In the matter of	Applications to the Selwyn District Council (RC 115199) and the Canterbury Regional Council (CRC 120239, CRC 120241, CRC 103589.1, CRC 120240, CRC 120236, CRC 103695.1, CRC 103592.1) by the Fonterra Cooperative Group Ltd for proposed expansion of the consented Milk Powder Plant near Darfield that is currently under construction.

DECISION OF HEARINGS COMMISSIONERS DAVID WILLIAM COLLINS, BRENT COWIE AND JOHN GRAHAM ISELI

Hearing:	**28th, 29th and 30th November and 6th and 7th December 2011, Darfield Recreation and Community Centre**
Site:	**680 hectares, 3.5 kilometres north-west of Darfield, fronting State Highway 73, near Racecourse Hill. The proposal is to also irrigate process wastewater on two nearby properties (see Figure 1)**
Zoning:	**Rural (Outer Plains) Zone in Selwyn District Plan**
Activity Status:	**All the applications are for discretionary activities**
Decision:	**All the consents sought are granted, with conditions**

CONTENTS

1. APPOINTMENT

1.1 We have been jointly appointed and empowered by both consent authorities to determine all the land use consent and discharge permit applications associated with the proposed Stage 2 development of the Darfield Fonterra Milk Powder Plant.

1.2 Two of us – Mr Collins and Mr Iseli - were involved in the hearing of the first suite of consents for the new Fonterra Dairy factory at Darfield. Dr Cowie has previously been involved in several major consent applications dealing with the effects of dairy processing, including the Synlait Plant near Dunsandel and discharges to the marine environment of waste water from the Clandeboye dairy factory, and to the Hokitika River from the Westland Milk dairy factory. While this background has provided us with an understanding of what this sort of proposal involves, we have been conscious of the need to assess this proposal with open minds.

1.3 We visited the site and its environs three times during the course of the hearing. Our first visit was to drive around the periphery of the plant, including along Homebush, Loes and Auchenflower Roads, and SH73. This visit enabled us to become familiar with the viewing points where the applicant had taken photo montages to show the visual effects of the development. The second visit, when we were accompanied by Mr Seaward (a submitter who did not appear at the hearing) and Mr Goldschmidt, was on to the site, one of the irrigation blocks and to Mr Seaward's property to the north west of the site. Our third visit was to see the site owned by the Camerons on the south side of Racecourse Hill, where they had proposed to build their retirement home.

1.4 The proposal is for a major development ($240 million construction cost, in addition to the $150 million plus land cost of Stage 1). We have had the benefit of comprehensive application documentation, stringent assessments by council reporting officers, and critiques by submitters in opposition. All of these documents are currently available on the Environment Canterbury website and will always be publicly available from the records of the two consent authority councils. We have therefore not attempted to set out all the information and evidence in this decision; rather we have focussed on the central facts and key evidence relating to the aspects of the proposed development in contention, and the aspects where we consider there is potential for adverse environmental effects.

2. THE PROPOSAL

2.1 Fonterra owns 680 hectares of land located on State Highway 73 (SH 73) near Racecourse Hill on the Canterbury Plains, approximately 3.5 kilometres north-west of Darfield. A milk powder drying plant is currently under construction on this property under a set of consents granted by the Canterbury Regional Council (Environment Canterbury or "ECan") on the 2nd of December 2010. It is now proposed to expand the factory and to irrigate some of the process water on two nearby properties under arrangement with the owners. Figure 1 below shows the application site and these properties (Gray and Gunn farms).

2.2 As can be seen from Figure 1, the application site straddles State Highway 73 approximately 3.5 kilometres north-west of Darfield, and the Gray and Gunn properties are located nearby to the east and west respectively.

2.3 The Stage 2 consents sought here are additional developments over and above Stage 1 as follows:

- The addition of a 30t/hr, 56.2m tall dryer with 4 discharge stacks up to 7m high. This will be built to the south east of the 16t/hr drier that is already being constructed as part of Stage 1.[1]
- An additional 45MW coal and/or biomass fuelled boiler sharing the same discharge stack as the Stage 1 boiler (which has a capacity of 30MW).
- An increased level of traffic movements from around 460 per day in Stage 1 to around 870 per day with both stages operating. This includes a further 346 tanker movements (two ways) per day.
- Expanded milk reception facilities.
- An increase in the length of the rail siding and it being potentially used at any time.
- The size of the dry goods store being increased by 30,000 square metres.

[1] The original application sought there be two discharge stacks, but at the start of the hearing Fonterra sought that this be increased to four, as this is more energy efficient. The expert evidence was that this makes no difference to the effects of the activity. No submitter opposed this change, and we agree that this change makes no material difference to the applications so is "within scope".

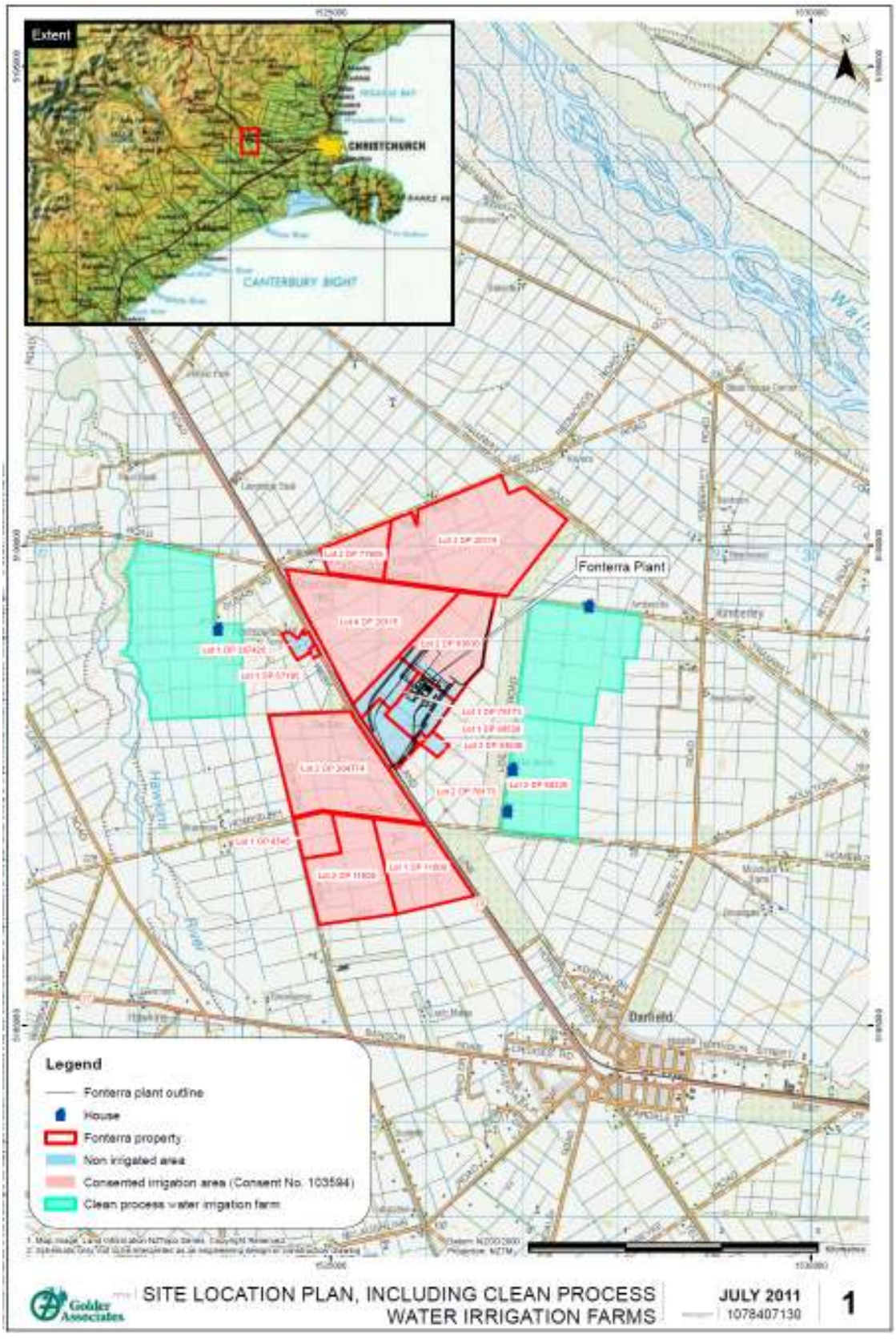

Extent
CHRISTCHURCH
CANTERBURY BIGHT
Fonterra Plant
Darfield
Legend
Fonterra plant outline
House
Fonterra property
Non irrigated area
Consented irrigation area (Consent No. 103594)
Clean process water irrigation farm
SITE LOCATION PLAN, INCLUDING CLEAN PROCESS WATER IRRIGATION FARMS
JULY 2011
1078407130
1

Figure 1

- An increase in the volumes of hazardous chemicals stored on the site. In particular, the maximum amount of diesel sought to be stored increased from the 15,000 litres consented by Stage 1 to 50,000 litres in Stage 2. There will also be increased volumes of chemicals such as sulphuric acid and chlorine stored on site.

- Enlarged stormwater and domestic sewage systems, with the effluent field for domestic sewage increased in area by 1,200 square metres.

- Storage of an additional 25,000 cubic metres of clean process water, which is subsequently irrigated to land.

- The addition of two further blocks of land, each of approximately 106ha, on to which clean process water can be irrigated. These are the Gunn Farm, to the west of Racecourse Hill and the Gray Farm, which is to the east of Loes Road.

2.4 The applicant said that, if consented, construction of Stage 2 will likely commence sometime prior to 2017, and will last about 18 months. The timing will depend on future milk flows, as processing capacity must be increased to meet increased supply. This is because under the Dairy Industry Restructuring Act 2001, Fonterra is obliged to collect and process milk throughout most of New Zealand, including all the Canterbury Plains and inland basins.

2.5 Construction of Stage 1 is well underway on the site. Noise bunds have been constructed, some boundary screen planting has taken place and the road access has been formed. The Stage 1 dryer, which will be built to a height of 41.25m (plus 7m stacks) rather than the maximum consented height of 52.25m (plus stacks), was constructed to a height of about 28m during our site visit. The dry store is being constructed, and excavation and construction of the foundations of the boiler was underway. Stage 1 is due to be operational in August 2012, which is the start of the next dairy season.

2.6 The factory site access to SH 73 has now been constructed along with the 1.2 kilometre access road itself. The design provides for a full right turn in lane as well as left hand turn arrival and departure slip lanes, all designed for the a substantial number of heavy vehicles. Stage 2 proposes some minor alterations to and extensions of the vehicle reception layout.

2.7 Stage 2 includes a commitment to use rail to transport milk powder from the site and coal to the site and thus reduce the number of heavy goods vehicles on the road network. The Stage 1 site development plan made an allowance for the construction of a rail siding into the site but at that time rail was an ‘either/or’ proposal with no commitment to rail. That siding is to be

extended in length as part of Stage 2 with product loading and unloading within the expanded drystore.

2.8 A small addition to planting shown on the approved landscape plan is proposed near the entrance to the factory to provide additional screening of the factory.

2.9 During the construction period an on-site work force will peak at approximately 700 employees, with a monthly average of approximately 300 employees.

2.10 In order to authorise these Stage 2 activities Fonterra sought the following resource consents and changes to existing consents:

- A land use consent (RC115119) from the Selwyn District Council authorising activities including the construction of the second dryer and the second boiler, an increase in the size of the dry store, additional storage of hazardous chemicals, additional earthworks and increased vehicle movements.

- A permit to discharge contaminants to air (CRC120180) from the combined Stage 1 (30MW) and Stage 2 (45MW) boilers burning coal and/or wood biomass, and from the combined 16 t/hr and 30 t/hr milk powder dryers.

- A permit to use land to store contaminants (CRC120240) in clean process wastewater in storage ponds with a maximum total capacity of 75,000 cubic metres. This replaces the previous Stage 1 consent which enabled the storage of up to 50,000 cubic metres of process wastewater.

- A land use consent (CRC120236) to excavate about 100,000 cubic metres of land to construct the new milk dryer plant and the extension to the storage pond.

- Two new permits to discharge contaminants into or onto land, and into air, on the Gunn (CRC120239) and Gray (CRC120241) properties. This will be carried out primarily via pivot irrigation.

- An application to change the conditions of CRC103859 for the discharge of stormwater to land. The main change sought is to increase the roof area from which stormwater will be discharged from 25,000 to 83,000 square metres. The present consent also authorises the discharge of stormwater via swales or infiltration basins from elsewhere on the site.

- An application to change the conditions of CRC103592 for the discharge of human and domestic wastewater into land. The changes sought are to maximum daily volume of wastewater discharge (from 12 to 16 cubic metres per day), and an associated increase in the size of the effluent treatment field by 1,200 square metres (from 3,000 to 4,200 square metres).

- An application to change the conditions of CRC103695, which is a land use consent for the storage of hazardous chemicals, notably an increase in the volume of diesel to be stored from 15,000 to 50,000 cubic metres.

3. NOTIFICATION AND THE HEARING

3.1 The land use application was lodged with the Selwyn District Council (SDC) on the 29th of July 2011 and the reply to a request for further information was received on the 30th of August 2011. Applications to the Canterbury Regional Council (ECan) were lodged on the 28th of July 2011. All the applications were publicly notified on the 10th of September in the Christchurch Press, on the 13th of September in the Selwyn Times and the 14th of September in the Central Canterbury News. Owners of properties within 1,000m of all proposed discharge areas were individually notified, as were 13 organisations with a potential interest in the project.

3.2 Submissions closed on the 7th of October 2011. There were 32 submissions on the SDC resource consent application. One was in support, three were neutral, and 28 were in opposition. There were 35 submissions on the ECan resource consent applications, most addressing more than one of the consents sought. Two were in support, three were neutral, and 30 were in opposition.

3.3 Another request for further information was made by the SDC on the 14th of October 2011 (seeking photo-simulations, information about rail and vehicle movements, and estimates of noise from rail operations). A response was provided on the 28th of October.

3.4 The following is a summary of some key points made by hearing participants. Our conclusions about the evidence and submissions are discussed mainly under the various headings later in this decision.

The Case for the Applicant

3.5 Ms Jo Appleyard presented opening legal submissions on behalf of Fonterra. She described how the proposed Stage 2 development would be constructed alongside Stage 1, what Stage 2 would involve and what new consents and/or changes to existing consents were being sought for Stage 2. She outlined the statutory context in which the applications sit, with all being assessed as discretionary activities. Ms Appleyard cited case law that supported further consent applications being made to expand the Darfield dairy factory in the future, and noted that Fonterra said at the first hearing that further consents may be sought on the site. In her view there is no justification for applying "the precautionary principle" to the Stage 2 applications because there is no uncertainty about the effects of the activities for which consent is being sought.

3.6 Mr Robert Spurway is the South Island Operations Manager for Fonterra. He said that although the company has 10 milk plants in the South Island, the three plants in Canterbury (at Kaikoura, Plains (Christchurch) and Clandeboye) cannot process existing peak milk supplies, and presently some milk is tankered to Edendale in Southland. This processing shortfall in Canterbury will be resolved once Stage 1 at Darfield starts operations in 2012, but with current milk supply growth in Canterbury this capacity will be full again by about 2017, which is why consents are being sought for Stage 2.

3.7 In response to submissions Mr Spurway said Fonterra will definitely use rail to transport product from Darfield to Lyttelton Port as part of Stage 2. Increasing the capacity of the factory will not lead to an increase in dairying, as Fonterra must collect and process milk, and so is supply driven. Building a factory close to many suppliers increases efficiency, and reduces transport costs.

3.8 Mr Richard Gray is the Canterbury Operations Manager for Fonterra. He has been in this position for eight months, and in June 2011 relocated his family to Darfield. Mr Gray described how Fonterra has interacted with the local community, including the Community Liaison Group required as condition of the Stage 1 consents. There had been benefits for local contractors, particularly in the development of the associated Fonterra farms. He detailed how Fonterra had taken a precautionary approach to construction of buildings on the site and the storage of hazardous chemicals due to proximity of the Horarata faultline. The operation of the railway siding was also described.

3.9 Mr Barry McColl is Fonterra's national transport manager for New Zealand operations, and is responsible for all milk collection. Fonterra owns its tanker fleet of 453 vehicles and employs 1,350 drivers. In the peak season the company collects over 80 million litres of milk from 10,500 farms, and its tankers travel about 200,000 kilometres per day (at peak) and about 85 million kilometres per year. Mr McColl described driver training and fleet performance, and said that Fonterra had offered to pay for improvements to an intersection in Darfield to improve traffic flow for its tanker fleet.

3.10 The Stage 2 Darfield development will reduce tanker travel by about 10,000 km/day at peak, over and above the 20,000 km/day saved by the Stage 1 development. There will also be substantial savings in road travel as dry goods will be taken by train to Lyttelton. This would not be practical if another milk dryer were constructed at Clandeboye.

3.12 Mr Ian Goldschmidt is the Environmental Manager for Fonterra in the South Island, and has been involved with the development of the Darfield site from the start of the project. Stage 1 of the project will generate up to 8,720 m^3/d of clean process water and washwater, which will be irrigated to two farms owned by Fonterra. Stage 2 will generate up to a further 9,630m^3/d, so additional land is needed for irrigation with this water. Fonterra has reached agreement with two third parties – the Gunn Farm to the west of Racecourse Hill, and the Gray Farm to the east of Loes Road – to take this water for irrigation. Each irrigation block will be about 106ha, with two pivots installed on each farm along with some pod irrigation. The daily application rate will vary from about 1.5 to 5mm/day during the season, with an average annual application of 365mm.

3.11 The remainder of Mr Goldschmidt's evidence covered matters such as construction management (the Construction Management Plan was appended to his evidence), comment on the conditions proposed by officers, and conditions proffered by Fonterra to upgrade the Bray Street intersections and for an $80,000 contribution to a Traffic Safety Community Trust Fund.

3.12 Mr Andrew Craig is a landscape architect and designed the proposed screen planting. He described the "receiving environment" with the aid of photographs, expressing the opinion that this extends to a radius of about two kilometres. Mr Craig discussed the screen planting that has been undertaken for the Stage 1 development and the additional broadleaf trees now proposed perpendicular to the vehicle access road. He presented some visual simulations of views with all the proposed development and existing and proposed trees in place, concluding that the Stage 2 buildings would have little additional effect on the landscape.

3.13 Mr Jason Blair provided a statement describing the technical basis for the visual simulations he had provided for Mr Craig.

3.14 Mr Andrew Carr is a traffic engineer. His evidence described the existing traffic situation and the effect of the proposed additional traffic. He discussed the capacity of the full intersection that has already been built at the entrance to the site and noted that the railway crossing close by will be protected by flashing lights, bells and barriers. Mr Carr discussed the effect of additional tanker traffic through Darfield, which he considered would not create significant delays for pedestrians crossing the road or any greater safety concern.

3.15 Mr Rob Hay is an acoustic expert. His evidence explained why, after reviewing what is proposed, he considers that the Stage 2 construction

activity would meet New Zealand Standard NZS 6803:1999 *"Acoustics - Construction Noise"*, and operation would meet the District Plan noise limits. His evaluation was based partly on experience with other Fonterra plants in the South Island.

3.16 Mr Michael Dent is an electrical engineer. His evidence was tabled and dealt with the effect of proposed lighting of the plant. He described the lighting that is necessary for the proposed 24 hour operation of the plant, and indicated that he expects that there would be very little light spill and that the additional lighting to what is consented for Stage 1 would be barely discernable beyond the site.

3.17 Dr Blake Fieldes is a Principal Process Engineer for Aurecon New Zealand Limited. He discussed fuel supply for the boilers, explaining that the 30MW Stage 1 boiler has been optimised for coal but can burn up to 15% biomass. Dr Fieldes stated that the design details and fuel choice for the proposed Stage 2 boiler are still under review.

3.18 Certainty of energy supply is an important factor for Fonterra, given the size (75MW combined) of the proposed boiler plant. Dr Fieldes explained that burning of wood fuel would require approximately 15% of the locally available wood. He also discussed trials of *Miscanthus*, an energy cropping plant, currently being undertaken by Fonterra. Given the uncertainty of biomass fuel supply and the costs associated with such fuel, Dr Fieldes considered that coal was likely to be the primary fuel burned in the boilers, at least in the short to medium term.

3.19 Mr Richard Chilton is a Senior Air Quality Specialist with Golder Associates (NZ) Limited. He provided a description of proposed discharges to air from the site and an assessment of the environmental effects of those discharges. Mr Chilton described dispersion modelling that predicted the ground level concentrations (GLCs) of primary contaminants discharged from the proposed boilers and powder driers. He concluded that the predicted GLCs of these contaminants, notably fine particulate matter (PM_{10}) and sulphur dioxide (SO_2), are well below relevant air quality guidelines for the protection of health.

3.20 Mr Chilton also discussed matters relating to air quality that were raised by submitters and by Mr Whitaker in his Section 42A report. These issues are discussed further in the findings of fact relating to contaminant discharges to air and in discussion of the objectives and policies of the Natural Resources Regional Plan (NRRP).

3.21 Dr Francesca Kelly is a director of Environmedical Aeraqua 2010 Limited, a company providing independent expert public health assessments. She addressed the likelihood of adverse health effects from exposure to contaminants discharged to air from the proposed expanded operations at the Darfield plant. Dr Kelly assessed the potential for acute and chronic effects, including synergistic effects, based on the contaminant concentrations predicted by Mr Chilton's modelling.

3.22 Dr Kelly also discussed the relevance of the World Health Organisation (WHO) 24-hour average guideline for SO_2 that was revised in 2006. Overall she concluded that the potential health risks associated with the proposed discharges are likely to be less than minor. Dr Kelly's findings, and in particular relating to the WHO SO_2 guideline, are discussed further in our evaluation and findings of fact.

3.23 Dr John Russell is the Environment Technical Group Manager at Fonterra. His evidence covered the effects of the discharge of factory wastewater to the Gunn and Gray farms via pivot and pod irrigation. He outlined what contaminants may be in these discharges and at what concentrations, how any potential odour could be controlled, and the nature of the soils on these sites and how suitable they are for irrigation. These matters are discussed more in the findings of fact in relation to the discharges of contaminants to land.

3.24 Mr Robert Bower is a hydrologist employed by Golder Associates. His evidence outlined the hydrogeology of the area around Darfield and the factory site, and assessed the effects of the proposed discharges to the Gunn and Gray farms on groundwater quality. This is also discussed more in the findings of fact in relation to the discharges of contaminants to land.

3.25 Mr Andre Bresler is an engineer employed by URS. His evidence discussed the effects of the discharges of stormwater and domestic wastewater on the site, and assessed the effects of these discharges on groundwater quality. Again this is discussed in the findings of fact in relation to the discharges of contaminants to land.

3.26 Mr Rob Potts is an agricultural engineer employed by CPG. His evidence gave an overview of the effects of the various discharges from the site and the local environs on groundwater quality, and particularly the potential for any cumulative effects from these discharges. We discuss this in the findings of fact in relation to the discharges of contaminants to land.

3.27 Ms Fiona Stewart is a registered valuer. She provided an analysis of the potential for the proposed development to affect the value of land owned by two submitters – the Seawards and the Camerons. Her conclusion was that the Stage 2 activity would have little effect except for possibly a negative effect on the value of a potential lifestyle block that could be subdivided off the Camerons' land.

3.28 Ms Justine Ashley is a resource management planner. Her evidence described the potential for subdivision and housing in the locality of the application site, under the Outer Plains Zone. Her conclusion was that an additional four dwellings could be erected on the adjoining 107 hectares Buttle property, and three new dwellings on some parts of the Cameron property.

3.29 Mr Dean Chrystal is a planner. His evidence provided an overview of the applications, the statutory assessment context, and his assessment of the environmental effects. His conclusion was that the benefits of the proposal such as reduced tanker travel and economic growth are much more significant than the minor adverse environmental effects.

The Submitters

3.30 Mr Ron Stewart's main concern about the Stage 2 applications was that the discharges associated with the Fonterra site may contaminate Darfield's new water supply well. At the time he made his submission the well had only been operating for about a week, and was producing high quality water at a rate of up to 83l/s. He said that "it had taken 15 years to get a decent water supply", and that a "Plan B" was necessary if the supply became contaminated. He doubted that this would be the case as the new well was very deep, but he sought certainty. He also said that there was a shallow aquifer at about 27m in the vicinity of Darfield, but that only flowed intermittently.

3.31 Mr Paddy McKay expressed similar concerns about protecting the integrity of the new Darfield water supply. He noted another deep community water supply well is to be drilled between Darfield and Kirwee, and he wanted the effects of the Fonterra discharges on groundwater quality monitored. Mr McKay also wanted certainty that surface water supplies, including stockwater races, and air quality in Darfield would be protected from the effects of activities on the Fonterra site.

3.32 Mr Murray Withers made legal submissions on behalf of Mr and Mrs Cameron. The Camerons own a mixed cropping farm on Homebush Road, but their

concerns focused mainly on the effects of the Fonterra development on a site on the south side of Racecourse Hill where they wanted to build a retirement house. They had not opposed the Stage 1 applications, because they were dealing with a serious personal health issue, and because they did not want to stand in the way of progress for the local community. They had however experienced adverse effects, particularly from more intensive use of Homebush Road and its environs, which is where their current home is located.

3.33 Mr Withers said that the part of the Cameron's property on Racecourse Hill is "so significantly adversely affected by Stage 2 that their intention of siting a home there would not proceed." However, in response to a question Mrs Cameron said they would not build their house on the site they had earmarked as "Stage 1 has ruined it for us".

3.34 We invited Mr Withers to make comments on proposed conditions of consent offered by the applicant. He did so subsequent to the hearing, and we thank him for that.

3.35 Ms Caitlin Dally is a resource management student. She said that the expansion of the dairy factory will result in more dairy farming, which she asserted was an indirect effect of the application. She is not against dairying per se, but said it "needs to be done properly". She was also concerned about the increase in diesel storage on the site, which, particularly with the proximity of the alpine fault, has the potential to cause major damage. While there is a low risk of this occurring, the potential for environmental damage is high, and so we should ensure that the storage tank is seismically strengthened.

3.36 Ms Dally said that less modelling of the effects of waste water would be needed if the applicant had waited until the effects of Stage 1 were known. She wanted air quality monitored, and if standards were breached, her co-submitter Patricia Monahan wanted an assurance that penalties would be imposed.[2]

3.37 Mr Tony Armstrong is a resident of Kirwee and is active in the local community. He had submitted against the proposal last time, and remains "quite concerned" about the nature of the proposal and the speed at which it has come about. He believed there would be significant adverse effects from the Stage 2 development. His major concern was the discharge to air,

[2] This is a matter for the consent authorities, who are legally obliged to enforce conditions of consents granted. We can only ensure that the conditions of consent are both robust and enforceable.

which he noted is an immediate and constant effect and that it will be pumping out potentially toxic air, but which is reversible. The officer's report had indicated that there were concerns about SO_2 and Mr Armstrong wanted to see the use of coal discounted or its use limited in westerly wind conditions.

3.38 His second main concern was about water, which he said was "a bit of an unknown" and that any effects are cumulative and irreversible. He thought the modelling used was rudimentary, that more research needs to be done, and would like to see conditions that require this.

3.39 In relation to the application to the District Council he had concerns about visual and noise effects. He said he could see the top of the current crane on the site from Kirwee. He asked what happens if the factory comes to the end of its life after say 35 years. Is there a provision to deconstruct the plant if its purpose is redundant? He would not want to see it as a relic of the distant past.

3.40 Mr Armstrong wanted the consents declined, or alternatively that there be some time delay such as a moratorium on construction if consent is granted.

3.41 Ms Lisa-Marie Brooks lives on Clinton Road just to the west of SH73. She objected to the Stage 1 applications, and similarly objected to all the Stage 2 applications. Ms Brooks asserted that Stage 2 will result in detrimental effects on pollution and visual amenity, which will "be doubled" by the Stage 2 applications, and that local residents will be more affected by contaminants, light, noise, dust and additional truck movements. She listed many reasons why she thought the applications should be declined, including effects on water supplies, tourism and sustainability, and concerns about earthquakes and the risks they posed given the volumes of hazardous chemicals sought to be stored on the site. Ms Brooks asserted that the environment was already overloaded, that ecotoxic effects had not been considered and that more monitoring is necessary. The current development should be trialled for two years before any additional consents are granted. She believed there would be downstream effects on Kirwee, West Melton and Christchurch.

3.42 Ms Brooks also said that some trees that partly screened the plant had been removed during site construction. In answer to a question she said these were near the site entrance, and she wanted fast growing trees planted more quickly to screen the site.

3.43 Ms Brooks also spoke of behalf of Mr Stuart Jacques, with whom she shares the Clinton Road address. Mr Jacques also opposes the Stage 2 consent applications, which he believed will "have detrimental effects for decades to come". He particularly cited effects on waterways and groundwater, which is already contaminated. As the effects cannot be mitigated, he advocated that the applications should be declined.

3.44 Two submitters tabled evidence at the hearing. Central Plains Water had read the applicant's evidence in relation to effects of the Stage 2 discharges on groundwater quality, and particularly nutrients. They wanted the same groundwater monitoring standards for Stage 2 as those that that had been included in conditions on the Stage 1 consents.

3.45 Mr Brian Warburton provided written evidence on behalf of Transpower, the national electricity grid operator. The Horarata-Islington 110kV transmission line runs along Homebush Road, and part of the land suitable for irrigation is within the transmission line corridor. The National Policy Statement on Electricity Transmission must be taken account of in our decision, and Mr Warburton said that the regional council officers had not acknowledged this in their s42A reports. Mr Warburton said that Stage 2 could result in adverse effects on system integrity, the safety of people and that dust could cause conductors or insulators to trip out, and that particulate material can reduce the economic life of transmission equipment. He listed conditions and advice notes that he considered should be imposed on some of the consents granted. We note here that the conditions sought by Mr Warburton have been included in the consents we have granted.

3.46 We also read all the other submissions on the applications. These were often comprehensive, and were generally addressed in the officers' reports, particularly the regional council officers.

The Officer Reports

3.47 Mr Ben Rhodes is a Resource Management Planner with the Selwyn District Council. He provided us with a comprehensive report, which like all the officers' reports, was pre-circulated to the applicant, the submitters and the hearing panel prior to the hearing. Mr Rhodes' report discussed the relevant provisions of the Selwyn District Plan and his assessment of the potential environmental effects of the proposed land use. His conclusion was that the proposal is in accordance with the objectives and policies for the Outer Plains rural zone and that *"...the effects of the proposal on the environment are considered to be minor in context of the consented activity on the site."* In coming to this conclusion he relied on advice from the

District Council's roading engineers and peer reviews of the applicant's landscape and acoustic reports carried out by Peter Rough Landscape Architects Ltd and Acoustic Engineering Services Ltd respectively, which were appended to Mr Rhodes' report.

3.48 Mr Neil Whitaker is a consents officer with Environment Canterbury. He provided reports in relation to the use of land for storage of hazardous substances and the discharge of contaminants to air. His reports concluded that consents for both these activities could be granted, subject to conditions. He provided additional written comments in relation to matters raised during the hearing concerning the discharges to air.

3.49 Mr Whitaker stated that he had no concerns regarding the proposed change from two to four emission stacks for the Stage 2 drier, since modelling predicted only a very small consequent change to contaminant GLCs. For all contaminants except SO_2, he stated that he has no concerns regarding the potential effects of discharges to air and is in general agreement with the applicant's assessment.

3.50 In relation to SO_2 Mr Whitaker noted that there is increasing concern regarding effects on human health, as reflected in the tightening of allowable limits internationally. He considered that Objective AQL2 of the NRRP should be met by requiring that SO_2 concentrations be maintained within the "acceptable" Regional Ambient Air Quality Target (RAAQT), equivalent to 66% of the National Environmental Standard (NES).

3.51 During the course of the hearing the applicant proposed to undertake ambient SO_2 monitoring in the vicinity of "The Oaks" property where modelling predicts the highest off-site concentrations. Mr Whitaker supported this proposal so the modelling predictions could be confirmed. However he considered that continuous monitoring of boiler load should also occur, so that sufficient information is available to validate the modelling predictions.

3.52 Ms Jocelyn Douglas, who is also a consents officer with Environment Canterbury, presented her report. She made some comments about conditions in particular, which we have followed up in the conditions on the consents granted.

4. STATUTORY ASSESSMENT FRAMEWORK

Status of the applications and key sections of the Resource Management Act 1991 ("RMA")

4.1 The applicant and reporting officers agree that although some elements of the proposal have controlled or restricted discretionary status, overall each of the applications has fully discretionary status. This was not disputed by any submitter.

4.2 Section 104(1) of the RMA requires that the consent authority must, subject to Part 2 of the Act, have regard to:

"a) any actual and potential effects on the environment of allowing the activity; and
b) any relevant provisions of -
(i)a national policy statement;
(ii)a New Zealand Coastal Policy Statement;
(iii)a regional policy statement or proposed regional policy statement;
(iv)a plan or proposed plan; and
c) any other matter the consent authority considers relevant or reasonably necessary to determine the application."

4.3 Section 104B of the RMA states that:

"After considering an application for a resource consent for a discretionary activity or non-complying activity, a consent authority-
(a) may grant or refuse the application, and
(b) if it grants the application, may impose conditions under section 108.

4.4 Section 105(1) of the RMA states that:

"If an application is for a discharge permit or coastal permit to do something that would contravene section 15 or section 15B, the consent authority must, in addition to the matters in section 104(1), have regard to—
(a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
(b) the applicant's reasons for the proposed choice; and
(c) any possible alternative methods of discharge, including discharge into any other receiving environment."

4.5 Section 107 of the RMA states that:

"(1) Except as provided in subsection (2), a consent authority shall not grant a discharge permit or a coastal permit to do something that would otherwise contravene section 15 or section 15A allowing—

(a) The discharge of a contaminant or water into water; or

(b) A discharge of a contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water; or

(ba)The dumping in the coastal marine area from any ship, aircraft, or offshore installation of any waste or other matter that is a contaminant,—

if, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:

(c) The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials:

(d) Any conspicuous change in the colour or visual clarity:

(e) Any emission of objectionable odour:

(f) The rendering of fresh water unsuitable for consumption by farm animals:

(g) Any significant adverse effects on aquatic life.

(2) A consent authority may grant a discharge permit or a coastal permit to do something that would otherwise contravene section 15 or section 15A that may allow any of the effects described in subsection (1) if it is satisfied—

(a) That exceptional circumstances justify the granting of the permit; or

(b) That the discharge is of a temporary nature; or

(c) That the discharge is associated with necessary maintenance work—

and that it is consistent with the purpose of this Act to do so."

4.6 Consideration of applications under section 104 of the Act is *"subject to"* the purpose and principles of the Act set out in Part 2 of the Act – sections 5 to 8. Relevant Part 2 matters in this case are the sustainable management of resources purpose of the Act set out in section 5, *"the efficient use and development of natural and physical resources"* (section 7(b)), *"the maintenance and enhancement of amenity values"* (section 7(c)), *"the maintenance and enhancement of the quality of the environment"* (section 7(f)), and *"the finite characteristics of natural and physical resources"* (section 7(g)).

4.7 We have had regard to these matters and the matters specified in sections 104(1), 104B, 105(1) and 107 and are satisfied that the proposal, with amended conditions, would on balance meet the purpose of the Act. We are quite satisfied that granting the application would not result in any of the adverse effects specified in section 107(1)(c-g).

4.8 In coming to this conclusion we have recognised that the Stage 1 development has to be acknowledged as part of the "receiving environment". Some of the submissions seemed to suggest we could revisit the Stage 1 consent. We cannot; nor could we defer a decision on Stage 2 until the effects of Stage 1 can be proven as suggested by some submitters. Applicants are entitled to a decision and in any case according to Mr Spurway's evidence there will be a shortfall of processing capacity in Canterbury within five years of Stage 1 becoming operational, which gives insufficient time to assess Stage 1 operations for a year or two, then obtain consents and construct Stage 2. We note that it also more efficient to plan for some Stage 2 consents at this stage of development. A good example is the MBR plant to treat domestic wastewater on the site – it is much more efficient to construct a plant and effluent field for the full development at this stage than it would be to add these incrementally in several years time.

4.9 Section 125 of the Act specifies that resource consents lapse five years after commencement unless given effect to, unless a longer period is specified in the consent. In the present case Fonterra has sought a lapsing period of 10 years. We consider this is reasonable, given the scale of the project, although as discussed in the previous paragraph the additional time is unlikely to be needed. The other consideration here is that it is unlikely that there would be any change to the receiving environment, technology or any other particular circumstances that would make it appropriate to require the consents to be applied for again if not implemented within five years.

4.10 Eight submissions were lodged after the 7th of October closing date. We asked the administrating officers to advise these submitters that they could apply to have their submissions validated under sections 37 and 37A of the Act. Two responses were received, from Ms Leslie Barlow and Murray Withers and Associates on behalf of The Trustees of the Bach Trust and Mr and Mrs A and L Cameron. The submission from the Trust was subsequently withdrawn. We issued a Memorandum to the applicant, Ms Barlow and Mr and Mrs Cameron on the 21st of November recording that we had resolved to extend the submission period for those submitters, allowing them to take part in the hearing process.

4.11 We have noted the general concern in submissions that consent would encourage more dairying, to the detriment of water resources. This issue was discussed in some detail in the decision on the Stage 1 application and we understand the situation has not changed. Fonterra is effectively obliged to collect milk from any new dairy farm that is established within an existing 'catchment' and is obliged to pay the same price regardless of the collection cost. The provision of additional processing capacity at Darfield would not therefore encourage dairy conversions in the Darfield area or the wider milk collection area for the factory by suppliers seeking to minimise transport cost. The only link we can see between the Stage 2 proposal and an increase in the number of dairy farms is perhaps some small effect on the payout to suppliers nationally from improved transport and processing efficiency in Canterbury.

4.12 Finally, in relation to legal considerations, we have considered Ms Brooks' concern about precedent. She suggested consent would *"open the floodgates"*. It is possible, although unlikely, that another one or even two dairy factories could be built in the District. This is limited by supply so it is very unlikely that another factory would be proposed in the upper plains area. If the concern is with agricultural processing generally, the District Plan anticipates and encourages this; the only serious issue under the District Plan is the height of the proposed structures and these are a functional necessity for large dryers. We also note that another substantial dairy factory – the Synlait Plant near Dunsandel – is already constructed and operating in the Selwyn District.

4.13 The District Plan distinguishes "Rural Based Industrial Activity" from general industry and provides a definition (page D-006): "*an Industrial Activity that involves the use of raw materials or primary products which are derived directly from the rural environment, including agricultural, pastoral, horticultural, forestry, viticultural and crops.*" It is clear from Rule 9.5 on page C9-004 of the District Plan that the Plan provides specifically for "Rural Based Industrial Activities" and intends a more permissive regime for them. We see no danger of consent for the Stage 2 development of this dairy factory having any weight as a precedent for non rural-based industrial (or commercial) developments.

Regional Policy Statement, Selwyn District Plan and the Natural Resources Regional Plan

4.14 Detailed analyses of the relevant provisions of the Canterbury Regional Policy Statement (CRPS), the Proposed Regional Policy Statement (notified on the 18th June 2011), the operative Natural Resources Regional Plan

(NRRP) and the Partially Operative Selwyn District Plan (SDP) have been provided in the section 42A reports and in the evidence of Mr Chrystal.

4.15 Some debate occurred at the hearing regarding the application of Objective AQL2 of the NRRP. Objective AQL2(a) states:

"(a) Where existing ambient air quality is equivalent to or better than the acceptable target specified in the Regional Ambient Air Quality Targets in Schedule AQL1 maintain air quality at its existing level."

4.16 Mr Chilton's modelling predicted that at the most affected off-site location predicted SO_2 concentrations would exceed the acceptable RAAQT for approximately two hours per year. Given the conservative nature of the modelling, he concluded that it is unlikely that the acceptable RAAQT of 230µg/m^3 (1-hour average) would be exceeded. We find that the potential for exceedance of the RAAQT at the most affected receptors is small. The applicant has proposed a condition that requires ambient monitoring to continue (at significant cost to Fonterra) if such an exceedance is detected during the previous year of monitoring.

4.17 We agree with Mr Chrystal that while the proposed SO_2 discharge is not in complete agreement with Objective AQL2, the discharge is not contrary to it and on balance will not be inconsistent with the objective. We also note that the objective does not follow through to any specific policies or rules that could not be met by the proposed discharge. It is our decision that ambient monitoring is more appropriate than imposing an SO_2 emission cap in this case.

4.18 With the exception of Objective AQL2 of the NRRP, the reporting officers and the applicants' legal and planning representatives agree that the proposed development is generally consistent with the relevant objectives and policies in the CRPS, the NRRP and the SDP. Having had regard to those provisions and considered the detailed revised proposal and conditions, we are satisfied that the proposed activity is consistent with almost all the relevant plan objectives and policies. On balance we find that the proposal is generally consistent with the overall objectives and policies framework.

5. PRINCIPAL ISSUES, EVALUATION, AND FINDINGS OF FACT

5.1 In summarising and evaluating the principal issues we have considered the application and the associated assessment of environmental effects, the

further information provided in response to section 92 requests, all submissions made in response to the applications, the section 42A reports and all the information provided at the hearing.

5.2 The principal issues or actual or potential adverse effects were discussed in some detail in the section 42A reports and in the evidence provided by the applicant and the submitters, and can be summarised as:

- Positive effects
- Landscape and rural amenity effects
- Noise effects
- Transportation effects
- Air quality effects
- Groundwater and surface water quality effects

5.3 Positive effects relate to the whole proposed development and land use. Landscape, noise and transport effects are relevant primarily to the application for land use consent under the Selwyn District Plan. Air and water quality effects relate to the applications required from Environment Canterbury. We will discuss these in turn.

Positive Effects

5.4 The purpose of the Act, set out in section 5, is to manage the "*...use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety...*" This enabling purpose is subject to provisos in section 5(2) about sustainability and avoiding, remedying or mitigating adverse effects on the environment.

5.5 The main resources at issue in this case are the resources required to construct and operate the Stage 2 facilities, the land to be built over, the air to be used for disposal of discharges, the surface and underground water resources potentially affected, the road network, and the "rural amenities" of the locality of the proposed Stage 2 development.

5.6 We accept that the proposal would enable Fonterra and its milk supplier shareholders to meet their needs, and that there would be economic and social benefits through increased economic activity and employment. The issue is whether these would be outweighed by the potential adverse effects identified.

5.7 It can be assumed that the resources to be used to construct and operate the Stage 2 facilities (which have alternative uses as indicated by their $240 million value) would be efficiently used (a section 7(b) of the Act matter) because there is no evidence of any market failure. We have therefore focussed on the claimed positive effects of this proposed use of resources and the potential adverse effects.

5.8 Counsel for the applicant emphasised the economic importance of Fonterra. The company employs over 6,000 people and provides, alongside domestic and export dairy revenue, over $525 million to the New Zealand economy through wages and salaries. While it could be argued that the economic benefits of the Stage 2 plant could be gained if it was located elsewhere, there is no evidence that there would be any advantage in that, and as discussed below, another location would raise other problems.

5.9 Like the Stage 1 development, the Stage 2 facilities would allow for a very significant reduction in transport of milk. Mr McColl's evidence was that the factory will draw milk primarily from farms within a 50km radius. It has been calculated that at full production tankers would have to travel an additional 10,331 km per day if the Stage 2 dryer was built at Clandeboye. It is proposed that if Stage 2 is constructed at Darfield, rail would be used to transport both Stage 1 and Stage 2 product to the port of Lyttelton, saving a further 8,122 km per day of truck travel. If Stage 2 is built at Darfield the coal fuelling both the Stage 1 and Stage 2 boilers would be brought in by rail, whereas Stage 1 alone could be served by road transport. Given that heavy vehicle movements on roads inevitably have adverse effects, we accept that these reductions in road use are a major factor in favour of granting the consents.

5.10 We accept that it is better to provide additional capacity at an existing or consented site than at a new site. This provides economies of scale, avoids some duplication of facilities, and limits adverse environmental effects to fewer sites. For example, we consider it is better to marginally increase the adverse effect on landscape at this site than to substantially affect the landscape at a new site.

5.11 The proposed irrigation of up to 500,000m^3 of process water per year to each neighbouring farm would be a benefit to their farming operations. Using conservative assumptions Dr Russell predicted this will reduce nitrate-nitrogen concentrations in drainage water. We have not attached much weight to this however because it is also possible that the land owners might continue to apply additional fertiliser to further increase production, but it does put the effect of the proposed irrigation of process water in context.

Landscape and Rural Amenity Effects

5.12 The potential for landscape and rural amenity effects relates to non-compliance with several standards in the District Plan for as-of-right development:

- Rule 1.6.1.2, which allows 5,000m^3 of earthworks – over 100,000m^3 is proposed.
- Rule 3.2, which permits buildings up to 12 metres in height – the Stage 2 dryer would extend to 56.2 metres, plus flues up to an additional seven metres.
- Rule 6.1 relating to signs. It is proposed that a 24m^2 Fonterra logo sign intended to go on the Stage 1 dryer would be painted on the taller Stage 2 dryer.
- Rules 9.4 and 9.5 relating to the scale of activities (floor area and number of staff), and
- Rule 9.13 relating to the number of vehicle movements.

5.13 All of these elements require consent as a discretionary activity except the number of vehicle movements which is a restricted discretionary activity. There are no aspects of the proposal requiring consent as a non-complying activity.

5.14 The effect of traffic is discussed under a separate heading below. Similarly the potential for dust from earthworks is discussed in the section on air quality below.

5.15 We have had the benefit of specialist assessment of landscape and rural amenity effects from two landscape architects - Mr Andrew Craig for the applicant, and Ms Nikki Smeatham from Rough and Milne Landscape Architects Ltd who provided a peer review on behalf of the District Council. Mr Chrystal and Mr Rhodes also commented on these effects and we note that landscape and rural amenity are a major concern for many of the submitters.

5.16 The starting point for assessment is an understanding of the "receiving environment" – the landscape and general environment into which the Stage 2 development and activity would be inserted. That includes the Stage 1 development, even though it is not yet operational. Mr Rhodes suggested the baseline includes the consented Stage 1 dryer, which could extend to a height of 52 metres plus flues. A 41.25 metre high dryer is well under

construction however, and knowing the sort of cost involved we consider it would be fanciful to take into account the theoretical possibility that Fonterra might revert to the 52 metre high dryer.

5.17 The site is part of the extensive Canterbury Plains, characterised by a patchwork of paddocks bordered by fences and shelter belts. In this locality dwellings are sparse and surrounded by amenity plantings of exotic evergreen and deciduous trees. Racecourse Hill, about one kilometre from the factory, is a distinctive landscape feature of the locality. The other important landscape element is the Southern Alps backdrop.

5.18 The landscape proposal in place under the Stage 1 consents requires retention of most of the existing shelterbelts and carefully designed new planting designed to screen the factory from view as much as possible. The only additional planting proposed as part of the Stage 2 proposals is an additional cluster of exotic broadleaf trees at the site entrance off State Highway 73. These are to be four metres high at the time of planting.

5.19 As part of our site visits we have attempted to visualise how much of the factory would be visible from various viewpoints, and we have been aided in that by the photo-simulations provided by Mr Craig. These accurately show what would be seen (both Stage 1 and Stage 2 development) from various public locations around the site, and importantly show the expected changes as screen planting matures. In some cases there is a significant difference between what would be seen initially and what would be visible after five or 10 years.

5.20 There is of course no need for planting to achieve anything like the height of the factory structures in order to screen them. This was illustrated when we visited the Seaward's property in Auchenflower Road, where a trimmed hedge on their property provides complete screening of the factory from their house. That hedge does not extend along their entire boundary but the newly planted trees along the application site boundary across the road can be expected to provide substantial screening within a few years.

5.21 We accept Mr Craig's point that the most important viewing location is State Highway 73, simply because this is the corridor along which the great majority of observers travel. We also accept that the most important vista from SH 73 is towards the mountains and not across the application site. The photo simulations show that travellers on SH 73 would have clear views of the factory for the first few years but within 10 years very little, if anything, would be visible. The entrance road has been designed to curve so that there is no view up the entrance road to the plant.

5.22 At present the factory site is completely screened from State Highway 73 from Darfield almost up to the factory entrance by McHughs Plantation. We understand from Mr Rhodes that the District Council is negotiating with the Selwyn Plantation Board to buy the property with the intention that it would be managed as a reserve. While there can be no certainty that the screening trees will always be there, it seems likely that the plantation will continue to be managed that way.

5.23 The factory would be visible from other less important public viewpoints. Importantly, within a few years only the dryer towers would be visible; there would be no view of the very large dry store, other buildings, or tankers. From parts of Loes Road and Homebush Road (east of the State Highway) the angle of elevation would mean that the dryer towers would protrude into the skyline above the backdrop Southern Alps, while from further away at the new subdivisions on the edge of Darfield (Kimberley Road and Landsborough Drive) the angle is such that the towers would be seen against the mountains.

5.24 In preparing his photo simulations Mr Craig assumed that no vegetation would be planted on the properties between the public viewpoints and the factory. This means that he was depicting worst case scenarios. In reality it is likely that people building houses in positions where there is a viewshaft through to the towers would plant trees and shrubs in strategic positions if they did not want to see the towers, just as they would if they wanted to block views of other closer buildings, power poles and roads.

5.25 Mr Craig made the point that even from these viewpoints where the towers could be prominent, they would not be dominant in the sense of occupying a substantial part of the visual field. From these viewpoints the open plains and the Southern Alps would remain dominant.

5.26 We note from the application and Mr Dent's evidence that the towers will not be lit at night and that they have no high level windows.

5.27 It is proposed that the Fonterra logo signage consented for the Stage 1 tower would be instead painted on the Stage 2 tower. We see no reason to prevent that.

5.28 We are familiar with the Clandeboye and Synlait dairy factories and we have used these to compare the likely visual impact of the proposed plant, and in particular the Stage 2 structures. Both are substantially more visible than what is proposed because of less screening, the substantially greater size

and "footprint" of the Clandeboye plant, and proximity to the highways. The Synlait plant in particular has a much lower tower (39.6 metres compared to the 56.2 metres height of the proposed Stage 2 dryer), but is much more prominent because it is only 275 metres from State Highway 1.

5.29 As already noted, Racecourse Hill is a distinctive landscape feature in the locality of the application site. Part of Racecourse Hill is owned by submitters Mr and Mrs Cameron. We visited their property and confirmed that the elevation affords a view over the application site. At present much of the Stage 1 construction is visible, but our impression is that planting within the application site will screen most of this within a few years, even from the vantage point of Racecourse Hill. The Stage 2 tower (and the consented Stage 1 tower) would however always be visible.

5.30 The Camerons indicated at the hearing that they no longer intend to build their retirement home on the Racecourse Hill part of their property because Stage 1 *"has ruined it". W*e have still considered the effect of Stage 2 on this particularly attractive building site. We accept that an additional tower would detract from the view, but at a distance of over 800 metres the tower would occupy only a small part of the vista. As in the case of other potential dwellings at a distance it would be possible to plant trees and shrubs between critical viewing points in and around a future dwelling and the one or two degree "blot on the landscape".

5.31 We acknowledge that for the Camerons and other submitters the effect of the Stage 2 development on landscape and rural amenity is not just a matter of visibility (or noise or any other physical effect). Even if the factory cannot readily be seen or heard, they will be aware of it, and it is unwelcome. For those people, a glimpse of the drying tower, noise within the District Plan limits, and even the presence of Fonterra tankers on the roads will be reminders that the factory is there.

Noise Effects

5.32 The application specifically does not seek consent to exceed the noise limits in the Selwyn District Plan so our role is to satisfy ourselves that this is plausible, and to assess whether the proposal would comply with the requirement under section 16 of the Act to adopt the *"best practicable option to ensure that the emission of noise...does not exceed a reasonable level."* Noise is mentioned as a concern in several submissions.

5.33 As with the other potential environmental effects our concern is just the effects of the Stage 2 proposals, not the consented Stage 1 activities. The Stage 1 consents authorise 24 hour operation of the factory and 24 hour tanker movements; the only new element proposed is night-time use of the (extended) railway siding. We are familiar with the noise associated with railway shunting operations, as submitters may be. It is important to note that as Mr Gray illustrated with model trains at the hearing, the system has been designed to provide for the dropping off and picking up of rakes of wagons (up to four rakes every 24 hours) without shunting or waiting.

5.34 The applicant's acoustic consultant, Mr Rob Hay, has technical experience with other Fonterra dairy factories and many other major industrial plants. His evidence was that the Stage 2 proposal *"...represents current best practice concepts in the design of milk powder plants."* Noise mitigation measures include:

- locating the plant as far as possible from existing dwellings, rather than the cheaper option of locating close to the State Highway and railway,
- using heavy weight construction to contain noisy equipment,
- specifying stringent noise emission standards in the tender documents for equipment,
- laying out the activities within the factory site so as to minimise noise propagation, and
- extensive use of noise control bunds.

5.35 Mr Hay also explained that the site operation would be subject to a Noise Management Plan. We are always uneasy about reliance on management plans, particularly when their content is unknown at the time of a hearing, but in this case the Noise Management Plan is already in place for Stage 1 and was tabled by Mr Goldschmidt.

5.36 The larger earth bunds now proposed are designed to ensure that the noise at site boundaries will be not significantly different from the noise predicted from operation of Stage 1 with less bunding. Bunds can be extended and raised, which gives us reassurance that if Mr Hay's modelled noise predictions proved wrong for some reason, it would be possible to extend them to achieve compliance.

5.37 It is unlikely that this would be necessary however – Mr Hay's predictions of the worst case times when the plant is operating while the rail siding is being used show dB L_{Aeq} 15 min levels at the nearest dwellings not owned by the applicant as between 30 and 35, compared to the 45dB L_{Aeq} 15 min

standard specified in both the Stage 1 consent conditions and volunteered for Stage 2.

5.38 During the day the noise environment for most of these dwellings is dominated by the noise from traffic on State Highway 73 and noise from trains on the Midland railway line. Both of these are steadily increasing. It is only at night, when there are lulls in road traffic, that the factory will be readily heard. We understand the character of this noise would be in the nature of a low hum which in still conditions would carry to the nearest dwellings and beyond.

5.39 In our assessment this would detract from the rural amenity of the area, but only to a limited extent bearing in mind the inoffensive kind of noise, and the fact that the increased bunding would reduce noise propagated from the combined operation of Stage 1 and Stage 2 to similar levels to the noise anticipated from consented Stage 1.

Transportation Effects

5.40 As noted earlier, a primary reason for locating the Stage 2 production at this site rather further from the supplying dairy farms is to minimise tanker travel. This counters the otherwise valid argument that consent for Stage 2 would lead to adverse effects associated with the tankers travelling to and from the site. As discussed above, the legislation Fonterra operates under requires the company to accept milk and to pay a uniform price so if milk supply is increasing there will be more tankers on the roads. The question then is not whether milk tankers have adverse effects like delaying faster vehicles, but whether any particular factory location will require shorter or longer trips.

5.41 The expected savings in tanker travel resulting from developing a site within the supply catchment, which can be served by rail has been discussed above under the heading of Positive Effects.

5.42 Our assessment of transportation effects has therefore focussed on some matters relating to the access design and the need for improvements to some sections of road.

5.43 Road access to the site has now been provided, with a full intersection to the New Zealand Transport Agency's requirements. The Agency did not lodge a submission on the Stage 2 application.

5.44 We questioned whether there is sufficient length in the lane providing for west-bound right turning vehicles at the times when the access road will be blocked by a passing train. The applicant's traffic engineer, Mr Andy Carr, indicated that he believes the length will be sufficient. We note that there is very good visibility so even if the space for queuing proved insufficient the effect would be inconvenience to other motorists rather than a significant safety issue.

5.45 Similarly, we questioned whether the tankers leaving at the start of one of the planned two shifts could delay traffic. In theory they should not because an acceleration lane has been provided. We were told that Fonterra instruct tanker drivers to leave a space for overtaking vehicles between tankers.

5.46 The Midland railway line parallel to State Highway 73 presents a potential problem because there is room for only one tanker and trailer in each lane between the State Highway and the railway. This means that it is important that drivers turning right into the site do not cross the opposing lane till that space is clear, in case a train comes.

5.47 Similarly, there is potential for several tankers in the acceleration lane blocking a tanker exiting across the railway. These are safety matters but we understand Fonterra carefully selects and trains tanker drivers and that there is a briefing at the start of each shift. Mr Carr indicated that construction traffic for Stage 2 (up to 480 vehicles per day) would be controlled so that peaks do not coincide with Stage 1 shift changes. The railway crossing will have lights, bells and barrier arms, and there appears to be no better design solution to further minimise the potential for conflict.

5.48 The applicant intends to use Telegraph Road for tankers travelling to and from the south and the Council has already proposed under Proposed Plan Change 12 to re-classify Telegraph Road from a "collector" road to an "arterial" road. We understand that the intersection of Telegraph Road / Bray Street / Cardale Street within Darfield needs some realignment and a change in priority in favour of Telegraph Road. From a visit we made, that does appear desirable. Counsel for the applicant and Mr Carr indicated that the applicant has costed the work and offered to pay for it, up to $100,000, plus a contingency of $10,000. This is recorded in the conditions attached to the land use consent.

5.49 The applicant has also volunteered to set up an $80,000 fund for road safety works and other projects such as safety education in the District. That could be used for the additional pedestrian refuge opposite the Darfield Library suggested by one submitter.

5.50 Mr Carr's evidence discussed the effect of Fonterra traffic on the Waimakariri Gorge bridge. Under the Stage 1 consent conditions Fonterra contributed $40,000 for an investigation of the bridge and the "zigzags" approaches. The deck of the bridge urgently needs replacement and this is scheduled within the current financial year. The bridge will then be capable of handling the additional Fonterra traffic.

5.51 Another matter, of concern to one or two submitters, is use of the route shown as emergency access, to Auchenflower Road. We were assured that this would be used only in emergencies such as an accident at the railway crossing and a condition has been imposed clarifying that.

5.52 We are satisfied that the overall transportation effects of the Stage 2 proposal would be overwhelmingly positive when the alternative of longer tanker trips is considered, and we can see no other design or other details that should be changed to further mitigate the inevitable adverse effects of more heavy vehicle movements in the Darfield area.

Effects on Air Quality

5.53 The primary discharges to air from the proposed combined Stage 1 and Stage 2 operations are combustion products from the 75 megawatt boiler plant and particulate matter from the milk powder dryers. Relatively minor discharges to air from other activities will also occur in association with the proposed development, including the spray irrigation of clean process water and temporary construction activities.

5.54 We will evaluate the evidence in relation to air quality effects of all proposed discharges of contaminants to air in the following sections.

Effects of Sulphur Dioxide

5.55 As occurred for the Stage 1 application, the effects of SO_2 emissions from coal combustion in the boiler plant have been assessed by Mr Chilton based on the results of dispersion modelling. The modelling was reviewed by Mr Whitaker, who concluded that the predictions were likely to be conservative. We consider that the modelling approach using CALPUFF was robust and accept the evidence that the predicted contaminant

concentrations are conservative. However given the scale of the proposed discharge and the magnitude of GLCs predicted, we find that it is appropriate to undertake ambient monitoring of SO_2 concentrations in order to confirm predictions. This matter is discussed further later in our evaluation.

5.56 The dispersion modelling predicted maximum short-term SO_2 ground level concentrations (GLCs) at existing neighbouring dwellings that are well within the NES and relevant New Zealand air quality guidelines. The maximum predicted 1-hour average GLC at these dwellings is 132µg/m^3, approximately 38% of the NES of 350µg/m^3. However predicted GLCs at "The Oaks" (now owned by Fonterra) and the adjacent land owned by Mr and Mrs Cameron (where a dwelling could potentially be established in future) are significantly higher. Mr Chilton predicted peak GLCs for this area that exceed the Regional Ambient Air Quality Target (RAAQT) acceptable level but would nevertheless be within the NES.

5.57 Mr Whitaker explained that the RAAQT in the NRRP: Air Chapter is set at the 'acceptable' level of 66% of the NES or 230µg/m^3 (1-hour average). Given the conservative nature of his modelling, Mr Chilton considered that the probability of exceedance of the RAAQT in the vicinity of The Oaks is low. We accept that evidence but consider that it is also appropriate to undertake ambient SO_2 monitoring in the vicinity of The Oaks and the adjacent Cameron property. Fonterra offered such monitoring during the course of the hearing. We also find that continuous in-stack monitoring of SO_2 emissions would be appropriate, to enable correlation of the discharge rate with ambient monitoring and to assist calibration of the model predictions.

5.58 Taking into account the additional monitoring requirements, we are satisfied that sufficient measures are in place to ensure that any short-term effects of SO_2 are not significant and that degradation of local air quality is minor.

5.59 With regard to longer-term impacts of SO_2, the modelling predicted a maximum 24-hour average GLC at the most affected neighbouring dwelling of 42µg/m^3. This value is well within the current New Zealand guideline of 120µg/m^3 (24-hour average), but exceeds the World Health Organisation (WHO) 2006 guideline of 20µg/m^3 (24-hour average). However Dr Kelly explained that predicted concentrations would be within the WHO interim guideline of 50µg/m^3 (24-hour average) and less than the 20µg/m^3 guideline for more than 90% of the time at the most affected existing dwelling not owned by Fonterra. She stated that for daily SO_2 predictions the distribution of likely exposures during the course of a typical year is more important than analysis of maximum concentrations in isolation. Given this factor and her

analysis of the scientific basis for the WHO 2006 guideline, Dr Kelly concluded that any adverse health effects as a result of long-term exposure to SO_2 at neighbouring properties are unlikely.

5.60 The evidence of Dr Kelly focused on potential health effects at existing dwellings, deemed to be the most sensitive potential receptors. We questioned her regarding potential impacts in the vicinity of "The Oaks" and the Cameron property immediately west of the highway where higher SO_2 concentrations are predicted. She stated that consideration of these properties did not change her conclusions in terms of health effects.

5.61 We accept the evidence that the WHO guideline has limited applicability to New Zealand conditions, particularly in relation to industrial discharges in rural areas. Nevertheless we consider it appropriate to adopt a precautionary approach and require ambient air quality monitoring for SO_2. As discussed in relation to the Stage 1 application, we also find it is appropriate to include a clause in the review condition that requires ambient SO_2 monitoring to be implemented in the event of a lower 24-hour average guideline being adopted in New Zealand.

5.62 Some submitters have raised concerns regarding potential effects of the discharge on air quality in Darfield. Mr Chilton predicted relatively small SO_2 GLCs for the Darfield area of less than 40µg/m^3 (1-hour average) and less than 10µg/m^3 (24-hour average). Taking into account the separation distance between the plant and Darfield, we are satisfied that any adverse effects on air quality in the settlement will be minor.

5.63 Overall we find that, based on the evidence presented, any adverse effects of SO_2 discharged from the dairy plant are likely to be minor. In the unlikely event that ambient monitoring finds SO_2 concentrations significantly exceeding those predicted, measures are readily available to reduce emissions and could be required through the review process. Such measures include choosing different fuels with lower sulphur content and flue gas desulphurization.

Effects of Particulate Matter

5.64 Fonterra proposes to control particulate matter (PM) emissions from the Stage 1 and 2 powder dryers and the boilers by bag filtration. The filtration is designed to achieve PM emission concentration limits (adjusted to standard conditions) of 20mg/m^3 for the driers and 50mg/m^3 for the boiler. Monitoring would include detection of the pressure differential across the filter bags (to indicate leakage) and a continuous PM monitor in the boiler stack. The evidence is that these controls are consistent with good practice

for modern dairy plants.

5.65 Mr Chilton's dispersion modelling predicted that discharges from the plant (Stage 1 and 2 combined) would cause a maximum PM_{10} GLC of approximately 5µg/m^3 (24-hour average) at the most affected existing neighbouring dwelling. Concentrations are predicted to be similar or less at sites of potential future dwellings, such as the Cameron property west of the highway. Cumulative concentrations (including background) are predicted to be well within the NES of 50µg/m^3 (24-hour average). We accept the evidence of Dr Kelly and Mr Chilton that any adverse health effects caused by PM_{10} discharges are likely to be minor.

5.66 We have also considered the issue of potential degradation of ambient air quality in Darfield. The modelled PM_{10} concentrations caused by the combined Fonterra discharges at the nearest part of the settlement were less than 1µg/m^3 (24-hour average). The modelling assumed PM_{10} discharge occurs all year round at the maximum emission rates, whereas plant operation is normally significantly reduced during the winter period when ambient concentrations would be elevated due to domestic burners used in Darfield. Overall we consider that adverse effects of PM_{10} on ambient air quality are acceptable.

5.67 Mr Chilton modelled the PM_{10} discharge from the proposed Stage 2 dryer with four emission stacks, rather than two stacks as originally proposed. He found that the change resulted in an approximately 6% increase in GLCs at the most affected neighbouring dwellings. We accept his conclusion that the effect of the proposed change to four emission stacks is negligible and we therefore find that consent could be granted for this stack configuration.

Effects of Other Combustion Products

5.68 Section 104E of the Act prevents us from having regard to the effects of the discharge of greenhouse gases on climate change, except to the extent that the use and development of renewable energy enables a reduction in the discharge into air of greenhouse gases. In this case the applicant proposes to burn either coal or wood biomass in the boiler plant. However the evidence of Dr Fieldes was that there is unlikely to be sufficient wood fuel available in the short term to provide for the energy needs of the dairy plant. Supplementary wood fuel could be used at up to 15% of the fuel mix. We consider that it is appropriate that consent allows for the burning of either coal or renewable fuels (or a combination thereof) so that Fonterra would be able to re-evaluate the viability of alternative fuels during the term of consent.

5.69 We questioned Dr Kelly and Mr Chilton regarding the predicted GLCs of metals such as chromium and mercury discharged from coal combustion. The information provided at the hearing indicates that concentrations will be much less than relevant air quality guidelines and that any adverse effects would be minor. Both Mr Chilton and Mr Whitaker concluded that any effects of combustion products, other than PM_{10} and SO_2, would be minor. We accept the evidence that the discharge of these contaminants from the boiler plant is unlikely to cause adverse effects.

Effects of Dust Discharges

5.70 As proposed for Stage 1, solid fuel for the boilers would be stored in an underground bunker with covered transfer to the boiler plant via conveyers. Taking into account the mitigation proposed and the distance to neighbouring properties, we find that dust from fuel handling is unlikely to cause adverse effects.

5.71 Construction activities are the primary source of any dust impacts that might be experienced beyond the site boundary, albeit for a finite period. Fonterra proposes to undertake appropriate dust control practices during the construction phase, including application of water, setting of vehicle speed limits on unsealed surfaces, and establishing vegetation on bunds. As for Stage 1, these measures would be incorporated in a construction management plan. Taking into account the temporary nature of any dust effects and the separation from neighbours, we find that dust could be controlled via a management plan to prevent significant adverse effects.

Effects of Odour

5.72 The primary sources of potential odour from the plant are the expanded sewage treatment and disposal system, the wastewater treatment plant and wastewater irrigation. Additional consent is not required for wastewater irrigation as part of the Stage 2 proposal. In terms of the irrigation of clean process water on the Gunn and Gray properties, we are satisfied that any odour associated with this activity will be minor. As we determined in relation to the Stage 1 application, the method of treatment of wastewater in the dissolved air flotation plant and the location of the plant are such that any off-site odour impacts are likely to be minimal. We have reached the same conclusion in relation to the expanded sewage treatment and disposal system. Odour from this source is unlikely to be detected at neighbouring properties.

5.73 We questioned the applicant regarding the extent of any odour detectable beyond the plant boundary, due to normal operations (excluding wastewater irrigation). Mr Chilton stated that odour from such activities, including the boiler and powder dryer discharges, should not be noticeable beyond the site boundary. The applicant has offered an additional condition of consent to that effect. We consider that condition to be appropriate.

5.74 Overall we find that any adverse effects of odour discharged to air from the proposed activities are likely to be minor.

Concluding Comments on Air Quality Effects

5.75 Some submitters raised the issue of potential synergistic effects caused by the combined effects of contaminants discharged from the plant. Dr Kelly assessed those effects in her evidence. We accept the evidence that the predicted cumulative concentrations of individual primary contaminants (notably SO_2 and PM_{10}) are well within accepted guidelines at locations where people are likely to be present and that significant synergistic effects are not likely to arise in relation to discharges from the expanded dairy plant.

5.76 With regard to visible emissions, Mr Chilton's evidence was that bag filtration would result in no significant visible emissions from either the boiler or the driers during normal operation. Steam may be visible in the dryer discharges at times in cold conditions due to condensation. We consider that visual impact of the Stage 1 and Stage 2 combined discharges would be minor.

5.77 As submitters have noted, the additional traffic generated by the dairy plant expansion would cause increased emissions. Mr Chilton's evidence is that the additional traffic generated is within screening assessment thresholds and that traffic emissions are unlikely to cause any significant air quality effects.

5.78 We accept the evidence that the mitigation measures proposed are consistent with good practice for modern dairy plants. Bag filtration of the powder dryer and boiler discharges results in relatively small contaminant emission concentrations. Ambient SO_2 monitoring is proposed to verify the predicted concentrations and a review condition would allow any identified effects to be addressed. Therefore we find that the discharges to air from the proposed expanded dairy plant, undertaken in accordance with the conditions of consent we have determined, would result in adverse effects that are acceptable in terms of the purpose and principles of the Act.

Effects on Groundwater Quality

The Existing Environment

5.79 While there are undoubtedly several semi-discrete aquifers underlying the site of the dairy factory and its environs, reliable groundwater is not available in any significant quantity until depths of around 30m or more. Mr Bower had identified 43 wells on the CRC database within about 10km of the factory site. Twenty-three of these were considered to be upgradient and 20 downgradient. The upgradient bores ranged from 5m to 59m deep (average 13m), while downgradient bores varied from 33m to 270m (average 137m). Mr Potts considered that on the factory site the depth to groundwater is expected to be around 40 to 50m; we agree with him.

5.80 From an environmental effects point of view the most significant downgradient well is that for the new Darfield community water supply. This well, which is 246.5m deep, is screened at a depth of 191-243m. The consent allows up to 4,600 cubic metres to be taken daily at a rate of up to 83l/s. The SDC has also been granted land use consents for two other potential water supply bores to be installed; they are on Clintons Road, and the corner of Boultons, Kimberley and Homebush roads, and are to depths of 230 and 288 metres respectively.

5.81 The applicant has now drilled five of the six monitoring bores required by the Stage 1 consents. Two yielded no water at depths of between 59 and 68m, and are not being used. One other bore had only a metre of water available for sampling. The other two bores are suitable for monitoring purposes; one of these bores is immediately downgradient of the Stage 1 irrigation block to the west of SH73. That not all these monitoring bores were successful also indicates the fairly unreliable nature of groundwater at moderate depths in the area around the Fonterra site.

5.82 The one known exception to this is the proposed Gunn irrigation block, which is set on a terrace above the left bank of the Hawkins River. Here the depth to groundwater is about 4-12m, which is to be expected as there will be some riparian groundwater associated with flows adjacent to the river gravels. There are likely to be some domestic supplies downgradient that rely on this shallow riparian groundwater.

5.83 Piezometric contours indicate that groundwater flow is towards the south east (i.e. more or less parallel to SH73). The key water supply that must be protected from any further significant contamination is the new Darfield

community supply, which is generally downgradient of the Fonterra site and the irrigation blocks.

5.84 Groundwater quality in and around the factory site is quite variable, with nitrate-nitrogen concentrations of between about 3 and 11 g/m^3 having been recorded in shallower wells. In deep wells nitrate-nitrogen concentrations are typically lower than this, often around $1g/m^3$.

5.85 The applicant chose to model the effects of the discharge of process water to land on the reasonably conservative assumption that upgradient nitrate-nitrogen concentrations in shallow groundwater are 7.4 g/m^3, which is the average nitrate-N concentration recorded in a 17m shallow well upgradient of the site. This approach was supported by the CRC officer, and we think that it is appropriate.

Consents Sought and Description of Discharges

5.86 There are three types of wastewater discharge, and one other potential source of discharge, that have the potential to cause adverse effects on groundwater quality:

1. The discharge of human and domestic wastewater from the sub-surface discharge of waste treated via the membrane biological reactor plant ("MBR"). The contaminants of most concern are microbial and viral pathogens from the domestic sewage. The Stage 2 consents apply to change the conditions of CRC103592 with the maximum daily volume of wastewater discharge increasing from 12 to 16 cubic metres per day, and the effluent treatment field increasing in size from 3,000 to 4,200 square metres with treated wastewater being discharged to ground at a rate of between 4 and 8mm per day.

2. The discharge of up to $9,630m^3/d$ of process water to land via irrigation pivots and pods on the Gunn and Gray farms. The only contaminant of significant concern is nitrogen. These are new discharges for which new consents are sought. Existing Stage 1 consents provide for the irrigation of process water to two farms owned by Fonterra.

3. The discharge of stormwater from the factory site, including hardstand and roofs. Stage 2 applies to change the conditions of CRC103859, with the main change sought being to increase the roof area from which stormwater will be discharged from 25,000 to 83,000 square metres. The present consent also authorises the discharge of stormwater via swales or infiltration basins from elsewhere on the site. However with the applicant seeking to store increased volumes of hazardous chemicals

on the site, particularly diesel fuel where consent is sought to increase capacity from 15,000 to 50,000 litres, there is more potential for contamination of stormwater, or direct discharge of hydrocarbons to groundwater if there is a major spill.

5.87 The three discharges onto or into land are sufficiently separated so that there will not be any physical 'overlap' between each discharge. This applies also to the new irrigation blocks on the Gunn and Gray farms, as these are quite separate from the factory and other consented discharges to land, and are effectively separate discharges given that groundwater flow is towards the south east. In other words there are no cumulative effects from discharges of process wastewater in series – effectively they are in parallel. We are also satisfied that because the key contaminants of concern are different for each proposed discharge they can essentially be treated as separate discharges. In this respect we agree with Mr Potts that there are unlikely to be any cumulative effects from the separate discharges.

Domestic Wastewater, including Sewage

5.88 The proposed MBR treatment system provides for a high level of treatment, producing effluent with total nitrogen concentrations less than 25 g/m^3 and faecal coliforms less than 1,000 cfu/100ml. This is much better performance than a typical septic tank system, particularly for coliform bacteria. The annual nitrate loading was estimated by Mr Bresler to be about 110 kg N/ha/y, which is less than what is permitted from the spreading of animal effluent to land in the NRRP. MBR plants have been in use for many years and provided that they are installed and maintained properly they are generally accepted as a reliable and robust treatment method. We are satisfied that, provided the plant is well installed and maintained, the effects of the discharge of up to 16 m^3/d of domestic effluent will be minor at most.

Stormwater

5.89 There are substantial changes to the sources of stormwater from the factory site due to the Stage 2 development. The roof area from which stormwater is discharged increases from 25,000 to 82,300 square metres. However the impermeable hardstand on the site decreases by some 10,200 square metres to about 56,000 square metres. The total increase in hard surfaces on the site will increase the peak flows of stormwater during heavy rain events.

5.90 Runoff from the hardstand and the dryer roofs is collected and treated in stormwater retention basins. This will be contaminated mainly by discharges from trucks stored on the site, with some hydrocarbons and

metals such as zinc and copper being present. Stormwater from other roofs on the Darfield site is discharged via ground soakage. Roofing material will be colorsteel or zincalume, with no galvanised steel roofs. The details of the system were described in the evidence of Mr Bresler.

5.91 The proposed stormwater treatment is in accordance with recognised best practice. Most roof stormwater is discharged (up to a 10% annual exceedance probability event) directly into the ground. This stormwater should not be contaminated in any way, and direct discharge to ground off large roofs is common practice and well accepted. The discharges from the dryer roofs and hardstand on the site will be treated in swales and an infiltration basin, which allows for the 25mm "first flush" to be treated comprehensively. Although now only two infiltration basins are to be constructed (versus the three consented for Stage 1) we agree with Ms Douglas that the effects will essentially be the same.

5.92 The (high infiltration rate) soakage basins are designed to accept stormwater up to 10% annual exceedance probability events with any stormwater above that amount being discharged onto the surrounding farmland separate from any other discharge area. The overall conceptual approach and the proposed treatment systems are well established, and provided that the systems are well constructed and maintained we are confident that any effects on the quality of shallow groundwater will be no more than minor.

5.93 The one potential source of significant groundwater contamination on the site is from the storage of hazardous chemicals. There are well established procedures to minimise this risk, particularly making sure that all hazchem storage sites are fully bunded to contain any spills. There are also strict regulations promulgated by the Environmental Risk Management Authority (ERMA) that further control the storage and use of hazardous chemicals on the dairy factory site.

5.94 The one hazardous chemical on the site that we had significant concerns about is the storage of up to 50,000 litres of diesel fuel. Milk tankers will be refuelled on the site, so there will be a large "turnover" of diesel fuel, particularly during peak season. Fuel tankers will need to visit the site frequently to top up the diesel tanks. With such a volume of diesel being stored and used on the site, we agree with Ms Dally that the diesel tank or tanks must be constructed to withstand major seismic events, and we have required this as a condition of consent. We have also required that, consistent with best practice, the diesel refuelling area must be fully bunded to contain an oversize spill of diesel without it being able to enter

groundwater. The tanks themselves will also have to be double skinned for additional fuel security.

Process Water to Land

5.95 The process water that will be irrigated to land comes from two sources in the factory: the water evaporated from milk as it is dried (which is known as clean process water), and other sources, particularly cooling water (which is known as wastewater). Stage 2 is expected to generate about 2.6 million cubic metres of water per annum, about half of which is clean process water and half wastewater.

5.96 The clean process water contains only traces of milk contaminants, with an expected COD of only about 20-24 g/m^3, and total nitrogen in the range of 2-3 g/m^3. Dr Russell said that this would add an average of about 24 kgN/ha/y to the two new irrigation blocks. We are satisfied from Dr Russell's evidence that the soils on the two farms are suitable for irrigation. In total about 365mm of water will be provided per annum, at a rate not to exceed 5mm per day. While this additional water and small additional nutrient input will allow more intensive farming on the Gunn and Gray irrigation blocks, it is insufficient to enable a change to dairying. Some submitters said they were suspicious that dairying would not occur on these blocks, but this is not controlled by Fonterra. Rather, at least twice the annual volume of water to be supplied by the company for irrigation would be necessary to provide sufficient water to enable a change of land use to dairy farming. This could only be achieved by supplementing the water provided by Fonterra with another source of supply.

5.97 Drainage beneath the irrigation blocks on the Gunn and Gray farms will increase from about 140mm per year to between 340 and 600mm annually. For this reason, even if substantial extra fertiliser is added to take advantage of the increase in production encouraged by the application of process water, the "Overseer" model predicts that nitrate-nitrogen in drainage water will be less than about 4.5g/m^3. This is less than "average" concentrations of nitrate-N in shallow groundwater upgradient of the site, so the net effect of the discharges to the Gunn and Gray farms is likely to be a slight reduction in nitrate-N concentrations in shallow groundwater.

5.98 We asked questions about how accurate "Overseer" is. The model is based on a large number of inputs, and could have a margin of error of up to 30%. Even if this is the case, the model still indicates that in the worst case scenario, irrigation to the Gunn and Gray farms will not increase nitrate-N concentrations in shallow groundwater downgradient. Accordingly we do not

accept those submi who suggested that more modelling is needed to be able to assess effects of these discharges on groundwater quality, as even a conservative approach indicates effects will be minor at most.

5.99 Several submitters had raised concerns about the potential for contamination of the new Darfield water supply. We think that is very improbable for two main reasons. First, the contaminants discharged from the Fonterra site are rapidly broken down and/or diluted, and are not predicted to have any adverse effects on shallow groundwater quality. Second, the Darfield well is very deep, and any additional contaminants will be intercepted by shallow groundwater, which is separated from the Darfield supply well by a great depth (around 130-170m), and by some likely quite impermeable layers deposited during the formation of the Canterbury Plains. Accordingly we do not agree with Mr Stewart that a "Plan B" is necessary in this instance, but we have required ongoing monitoring of groundwater quality downgradient of the factory site and the irrigation blocks just to be very sure that effects will be less than minor.

5.100 The other two wells for which land use consents have been granted for their drilling are also at depths well over 200m, and we similarly believe the discharges from the Fonterra site will not have any adverse effects on water quality in these deep wells.

5.101 There is one other matter which, although not strictly relevant to the current consent applications, would apply if the new Darfield water supply well were listed as a community supply well in Schedule 2 of the NRRP (for which it meets the criteria for inclusion and should eventually be listed there). This is the *Resource Management (National Environmental Standards for Sources of Human Drinking Water) Regulations 2007* (the NES). These standards mean that the consents sought would have to be declined if we thought the discharges from Stage 2 of the Fonterra site would have significant effects on water quality in the Darfield water supply well. However as we noted above any such effect is very improbable, so even if the NES were to apply to these discharges we would not decline any of the consents sought on this basis.

5.102 We do think however it would be prudent to monitor groundwater quality downstream of the Gunn property, as the discharge could potentially affect domestic water supplies for downstream users who take shallow groundwater close to the Hawkins River bed. We have required this as a condition of this consent.

5.103 We are satisfied that given the low concentrations of contaminants in the process water and wastewater, and the set back distances on the consent, there will be no objectionable or offensive odour generated beyond the property boundaries.

5.104 We should also note that a consent is sought for some further excavation on the site. Given the depth to groundwater we are satisfied that this will cause no adverse effects on groundwater quality.

5.105 In conclusion, we are generally satisfied that given the proposed discharges and their location, the treatment proposed and the conditions imposed, there will be no significant adverse effects on groundwater quality from discharges to land on the Fonterra site at Darfield. We are also confident that there will be no adverse effects on the Darfield water supply well.

Effects on Surface Water Quality

5.106 We are satisfied that given the limited surface water resources in the vicinity of the proposed discharges into and onto land and the proposed conditions that limit discharges to specific distances from surface water bodies, the adverse effects on current or future surface water resources will be less than minor.

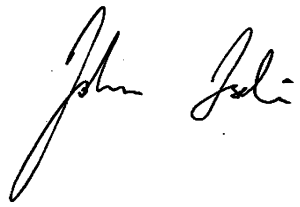
6. DECISIONS

For the reasons detailed in this report we grant all the resource consent applications, under sections 104, 104B, 105, 107 and 108 of the Resource Management Act 1991, subject to the attached conditions.

David W. Collins

Brent Cowie

John Iseli



Hearings Commissioners
31st January 2012

Resource consent 115199 is granted pursuant to Sections 104 and 104B of the Resource Management Act 1991 subject to the following conditions imposed under Section 108 of the Act.

General

Definitions

1. For the purpose of this resource consent:
   a. *HSNO* means the Hazardous Substances and New Organisms Act 1996 and associated regulations
   b. *Hazardous Substances* means a substance that is subject to HSNO.
   c. *Emergency Situation* means when it is unsafe to use the main access road to the site because of an accident or incident on the site, on the access road, rail line or SH73, or where emergency services have requested that vehicles not use the main access road.
   d. *Stage 2* means the proposed expansion of the Dairy Factory near Darfield as generally described in application 115199 (with accepted amendments) and as generally shown on the plans referred to in condition 14.

Hazardous Substances

2. The consent holder shall ensure that:
   a. All practicable measures shall be undertaken to prevent oil and fuel leaks from vehicles, storage vessels and machinery;
   b. The diesel refuelling facility and its foundations shall be designed to a *z-factor* of 0.4; and
   c. storage of hazardous substances or refuelling of vehicles and machinery shall not occur within 50 metres of any ephemeral or flowing surface water body.

3. The consent holder shall maintain on site at all times, measures to prevent spills entering land or water, including:
   a. Spill kits to contain or absorb any spilled hazardous substance;
   b. Signs to identify the location of spill kits; and
   c. Written procedures in a clearly visible location that are to be undertaken to contain, remove and dispose of any spilled hazardous substance.

4. Copies of HSNO Test Certificates for each storage system where required shall be retained on site at all times and made available for inspections by officers or agents of the Consent Authority.

5. The consent holder shall maintain a current inventory of all hazardous substances stored on the site, and a copy of the inventory shall be made available to the Consent Authority on request.

6. In the event of a spill of a hazardous substance within the site, the consent holder shall:
   a. Take all practicable measures to prevent the hazardous substance being further discharged into land or water; and

b. Collect and remove the hazardous substance and any contaminated material as soon as practicable.

7. In the event of a spill of more than 50 litres or 50 kilograms of a hazardous substance on site, the consent holder shall record and provide to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, and to the Selwyn District Council, Attention: RMA Compliance and Enforcement Manager, within 24 hours of the spill:
   a. The date, time, location and amount of the spill;
   b. The substance spilt;
   c. A description of the remediation measures taken in response to the spill;
   d. A description of the measures taken to prevent the spilt substance being discharged into land or water;
   e. The cause of the spill and measures that will be taken to prevent a reoccurrence; and
   f. The timeframes for such measures.

8. Any contaminated material, resulting from a spill as specified in condition (7), removed from the site shall be disposed of at a facility authorised to receive such material and the consent holder shall provide the Canterbury Regional Council and the Selwyn District Council with written confirmation of such disposal within 10 working days of the disposal.

Complaints Register

9. The consent holder shall maintain a Complaints Register for any complaints about the construction activities and operation related to Stage 2 of the milk powder plant received by the consent holder in relation to traffic, noise, vibration, glare, dust and odour. The Register shall record, where this information is available:
   a. The date, time and duration of the incident that has resulted in a complaint;
   b. The location of the complainant at the time of the incident; and
   c. Any corrective action undertaken by the consent holder in response to the complaint, including timing of that corrective action.

10. The Register shall be made available to both Selwyn District and Canterbury Regional Council at all reasonable times on request. Complaints received by the consent holder, which may relate to compliance with the conditions of this resource consent, shall be forwarded to the Council within 48 hours of the complaint being received.

Approved Plans

14.
   a. The proposal shall proceed in general accordance with the following plans submitted to the consent authority which form part of this consent:
      i. Stage 2 Elevation Plans numbered A4.20a – A4.23a
      ii. Stage 2 Site Layout Plans numbered CL1 and 'Drier 2 Excavation'
      iii. Stage 2 Landscape Plan numbered FD2#-A4-P2-XR.

b. Should the consent holder choose to construct the second milk powder drier at a height lower than that set out in the Elevation Plans A4.20a to A4.23a, the consent holder shall provide an updated version of those plans, with the sole change being a reduced drier height, to the Selwyn District Council, prior to commencing construction (the Revised Plans). The Revised Plans provided in accordance with this condition shall replace the Elevation Plans numbered A4.20a to A4.23a, shall be renumbered accordingly, and shall form part of this consent.

c. That the logo signs approved to the eastern and western elevations of the stage 1 drier be retained or relocated to the eastern and western elevations of the stage 2 drier.

d. That no building/structure shall be erected, including irrigators, within 20 metres of the Hawkins River without additional resource consent approval.

Traffic

15. At least 10 working days prior to the commencement of Stage 2 construction works on site, the consent holder shall prepare and submit to the Selwyn District Council, Attention: Asset Delivery Manager, a Traffic Management Plan that has been approved by New Zealand Transport Agency and Kiwi Rail. The Plan shall:

    a. Set out in appropriate detail the extent and timing of traffic during Stage 2 construction period and any temporary traffic management provisions to be put in place during that time, including, but not limited to:

        i. Contact details of the Lead Contractor and the Site Traffic Management Supervisor;
        ii. Internal road and vehicle parking and manoeuvring area layouts;
        iii. The timing and duration for each phase, including the working hours within which works will be undertaken;
        iv. Traffic controls at any site access, including temporary traffic management, any signage, and timing of upgrades;
        v. Measures to prevent deposition of debris on the State Highway and local roading networks; and
        vi. Processes and procedures for updating the plan.

    b. Ensure that construction traffic and associated activities on roads and accessways adjoining and surrounding the site are planned so as to cause as little disruption, delay or inconvenience as is practicable to other users (such as pedestrians, cyclists or motorists) without unduly compromising safety, capacity and convenience on the adjoining road network.

16. The emergency access road shall be used only for farm activities and emergency situations. If the road is to be used by any heavy vehicles during the emergency situation (other than emergency services) the consent holder shall;

(a) Within 2 hours of the road being used, start a dust mitigation program which shall extend for 100 metres either side of any residential property the heavy vehicles pass on Loes, Auchenflower and Homebush roads. Dust suppression will continue until the use of the road(s) cease.

(b) Within 1 hour inform Selwyn District Council of why the road is being used.

(c) If the use of the road is expected to last longer than 4 hours, the consent holder shall take reasonable steps to inform neighbours of how long the road is expected to be used.

Advisory note: Nothing in this condition 16 shall prevent use of the emergency access road by the consent holder as a part of the farming operations on the property owned by the consent holder.

17 Prior to commencement of the operation of the plant under Stage 2, all additional vehicle parking and manoeuvring areas shall be constructed, formed and sealed (with drainage).

18. All parking shall be on site, and the number of parking spaces to be provided on site shall meet the anticipated additional parking demand for the operation of Stage 2 of the Milk Powder Plant, including staff, visitors, tankers and loading. This shall be demonstrated through the provision of a Car Parking Plan submitted to the Selwyn District Council's Asset Delivery Manager at least 10 working days prior to construction of Stage 2 vehicle parking and manoeuvring areas.

19. At least 10 working days prior to the commencement of the operations related to Stage 2 of the Milk Powder Plant, the consent holder shall prepare and submit to the Selwyn District Council, Attention: Asset Delivery Manager, a Traffic Management Plan for the operation of the plant vehicular access. The Plan shall include details around the management of peak loading times to ensure the appropriate reduction in queuing space at the access, and to avoid conflict with busy rail operating times.

20 Traffic Safety Community Trust Fund

(a) The Consent Holder shall, within six months of this consent being given effect to, and after consultation with the District Council, Community Board and the Fonterra Community Liaison Group, establish a charitable trust, "The Traffic Safety Community Fund Trust" (the Trust).

(b) The Trust shall have up to 5 Trustees:

(i) 1 appointed by the Consent Holder;

(ii) 1 appointed by the Selwyn District Council; and
(iii) 3 from Darfield community organisations.

(c) In respect of the appointment of Trustees under condition 20(b)(iii), the Consent Holder shall, within 3 months of this consent being given effect to (or at any other time should an existing Trustee no longer be a trustee of the Trust), place an advertisement within the Malvern News (or an equivalent local newspaper) calling for nominations. Appointments to the Trust shall be made by the Consent Holder in consultation with the Selwyn District Council.

(d) The Trust shall have the general charitable purpose of providing funding for community based traffic safety initiatives within Darfield Township and the immediate surrounding area, including but not limited to:

(i) funding or contributing to road and pedestrian crossing improvements;

(ii) funding or contributing to any signage improvements;

(iii) providing safety clothing to education facilities; and

(iv) educating the community

(e) The Consent Holder shall settle upon the Trust $80,000 six months prior to the intended first operational date of the Stage 2 plant.

(f) Following the settlement of funds upon the Trust, the Trust shall on a 3 monthly basis place an advertisement within the Malvern News (or an equivalent local newspaper) calling for applications for funding from the community. The Trust shall evaluate the applications and ensure a formal written response is provided back to all applicants indicating if they have been successful or not and the reasons why. Successful applications will be publicly notified in the Malvern News (or an equivalent local newspaper).

(g) The Trust shall terminate once all funds settled upon the Trust have been exhausted or following the agreement of all Trustees.

21 (a) 12 months prior to the date that the stage 2 dryer is intended by the consent holder to be operational the consent holder shall notify the Council of the intended operational date.

(b) Following notification under condition 21(a), the Council may request in writing that the consent holder pay up to $110,000 (exclusive of GST) to the Council for the express purpose of undertaking works to enable the changing of the priority of the Telegraph Road / Bray Street / Cardale Street intersection in Darfield to safely and efficiently cater for the increase in the traffic expected on the second dryer becoming operational.

(c) If no such request is received for funding within five years of written notice being provided under condition 21(a), the right to request payment under condition 21(b) will lapse.

Advisory Note: Conditions 20 and 21 were offered by the consent holder.

Environmental Construction Management Plan

22. Best practicable measures shall be taken to avoid or mitigate the dispersal and deposition of dust resulting from Stage 2 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 tankers 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 'hydroseeding' or similar methods on soil bunds and other unsealed areas.

23. At least 10 working days prior to the commencement of Stage 2 construction works on site, the consent holder shall prepare and submit to Selwyn District Council, Attention: Asset Delivery Manager, an Environmental Construction Management Plan. This shall include, but not be limited to:
    a. The best practicable measures that shall be adopted during construction to avoid, remedy or mitigate dust related adverse effects on adjoining properties and surface water bodies, as well as outlining:
        i. The contact details of the Lead Contractor;
        ii. The phases in which work will be undertaken for the purpose of constructing Stage 2 of the Milk Powder Plant and associated infrastructure on the site;
        iii. The timing and duration for each phase, including the working hours within which works will be undertaken;
        iv. The disturbed area in square metres, including location, area and volume of earthworks associated with each phase of the construction;
        v. The sediment and erosion control measures that are to be implemented for each phase of the works authorised by this consent. Including, but not limited to swales and soakage pits (if required);
        vi. Construction noise limits, minimum buffer distances and attenuation measures for specific activities and areas in order to comply with NZS6803:1999 Acoustics – Construction Noise;
        vii. Details of vibration testing of equipment to confirm that the vibration standards set out in NZS2631:1985-89 Parts 1-3 or equivalent standard are not exceeded;
        viii. Detailed methods for monitoring and reporting on Stage 2 construction noise and vibration throughout the process following any request by the Selwyn District Council;

ix. The establishment and retention of a water supply on site for dust control;
x. A 20 kilometre per hour speed limit on unsealed roads and surfaces left exposed during the construction period;
xi. The compaction and establishment of pasture and vegetation of the bunds set out in Opus Plan "Drier 2 Excavation" (6/3119/2/7604);
xii. Details of locations and quantities of cuts and fills, including details of backfilling techniques to ensure fugitive dust controls are prevented as much as is practicable;
xiii. How the stockpiling of soil shall be located a minimum of 100 metres from the site boundaries and a minimum of 20 metres from water races (other than soil required for the establishment of the bunds referred to in Opus Plan "Drier 2 Excavation" (6/3119/2/7604)); and
xiv. Processes and procedures for updating the plan.

b. A copy of the Environmental Construction Management Plan shall be provided to adjoining landowners / residents and the Community Liaison Group.

Landscape

24. The consent holder shall undertake planting within the first available planting season after the commencement of this consent. All Stage 2 landscaping shall be planted and maintained in accordance with the Landscape Plans FD2#-A4-P1-XR and FD2#-A4-P2-XR.

25. All landscaping required for this consent shall be maintained, with any dead, diseased, or dying landscaping being replaced within the next available growing season with plants of a similar species and at the minimum height at time of planting as specified on Landscape Plans FD2#-A4-P1-XR and FD2#-A4-P2-XR.

26. The colour of the exterior surfaces of the Milk Powder Plant shall be limited to Grey Friars (reflectivity 8%) and Titania (reflectivity 67%) as shown on the Elevation Plans A4.20a-A4.23a.

27. The maximum height of the Stage 2 drier building shall be 56 metres above the existing ground level, with an allowance for an additional 7 metres above the building roof for up to four exhaust stacks.

Lighting / Glare

28. The mounting height for exterior lighting on poles or building structures shall not exceed 12 metres above ground, except for:
    a. Localised lightings on walkways and access facilities higher than 12 metres, which may be lit only when in use; and
    b. Lighting associated with the rail loading and unloading area, which shall have lighting no higher than 15 metres.

29. Lighting shall be excluded on the main access road entering the site from the point where the access crosses the site boundary for a length of 650 metres.

30. Lighting for the railway spur shall be restricted to:
    a. The area for loading or unloading activities; and
    b. Any time period where lighting is necessary for the loading and unloading of rail wagons.

31. Exterior luminaries shall be of a type and mounting that results in minimal output above the horizontal plane (e.g. roadway luminaries of AS / NZS 1158.3.1:2005, type 5 or 6).

32. Lamps for open area exterior lights shall have an atmospheric refraction characteristic no greater than that of the high pressure sodium vapour type.

33. Any night time lighting shall be designed so that the light spill onto any adjoining property is no more than 3 lux.

Solid Waste

34. Prior to the commencement of Stage 2 operations, the consent holder shall provide the Selwyn District Council, Attention: Asset Delivery Manager with a copy of its Eco-Efficient System documentation.

Noise

Construction period

35. Stage 2 construction noise shall comply with NZS6803:1999 Acoustics – Construction Noise.

36. Stage 2 construction vibration shall comply with NZS2631:1985-1989 Parts 1-3 or equivalent standard.

37.
    a. At least 10 working days prior to the commencement of Stage 2 construction works on site, the consent holder shall prepare and submit to the Selwyn District Council's Monitoring Officer a Construction Noise and Vibration Management Plan. The Plan shall detail all best practice procedures, mitigation and methodologies required to ensure compliance with the proposed construction noise limits during both daytime and night time periods; including:
        i. Setting out the extent of hours and days of operation per week for construction activities;
        ii. Setting out and detailing the extent, location and timing of noise and vibration producing construction activities during the construction period, including any specific measures identified to avoid, remedy or mitigate adverse vibration effects on dwellings adjoining the site;
        iii. Outlining noise complaint procedures; and
        iv. Procedures and processes for updating the plan

and

b. A copy of the Stage 2 Construction Noise and Vibration Management Plan shall be provided to adjoining landowners and the Community Liaison Group.

38. Stage 2 noise bunds shall be constructed in the locations set out in the Opus Plan "Drier 2 Excavation" (6/3119/2/7604) and in accordance with the following dimensions:
    a. 4 metres high;
    b. A minimum slope gradient of a 1:2; and
    c. A minimum width of 2.5 metres (flat) on the top.

39. All Stage 2 noise bunds shall be planted with appropriately drought tolerant grass as soon as reasonably practicable following their construction to prevent subsidence and dust emissions.

Operational noise limits

40. At least 10 working days prior to the commencement of the operation of Stage 2 of the Milk Powder Plant, the consent holder shall submit to the Selwyn District Council, Attention Environmental Policy and Approvals Manager an Operational Noise Management Plan.

41. The plan shall detail all best practice procedures, mitigation and methodologies required to ensure compliance with the noise limits in condition (42) during both the daytime and night time periods, and including, but not limited to:
    a. Noise monitoring requirements, including the locations, timing and duration of the noise monitoring required by condition (43);
    b. Noise complaints procedures including 24 hour contact details for the site;
    c. Staff training procedures including:
        i. Safe and effective and noise conscious use of tankers; and
        ii. Minimising the use of engine and exhaust braking at the entry and exit of the site;
    d. Maintenance and operation procedures to ensure:
        i. All vehicles operate according to the relevant Manufacturer' specifications; and
        ii. All plant and equipment capable of generating noise is kept in good working order and repair;
    e. The use of Auchenflower, Loes and Homebush Roads in emergency situations including when access to or from State Highway 73 is not available; and
    f. Procedures and processes for updating the plan.

42. Noise arising as a result of the operation of Stages 1 and 2 of the Milk Powder Plant, including all ancillary equipment and associated activities, maintenance activities, and the operation of road and rail transport on site shall not exceed the following limits, measured at the notional boundary of any dwelling, excluding any dwelling owned by the consent holder:
    - Daytime (7.30am – 8.00pm) 60dB LAeq and 85 dB LAFmax

- Night-time (8.00pm – 7.30am) 45dB LAeq and 70 dB LAFmax

Noise Monitoring and Reporting

43.

a. Noise monitoring shall be undertaken during the November or December peak activity of the Milk Powder Plant operation and ancillary activities with all significant noise sources from the site clearly identified and included.

b. The noise monitoring shall be undertaken in accordance with the following:

i. At no less than four key control locations around the consent holder's site;

ii. During the night time worst case periods identified during peak activity;

iii. On a yearly basis for the first three years of operation and every two years thereafter; and

iv. The measurements and assessment of noise shall be in accordance with NZS 6801:2008 Acoustics – Measurement of Environmental Sounds and NZS 6802:2008 Acoustics – Environmental Noise.

44. The consent holder shall submit to the Selwyn District Council, Attention: Monitoring Officer by 31 January following each November/December noise monitoring programme, a report prepared by a suitably qualified and experienced acoustic consultant on noise monitoring undertaken in accordance with condition (43). The report shall identify any activities that have the potential to cause a breach of the noise limits specified in condition (42) and identify any action taken to minimise noise created at the site.

Rail noise

45. At least 3 months prior to rail operations commencing on site, the consent holder shall submit a Rail Operations Noise Management Plan to the Selwyn District Council, Attention: Monitoring Officer. The Plan shall include:

a. the nature and hours of the planned rail operations;

b. best practice procedures including mitigation and attenuation measures to be undertaken to ensure compliance with the noise limits specified in condition (42) and to generally minimise noise reaching site boundaries;

c. noise complaint procedures; and

d. procedures and processes for updating the plan.

Tanker Engine Braking

46. The consent holder shall instruct all drivers of milk tankers delivering product to the factory to not use engine braking (except in emergencies) as they slow to go through Darfield Township and as they slow before the

entrance to the factory, and the consent holder shall use its best endeavours to ensure that there is compliance with that instruction.

Accidental Discovery - Archaeological and Cultural

47. If at any time during the site excavation authorised by this consent historic artefacts, cultural remains, koiwi Tangata (human bones) or taonga (treasured artefacts) are discovered then:
    a. All work in the immediate vicinity (20 metres) of the discovery shall stop.
    b. The consent holder shall as soon as possible inform the Selwyn District Council, Attention: Team Leader – Resource Consents, and if the discovery includes koiwi tangata (human bones) or taonga (treasured artefacts), the consent holder shall also inform the Taumutu Runanga (contact information can be obtained by contacting the Selwyn District Council (phone (03 318-8338) or the Canterbury Regional Council (phone 0800 324 636)).
    c. The consent holder shall contract a suitably qualified and experienced archaeologist (i.e. a person with a post graduate degree in archaeology, and who is a member of the New Zealand Archaeological Association) to the site to assess the significance of the findings.
    d. If the discovery includes koiwi tangata (human bones) or taonga (treasured artefacts), further excavation work within the immediate vicinity of the discovery shall be suspended until either (i) a certificate signed by a representative of Taumutu Runanga stating that appropriate action has been undertaken in relation to the discovered culturally sensitive material, or (ii) after five working days after advising the Taumutu Runanga, a certificate signed by an archaeologist (i.e. a person with a post graduate degree in archaeology, and who is a member of the New Zealand Archaeological Association) is provided to the Selwyn District Council, Attention Team Leader – Resource Consents, that states that in the archaeologist's professional opinion appropriate action has been undertaken in relation to the discovered culturally sensitive material. That certificate shall detail the action that has been undertaken by the consent holder. A copy of the archaeologist's qualification shall also be provided with any such certificate.

    Note: this condition is in addition to any agreements that are in place between the consent holder and the Taumutu Runanga (cultural site Accidental Discovery Protocol) or the New Zealand Historic Places Trust. This condition does not replace other legal responsibilities, such as those under the Historic Places Act.

Review (section 128 of the RMA)

48. The Selwyn District 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 that may arise from the exercise of this consent and which 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.

Lapsing

49. This consent shall lapse ten years after the date of commencement, unless the consent is either given effect to before that lapsing date, under section 125 of the Resource Management Act 1991.

Notes to the Consent Holder

The following information is included as information to the applicant and is not a condition of this approval.

a) Pursuant to section 125 of the Resource Management Act 1991, if not given effect to, this resource consent shall lapse ten years after the date of this decision unless a longer period is specified by the Council upon application under section 125 of the Act.
b) That in accordance with section 36 of the Resource Management Act 1991, the consent holder shall meet all reasonable costs associated with the monitoring and administration of this consent. Costs can be minimised by consistently complying with conditions and thereby reducing the frequency of Council visits.
c) In accordance with section 36 of the Resource Management Act 1991, the Council's specialised monitoring fee has been charged.

CRC103592.1 To Discharge Human and Domestic Wastewater into Land

Definitions

For the purposes of this consent:

(a) **Qualified Person** means a person who holds a relevant tertiary qualification that required the equivalent of at least three years full-time study, and who has expertise in environmental investigation and environmental sampling, or a person who has such extensive experience and expertise to be equivalent to that qualification and expertise. The consent holder shall provide evidence of the person's qualifications, experience and expertise on request from the Canterbury Regional Council.

(b) **Wastewater** means only:
   (i) wastewater from ablution blocks including toilets, showers and hand basins; and
   (ii) wastewater from kitchen facilities.

1.
   a. The volume of wastewater discharged shall not exceed 16 cubic metres per day averaged over any 30 consecutive days.
   b. For the purposes of demonstrating compliance with Condition 2(a) the volume of wastewater entering the land application system shall be continuously measured by a flow meter.
   c. The flow meter specified in condition 2(b) shall be located at a point following exit from the treatment system and before discharge into the land application system and calibrated annually to a margin of error of ± five percent.

2. The discharge shall be only into land as shown on the attached **"URS Stage 2 Stormwater and Wastewater Layout – Figure 1 – Rev B"** which forms part of this consent.

3.
   a. The wastewater shall be treated in a membrane bioreactor treatment system (MBR) or an alternative wastewater treatment system that provides the same or better quality of treatment.
   b. The wastewater treatment system shall be fitted with an alarm to alert the consent holder to power failure, membrane rupture or high water levels.

4. After exiting the wastewater treatment system, the wastewater shall be discharged via a land application system as follows:
   a. The land application system shall include an area of at least 4,200 square metres for sewage disposal through sub-surface drip irrigation.

b. Lines of drip irrigation tubing shall be at least one metre apart.
c. The drippers on the drip irrigation tubing shall be spaced at intervals not more than 600 millimetres apart.
d. The wastewater shall be evenly dosed in fixed quantities over the land application system.
e. The wastewater shall be discharged at a loading rate not exceeding eight millimetres per day, with an average loading rate not exceeding four millimetres per day calculated as a monthly rolling average.
f. The drip irrigation tubing shall be covered with between 100 and 200 millimetres of soil.
g. The soil above the drip irrigation tubing shall be planted with grass. The grass shall be kept in a healthy state. Replanting shall occur when erosion or die-off has resulted in bare or patchy soil cover.

5. A certificate shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of completion of the wastewater treatment and land application system signed by a Chartered Professional Engineer (CPEng) who has experience of designing and installing wastewater treatment systems, certifying that the system has been designed and installed in accordance with Conditions 3, 4 and 5.

6. The discharge shall not result in any wastewater being visible at the land surface.

7. The land application system shall be fenced to exclude stock, unauthorised vehicles and unauthorised access.

8. The discharge shall not result in odour that is offensive or objectionable beyond the boundary of the property on which the consent is exercised .

9.
a. there shall be no discharge within 20 metres of any surface water body; and
b. there shall be no discharge to a surface water body as a consequence of the exercise of this consent.

10.
a. The wastewater treatment system and land application system shall be serviced at least once every six months or sooner determined by conditions on site, by a person who is a currently Registered Drainlayer under the Plumbers, Gasfitters and Drainlayers Act 2006 or who holds an equivalent qualification or who is an accredited agent of the manufacturer (of the wastewater treatment system) for the service and operation of the relevant wastewater treatment system or land application system.

b. The servicing shall include, but shall not be limited to:
   i. flushing the membrane and cleaning if necessary;
   ii. inspecting the filters and cleaning if necessary;

iii. checking that the pump is working and replacing the pump as required;
iv. checking the electrical equipment is working and replacing as necessary; and
v. checking the alarm system is working and replacing as necessary.

c. Grass from the site of the land application system shall be harvested and removed from the site.

d. Following every service a written report shall be prepared and kept by the consent holder. In addition, the consent holder shall keep written records of all repairs made to any part of the wastewater treatment and land application system.

e. The consent holder shall forward a copy of the written reports and records of repairs to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, on request.

11. Prior to installation of the wastewater treatment and land application system, the consent holder shall prepare an Operation and Maintenance Manual. This Manual shall include, but not be limited to:
    a. Procedures to ensure the efficient operation of the treatment and land application system;
    b. Methods of pasture management, including the harvesting and removal of grass from the land application system;
    c. Contingency plans in the event of a breakdown or malfunction, or when discharge is not possible;
    d. A list of the records that will be kept and how they will be maintained; and
    e. A list of the sampling required and how the records will be maintained.

12.
    a. A copy of the Operation and Maintenance Manual shall be supplied to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager within five working days of its completion.
    b. Any subsequent changes to the Operations and Maintenance Manual shall be submitted to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within five working days of those changes being made.

13.
    a. Daily records shall be kept of the following, and supplied to the Canterbury Regional Council on request:
        i. The volume of wastewater applied to land.
        ii. The depth of rainfall.
    b. Records shall be kept of the following and supplied to the Canterbury Regional Council Attention on request:
        i. The wastewater nitrogen loading rate expressed as kilograms per hectare per year; and

ii. The quantity of pasture (kilograms dry weight) removed from the site, recorded on a monthly basis.

14.

a. Representative samples of treated wastewater shall be taken from a point following exit from the wastewater treatment system and before discharge into the land application system.
b. The samples shall be taken by a qualified person at the following frequencies;
    i. At least once every 30 days for the first 12 months following commencement of the discharge authorised by this consent.
    ii. At least once every three months for the following 24 months.
    iii. At least once per year thereafter.
    iv. At least once every 30 days for the six months following any exceedence of the trigger values in Condition 17.

15.

a. All samples taken in accordance with Condition 15 shall be analysed for:
    i. BOD5;
    ii. Faecal coliforms;
    iii. Total suspended solids; and
    iv. Total nitrogen.
b. The samples shall be maintained prior to analysis by the most appropriate generally accepted method that ensures that the analysis result is representative of the wastewater at the time of sampling
c. The samples shall be analysed using the most appropriate scientifically recognised and current method by a laboratory that is certified for that method of analysis by an accreditation authority such as International Accreditation New Zealand (IANZ).

16. The results of the analyses carried out in accordance with condition 16 shall be compared to the following trigger values;
    a. A median of 20mg/L BOD5 in any 10 consecutive samples and a maximum of 35mg/L BOD5 in any one sample.
    b. A median for faecal coliforms of 100cfu per 100ml sample in any five consecutive samples and a maximum of 1000cfu per 100ml in any one sample.
    c. A median of 30mg/L total suspended solids in any 10 consecutive samples and a maximum of 45mg/L TSS in any one sample.
    d. No more than one sample over 25mg/L total nitrogen in any 10 consecutive samples.

17.

a. If any of the results of the sampling carried out in accordance with conditions 15 and 16 exceed the trigger values in condition 17 the consent holder shall, within three working days, take another sample of the treated wastewater in accordance with condition 16 and have it analysed in accordance with condition 17.

b. If the results of the sampling and analysis carried out in accordance with condition 18(a) exceed the trigger values in condition 17, the consent holder shall immediately inspect, service, repair and/or modify the treatment system, as required, to reduce the concentration of water quality parameters in the discharge to less than the trigger values set out in condition 17.
c. A further sample shall be collected and analysed within seven days of receiving the results of the sample taken in accordance with condition 18(a).
d. In the event that the results of analyses of the sample taken in accordance with condition 18(c) exceed the trigger values shown in condition 17, the consent holder shall immediately cease the discharge of wastewater from the treatment system to land.
e. In the event of a cessation of discharge under condition 18(d), the discharge of wastewater from the treatment system to land shall not recommence until the results of analyses of a further sample do not exceed any of the trigger values specified in condition 17.

Advisory Note: If a discharge cessation is required, wastewater will need to be tankered off site until there is full compliance with the trigger values specified in condition 17.

18.

a. The consent holder shall provide an annual report to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager by 30 September each year.
b. The report shall include, but not be limited to:
    i. A summary and interpretation of the data collected under conditions 15, 16 and 18;
    ii. Identification and discussion of any trends in the results;
    iii. A comparison of the results with results from previous years;
    iv. An explanation of any operational difficulties, changes or improvements made to the processes which could result in changes in the effects on water quality or the quality of the wastewater discharged; and
    v. If applicable, an outline of any measures undertaken to mitigate any adverse environmental effects to prevent a reoccurrence and a comment on the effectiveness of these measures.

Review

19. 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; or
    c. requiring the consent holder to carry out monitoring and reporting instead of, or in addition to, that required by the consent;

d. requiring the consent holder to undertake remediation action, instead of, or in addition to, that required by the consent.

Lapsing

20. 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.

Duration

21. This consent shall expire on the 2nd of December 2045.

CRC103659.1 To Use Land

Definitions

(1) For the purposes of this consent:

HSNO means the Hazardous Substances and New Organisms Act 1996 and associated regulations.

Design

(2) The above ground container(s) containing diesel shall have a total capacity not exceeding 50,000 litres.

(3) The above ground container(s) and their foundations shall be

(a) designed to a *z-factor* of 0.4; and

(b) be either:

(i) a double skinned tank; or

(ii) a single skinned tank, bunded to contain a volume of not less than 55,000 litres that is designed, installed and maintained to meet all relevant HSNO requirements.

(4) The holder of this consent shall:

(a) At least 20 working days prior to the installation of the diesel container, provide written confirmation and appropriate evidence to the Canterbury Regional Council (attention: RMA Compliance and Enforcement Manager) that the diesel container and associated pipe work and ancillaries have been designed in accordance with Condition (3) above and HSNO requirements for above ground storage of diesel fuel; and

(b) Within 20 working days of the completion of the installation of the diesel container and associated pipe work, provide written confirmation and appropriate evidence to the Canterbury Regional Council (attention: RMA Compliance and Enforcement Manager) that the installation is in accordance with the design provided under condition 4(a).

(5) All outlets from the above ground container and associated ancillaries shall be padlocked or similarly secured to prevent unauthorised use.

(6) All pipe work associated with the above ground container that carries or contains diesel fuel oil shall be placed above ground.

(7) The diesel fuel dispensing equipment shall be located on a refuelling pad of sufficient size to fully accommodate the vehicle being refuelled.

(8) The bund referred to in condition 3(b)(ii) and refuelling pad shall discharge to the stormwater system only via an oil/water separator that is designed, installed and operated in general accordance with the Ministry for the Environment Environmental guidelines for water discharges from petroleum industry sites in New Zealand, 1998.

(9) The refuelling pad shall be designed so that stormwater from other parts of the site will not pass through the oil/water separator.

(10) The diesel shall not be used or stored within 200 metres of a bore or water course.

Container and Bund Management

(11) The following checks and inspections shall be carried out on the diesel container and bund at least once every month:

a) an inventory reconciliation;

b) an inspection of the above ground container for leaks and general condition;

c) an inspection of the bund for integrity and general condition;

d) an inspection of the pipe work for leaks and general condition;

e) maintenance in accordance with HSNO requirements; and

f) records of these inspections shall be kept and supplied to the Canterbury Regional Council on request.

Administration

(12) The Canterbury Regional Council may, on the last working day of September each year, 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 the 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.

(13) This consent shall lapse after the date of commencement, unless the consent is given effect to before that lapsing date, under section 125 of the Resource Management Act 1991.

CRC103589.1 To Discharge Contaminants in Stormwater into Land

Definitions

(1) For the purposes of this resource consent:

(a) Qualified Person means a person who holds a relevant tertiary qualification that required the equivalent of at least three years full-time study, and who has expertise in environmental investigation and environmental sampling, or a person who has such extensive experience and expertise to be equivalent to that qualification and expertise. The consent holder shall provide evidence of the person's qualifications, experience and expertise on request from the Canterbury Regional Council.

(b) HSNO means Hazardous Substances and New Organisms Act 1996 and associated regulations.

(c) Hazardous substances means a substance that is subject to HSNO.

Hazardous Substances

(2) The consent holder shall ensure that:

(a) All practicable measures shall be undertaken to prevent oil and fuel leaks from vehicles, storage vessels and machinery; and

(b) Storage of hazardous substances or refuelling of vehicles and machinery shall not occur within 50 metres of any ephemeral flowing surface water body.

(3) The consent holder shall maintain on site at all times, measures to prevent spills entering land or water including:

(a) Spill kits to contain or absorb any spilled hazardous substance;

(b) Signs to identify the location of spill kits; and

(c) Written procedures in a clearly visible location that are to be undertaken to contain, remove and dispose of any spilled hazardous substance.

(4) Copies of HSNO Test Certificates for each storage system where required shall be retained on site at all times and made available for inspection by officers or agents of the Consent Authority.

(5) The consent holder shall maintain a current inventory of all hazardous substances stored on the site, and a copy of the inventory shall be made available to the Consent Authority on request.

(6) In the event of a spill of a hazardous substance within the site, the consent holder shall:

(a) Take all practicable measures to prevent the hazardous substance being further discharged into land or water; and

(b) Collect and remove the hazardous substance and any contaminated material as soon as practicable.

(7) In the event of a spill of more than 50 litres or 50 kilograms of a hazardous substance on site, the consent holder shall record and provide to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, and to the Selwyn District Council, Attention: Environmental Policy and Approvals Manager, within 24 hours of the spill:

(a) The date, time, location and amount of the spill;

(b) The substance spilled;

(c) A description of the remediation measures taken in response to the spill;

(d) A description of the measures taken to prevent the spilt substance being discharged into land or water;

(e) The cause of the spill and measures that will be taken to prevent a reoccurrence; and

(f) The timeframes for such measures.

(8) Any contaminated material, resulting from a spill as specified in condition (7) and removed from the site, shall be disposed of at a facility authorised to receive such material. The consent holder shall provide the Canterbury Regional Council and the Selwyn District Council with written confirmation of such disposal within 10 working days of the disposal.

<u>Limits</u>

(9) The discharge shall be only stormwater generated from:

(a) roofs, including the dryer roof;

(b) impermeable sealed surfaces, including roads and other hardstand areas; and

(c) refuelling areas;

associated with the proposed Milk Powder Plant located on State Highway 73, Racecourse Hill, Darfield, shown on attached **URS Plan "Stage 2 Stormwater and Wastewater Layout – Fig 1 –Rev B** which forms part of this consent.

(10) Stormwater shall be generated from no more than **83,000** square metres of roof and no more than 67,000 square metres of hardstand and roading.

(11) The discharge of roof stormwater shall not be from galvanised sheet building materials.

(12) There shall be no discharge from coal and milk loading and unloading areas, from truck wash areas or hardstand around the silos and balance tanks into the stormwater system.

(13) Any on-site chemical storage areas shall be bunded to prevent the release of the hazardous substance from the bunded area. Each bund shall be;

(a) Sized to contain at least 110 percent of the largest single container within the bund; and

(b) Constructed of robust material and made effectively impermeable to leakage through the bund material.

(14) Material collected in bunds shall be removed off-site for disposal at a facility authorised for the disposal of such material.

Stormwater System Performance

(15) Stormwater shall be discharged as follows:

(a) Except for storm events that occur less frequently than 10 percent annual exceedance probability storm events, all stormwater from roofs, except that from the dryer roof, shall be discharged into land via a sealed system that excludes all other stormwater.

(b) Stormwater from the dryer roof shall be discharged to road and parking areas for collection and treatment in the infiltration basins.

(c) Stormwater from impermeable sealed surfaces shall be discharged into land;

(i) via collection sumps, pipes and swales to the vegetated infiltration basins; or

(ii) by overland sheet flow to vegetated infiltration basins or to treatment swales.

(d) Stormwater from the refuelling area shall be discharged via an oil/water separator prior to discharge to an infiltration basin.

(16) When the capacity of the infiltration basins or swales is exceeded, stormwater shall;

(a) be directed to soakage trenches; or

(b) flow overland to landscaped or grassed areas.

Stormwater System Design

(17) All sumps shall be fitted with submerged or trapped outlets as per the Christchurch City Council standard sump details labelled SSD1 SSD2 SSD3 and SSD4, which form part of this consent.

(18) (a) The stormwater system shall be designed and constructed to collect, treat and dispose of stormwater up to and including all 10 percent annual exceedance probability storm events; and

(b) National Institute of Water and Atmospheric Research High Intensity Rainfall Design System (HIRDS) V3 rainfall data or Selwyn District Council 2010 data, plus an increase of 15 percent of the rainfall depth to take account of climate change, shall be used in the design of the stormwater system.

(19) The stormwater swales shall:

(a) Be at least 70 metres in length;

(b) Have a maximum base width of 1.5 metres;

(c) Have side batters that do not exceed one vertical to four horizontal; and

(d) Be uniformly vegetated with grass.

(20) The two stormwater infiltration basins shall:

(a) Be designed to treat and dispose of the first 25 millimetres of any rainfall event generated from each specific catchment area;

(b) Be lined with a layer of topsoil at least 150 millimetres thick; and

(c) Be uniformly vegetated with grass.

(21) Stormwater shall not cause ponding in the infiltration basins for longer than 72 hours after cessation of any storm event.

(22) Bypass systems shall be installed to divert all stormwater generated in excess of the first 25 millimetres of any storm event from the infiltration basins into soakage trenches or to overland flow

(23) The soakage trenches shall be constructed:

(a) In accordance with a design consistent with the New Zealand Building Code (E1/VM1)(2004);

(b) To reach down to gravel allowing infiltration at a minimum rate of 600 millimetres per hour; and

(c) With sufficient capacity to dispose of stormwater generated during rainfall events up to and including all 10 percent annual exceedance probability storm events.

(24) The oil/water separator referred to in Condition 15 (d) shall:

(a) Have a minimum capacity of 1000 litres;

(b) Have the capacity to treat stormwater flows of at least one litre per second; and

(c) Be designed and constructed to capture oil globules greater than or equal to 150 micrometres in diameter.

(25) The infiltration basins shall have an infiltration rate:

(a) Not exceeding 112 milllimetres per hour and not less than 18 millimetres per hour as determined using a double ring infiltrometer test; or

(b) Not exceeding 75 millimetres per hour and not less than 12 millimetres per hour as determined using a flooded basin test.

Design plans

(26) At least one month prior to the construction of the stormwater system, the consent holder shall submit to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, design plans of the stormwater system, including the oil/grit separator design details, to be installed that comply with Conditions (9) to (25) of this consent.

(27) Within one month after the installation of the stormwater system, a certificate signed by a Chartered Professional Engineer (CPEng) with stormwater treatment system design/construction experience, shall be submitted to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, to certify that the stormwater system complies with Conditions (9) to (25) of this consent. The CPEng shall at the same time provide a signed statement confirming that they are competent to certify the engineering work.

Inspections and Maintenance

(28) The entire treatment system shall be inspected at least once every month.

(a) Any visible hydrocarbons and debris or litter shall be removed within five working days of inspection.

(b) Any accumulated sediment in the infiltration basins and swales shall be removed within five working days of inspection.

(c) Any accumulated sediment in the sumps shall be removed when the sediment occupies more than one quarter of the depth below the invert of the outlet pipe.

(d) Any erosion or scour shall be remediated within five working days of inspection to the extent that future rain events will not cause erosion or scour.

(29) The infiltration basins shall be:

(a) Maintained so that grass or vegetation is in a healthy and uniform state; and

(b) Re-planted where erosion or die-off has resulted in bare or patchy soil cover.

(30) The swales shall be:

(a) Maintained so that vegetation is in a healthy and uniform state;

(b) Replanted where erosion or die-off has resulted in bare or patchy soil cover; and

(c) Mowed regularly or maintained so that vegetation has a minimum length of 50 millimetres.

(31) The oil/water separator shall be maintained in accordance with the manufacturer's specifications/operating instructions. A copy of these specifications/operating instructions shall be made available to the Canterbury Regional Council on request.

Disposal of Material

(32) Any material removed in accordance with Condition (28) shall be disposed of at a facility authorised to receive such material.

Monitoring

(33) Representative soil samples shall be taken from each of the infiltration basins:

(a) At least once every ten years;

(b) From a depth of between zero and 50 millimetres below the ground surface at the point of lowest elevation;

(c) By a Qualified Person; and

(d) In general accordance with the Ministry for the Environment (2004) 'Contaminated Land Management Guidelines–Site Investigation and Analysis of Soils.'

(34) Soil samples taken in accordance with Condition (33) shall be analysed for the following contaminants

Copper
Lead
Zinc
Benzo(a)pyrene
Total Petroleum Hydrocarbons:
C_7 to C_9
C_{10} to C_{14}
C_{15} – C_{36}

in milligrams per litre (mg/L) using the United States Environmental Protection Agency method 1312, Synthetic Precipitation Leaching Procedure (SPLP), using reagent water, by a laboratory accredited by IANZ for the appropriate methods, compared against the Leachate Trigger Concentrations as listed in Condition (36).

(35) The analyses undertaken in accordance with Condition (34) shall be carried out with detection limits of a maximum of 10 percent of the trigger concentrations set out in Condition (36), with the exception of Total Petroleum Hydrocarbons detection limits which shall be as follows:

	Method detection limit
Total Petroleum Hydrocarbons	SPLP (mg/L)
C_7 – C_9	0.10
C_{10} – C_{14}	0.20
C_{15} - C_{36}	0.40

(36) The results of analyses undertaken in accordance with Condition (34) shall be compared against the following trigger concentrations:

	Leachate Trigger Concentration (milligrams per litre)
Copper	40
Lead	0.2
Zinc	30
Benzo(a)pyrene	0.014
Total Petroleum Hydrocarbons:	
C_7 to C_9	360
C_{10} to C_{14}	7
C_{15} – C_{36}	14

(37) If any of the trigger concentrations listed in Condition (36) are exceeded, the soils shall be considered to be contaminated and:

(a) Additional sampling to determine the lateral and vertical extent of the contamination, with respect only to the contaminant(s) that exceeded a trigger concentration, shall be carried out in accordance with Conditions (33)(b) to (d), and (34) to (36);

(b) All contaminated soils identified in accordance with Conditions (33) to (36) shall be removed; and

(c) The infiltration basin shall be reconstructed in accordance with Conditions (18), (20) and (25).

(38) Any soils imported on site to backfill any excavation as a result of Condition (37) shall not be sourced from:

(a) A site where activities included in Schedule WQL3 of the Natural Resources Regional Plan or the Ministry for the Environment's Hazardous Industries and Activities list have been, or are being, undertaken; or

(b) Any site on the Canterbury Regional Council's Listed Land Use Register, unless the soil has been analysed for the appropriate contaminants and has been shown to be not contaminated, defined as at or below background concentrations and residual use guideline values.

Recording and Reporting

(39) Records of the inspection and maintenance of the stormwater system shall be kept. The records shall include, but not be limited to, information that demonstrates compliance with Conditions (28) to (31) of this consent. Copies of these records shall be provided to the Canterbury Regional Council on request.

(40) A report on soil monitoring undertaken in accordance with Conditions (33) to (37) shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within 30 working days of the taking of samples. This report shall include:

(a) All monitoring results required by the conditions of this consent;

(b) An analysis of all monitoring results against relevant guidelines and the determination of any trends in the results;

(c) Comments on any adverse effects from the discharge and the actions taken to remedy or mitigate these effects; and

(d) Recommended changes to the monitoring programme, if applicable.

Tanker Parking Area

(41) The tanker parking area shall have an isolation valve or sluice to fully isolate this area in the event of a spill.

Review

(42) 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 for 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; or

(c) Requiring the consent holder to carry out monitoring and reporting instead of,or in addition to, that required by the consent;

(d) Complying with the requirements of the relevant rule in an operative regional plan; or

(e) Reviewing the trigger values established specified in the conditions of this consent

Lapsing

(43) This consent shall lapse ten years after the date of commencement, unless the consent is either given effect to before that lapsing date, under section 125 of the Resource Management Act 1991.

Duration

(44) This consent will expire on the 2nd of December 2045.

CRC120239 (Gunn) Irrigation. – to discharge contaminants to land

Definitions

(1) For the purposes of this resource consent:

(a) Clean Process Water means condensate water (cow water), obtained by evaporating the water content out of milk and cooling water.

(b) Overseer® Modeller means a person holding an Advanced Sustainable Nutrient Management Certificate issued by Massey University or an equivalent qualification.

(c) Qualified Person means a person who holds a relevant tertiary qualification that required the equivalent of at least three years full-time study, and who has expertise in environmental investigation and environmental sampling, or a person who has such extensive experience and expertise to be equivalent to that qualification and expertise. The consent holder shall provide evidence of the person's qualifications, experience and expertise on request from the Canterbury Regional Council.

(d) Significant Ponding means when wastewater remains on the ground surface of an area greater than 50 square metres 24 hours after irrigation has ceased.

Limits

(2) The discharge shall be only clean process water sourced from a Milk Powder Plant located on State Highway 73, Racecourse Hill, Darfield.

(3) The clean process water shall be discharged onto land at or about map reference NZMS 260: L35:3336-5068 or BX22:2338-8906 as shown on Plan CRC120239 which forms part of this consent.

(4) The discharge to land shall occur on at least 106 hectares of land but not onto the lower terrace adjacent to the Hawkins River.

(5) Clean process water shall be irrigated to pasture at an average application rate not exceeding five millimetres per day when the soil moisture is less than 85 percent of field capacity.

(6) When the soil moisture on the irrigation farm exceeds 85 percent of field capacity the consent holder shall;

(a) Subject to (b) below defer irrigation of clean process water in order to reduce the loading on the irrigation area; and

(b) Reduce the application rate to an average of 1.5 millimetres per day.

(7) The volume of clean process waste discharged shall not exceed 500,000 cubic metres per year.

(8) For the purpose of demonstrating compliance with conditions (5) to (7) and (12), the consent holder shall:

(a) Continuously measure the volume of clean process water discharged with a flow meter;

(b) Monitor soil moisture, as required, with a TDR Type Soil Moisture Meter.

(9) The flow meter specified in condition (8)(a) shall be located at a point following the exit from the storage silos or pond(s) and before the discharge onto land by the irrigation system. The flow meter shall be calibrated annually to a margin of error of +/- 5 percent.

(10) All irrigation infrastructure shall be designed, constructed and operated to comply with the New Zealand Electrical Code of Practice for Electrical Safe Distances 34:2001 (NZECP 34:2001).

Discharge

(11) The clean process water shall be discharged onto land by spray irrigation. The consent holder shall ensure that the discharge:
(a) Is applied over the irrigation area in a uniform manner;
(b) Does not cause any significant ponding on the ground surface; and
(c) Does not occur within 24 hours of the application of any fertiliser.

(12) The soil moisture in the irrigation area shall be monitored daily when clean process water is irrigated using a generally accepted method and in accordance with condition (8)(b). The results of this monitoring shall be recorded and made available to the Canterbury Regional Council on request.

(13) There shall be no discharge:

(a) Over or within 20 metres of any surface water body, well or bore, impermeable surfaces or in any other place or at such a rate that the discharge is likely to enter surface water or flow onto any neighbouring property; or

(b) Within 100 metres of any dwelling not owned by the consent holder.

(14) The consent holder shall annually update a nutrient balance to demonstrate nutrients are being managed effectively.

(15) Overseer® shall be used to calculate the average annual concentrations of nitrate-nitrogen in the soil drainage water from the irrigation land. The consent holder shall ensure that:

(a) If the predicted annual average concentration of nitrate-nitrogen, calculated in accordance with this condition exceeds 8 milligrams per litre, best management practices shall be implemented to minimise as

far as practicable, the discharge of nitrate-nitrogen to soil drainage water;

(b) The predicted average annual concentration of nitrate-nitrogen in the soil drainage water shall not exceed 16 milligrams per litre.

Odour and Aerosols

(16) The discharge to air from the spray irrigation of clean process water shall not result in odour which is noxious, offensive or objectionable beyond the property boundary.

(17) The consent holder shall:

(a) Take all practicable measures to prevent the drift of aerosols beyond the boundary of the property on which this consent is exercised; and

(b) Use wind direction controls to automatically deactivate irrigation zones close to down-wind boundaries to minimise the risk of spray drift.

Maintenance

(18) The consent holder shall maintain and operate all structures and relevant equipment associated with the site's disposal system in accordance with the procedures and requirements of the Environment Management Plan prepared in accordance with condition (24) of this consent.

Clean Process Water Monitoring

(19) The consent holder shall for the first 12 months after commencement of the discharge authorised by this consent, take a representative 24 hour sample of the clean process water at the point it enters the irrigation system on one day per week that irrigation occurs. For the remaining term of the consent, three samples per year will be taken. The sample shall be analysed for:

(a) COD in milligrams per litre;
(b) Total nitrogen in milligrams per litre;

All samples shall be taken by a suitably qualified person.

(20) Results of the analyses of clean process water monitoring carried out in accordance with condition (19) shall be provided to the Canterbury Regional Council, within ten working days of the samples being collected.

(21) (a) Prior to this consent being exercised the consent holder shall install two monitoring bores at locations that enables the monitoring of nitrate-nitrogen in the up-gradient and down-gradient shallow groundwater (if present) that might be affected by irrigation/discharge activities.

(b) The final location of the monitoring bores shall be determined in consultation with the Canterbury Regional Council. The consent holder shall not be required to install bores below a depth of 40 metres.

(c) Sampling shall be completed by a qualified person at least once every three months for the term of this consent and the results shall be provided to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager within 1 month of the consent holder receiving the results.

Records and Reporting

(22) The consent holder shall log any complaints received. The log at a minimum shall contain the following information:

(a) Date and time the complaint was received;

(b) Nature and location of the complaint;

(c) Complainant's details;

(d) Weather information; and

(e) Details of the key operating parameters at the time of the complaint; and

(f) Remedial action taken to prevent further incidents.

Complaints shall be reported to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within 24 hours and the log of complaints will be made available to the Canterbury Regional Council on request.

(23) The consent holder shall supply to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, an annual report on the exercise of this consent over the prior dairy season. The report shall be provided by 30 September each year and shall include the following records:

(a) Daily application rates and volumes of discharges onto land by spray irrigation;

(b) Location and timing of clean process water applications;

(c) A record of any complaints that are received relating to the irrigation of clean process water;

(d) A copy of the nutrient budget as required by condition (14);

(e) A copy of the Overseer® report as required by condition (15);

(f) Analysis and interpretation of clean process water quality; and

(g) Any proposals for mitigating any adverse effects found to be occurring.

Environment Management Plan

(24) At least 10 working days prior to the first exercise of this consent, the consent holder shall prepare and forward to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, an Environment Management Plan (EMP) for the operation of the wastewater treatment and disposal system. The EMP shall include, but not be limited to, details of procedures to:

(a) Manage and maintain the clean process water storage systems;

(b) Manage and report on soil moisture and clean process water irrigation application rates, including in snow cover situations;

(c) Manage and report on the nutrient budget;

(d) Monitor clean process water quality;

(e) Reduce application rates and manage the storage silos and pond(s) when weather and soil conditions are not suitable for irrigation;

(f) Minimise potential odour and spray drift from the system; and

(g) Respond to emergencies and provide contingency plans.

(25) The Environment Management Plan shall be reviewed by the consent holder at least annually for the purpose of addressing any issues relating to compliance with the conditions of this consent. The current plan will be forwarded to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager by 31 August each year for the term of this consent.

Administration

(26) 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 the 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 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; or

(c) Requiring compliance with any relevant rule of an operative Regional Plan; or

(d) Reviewing the frequency of monitoring and the determinants monitored.

(27) This consent shall lapse ten years after the date of commencement, unless the consent is given effect to before the lapsing date, under Section 125 of the Resource Management Act.

Duration

This consent will expire on the 2nd of December 2045.

CRC120240 to Use Land to Store Contaminants

Definitions

(1) For the purposes of this resource consent:

(a) Clean Process Water means condensate or process water obtained by evaporating the water content out of milk and cooling water.

(b) Qualified Person means a person who holds a relevant tertiary qualification that required the equivalent of at least three years full-time study and who has expertise in the construction and assessment of storage ponds. The consent holder shall provide evidence of the person's qualifications, experience and expertise on request from the Canterbury Regional Council.

(2) The contaminants stored shall be only Clean Process Water.

(3) Clean Process Water shall only be stored in the storage pond(s) described in condition (4).

(4) The Stage 1 and Stage 2 storage pond(s) shall:

(a) Have a minimum combined capacity of 75,000 cubic metres;

(b) e lined with a clay or synthetic liner to prevent direct infiltration to groundwater;

(c) Be able to store a total of at least 14 days of Clean Process Water;

(d) Have a seepage rate of no more than 10^{-8} metres per second;

(e) Be no less than 100 metres from any adjoining property boundary; and

(f) Not be located within 20 metres of any bore, surface water body or artificial water course.

(5) The storage of Clean Process Water shall not result in odour, which is noxious, offensive or objectionable beyond the property boundary.

(6) Within 15 working days of the construction of the storage pond a certificate signed by a Qualified Person shall be submitted to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, to certify that the storage pond complies with Condition 4(a) to (f) of this consent. Evidence shall be provided with that certificate that demonstrates the basis for the certification for each of the matters in condition (4)(a) to (f).

Administration

(7) 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 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 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.

(8) This consent shall lapse ten years after the date of commencement, unless the consent is given effect to before the lapsing date, under Section 125 of the Resource Management Act.

Advisory note: it is the consent holder's responsibility to determine whether any additional authorisation is required for the storage pond under the Building Act.

CRC120236 To Use Land to Excavate Land and Deposit Fill

Definition

(1) For the purpose of this consent,

(a) Archaeologist means a person with a postgraduate degree in archaeology and who is a member of the New Zealand Archaeological Association;

(b) Stage 2 means the proposed expansion of the Dairy Factory near Darfield as generally described in application CRC120236 (with accepted amendments).

Limits

(2) The activity shall be only the excavation of land and deposition of fill for the purposes of constructing:

(a) Stage 2 of the proposed Milk Powder Plant development and associated roads; and

(b) A clean process water storage pond;

located on State Highway 73, Racecourse Hill, Darfield.

(3) The maximum volume of material to be excavated:

(a) For the construction of the Milk Powder Plant shall be 75,000 cubic metres; and

(b) For the clean process water storage pond shall be 25,000 cubic metres.

(4) The maximum depth of these excavations shall be five metres below natural ground level or one metre above the highest recorded groundwater level at the site, whichever is lesser.

(5) Excavation shall not occur within 100 metres of the road or property boundaries or surface water.

(6) Excavated material shall be retained on-site and used for fill or for construction of bunds.

(7) Any soils imported on to the site and used as fill shall not be sourced from:

(a) A site where activities included in Schedule WQL3 of the Natural Resources Regional Plan or the Ministry for the Environment's Hazardous Industries and Activities list have been, or are being undertaken; or

(b) Any site on the Canterbury Regional Council Listed Land Use Register, unless the soil has been analysed for the appropriate contaminants

and has been shown not to be contaminated, defined as at or below background concentrations and residential use guideline values.

(8) All practicable measures shall be undertaken to prevent oil and fuel leaks from vehicles and machinery.

(9) There shall be no storage of fuel or refuelling of vehicles within 20 metres of the excavated area.

(10) In the event of a spill of fuel or any other contaminant, the consent holder shall:

(a) Clean up the spill as soon as practicable and take measures to prevent a recurrence; and

(b) Inform the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within 24 hours of any spill event in excess of 50 litres.

(11) If at any time during the site excavation authorised by this consent, historic artefacts, cultural remains, Koiwi Tangata (human bones) or taonga (treasured artefacts) are discovered then:

(a) All work within 20 metres of the discovery shall cease.

(b) The consent holder shall as soon as possible inform the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, and if the discovery includes koiwa tangata or taonga, the consent holder shall also inform the Taumutu Runanga (contact information can be obtained by contacting the Canterbury Regional Council, phone 0800 324 636).

(c) The consent holder shall contract an archaeologist to the site to assess the significance of the findings.

(d) If the discovery includes koiwa tangata (human bones) or taonga (treasured artefacts), further excavation work within the immediate vicinity of the discovery shall be suspended until either:

(i) A certificate signed by a representative of Taumutu Runanga stating that appropriate action has been undertaken in relation to the discovered culturally sensitive material is provided, or

(ii) After five working days after advising the Taumutu Runanga, a certificate signed by an archaeologist is provided to the Canterbury Regional Council: Attention: RMA Compliance and Enforcement Manager, that states that in the archaeologist's professional opinion appropriate action has been undertaken in relation to the discovered culturally sensitive material. That certificate shall detail the action that has been undertaken by the consent holder. A copy of the archaeologist's qualification shall also be provided with any such certificate.

Note: This condition is in addition to any agreements that are in place between the consent holder and Taumutu Runanga (cultural site Accidental Discovery Protocol) or the New Zealand Historic Places Trust. This condition does not replace other legal responsibilities, such as those under the Historic Places Act.

Administration

(12) The Canterbury Regional Council may, once per year, on any of the last five working days of March or September, serve notice of its intention to review the conditions for 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.

(13) This consent shall lapse ten years after the date of commencement, unless the consent is given effect to before that lapsing date, under section 125 of the Resource Management Act 1991.

CRC120241 (Gray) Irrigation – to discharge contaminants to land

Definitions

(1) For the purposes of this resource consent:

(a) Clean Process Water means condensate water (cow water), obtained by evaporating the water content out of milk and cooling water.

(b) Overseer® Modeller means a person holding an Advanced Sustainable Nutrient Management Certificate issued by Massey University or an equivalent qualification.

(c) Qualified Person means a person who holds a relevant tertiary qualification that required the equivalent of at least three years full-time study, and who has expertise in environmental investigation and environmental sampling, or a person who has such extensive experience and expertise to be equivalent to that qualification and expertise. The consent holder shall provide evidence of the person's qualifications, experience and expertise on request from the Canterbury Regional Council.

(d) Significant Ponding means when wastewater remains on the ground surface of an area greater than 50 square metres 24 hours after irrigation has ceased.

Limits

(2) The discharge shall be only clean process water sourced from a Milk Powder Plant located on State Highway 73, Racecourse Hill, Darfield.

(3) The clean process water shall be discharged onto land at or about map reference NZMS 260: L35:3740-4979 or BX22:2741-8818 as shown on Plan CRC120241 which forms part of this consent

(4) The discharge to land shall occur on at least 106 hectares of land.

(5) Clean process water shall be irrigated to pasture at an average application rate not exceeding five millimetres per day when the soil moisture is less than 85 percent of field capacity.

(6) When the soil moisture on the irrigation farm exceeds 85 percent of field capacity the consent holder shall;

(a) Subject to (b) below defer irrigation of clean process water in order to reduce the loading on the irrigation area; and

(b) Reduce the application rate to an average of 1.5 millimetres per day.

(7) The volume of clean process waste discharged shall not exceed 500,000 cubic metres per year.

(8) For the purpose of demonstrating compliance with conditions (5) to (7) and (12), the consent holder shall:

(a) Continuously measure the volume of clean process water discharged with a flow meter;

(b) Monitor soil moisture, as required, with a TDR Type Soil Moisture Meter.

(9) The flow meter specified in condition (8)(a) shall be located at a point following the exit from the storage silos or pond(s) and before the discharge onto land by the irrigation system. The flow meter shall be calibrated annually to a margin of error of +/- 5 percent.

(10) All irrigation infrastructure shall be designed, constructed and operated to comply with the New Zealand Electrical Code of Practice for Electrical Safe Distances 34:2001 (NZECP 34:2001).

Discharge

(11) The clean process water shall be discharged onto land by spray irrigation. The consent holder shall ensure that the discharge:

(a) Is applied over the irrigation area in a uniform manner;
(b) Does not cause any significant ponding on the ground surface; and
(c) Does not occur within 24 hours of the application of any fertiliser.

(12) The soil moisture in the irrigation area shall be monitored daily when clean process water is irrigated using a generally accepted method and in accordance with condition (8)(b). The results of this monitoring shall be recorded and made available to the Canterbury Regional Council on request.

(13) There shall be no discharge:

(a) Over or within 20 metres of any surface water body, well or bore, impermeable surfaces or in any other place or at such a rate that the discharge is likely to enter surface water or flow onto any neighbouring property; or

(b) Within 100 metres of any dwelling not owned by the consent holder.

(14) The consent holder shall annually update a nutrient balance to demonstrate nutrients are being managed effectively.

(15) Overseer® shall be used to calculate the average annual concentrations of nitrate-nitrogen in the soil drainage water from the irrigation land. The consent holder shall ensure that:

(a) If the predicted annual average concentration of nitrate-nitrogen, calculated in accordance with this condition exceeds 8 milligrams per litre, best management practices shall be implemented to minimise as

far as practicable, the discharge of nitrate-nitrogen to soil drainage water;

(b) The predicted average annual concentration of nitrate-nitrogen in the soil drainage water shall not exceed 16 milligrams per litre.

Odour and Aerosols

(16) The discharge to air from the spray irrigation of clean process water shall not result in odour which is noxious, offensive or objectionable beyond the property boundary.

(17) The consent holder shall:

(a) Take all practicable measures to prevent the drift of aerosols beyond the boundary of the property on which this consent is exercised; and

(b) Use wind direction controls to automatically deactivate irrigation zones close to down-wind boundaries to minimise the risk of spray drift.

Maintenance

(18) The consent holder shall maintain and operate all structures and relevant equipment associated with the site's disposal system in accordance with the procedures and requirements of the Environment Management Plan prepared in accordance with condition (23) of this consent.

Clean Process Water Monitoring

(19) The consent holder shall for the first 12 months after commencement of the discharge authorised by this consent, take a representative 24 hour sample of the clean process water at the point it enters the irrigation system on one day per week that irrigation occurs. For the remaining term of the consent, three samples per year will be taken. The sample shall be analysed for:

(a) COD in milligrams per litre;
(b) Total nitrogen in milligrams per litre;

All samples shall be taken by a suitably qualified person.

(20) Results of the analyses of clean process water monitoring carried out in accordance with condition (19) shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within 10 working days of the samples being collected.

Records and Reporting

(21) The consent holder shall log any complaints received. The log at a minimum shall contain the following information:

(a) Date and time the complaint was received;

(b) (Nature and location of the complaint;

(c) Complainant's details;

(d) Weather information; and

(e) Details of the key operating parameters at the time of the complaint; and

(f) Remedial action taken to prevent further incidents.

Complaints shall be reported to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within 24 hours and the log of complaints will be made available to the Canterbury Regional Council on request.

(22) The consent holder shall supply to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, an annual report on the exercise of this consent over the prior dairy season. The report shall be provided by 30 September each year and shall include the following records:

(a) Daily application rates and volumes of discharges onto land by spray irrigation;

(b) Location and timing of clean process water applications;

(c) A record of any complaints that are received relating to the irrigation of clean process water;

(d) A copy of the nutrient budget as required by condition (13);

(e) A copy of the Overseer® report as required by condition (14);

(f) Analysis and interpretation of clean process water quality; and

(g) Any proposals for mitigating any adverse effects found to be occurring.

<u>Environment Management Plan</u>

(23) At least 10 working days prior to the first exercise of this consent, the consent holder shall prepare and forward to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, an Environment Management Plan (EMP) for the operation of the wastewater treatment and disposal system. The EMP shall include, but not be limited to, details of procedures to:

(a) Manage and maintain the clean process water storage systems;

(b) Manage and report on soil moisture and clean process water irrigation application rates, including in snow cover situations;

(c) Manage and report on the nutrient budget;

(d) Monitor clean process water quality;

(e) Reduce application rates and manage the storage silos and pond(s) when weather and soil conditions are not suitable for irrigation;

(f) Minimise potential odour and spray drift from the system; and

(g) Respond to emergencies and provide contingency plans.

(24) The Environment Management Plan shall be reviewed by the consent holder at least annually for the purpose of addressing any issues relating to compliance with the conditions of this consent. The current plan will be forwarded to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager by 31 August each year for the term of this consent.

Administration

(25) 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 the 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 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; or

(c) Requiring compliance with any relevant rule of an operative Regional Plan; or

(d) Reviewing the frequency of monitoring and the determinants monitored.

(26) This consent shall lapse ten years after the date of commencement, unless the consent is given effect to before the lapsing date, under Section 125 of the Resource Management Act.

Duration

This consent will expire on the 2nd of December 2045.

CRC120180 to discharge contaminants to air

General

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.
3. (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 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 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.

Fuel and Ash Storage

5. Fuel for the two solid fuel-fired boilers shall be stored in covered underground bunkers (except for day bins attached to the boiler).
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.

Solid Fuel Fired Boilers

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 140ºC 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.

    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.

Milk Powder Dryer

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 63 metres above the local ground level and not less than 7 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 exceedance 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 exceedance is detected.

Monitoring Requirements

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. Under normal operating conditions there shall be no noticeable odour or particulate matter, in the opinion of a Canterbury Regional Council Enforcement Officer, beyond the site boundary from the discharge associated with the milk powder dryers and the boilers at the milk processing plant site.

Ambient Monitoring

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 exceedance of the Regional Ambient Air Quality Target acceptable level (1-hour average) then monitoring shall continue until such time that there have been no exceedances within a 12 month continuous period, provided that the total period of monitoring under this condition shall not exceed five years.

Servicing

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:

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

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

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

(a) Servicing reports shall be prepared and copies provided to the Canterbury Regional Council on request

(b) 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

Best practicable measures to avoid dust effects

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.

Reporting

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.

Annual Environmental Report

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).

Air Discharge Management Plan

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.

Administration

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

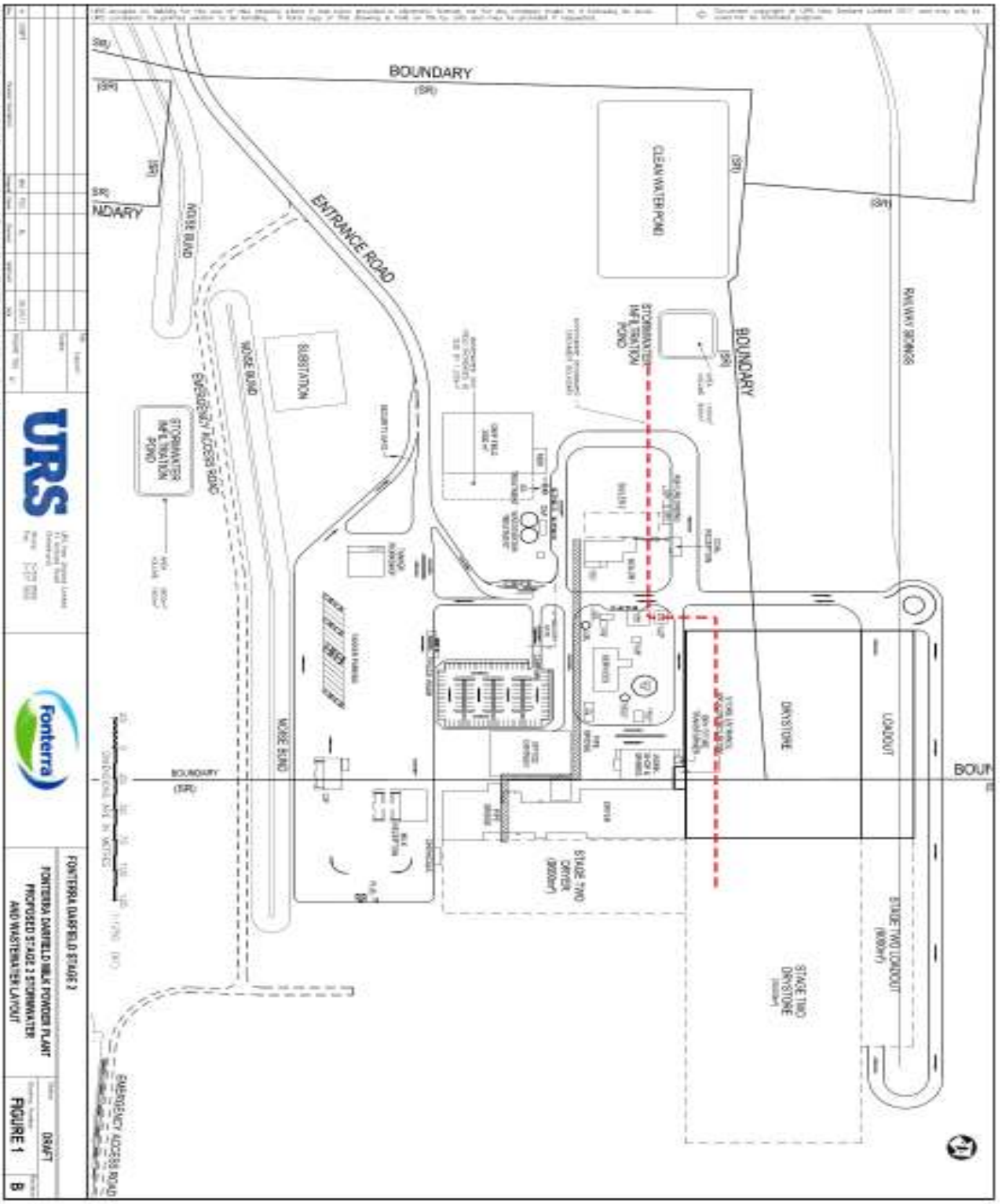
e. Requiring measures to reduce sulphur dioxide emissions from the solid fuel-fired boiler plant when fired on coal to a level that is predicted to comply with the standard or air quality guideline described in condition 47(d).

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.

Duration

49. This consent shall expire on the 2nd of December 2045.

PLAN CRC120329


BOUNDARY
(SR)
ENTRANCE ROAD
MORE ROAD
CLEAN WATER POND
STORMWATER INFILTRATION POND
RAILWAY BOWSS
BOUNDARY
SUBSTATION
EMERGENCY ACCESS ROAD
STORMWATER INFILTRATION POND
MORE ROAD
BOUNDARY
(SR)
DRYSTORE
LOADOUT
STAGE TWO DRYER (900tph)
STAGE TWO LOADOUT (900tph)
STAGE TWO DRYSTORE
BOUN
EMERGENCY ACCESS ROAD
URS
Fonterra
FONTERRA DARFIELD STAGE 2
FONTERRA DARFIELD MILK POWDER PLANT
PROPOSED STAGE 2 STORMWATER AND WASTEWATER LAYOUT
DRAFT
FIGURE 1
B

PLAN CRC120241