

**IN THE MATTER OF**

The Resource Management Act 1991  
("the Act")

**AND**

**IN THE MATTER OF**

An application to the Bay of Plenty Regional Council (Environment BOP) by Fonterra Co-Operative Group Ltd ("the Applicant") to discharge dairy manufacturing wastewater to land, discharge of contaminants to air, including odour, as a result of the discharge to land of wastewater (consent number 65800); and to vary discharge consent number 62522 to clarify the nature of waste solids that can be applied to land and to cancel the conditions which set daily and weekly limits on the volume of waste that can be applied to land, all associated with the Edgumbe Dairy Plant.

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**DECISION OF THE HEARING COMMITTEE**

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**1. Introduction**

- 1.1 Fonterra Co-Operative Group Ltd ("the Applicant") is the owner and operator of the Edgumbe Dairy Plant.
- 1.2 Fonterra's current consents to discharge high strength and medium strength wastewater by way of irrigation onto land expire on 30 June 2010.
- 1.3 Fonterra seeks (by this application) to renew these consents and to obtain consent for the discharge of associated contaminants to air.
- 1.4 Fonterra also currently discharges waste solids to land by truck spreading and seeks (by this application) to vary the consent in order to delete two conditions and clarify that the consent allows for spreading of wastewater silo solids to land.
- 1.5 The Bay of Plenty Regional Council's file references are 1370 65800 and 62522.
- 1.6 The legal descriptions of the disposal area are described in SCHEDULES 1 AND 2.
- 1.7 The Bay of Plenty Regional Council, as consent authority, has delegated its authority under s.34A(1) of the Act to Cr Andrew von Dadelszen (Chair), Cr Karen Summerhays and Cr Malcolm Whitaker to hear and determine the applications.

## 2. Background

2.1 Fonterra Co-operative Group Limited (the Applicant) has applied for resource consents to replace discharge permits 24213 and 24902, which authorise the discharge of medium and high strength dairy manufacturing wastewater to land. These consents expire on 30 June 2010.

The Applicant has also applied for a discharge to air permit to authorise the discharge of contaminants (including odour) associated with the land disposal operations. This is a new consent.

The discharge to land and air activities are all considered as **discretionary** under either the Regional Water and Land Plan or the Regional Air Plan, and have been incorporated into one new consent document, **65800**. These applications were notified as two separate consents, 65800 and 65801.

Lastly, the Applicant has applied to change the conditions on consent **62522**, which authorises the discharge of dairy manufacturing waste solids to land. The Applicant wishes to change the conditions of this consent to clarify the nature of waste solids that can be applied to land and to cancel the conditions which set daily and weekly limits on the volume of waste that can be applied to land. This is also a **discretionary activity**.

The Applicant also holds consents to discharge waste, storm and cooling-water into the Rangitaiki River – an application will be made to replace these consents (which also expire in 2010) towards the end of this year (2009).

## 3. The Application

### 3.1 Activities requiring consent

The following activities require consent:

**Resource consent 65800:** Discharge of dairy manufacturing wastewater to land and the associated discharge of contaminants (including odour) to air; and

**Resource consent 62522:** Change of consent conditions (current consent for the discharge of dissolved air flotation (DAF) solids onto various farms within the Whakatane District).

## 4 Description of Proposal

The Applicant operates a dairy manufacturing site in Edgecumbe, which can process up to 4 million litres of whole-milk per day. Peak production is during September-November, whereas production is minimal during June and July. Wastewater from the manufacturing process is discharged onto farmland across the Rangitaiki Plains and also to the Rangitaiki River. The production process is described in more detail in the application (pages 4-9).

Wastewater from the plant is separated into three streams before it's discharged based on its lactose content – low, medium and high strength. Low strength wastewater is discharged to the Rangitaiki River under resource consent 24211. This activity is not included within this application.

#### 4.1 **Medium strength wastewater**

The characteristics of the medium strength wastewater are described on pages 12-15 of the application. In summary, the wastewater has a high oxygen demand (measured as cBOD<sup>1</sup> and COD<sup>2</sup>) and high level of total phosphorus, potassium and sodium.

The composition and volume of waste is expected to change from July 2010 Fonterra intends to divert some of the wastewater currently discharged to the river to the medium strength wastewater stream. Overall the discharge will be more dilute; however the sodium content is expected to increase due to the presence of more sodium hydroxide (used to clean the manufacturing plant). The volume of wastewater will increase; therefore additional land will be required for irrigation and to allow for the staged reduction in nitrogen loading limits proposed by Fonterra.

Medium strength wastewater is currently discharged via an in-ground irrigation system to the Omeheu, Brophy and McLean farms (total irrigable area of 132 ha). Fonterra has identified additional farms that can be used for irrigation to give a total irrigable area of 289 ha by 2010, but the exact method of irrigation has not been decided for each property. Options include: fixed ground system; moveable pod system or a pivot combined with moveable sprinklers.

The wastewater silos, irrigation pumping stations and control room for the medium strength irrigation system are located on the Omeheu farm, owned by Fonterra.

#### 4.2 **High strength wastewater**

The characteristics of the high strength wastewater are described on pages 10-12 of the application. In summary, the wastewater has a high oxygen demand (measured as cBOD<sup>1</sup> and COD<sup>2</sup>) and high mineral content (measured as calcium, potassium, magnesium and sodium).

High strength wastewater is irrigated to land on approximately 30 farms (a total irrigable area of 1534 ha) using travelling irrigators. Management of these systems is now the responsibility of Fonterra (prior to 2002 the individual farm owners managed the irrigators).

There are four irrigation 'lines' or schemes: Putiki, Awakeri, Angle Road and Omeheu.

The wastewater silos, irrigation pumping stations and control rooms for the high strength irrigation system are located on the Awaroa and Omeheu farms, both owned by Fonterra.

#### 4.3 **Proposed change to consent 62522**

Fonterra currently holds a consent to discharge up to 60 m<sup>3</sup> per day DAF to land using trucks. DAF is a waste material separated from the wastewater stream through the use of dissolved air flotation units, located at the Fonterra Edgecumbe plant. The DAF solids principally comprise fat and protein material.

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<sup>1</sup> cBOD – carbonaceous Biochemical Oxygen Demand = a measure of the amount of oxygen used by micro-organisms to breakdown carbon-based substances.

<sup>2</sup> COD – Chemical Oxygen Demand = a measure of the amount of oxygen used to break down organic (carbon-based) compounds by oxidation.

The actual loading rate is limited by the maximum total nitrogen loading rate of 200 kgN/ha/yr.

Fonterra also discharges the waste solids removed from the Omeheu and Awaroa wastewater storage silos to land using trucks, and wish to incorporate this activity within consent 62522. They do not wish to increase the current nitrogen loading rate. Accordingly, Fonterra wishes the current consent to be amended such that it specifically allows for the discharge of other dairy manufacturing solid waste to land. Fonterra also wishes to remove the two conditions (condition 2.1 and 2.2) that set limits on the daily and weekly volume of waste that can be applied.

## 5 Statutory Reasons for Requiring Resource Consents

Section 15 of the Resource Management Act 1991 places restrictions on the discharge of contaminants into the environment. The activities proposed by the Applicant are not permitted as of right under this section of the RMA or by the relevant regional plans; therefore resource consent is required for the proposal.

The relevant regional plans are the Regional Water and Land Plan, the regional Tarawera River Catchment Plan and the Regional Air Quality Plan. All three plans were operative at the time the application was lodged.

### 5.1 Discharge of Wastewater to Land

The Applicant considers that the wastewater discharged to land is a fertiliser; however the definition of fertiliser contained within the Water and Land Plan specifically excludes *products applied or discharged as part of a waste treatment process*. Therefore the activity cannot be considered under Rule 20 of the Plan, which allows for application of fertiliser to land as a permitted activity, and instead is considered under Rule 37 as a **discretionary activity**.

This discharge is also captured by Rule 16.8.5(a) of the Tarawera River Catchment Plan. Under this rule, any discharge of waste into or onto land that may result in the percolation or movement of contaminants into groundwater is a **discretionary activity**.

### 5.2 Discharge to Air – Spray Irrigation

Rule 9 of the Air Plan provides for the spray irrigation of liquid waste provided that the associated conditions can be met. One of these conditions is that the irrigation of liquid is not carried out within 20 metres of the boundary of the subject property or within 20 metres of any surface water body. The applicant wishes to use a 10 metre buffer zone between the spray irrigation areas and surface water bodies (as per their current consent conditions). Therefore the proposal cannot be considered under Rule 9 and instead falls under Rule 19, and is a discretionary activity.

### 5.3 Change or Cancellation of Consent Conditions

In accordance with section 127(3)(a) of the RMA, the application to change and cancel consent conditions is considered as a discretionary activity.

## 6 Notification & Consultation

The application was publicly notified in the Whakatane Beacon and Eastern Bay News on 29 and 30 July 2009 respectively. In addition, notice of the application was served on over 200 interested parties, including:

- Land owners and occupiers in the vicinity of the proposed discharges;
- Local iwi authorities;
- Department of Conservation;
- Government Departments; and
- Local environmental groups.

The Applicant also held a public meeting on 27 July 2009.

## 6.1 Consultation with Iwi

Fonterra recognized that tangata whenua have a particular interest in the proposed discharges, and in particular the potential effects upon the Rangitaiki River, and that it was appropriate to have focused consultation with the relevant Iwi.

### 6.1.1 Ngati Awa

The Applicant met with Ms Beverley Hughes, Manager Environment Ngati Awa, on 18 December 2008. Ngati Awa never formally submitted on the application.

### 6.1.2 Ngati Tuwharetoa

The Applicant also contacted Ngati Tuwharetoa (BOP) Settlement Trust representatives Anthony Olsen and Elaine Savage on 8 May 2009. Ngati Tuwharetoa never formally submitted on the application.

## 6.2 Consultation with other affected parties

Following the lodgment of the application, the Applicant engaged in consultation with other specific affected parties. This consultation included written correspondence, telephone conversations, and in some cases meetings. This included Royal Forest & Bird, Fish & Game, Department of Conservation, and individuals who had submitted.

## 7 Matters for consideration

As this application was lodged before 1 October 2009, the Resource Management (Simplifying and Streamlining) Amendment Act 2009 does not apply.

### 7.1 The application has been considered under s.104 and 104B of the Act:

- “104 Consideration of applications*
- (1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, 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 and reasonably necessary to determine the application.*
- (2) When forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if the plan permits an activity with that effect.*
- (3) A consent authority must not –*
- (a) have regard to trade competition when considering an application;*

- (b) *when considering an application, have regard to any effect on a person who has given written approval to the application;*
- (c) *grant a resource consent contrary to –*
  - (i) *section 107 or section 107A or section 217;*
  - (ii) *an Order in Council in force under section 152;*
  - (iii) *any regulations*
- (d) *grant a resource consent if the application should have been publicly notified and was not.”*

- “104B *Determination of applications for discretionary or non-complying activities*  
*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.”*

## 7.2 **Planning Instruments**

Section 5 of the RMA provides that the purpose of the RMA is to promote the sustainable management of natural and physical resources to enable people to provide for their social, economic and cultural wellbeing. The following planning instruments and documents are relevant to, and have been considered for this application:

### **Regional Planning Instruments**

- The Bay of Plenty Regional Policy Statement 1999.
- The Operative Bay of Plenty Regional Air Plan 2003.
- The Operative Bay of Plenty Regional Plan for the Tarawera Catchment 2004.
- The Operative Bay of Plenty Regional Water and Land Plan 2008.

## 7.3 **Other Matters relating to the grant of discharge permits**

Section 105 of the RMA lists additional matters that a consent authority must have regard to when considering applications for discharge permits to do something that would contravene section 15 of the RMA.

Section 107(1) of the RMA places restrictions on the grant of resource consents for the discharge of contaminants onto or into land, where those contaminants may enter water.

## 8 **Part 2 of the RMA**

Consideration of an application under section 104 of the RMA is subject to Part 2. “Subject to” gives primacy to Part 2 and is an overriding guide when applying the provisions of the RMA.

Part 2 of the RMA sets out its purpose, which is to promote the sustainable management of natural and physical resources, and in sections 6, 7 and 8 sets out matters that consent authorities should consider when exercising their functions under the RMA.

### 8.1 **Section 5 – Purpose and Principles**

Sustainable management of natural and physical resources includes managing in a way or at a rate which enables people and communities to provide for their social, economic and cultural well-being. In assessing the effects of activities on the well-

being of people and communities, both positive and adverse effects can be considered.

Overall, and provided that the proposed activities are undertaken in accordance with the consent conditions, the proposal meets the sustainable management purpose of the RMA.

## 8.2 Section 7 – Other Matters

The other matters to which Environment Bay of Plenty must have particular regard in relation to managing the use, development, and protection of natural and physical resources are listed in section 7 of the RMA. The matters of relevance to this application include:

- Section 7 (a) Kaitiakitanga;
- Section 7(aa) The ethic of stewardship;
- Section 7(c) The maintenance and enhancement of amenity values;
- Section 7(f) The maintenance and enhancement of the quality of the environment
- Section 7(g) Finite characteristics of natural and physical resources.

## 8.3 Section 8 – Principles of the Treaty of Waitangi

Section 8 of the RMA requires the consent authority to take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi) when considering applications for resource consent. The two key principles that are of relevance to this application are active protection of Maori interests and consultation. The Applicant undertook consultation with various iwi groups prior to, and after, submitting their application.

## 9 Assessment of Environmental Effects

An Assessment of Environmental Effects was prepared by the Applicant. This identified that the main effects of approving the application included, but were not limited to:

- (a) Positive Effects – The Applicant indicated in its AEE that Fonterra is undertaking several environmental initiatives at the Edgecumbe site. These include:
  - ISO 14001 certification and FOEMM Manual
  - Environmental Best Practice
  - Water Reduction
  - Washwater RO Project
- (b) This proposal will reduce the discharge to the Rangitaiki River (by expanding the irrigable land) and reduce the nitrogen loadings from the medium strength wastewater.
- (c) The nutrient source which the wastewater provides to the farms receiving irrigation, reducing the need to apply other sources of fertilizer.
- (d) The proposed discharges will not adversely affect or contaminate the irrigated farms or surrounding land or waterways
- (e) Wastewater irrigation appears to have minimal effect on the groundwater.

- (f) The significant positive effects on the social and economic wellbeing of the community that flow from the continued successful operation of Fonterra's manufacturing site at Edgecumbe (including approximately 360 employees, contractors, service industries and the farming community).
- (g) The risk to the environment includes human intervention / management. Although some of the system is automated there is significant human intervention and management required to avoid, remedy & mitigate adverse effects associated with the activity. These include positioning of the travelling irrigators, decisions regarding rotation of irrigation between farms and paddocks, wet weather management, truck spreading, and odour management decisions. This was highlighted by Mr Murnane's comments regarding their experience with the positioning of travelling irrigators next to their property (used for high strength irrigation).
- (h) Sensitivity of receiving environment - There are clearly some 'sensitive' neighbours to the irrigation activities as demonstrated by complaints received by Fonterra and Environment Bay of Plenty and the nature of the submissions received. The Applicant noted that spray drift and odours will be avoided by careful management of the irrigation system.
- (i) Future uncertainties - There are some uncertainties regarding expansion of the irrigated areas (i.e. exactly what expansion will occur and when) and whether renewal of river consent will impact on the ability of Fonterra to rely on the 'contingency' discharge to the river in wet weather events (relevant conditions appear at the end of this document) or require further land to be irrigated (to limit direct discharges to the river). The discharge to river consent expires on 30 June 2010. The locations for the truck spreading of wastewater are also uncertain.

## 10. Site Visit and Hearing

The Hearing Committee conducted a site visit on 10 November 2009 prior to the hearing of the application.

## 11. Applicant's Submissions

### 11.1 Ms Suzanne Janissen made legal submissions on behalf of the Applicant.

Ms Janissen advised that Fonterra's current consents to discharge high strength and medium strength wastewater by way of irrigation onto land expire on 30 June 2010; and seeks (by way of this Application) to renew these consents and to obtain consent for the discharge of associated contaminants to air.

Ms Janissen also advised that Fonterra currently discharges waste solids to land by truck spreading, and seeks (by way of this Application) to vary the consent in order to delete two conditions and clarify that the consent allows for the spreading of wastewater silo solids to land.

Ms Janissen noted that Fonterra's Edgecumbe site processes approximately 3.8 million litres of whole milk per day, and employs approximately 360 staff locally.

Ms Janissen noted that Fonterra's wastewater management scheme takes a holistic approach, favouring land disposal in large part, but utilizing the Rangitaiki River to sustainably manage the irrigation farms. This, she said, ensured Fonterra's

commitment to carry out its business in a responsible and sustainable manner, while minimizing the environmental impact of its processes.

Ms Janissen's evidence noted that this Application, if granted, will allow Fonterra to progressively reduce the nitrogen loading in the wastewater from 760kgN/ha/yr to 400kgN/ha/yr over a 5 year period. It will also enable a reduction in the amount of wastewater which is being discharged to the Rangitaiki River.

Ms Janissen noted that as Fonterra's Application was lodged before 1<sup>st</sup> October 2009, the latest RMA amendments do not apply.

Ms Janissen drew the Committee's attention to Section 104 of the RMA, which sets out those matters that the Committee must have regard to when considering this Application.

Ms Janissen also noted the section 5 provisions in the Act promoting the sustainable management of natural and physical resources, commenting that the decrease in nitrogen loading and the reduction in the amount of wastewater discharge to the Rangitaiki River were consistent with this section.

Considering Sections 6 & 8 of the RMA, Ms Janissen noted that while iwi were actively consulted, none formally submitted.

Ms Janissen sought a reduced term for the consent, from 35 years in the original application to 25 years. In answering questions in clarification however, neither Ms Janissen nor the other Applicant's expert witnesses could satisfy the Committee's request to explore an economic imperative for a consent term in excess of the Officer's Report recommendation.

11.2 **Dr. Paul Rennie**, Hub Operations Manager for Fonterra's Edgecumbe and Reporoa manufacturing facilities gave evidence, providing an overview of the Edgecumbe dairy manufacturing site, with explanations as to why Fonterra has applied for these discharge consents.

Dr Rennie explained that this Application has resulted in an \$8.5 million added investment by Fonterra (\$3m being for the purchase of land). He commented that if the Edgecumbe irrigation system could only be partially used, through cessation or deferment of use during inclement periods, additional investment for the purposes of wastewater discharge would be required. This would represent a major impact on the return on investment of the irrigation scheme, threatening the viability of manufacturing at the Edgecumbe site.

Dr Rennie, in his evidence, gave alternative treatment options, as required by Section 105(1)(c) of the RMA. These included use of a biological treatment plant; a reverse osmosis (RO) membrane plant; and a direct discharge of wastewaters to the ocean. In summary, Dr Rennie argued that Fonterra considers that a combination of land irrigation of the wastewater and discharge of the low strength wastewater to the Rangitaiki River provide a sustainable approach for both land and the River.

11.3 **Dr. James (Jim) Barnett**, Environmental Strategy and Development Manager in the Natural Resources Group at Fonterra, gave evidence, including the wastewater strategy for the Edgecumbe manufacturing site.

Dr Barnett noted that the area of land used for the medium strength wastewater irrigation would increase from 161 ha to 318 ha. This would result in a substantial reduction (760 kgN/ha/yr to 400 kgN/ha/yr), while the wastewater loadings on the

high strength wastewater scheme would remain unchanged at 150 kgN/ha/yr and 200 kgN/ha/yr.

Dr Barnett described the circumstances requiring the discharge of both DAF solids and wastewater silo solids by truck spreading onto land across the Rangitaiki Plains. He gave evidence that the use of truck disposal, while once a regular occurrence, had been used very infrequently by Fonterra in the last few years. He commented that in 2008/09 there were only 33 days when Awaroa wastewater was trucked (at an average of 69 m<sup>3</sup>/d), and 3 days when Omeheu wastewater was trucked (102 m<sup>3</sup>/d).

Dr Barnett commented that Fonterra used the most up to date information in operating existing systems and in designing new systems, allowing the implementation of best practice at the Edgecumbe site. He stated in response to a question in clarification from the Committee that Fonterra took over the day to day irrigator management (including irrigator movement) approximately five years ago.

- 11.4 **Ms Jolene Francis**, Irrigation/Environmental Team Leader at Fonterra's Edgecumbe manufacturing site, gave evidence describing the history of operational control and the changes sought to the Edgecumbe irrigation system.

Ms Francis noted that the change in operational structure where Fonterra now employ specific staff (approximately 12) to manage the day to day operations of the irrigation system has led to "best practice". She commented that the reason that the previous high usage of truck disposal of wastewater was because when the farmers were shifting their own irrigation systems they were not prioritizing these movements to minimize environmental impacts for Fonterra.

Ms Francis noted that the reason for the variation of the existing consent to include truck spreading of the wastewater silo solids as part of the DAF solids activity was to eliminate confusion over what solids can be disposed of under the existing consent (62522).

Ms Francis also stated that Fonterra wished to vary the existing consent to remove conditions 2.1 and 2.2, as these are not, in her opinion, considered necessary to control environmental effects and have the potential to create technical non compliance.

- 11.5 **Mr David Wright**, National Consents Manager at Fonterra Co-Operative Group Ltd, gave evidence in support of the consultative process that Fonterra had undertaken for this application.

Mr Wright described the consultation undertaken with Bay of Plenty Regional Council; with affected iwi; and with other stakeholders; and neighbours as well as the public.

Mr Wright noted that in the majority opposition was to odour issues result from the on farm irrigation of the high strength wastewater. He discussed mitigation methodology including the use of riparian planting (noting that past plantings had been undertaken in the sand dunes at Thornton, Ohope and Ohiwa), buffer zones, and exclusion zones.

Mr Wright maintained that it is neither feasible nor necessary to cease irrigation during high wind events, as management controls and operational strategies (including increased buffer zones during high wind events) currently in place ensure that any effects on surface water are avoided.

Mr Wright highlighted the existing groundwater and surface water monitoring being undertaken by Fonterra, and with regard to surface water monitoring, noted that monitoring needed to be realistic to the scale of effects on these surface waters that could be attributed to the irrigation systems.

11.6 **Dr. John Russell**, Environmental Technical Manager at Fonterra's Environment Strategy and Development Group, gave evidence outlining the potential effects on the environment.

Dr Russell noted that the buffer zones prevented wastewater irrigation from direct contamination of surface water. He contended that that buffer zones or protected areas, of 10 metres from any drain or water course, 10 metres from any property boundaries (unless the adjacent land is also irrigated by Fonterra with dairy processing wastewater), and 45 metres from any residential dwellings, was sufficient to ensure minimal impact on the surrounding environment.

Dr Russell noted that samples of surface water taken from within the irrigated area had been collected monthly for January, February and March 2009, and that the monitoring showed minimal effects on the surface water quality.

Dr Russell stated that Fonterra had assessed the effects of its current wastewater irrigation operations on groundwater using two methods: by modelling the irrigation process using the AgResearch Overseer model (Version 5.4.3) and by measuring the groundwater composition from sampling bores located near the irrigation areas. He contended that the conclusion of this modelling showed that groundwater nitrates are likely to remain below the drinking water standard, and the wastewater irrigation appears to have minimal effect on the groundwater. He concluded that, in his opinion, the modelling and measurements undertaken show that the proposed irrigation will not increase levels of nitrate-nitrogen, phosphorus or sodium to levels that will make groundwater unsuitable for stock or human drinking water.

Dr Russell gave evidence that the effects of irrigated wastewater would be no more than minimal on soils and pasture. He noted that sodium can have adverse effects on soils in high concentrations, but he noted that the samples taken showed sodium levels at half of the recommended limit.

Dr Russell noted that odours are produced in dairy processing wastewater if they are allowed to decompose anaerobically. He also stated that wastewater from the Edgecumbe site is irrigated in a fresh condition with all daily wastewater irrigated within 24 hours. That said, Dr Russell conceded that removing odour completely is unachievable, but that there are several practicable actions that can be taken to reduce or minimize odour, all of which are currently in place and will continue to be used at the Edgecumbe site.

Dr Russell gave evidence that Manganese, Iron and Copper levels as identified in the sampling undertaken were at non-significant levels. In response to Forest & Bird's submission he did recommend, however, that copper sulphate be included in the list of soil analyses required in the annual soil testing conditions for this consent.

Dr Russell did not agree with Dr Guinto (Bay of Plenty Regional Council expert reviewer) that more biochemically based soil health parameters should be measured. He noted that Dr Guinto acknowledged that these cannot be measured by commercial laboratories.

In commenting on the Council Officer's Report, Dr Russell acknowledged that irrigation of wastewater is more difficult in wet conditions, but contended that deferred

irrigation is not a practicable way to reduce loadings in wet weather. He stated that any deferred irrigation storage system would require full treatment facilities to prevent odour, at an estimated cost of at least \$6 million.

Dr Russell further contended that the installation of soil measuring equipment is also not practical. He stated that with at least 30 separate farms involved in this Fonterra irrigation scheme (and usually with multiple soil types on each farm), the cost of this equipment is prohibitive.

Dr Russell, in his evidence, refuted the evidence of Dr Guinto, stating that “the immobilization is supported at Edgecumbe as evidenced by the low phosphorus levels in the groundwater.” He further stated that “therefore, on the basis of the results obtained at Edgecumbe and my own research at other sites, I do not expect the elevated Olsen P levels in the soils to cause adverse environmental effects.” The Committee notes that the Olsen-P concern raised by Dr Guinto was regarding sediments containing the sorbed-P being washed into water bodies during rain events (as stated in his technical review).

In answering a question of clarification from the Committee, Dr Russell stated that there was no source of cadmium in the wastewater from the Edgecumbe site, and therefore testing for this was unnecessary.

## 12. Submissions by affected parties

Bay of Plenty Regional Council received 10 written submissions; with 6 in opposition, 2 in support, and 2 in conditional support. Three submitters appeared in person.

### 12.1 Forest & Bird

**Ms Linda Conning**, a member of the local committee appeared on behalf of Forest & Bird. Ms Conning was supported by Mr Mark Fort. In her evidence she recognized that land disposal of wastewater has the potential to reduce adverse effects of the Applicant’s discharge to the Rangitaiki River, but noted that it was not a “magic fix”. However she did not suggest any alternative method of disposal.

Ms Conning commented that Fonterra “needs to take a strategic lead to ensure riparian planting”, noting their commitment to the Clean Streams Accord. The committee notes that not all irrigation occurs on Fonterra land and this would constrain a consent condition’s ability to enforce riparian planting on non-Fonterra owned land.

Ms Conning, in her evidence, gave concern that there was no reference to Section 6(a) of the RMA in Section 13.3 of the Planning Report. The committee notes that Section 6(a) relates to preservation of natural character not restoration; therefore we don’t consider s6(a) is relevant to the application.

Ms Conning also expressed concern at the length of the 5 year Review conditions. The committee notes that there is a need to balance providing operating certainty to applicant and the ability to review the consent. The Best Practicable Option review will occur every five years – the review condition ties in with this. This is also likely to be a need for considerably more than a year’s worth of monitoring to substantiate the need for a review based on effects.

**12.2 Barry C Marshall, 11 Holland Crescent, Kawerau**

Mr Marshall made an oral submission, in support of his written submission. Mr Marshall acknowledged that his submission did not contain any specific technical information, but relied on largely rhetorical and anecdotal evidence to emphasize his concerns about the length of the proposed term for the consent. Mr Marshall asked for a 10 year term, saying that "Uncertainties make any term longer than ten years unwarranted."

Mr Marshall highlighted concerns about climate change, including the effects of sea-level rise as being justification for a 10 year consent term.

Mr Marshall also expressed concern about the effects on soil quality, with specific reference to the rise over time in sodium levels.

Mr Marshall was also concerned at the discharges to air, stating that offensive odour and spray drift were both adverse environmental effects.

**12.3 Peter Murnane & Margaret Murnane, 87 Angle Road, RD3, Whakatane**

Both Peter and Margaret Murnane attended the Hearing, with Mr Murnane making an oral submission. Mr Murnane stated that he was an electrical maintenance engineer at the Tasman Mill, and had lived in his current location for the past 25 years.

Mr Murnane gave evidence that their primary concern was the lack of odour mitigation, which he said has a significant detrimental effect on people and property, particularly in the lee of prevailing wind or under humid conditions.

Mr Murnane stated that the buffer zone should be set at no less than 100 metres from the boundaries of Lot 1 DP 11509, noting that his property is currently subject to regular spray drift and odour.

Mr Murnane commented that while there had not been many complaints in the past, this does not mean that they were satisfied. Mr Murnane sought better liaison between the Applicant and affected neighbouring property owners.

Mr Murnane also advocated for a 15 year consent term.

**13. Bay of Plenty Regional Council Officer's Report**

The Reporting Officer for the Bay of Plenty Regional Council report was tabled but not read by Ms Jo Noble, Senior Consents Officer. Ms Noble also tabled a tracked change draft consent document in response to the version that she had previously received via email from the Applicant.

**14 Matters of Contention and Main Findings of Fact**

It is unnecessary to specifically list the matters of contention or the main findings of fact as they are clearly covered in the body of the decision and summarised in the Reasons for Our Decision.

## 16. Determination

The Hearing Committee grants consent 65800 for the discharge high strength and medium strength wastewater by way of irrigation onto land and the associated discharge of associated contaminants to air subject to attached conditions.

The Hearing Committee grants the variation to resource consent 62522 in order to delete two conditions and clarify that the consent allows for spreading of wastewater silo solids to land as per the attached conditions.

The main reason for these decisions is the positive effects that result from optimising the operation of its wastewater management and operations at its Edgecumbe Dairy Plant. The Committee considers the adverse effects to be appropriately avoided, remedied and/or mitigated, The Hearing Committee recognises the commitment by the Applicant to ensure that “best practice” is undertaken in its wastewater management and operations at its Edgecumbe Dairy Plant.

The Hearing Committee notes that the improved operation being undertaken by the Applicant will result in less wastewater discharge to the Rangitaiki River.

The Hearing Committee further notes that the review conditions will ensure that “best practice” is maintained throughout the duration of the consent.

The Hearing Committee has decided to agree to a 25 year consent term, in recognition that the Applicant is using “best practice” in dealing with its wastewater disposal.

## 17. Reasons for the Decision

Section 105 of the RMA lists additional matters that a consent authority must have regard to when considering applications for discharge permits to do something that would contravene section 15 of the RMA.

The Applicant produced evidence from Dr. Barnett that it has given consideration to alternative treatment options, as per the requirement in Section 105(1)(c) of the RMA.

The Hearing Committee is satisfied that the Applicant adequately considered possible alternative receiving environments for the discharges associated with the proposal, as required under Section 105 of the Act, and that this proposal is the best option for the receiving environment.

Pursuant to s.113 of the Act, the Hearing Committee has determined that the following are reasons for this decision:

- (a) The consent provides for the operation of “best practice” in the disposal of the wastewater discharges from the Edgecumbe Dairy Plant. It, therefore, provides for the purpose of the Act stated in s.5, viz the promotion of sustainable development of natural and physical resources, and enables people and communities to provide for their well-being and their health and safety.
- (b) The effects will be mitigated by conditions of consent and overall the effects on the environment of the consent will be less than minor.

- (c) The terms of the consent and conditions have had regard for relevant matters listed in s.7 of the Act:

“ (a) *Kaitiakitanga:*  
(aa) *The ethic of stewardship:*  
(b) *The efficient use and development of natural and physical resources:*  
(c) *The maintenance and enhancement of the quality of the environment:*

The Hearing Committee has noted that the Applicant conducted substantive consultation with the appropriate local Iwi authorities, none of whom made formal submission to the applications.

- (e) The Hearing Committee considered the application of s.8 of the Act and concluded that there were no issues that affected this application.
- (f) The Hearing Committee is satisfied that granting of consent is not inconsistent with the provisions of the Regional Planning instruments, including the operative Regional Policy Statement, the Regional Water and Land Plan, the Regional Air Plan or the Regional Plan for the Tarawera Catchment, subject to constraints and conditions to mitigate adverse effects on the environment.

## 18 Summary

Having read all of the submissions received, listened to all of the evidence presented, and considered the various requirements of the Act and the national and regional statutory documents we are satisfied that the potential adverse effects of the proposed wastewater discharge can be adequately avoided, remedied or mitigated.

The hearing was adjourned at 6.00pm to allow the Committee to come back to the parties to seek further information on methodology of works, if required, when forming the consent conditions. The hearing was closed when deliberations ended at 1.00pm on 14 December 2009.

Signed and dated this 21<sup>st</sup> day of December 2009



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Andrew von Dadelszen  
Chairman of Hearing Committee

Consent Number: **62522**

## **Bay of Plenty Regional Council**

### **Resource Consent**

Under the Resource Management Act 1991, the **Bay of Plenty Regional Council**, by a decision dated 14 December 2009, **Hereby Grants** to:

#### **FONTERRA CO-OPERATIVE GROUP LIMITED**

A discharge permit pursuant to section 15(1)(b) of the Resource Management Act 1991 to **Discharge Dissolved Air Flotation and Wastewater Silo Solids to Land** subject to the following conditions:

#### **1 Purpose**

For the purpose of discharging dissolved air flotation (DAF) and dairy wastewater silo solids to land from the permit holder's operation at Edgecumbe and its associated silocompound areas onto various farms within the Whakatane District.

#### **2 Discharge Quantity**

- 2.1 The total annual nitrogen loading rate of DAF and wastewater silo solids to land shall not exceed 200 kilograms per hectare.
- 2.2 The application rate of DAF and wastewater silo solids to land shall not exceed 7mm per day.

#### **3 Location**

At various locations within the Whakatane District.

#### **4 Map Reference**

Edgecumbe Dairy Plant: At or about map reference NZMS 260 V15:4673-5126.

#### **5 Legal Description**

Various. (Whakatane District)

## **6 Irrigation Management**

- 6.1 The permit holder shall not apply DAF and/or wastewater silo solids to any land which currently receives any other waste products such as dairy effluent or whey.
- 6.2 When discharging the DAF and/or wastewater silo solids to cropping land, the permit holder shall plough the solids into land as soon as practicable after spreading.
- 6.3 The permit holder shall not apply any DAF and/or wastewater silo solids to land where there is water ponding as a result of recent rainfall.
- 6.4 No spreading of DAF and/or wastewater silo solids shall be undertaken within the following buffer zones:
- 10m from any property boundary,
  - 20m from any surface water body,
  - 50m from any house or place of residence,
  - 50m from any water supply bore.
- 6.5 The permit holder shall keep records as to the date and farm on which DAF and/or wastewater silo solids is applied, the paddock number or description, the volume applied and any additional comments relating to the application of the solids.
- 6.6 The permit holder shall make available a copy of the records pursuant to condition 6.5 to the Regional Council on request.
- 6.7 The consent holder shall provide the following information to the Bay of Plenty Regional Council by the 21<sup>st</sup> of each month:
- a) The amount of Nitrogen and Phosphorus applied in the preceding month as a result of the discharge of DAF and/or wastewater silo solids to land, to be expressed as kgN/ha and kgP/ha; and
  - b) The cumulative amount of nitrogen and phosphorus applied as a result of the discharge of DAF and/or wastewater silo solids to land (up to and including data from the preceding month), to be expressed as kgN/ha and kgP/ha.

## **7 Environmental Monitoring**

- 7.1 In August, November, February and May each year the permit holder shall collect a representative sample of the DAF and/or wastewater silo solids and analyse for the following constituents:
- pH,
  - Chemical Oxygen Demand,
  - Total Nitrogen,
  - Total Phosphorus,
  - Potassium,
  - Calcium,
  - Sodium,
  - Magnesium.

Consent Number: **62522**

- 7.2 In April each year the permit holder shall collect a representative soil sample from an area of land that received the DAF and/or wastewater silo solids up to the 200 kgN/ha/yr limit and analyse for the following constituents:
- pH,
  - Total Carbon,
  - Total Nitrogen,
  - Olsen P,
  - Cation exchange capacity,
  - Base saturation.
- 7.3 The permit holder shall provide a plan showing the location of the soil samples pursuant to condition 7.2 and a description of soil type, sampling depths, and sampling methodology used.
- 7.4 DAF and wastewater silo solids and soil analyses as required under conditions 7.1 and 7.2 shall be carried out as set out in the latest edition of "Standard Methods for the Examination of Water and Wastewater" APHA – AWWA – WPCF' or such other method as may be approved by the Chief Executive of the Bay of Plenty Regional Council or delegate.
- 7.5 The permit holder shall forward the results of the DAF and wastewater silo solids and soil analysis pursuant to conditions 7.1, 7.2 and 7.3 to the Bay of Plenty Regional Council within one month of receiving the analytical report.

## **8 Review of Conditions**

The Bay of Plenty Regional Council may,

- a. within six months following 31 March 2006, 31 March 2009, and 31 March 2011, or
- b. within six months of completion of any compliance report carried out by the Bay of Plenty Regional Council, which shows that there is groundwater contamination as a result of the application of DAF and/or wastewater silo solids,

serve notice on the permit holder under s.128(1)(a)(i) and/or (iii) of the Resource Management Act 1991 of its intention to review the conditions of this permit. The purpose of such a review is to assess the need for groundwater monitoring, and to impose conditions relating to the application of DAF and/or wastewater silo solids where appropriate.

## **9. Term of Permit**

This permit shall expire on 28 February 2014.

Consent Number: **62522**

## **10 Resource Management Charges**

The permit holder shall pay the Bay of Plenty Regional Council such administrative charges as are fixed from time to time by the Bay of Plenty Regional Council in accordance with section 36 of the Resource Management Act 1991.

**11 The Permit** hereby authorised is granted under the Resource Management Act 1991 and does not constitute an authority under any other Act, Regulation or Bylaw.

### **Advice Notes:**

- 1 Monitoring information as required by condition 6.7 and 7.5 shall be directed (in writing) to the Manager Pollution Prevention, Environment Bay of Plenty, PO Box 364, Whakatane 3158 or fax 0800 368 329 or email [notify@envbop.govt.nz](mailto:notify@envbop.govt.nz). This notification should include consent number 62522.*
- 2 The permit holder is advised that non-compliance with permit conditions may result in enforcement action against the permit holder and/or their contractor(s).*
- 3 The permit holder is responsible for ensuring that all contractors carrying out works under this permit are made aware of the relevant permit conditions, plans and associated documents.*

Consent Number: **65800**

## **Bay of Plenty Regional Council**

### **Resource Consent**

Under the Resource Management Act 1991, the **Bay of Plenty Regional Council**, by a decision dated 14 December 2009, **Hereby Grants** to:

#### **FONTERRA COOPERATIVE GROUP LIMITED**

A resource consent under the Resource Management Act 1991 to undertake a discretionary activity being to **Discharge Treated Dairy Manufacturing Wastewater to Land and undertake the associated Discharge of Contaminants to Air** subject to the following definitions and conditions:

### **Definitions**

For the purpose of this consent the following definitions apply:

Buffer zones:	<i>An area established around an activity (in this case irrigation) to separate the environment beyond the buffer zone from the adverse effects of that activity. The buffer zone is measured from the edge of the spray-zone and not the position of the irrigator.</i>
Irrigation event:	<i>An irrigation event is the period of time over which wastewater is irrigated on a particular disposal area within a single rotation period. An irrigation event lasts up to 3 days using in-ground irrigation.</i>
Riparian margins:	<i>A strip of land adjacent to the bed of a stream, river, lake or wetland, which contributes or may contribute to the maintenance and enhancement of the natural functioning, quality and character of the stream, river, lake or wetland.</i>
Surface water body:	<i>Means freshwater in a river, lake, stream or pond. This includes modified watercourses and intermittent watercourses.</i>
Year:	<i>From 1 June to 31 May inclusive</i>
Infiltration capacity:	<i>The rate at which water enters the soil</i>
Field capacity:	<i>The moisture content of a soil when free drainage immediately after a rain or irrigation has virtually stopped. It is a measure of the maximum amount of water a soil can retain against the force of gravity</i>

## **1 Purpose**

To discharge treated wastewater from the Edgecumbe dairy manufacturing plant to land and the associated discharge of contaminants (including odour) to air.

## **2 Location of Discharges**

- 2.1 Medium strength wastewater shall be irrigated onto the land described in Schedule 1 (Schedule of Irrigation Properties – medium strength wastewater) and shown on BOPRC 65800/1.
- 2.2 High strength wastewater shall be irrigated onto the land described in Schedule 2 (Schedule of Irrigation Properties – high strength wastewater) and shown on BOPRC 65800/2.
- 2.3 Truck spreading of either high strength or medium strength wastewater shall be undertaken on farmland within the Rangitaiki Plains.

## **3 Notification Requirements**

- 3.1 Within two weeks of the commencement of this consent, the consent holder shall provide to the Bay of Plenty Regional Council details of who is responsible for irrigation management and compliance with consent conditions and their contact details (see Advice Notes 1 and 2). If the person responsible for the irrigation systems changes during the term of this consent, the consent holder shall notify the Council of the new details no later than five working days after that person(s) take responsibility.
- 3.2 The consent holder shall notify the Bay of Plenty Regional Council of proposed additions to the irrigation areas or wastewater storage facilities authorised by this consent (see Advice Notes 1, 3 and 4). This notification shall occur prior to the commissioning of any new areas of irrigation or new storage facilities not already authorised by this consent, and shall include the following information:
  - a) A map clearly showing the proposed irrigation area - irrigation areas only;
  - b) The irrigable area (ha) - irrigation areas only;
  - c) Legal description(s);
  - d) The current land owners;
  - e) The type of wastewater that will be irrigated or stored; and
  - f) The irrigation or storage system to be used.
- 3.3 The consent holder shall notify the owners/occupiers of any residence which is adjacent to the land which it is proposed to spray wastewater irrigation prior to applying wastewater to that land. The consent holder will use “best endeavours” to ensure that the said notice is received at least 8 hours prior to the commencement of wastewater irrigation within an area adjacent to that affected residence.

## 4 Quantity and Rate

### Medium Strength Wastewater Irrigation Systems

- 4.1 The rate of application using centre pivot irrigation systems shall not exceed 15 mm per pass.
- 4.2 The rate of application using in-ground sprinkler systems, pod irrigation systems or long lateral irrigation systems shall not exceed 60 cubic metres per hectare per hour.
- 4.3 The maximum volume applied over an irrigation area during any irrigation event using centre pivot irrigation systems, in-ground sprinkler systems or long lateral irrigation systems shall not exceed 50mm.

### High Strength Wastewater Irrigation Systems

- 4.4 The rate of application using travelling irrigators shall not exceed 16 mm per irrigation event.

### Truck Spreading of Wastewater

- 4.5 The rate of application using truck disposal shall not exceed 50 cubic metres per hectare per application.
- 4.6 Any area receiving wastewater by truck disposal shall be rested for at least a 10-day period, or longer, between applications unless otherwise agreed in writing by the Chief Executive of the Bay of Plenty Regional Council or delegate.
- 4.7 Within any area receiving wastewater by irrigation, the return cycle, being the period of an irrigation event to the first day of the next irrigation event, shall not be less than 14-days (unless otherwise agreed in writing by the Chief Executive of the Bay of Plenty Regional Council or delegate).
- 4.8 The maximum nitrogen loading rate for those properties receiving medium strength wastewater (identified in Schedule 1 to this consent) shall not exceed the following nitrogen limits:

<b>Period</b>	<b>Annual limit</b>
Prior to 1 July 2010	760 kgN/ha/year
1 July 2010 to 30 June 2012	675 kgN/ha/year
1 July 2012 to 30 June 2015	475 kgN/ha/year
From 1 July 2015	400 kgN/ha/year

- 4.9 The maximum nitrogen loading rate for those properties receiving high strength wastewater (identified in Schedule 2 to this consent) or wastewater applied by truck shall not exceed 150 kgN/ha/year.
- 4.10 The maximum phosphorus loading rate for those properties receiving high strength wastewater (identified in Schedule 2 to this consent) or wastewater applied by truck shall not exceed 200 kgP/ha/year.

## 5 Irrigation Management

5.1 The consent holder shall prepare and submit updated versions of the **Medium Strength Waste Water Irrigation Management Plan** (submitted as Appendix 4 to the application), **High Strength Awaroa and Omeheu Fertiliser Irrigation Schemes Management Plan** (submitted as Appendix 5 to the application) and **Truck Spreading of Wastewater Management Plan** (submitted as Appendix 6 to the application), to the Chief Executive of the Bay of Plenty Regional Council or delegate for approval within three months of the commencement of this consent. These Plans shall be consistent with the conditions of this consent (see Advice Notes 1) and shall be revised to include the following:

- a) Identify key personnel and contact addresses/numbers – including the following persons where applicable:
  1. Site manager
  2. Environmental manager.
- b) Clear identification on a map or plan of the drains and watercourses in the irrigation disposal areas, paddocks with sub-surface drainage and paddocks that are used for dairy farm effluent irrigation so that appropriate management procedures can be undertaken to avoid contamination of surface water by wastewater;
- c) Clear identification on a map or plan of properties potentially affected by odour or spray-drift effects, so that appropriate management procedures can be undertaken to avoid such effects;
- d) Maps of all the irrigation supply pipe-work including on-farm pipe layout, hydrants identification of all pipe crossings and the location of all isolation valves;
- e) Provisions for monitoring and recording application rates to ensure the relevant consent requirements are being met;
- f) Maintenance procedures and programmes, including identification of items critical to the operation and correct application of wastewater and how and at what frequency monitoring will be undertaken to verify the integrity of the pipelines, canal crossings, farm isolation valves, wastewater storage facilities and associated irrigation equipment;
- g) Contingency measures in the event of irrigation equipment or pipeline failure;
- h) Procedures for auditing set-up and operation of the irrigation systems to assess compliance with the conditions of this consent;
- i) Procedures for reviewing the overall system performance – including frequency of reports to the Bay of Plenty Regional Council regarding complaint frequencies and site upgrades;
- j) Complaint and incident recording and investigation procedures;
- k) Staff training procedures - methods, frequency and how records will be maintained;
- l) A description of the main potential sources of odour emission, a description of any odour mitigation measures and identification of operating procedures and parameters that need to be controlled to minimise emissions (in particular to include the matters listed in the further information received by letter on 1 October 2009, which forms part of the application);

- m) A sampling programme and procedures that meet the requirements of conditions listed under sections 8, 9, 10, 11 and Schedules 4 to 7 of this consent; and
  - n) Other matters not currently covered by the Management Plans but that form requirements of this consent, such as protection of well-heads from contamination; preventing soil damage; and the development of riparian management plans for watercourses on irrigation properties pursuant to condition 15.2 and condition 15.3 of this consent.
- 5.2 Irrigation of wastewater and maintenance of the irrigation system shall be undertaken in accordance with the most current and approved version of the Management Plans required by condition 5.1 of this consent.
- 5.3 The Management Plans required by condition 5.1 of this consent shall be reviewed by the consent holder at least once every year to ensure that they reflect best management practices. Any proposed changes to the Management Plans that may affect the consistency of the Management Plans with the conditions of this consent shall be submitted to the Chief Executive of the Bay of Plenty Regional Council or delegate for approval. Changes shall not be implemented until approval has been received in writing (see Advice Note 10).
- 5.4 Wastewater shall not be applied to areas that have also received dairy-effluent irrigation at any time within the preceding 12 months.
- 5.5 The consent holder shall ensure that no wastewater will reach surface waters as a result of overland flow, sub-surface drainage or discharges from irrigation pipe-work, hydrants or irrigators, spray irrigation outlets or truck spreading (see Advice Note 11).
- 5.6 The irrigation of wastewater shall not result in significant ponding of wastewater. For the purpose of this consent, significant ponding is deemed to have occurred if wastewater remains on an area of more than 10 square metres, 24 hours after irrigation of that area ceased.
- 5.7 The soil and pasture system in the irrigation areas shall be managed in a way that minimises organic nitrogen mobilisation in the soil.
- 5.8 Wastewater shall not be applied within the buffer zones identified in condition 5.9. (See Advice Note 5). The distance of the irrigator or spray irrigation outlet from the buffer zone shall be increased if necessary (for example in windy conditions) to ensure that spray-drift does not encroach into the buffer zone.
- 5.9 The consent holder shall ensure that the following buffer zones are maintained at all times during irrigation operations:
- a) A buffer zone no less than 10 metres wide between the sprayed irrigated area and any stream or drain; and
  - b) A buffer zone no less than 10 metres wide between the sprayed irrigated area and property boundaries (except where that property is identified in Schedule 1 or 2 or the written approval to a lesser buffer has been received by the Bay of Plenty Regional Council from the owner and occupier of the neighbouring property); and
  - c) A buffer zone no less than 60 metres wide between the sprayed irrigated area and any residential dwelling (except where that property is identified in Schedule 1 or 2 or the written approval to a lesser buffer has been received by

the Bay of Plenty Regional Council from the owner and occupier of the neighbouring property).

- d) A buffer zone no less than 50 metres wide between the sprayed irrigated area and a water supply bore which is used to supply drinking water to either stock or for human consumption.
- 5.10 If any irrigation system is also used to distribute water, a backflow preventer manufactured in accordance with AS 2845.1 (1998) or an equivalent standard, shall be installed within the pump outlet or plumbing to prevent the backflow of water or contaminants into the water source.
- 5.11 The consent holder shall ensure that the wastewater discharged by irrigation does not cause pasture-burn to the extent that it has the potential to have an adverse effect on the productivity of the pasture that has been irrigated.
- 5.12 Where the natural infiltrative capacity of the soil has been impeded through the accumulation of sodium (as identified by the monitoring required by condition 11.1 of this consent), the consent holder shall apply an appropriate soil conditioner. Soil conditioning shall be undertaken as soon as practicable in a manner that minimizes the instantaneous load of sodium displaced to groundwater, and at least within one year of identification of sodium accumulation.
- 5.13 Any pipelines crossing drains or watercourses shall be constructed to a suitable standard to minimise the chances of pipe failure. At each pipeline crossing external to the farms, a sign shall be installed detailing pipeline contents and contact phone numbers in case of leakage or breakage.
- 5.14 The consent holder shall not make any changes to the discharges authorised by this consent that will or are likely to change the nature of the discharges or their effect on the environment without first notifying the Chief Executive of the Bay of Plenty Regional Council or delegate. (See Advice Notes 1 and 3).

## **6 Contingency Measures**

- 6.1 The consent holder shall install and maintain an alarm and automatic switch-off system as a contingency measure to detect irrigation system failures.

## **7 Odour Management**

- 7.1 The land disposal systems shall be operated and maintained in a manner that ensures there is no offensive or objectionable odour at or beyond the irrigation property boundaries (as defined in Schedules 1 and 2). (See Advice Note 6).
- 7.2 Irrigation lines shall be flushed with clean water once spraying of wastewater for a particular season has been completed.
- 7.3 The consent holder shall ensure that the wastewater storage silos are cleaned on a regular basis so as to prevent the generation of odour that may breach condition 7.1 of this consent. Any solid material removed is to be disposed of at an authorised disposal site and not to any land that currently receives any waste products such as dairy effluent, whey or wastewater.

- 7.4 The consent holder shall circulate the Complaints Procedure to residents of properties neighbouring irrigation areas within one month of the Management Plans required by condition 5.1 of this consent being approved. The consent holder shall circulate updated Complaints Procedures as required.

## **8 Wastewater Monitoring**

- 8.1 The consent holder shall characterise the nature of the medium and high strength wastewater in accordance with the monitoring programme attached as Schedule 4 to this consent.
- 8.2 The consent holder shall maintain a weather station at its Omeheu Farm for the purpose of recording daily rainfall. The consent holder shall record the daily rainfall and report (in accordance with condition 8.3) all days on which rainfall and wastewater irrigation coincide.
- 8.3 The volume of wastewater discharged each day, the area irrigated, and the paddock(s) irrigated (listed by farm and paddock number) shall be measured and recorded daily for the medium strength irrigation scheme.
- 8.4 The consent holder shall measure and record the daily volume of high strength wastewater discharged by each of the high strength irrigation schemes.
- 8.5 The consent holder shall measure and record the equivalent depth of application of the high strength wastewater applied by travelling irrigator for all farms receiving high strength wastewater at least once every three months.
- 8.6 The quantity of wastewater discharged by truck each day, the area irrigated, and the properties and paddocks onto which material is discharged shall be measured and recorded daily whenever wastewater is disposed of to land using trucking.
- 8.7 The daily records kept in accordance with conditions 8.2 to 8.6 of this consent shall be kept by the consent holder and shall be made available for inspection by Bay of Plenty Regional Council staff upon request.

## **9 Groundwater Monitoring**

- 9.1 The consent holder shall maintain the groundwater monitoring bores (identified in Schedule 3 of this consent) to the satisfaction of the Chief Executive of the Bay of Plenty Regional Council or delegate.
- 9.2 The consent holder shall notify the Chief Executive of the Bay of Plenty Regional Council or delegate within one week of detection of an issue (such as damage) that makes a monitoring bore unusable for monitoring purposes. Any bores that cannot be used for monitoring purposes (for example due to damage) shall be repaired or replaced within three months (unless otherwise agreed to in writing by the Chief Executive of the Bay of Plenty Regional Council or delegate).
- 9.3 Prior to commissioning the additional medium strength wastewater irrigation areas proposed in the application (which are marked with an asterisk in Schedule 1, Table 2 to this consent), the consent holder shall submit proposed locations of additional groundwater monitoring bores and any changes required to the location of current

monitoring bores to enable characterisation of groundwater quality up and down gradient of the additional and existing irrigation areas. The additional irrigation areas shall not be commissioned until the Chief Executive of the Bay of Plenty Regional Council or delegate has approved the location of the additional monitoring bores. (See Advice Notes 1, 7 and 8).

- 9.4 The consent holder shall investigate possible locations for installing one groundwater monitoring bore between the areas of irrigation to the east of the Rangitaiki River and the Rangitaiki River for the purpose of intercepting any groundwater flow from the irrigation areas to the river. The consent holder shall supply a report on this investigation and a recommendation as to the preferred location of the groundwater monitoring bore to the Chief Executive of the Bay of Plenty Regional Council or delegate for approval of the proposed bore location within 6 months of the granting of this consent. If approval is granted the consent holder shall, within 6 months of approval being given, install the bore at the approved location. If installed this groundwater monitoring bore shall be added to the groundwater monitoring wells listed in Schedule 3.
- 9.5 The groundwater monitoring bores specified in conditions 9.1, 9.3 and 9.4 shall be levelled to Moturiki Datum.
- 9.6 The consent holder shall undertake groundwater monitoring in accordance with the monitoring programme attached as Schedule 5 to this consent, in order to characterise the nature of any effects on groundwater resulting from the irrigation operations authorised by this consent.
- 9.7 The consent holder shall engage a suitably qualified and experienced person to compare the groundwater quality data collected to background groundwater quality, current drinking water standards and historic groundwater data at least once every two years. The consent holder shall submit a report to the Chief Executive of the Bay of Plenty Regional Council or delegate that includes, but is not limited to:
- a) A description of groundwater quality trends;
  - b) Any exceedances of the drinking water standards and an explanation for those exceedances; and
  - c) What (if any) action is required to avoid, remedy or mitigate adverse effects on groundwater quality resulting from the irrigation activities, or to refine the monitoring programme to ensure that potential effects are identified.

## **10 Surface Water Quality Monitoring**

- 10.1 The consent holder shall establish surface water monitoring points at a minimum of three points along the Awaiti Canal (that runs adjacent to Awaiti South and North Roads) and submit details of these locations, including GPS references to the Bay of Plenty Regional Council. The sampling points shall be to the satisfaction of the Chief Executive of the Bay of Plenty Regional Council or delegate, and shall include at least one site upstream of all current and proposed irrigation activities, one site downstream of all current and proposed irrigation activities and one site immediately downstream of the confluence of the western arm of the Awaiti Canal (approximate grid reference 2843150, 6354500).
- 10.2 The consent holder shall undertake surface water monitoring in accordance with the monitoring programme attached as Schedule 6 to this consent, in order to characterise the nature of any effects on surface water resulting from the irrigation operations authorised by this consent.

10.3 The consent holder shall engage a suitably qualified and experienced person to compare the surface water quality data collected to current ANZECC water quality guidelines, water standards set in any relevant regional plan and historic Rangitaiki Plains surface water quality data at least once every two years. The consent holder shall submit a report to the Chief Executive of the Bay of Plenty Regional Council or delegate that includes, but is not limited to:

- a) A description of surface water quality trends;
- b) Any exceedances of the relevant guidelines and standards and, where possible, an explanation for those exceedances; and
- c) What (if any) action is required to avoid, remedy or mitigate adverse effects on surface water quality resulting from the irrigation activities or refine the monitoring programme to ensure that potential adverse effects are identified.

## 11 Soil Monitoring

11.1 The consent holder shall undertake soil monitoring in accordance with the monitoring programme attached as Schedule 7 to this consent, in order to characterise the nature of any effects on soil quality resulting from the irrigation operations authorised by this consent.

11.2 Within 12 months of the commencement of this consent, the consent holder shall install soil moisture measuring equipment at a location on the Fonterra Omeheu Farm that is capable of measuring the field capacity of the soil. This location shall be agreed in advance with the Chief Executive of the Bay of Plenty Regional Council or delegate. Once the equipment has been installed, soil moisture shall be measured and recorded daily by the consent holder.

11.3 The consent holder shall engage a suitably qualified and experienced person to compare the soil quality collected to the *Provisional Soil Quality Indicators in New Zealand, Landcare Science Research Series No.34, Sparling 2008* (or other appropriate standards as agreed with the Bay of Plenty Regional Council) and historic soil quality data at least once every two years. The consent holder shall submit a report to the Chief Executive of the Bay of Plenty Regional Council or delegate that includes, but is not limited to:

- a) A description of soil quality and soil analyses data trends and how these trends might impact on soil quality or structure;
- b) Any exceedances of the soil quality standards and an explanation for those exceedances;
- c) What (if any) action is required to avoid, remedy or mitigate adverse effects on soil quality resulting from wastewater irrigation, or refine the monitoring programme to ensure that potential effects are identified.

## 12 Reporting and Record Keeping

12.1 The results of sampling undertaken in accordance with Schedules 4 to 7 of this consent shall be forwarded to the Bay of Plenty Regional Council within one month of receipt of the results. Results shall be provided in an electronic format to the satisfaction of the Chief Executive of the Bay of Plenty Regional Council or delegate.

- 12.2 The consent holder shall provide the following information to the Bay of Plenty Regional Council by the 21<sup>st</sup> of each month:
- a) The amount of Nitrogen and Phosphorus applied in the preceding month per farm as a result of medium strength water irrigation, to be expressed as kgN/ha and kgP/ha; and
  - b) The amount of Nitrogen and Phosphorus applied per irrigation scheme in the preceding month as a result of high strength water irrigation, to be expressed as kgN/ha and kgP/ha; and
  - c) The cumulative amount of nitrogen and phosphorus applied as a result of medium and high strength wastewater irrigation over the irrigation season (up to and including data from the preceding month), to be expressed as kgN/ha and kgP/ha.
- 12.3 The consent holder shall provide the following information to the appropriate landowner/occupier of the receiving environment at least once in any twelve month period:
- a) The amount of Nitrogen and Phosphorus applied in the preceding month per farm as a result of medium strength water irrigation, to be expressed as kgN/ha and kgP/ha; and
  - b) The amount of Nitrogen and Phosphorus applied per irrigation scheme in the preceding month as a result of high strength water irrigation, to be expressed as kgN/ha and kgP/ha; and
  - c) The cumulative amount of nitrogen and phosphorus applied as a result of medium and high strength wastewater irrigation over the irrigation season (up to and including data from the preceding month), to be expressed as kgN/ha and kgP/ha.
- 12.4 By 30 September each year, the consent holder shall submit an annual report for the activities authorised by this consent to the Chief Executive of the Bay of Plenty Regional Council or delegate. This report shall include, but not be limited to, the following:
- a) The results of all monitoring required by the conditions of this consent undertaken in the previous 12 months (and not already provided);
  - b) Recommendations on alterations or additions to the monitoring programmes attached as Schedules 4 to 7 to this consent;
  - c) An assessment of the extent to which the discharges complied with the limits specified in this consent, and reasons for any non-compliances and what steps have been taken to mitigate the adverse environmental effects (if any) associated with non-compliance and prevent future reoccurrence;
  - d) A report and discussion on any proposed operational changes at the Edgecumbe Dairy Manufacturing Plant that may result in a notable variation of wastewater volume or characterisation;
  - e) An analysis of any trends evident from the monitoring data, particularly in comparison to previous year's monitoring. This analysis should also incorporate the requirements of conditions 9.7, 10.3 and 11.3 of this consent (only required every second year);
  - f) A report on and discussion of any complaints received (see condition 14.1) or incidents (see condition 1.2) that have occurred in relation to the wastewater

irrigation and truck-spreading operations. If no complaints and/or incidents have occurred then this should be noted in the report;

- g) Discussion of feedback received from any community liaison activities undertaken by the consent holder;
- h) Any actions recommended under conditions 9.7, 10.3 or 11.3 shall be reported back to Bay of Plenty Regional Council with the consent holders recommendations and options for implementation; and
- i) Any other issue considered important by the author.

12.5 By 1 September 2014, 1 September 2019, 1 September 2024 and 1 September 2029, the consent holder shall provide to the Chief Executive of the Bay of Plenty Regional Council or delegate, a report that assesses whether waste disposal is being undertaken in accordance with the best practicable option(s) to minimise adverse environmental effects and generation of wastewater. A suitably qualified and experienced specialist(s) shall undertake the assessment required by this condition, which shall be to the satisfaction of the Chief Executive of Bay of Plenty Regional Council or delegate. The report submitted to the Bay of Plenty Regional Council shall address, but not necessarily be limited to, the following:

- a) An assessment of the consistency of the current method of disposal with any relevant national standards, codes of practice or industry guidelines in effect at that time;
- b) A summary of any actual or potential effects of the continued discharge of wastewater to land, irrespective of whether those effects are in accordance with the conditions of this consent;
- c) An outline of technological changes and advances in relation to dairy manufacturing wastewater management, treatment and disposal which may be available to address the identified adverse effects;
- d) An assessment of whether any such options or combination of options represent the Best Practicable Option to minimise the effects of the discharge and to minimise the production of wastewater (and thereby disposal to land); and
- e) Whether and when (if applicable) the consent holder intends to incorporate such changes.

## **13 Maintenance**

13.1 All equipment that forms part of the wastewater irrigation systems (including truck tanks) shall be maintained in good working order and to the satisfaction of the Chief Executive of the Bay of Plenty Regional Council or delegate

13.2 The consent holder shall undertake inspections of all irrigation pipe-work and associated distribution network at least twice every year. At least one inspection shall be completed prior to the irrigation commencing at the start of the dairy manufacturing season, and the second inspection undertaken during the period 1 November to 29 February inclusive. The inspections shall be undertaken to check for leaks or any other event likely to cause the unintended discharge of wastewater. Records of these inspections shall be made available to the Bay of Plenty Regional Council officers upon request.

13.3 The consent holder shall undertake any maintenance works required as soon as possible to ensure that the requirements of this consent are satisfied.

## 14 Complaints and Incidents

14.1 The consent holder shall keep and maintain a register of all complaints it receives that relate to the discharges authorised by this consent. The following information shall be recorded:

- a) Time and date of complaint.
- b) Name and address of complainant (if provided).
- c) The site about which the complaint was made.
- d) The weather conditions at the time of complaint.
- e) The nature of the complaint.
- f) Any events in the management and operation of irrigation or trucking processes that may have given rise to the complaint.
- g) Any remedial actions taken by the consent holder.

Complaint records shall be kept by the consent holder and shall be submitted to the Bay of Plenty Regional Council upon request.

14.2 The consent holder shall notify the Chief Executive of the Bay of Plenty Regional Council or delegate using the Pollution Hotline (0800 73 83 93) as soon as practicable, and at least within 2 hours, of any event or incident that has or is likely to result in any conditions of this consent being breached.

14.3 The consent holder shall establish a Community Liaison Group (CLG) within 6 months of the granting of this consent to which the following shall be invited:

- submitters on this consent (and/or consent 62522);
- neighbours who adjoin irrigated properties;
- the owners of land subject to Fonterra's irrigation activities;
- Ngati Awa and Ngati Tuwharetoa; and
- Bay of Plenty Regional Council.

a) The role of the CLG is to provide a forum:

- To facilitate communication and dialogue between the consent holder, the community and the Bay of Plenty Regional Council;
- To facilitate communication arising from the consent holder's irrigation operation (including, the results of monitoring, concerns and complaints of residents, and aspects of non-compliance (if any) and means of alleviating them).

b) The consent holder shall ensure that meetings of the CLG are held at least every six months. Representatives of the consent holder shall attend all meetings of the CLG. Meetings of the CLG are to be open to any member of the public to attend.

## 15 Riparian Management

15.1 The consent holder shall prevent all stock access, from properties owned by the consent holder, to surface water bodies. Stock shall be excluded by the installation

of fencing or any other method that effectively prevents stock accessing surface water bodies.

15.2 The consent holder shall, on properties owned by the consent holder, develop a riparian management plan for watercourses traversing and immediately adjacent to the irrigation areas.

15.3 The consent holder shall, in conjunction with landowners, develop a riparian management plan for watercourses traversing and immediately adjacent to the irrigation areas. For the avoidance of doubt, the consent holder shall not be considered to be in non compliance with this condition if individual landowners (other than the consent holder) are unwilling to participate.

## 16 Review Conditions

16.1 The Bay of Plenty Regional Council may, at any time within three months of the fifth, tenth, fifteenth or twentieth anniversary of the grant of this consent, or within three months of receiving a report under condition 12.4, serve notice on the consent holder under section 128 of the Resource Management Act of its intention to review the conditions of this consent for any of the following purposes:

- a) To deal with an 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) To require the consent holder to adopt the best practicable option to remove or reduce an adverse effect on the environment; or
- c) To review the adequacy of, and necessity for, the monitoring required to be undertaken by the consent holder; or
- d) To provide for compliance with any regional plan that sets rules relating to minimum standards or water quality or air quality and that has been made operative since the grant of this consent; or
- e) To ensure that the consent conditions are consistent with any relevant national environmental standards.

16.2 The consent holder shall pay to the Bay of Plenty Regional Council the actual and reasonable costs incurred whilst undertaking a review of consent conditions in accordance with condition 16.1 of this consent.

## 17 Term of Consent

This consent shall expire on 31 December 2034.

## 18 Resource Management Charges

The consent holder shall pay the Bay of Plenty Regional Council such administrative charges as are fixed from time to times by the Bay of Plenty Regional Council in accordance with section 36 of the Resource Management Act 1991.

19 **The Consent** hereby authorised is granted under the Resource Management Act 1991 and does not constitute an authority under any other Act, Regulation or Bylaw.

## Advice Notes:

- 1) *Notification/Reporting required by consent conditions shall be directed (in writing) to: The Manager Pollution Prevention, Environment Bay of Plenty Regional Council, PO Box 364, Whakatane 3158 or fax 0800 368 329 or email notify@envbop.govt.nz. This notification should include the consent number 65800.*
- 2) *The contact identified in condition 3.1 of this consent will be the primary contact for Bay of Plenty Regional Council staff for compliance monitoring purposes and in the event of an incident or complaint. Nothing in that condition removes or limits the consent holder's liability to ensure compliance with the consent and its conditions.*
- 3) *Any significant changes to the irrigation system or irrigable areas that were not included in the consent application lodged on 15 July 2009 may require a change of consent conditions or a new consent.*
- 4) *New irrigation properties will be added to the relevant Schedule(s) of this consent. In some circumstances this may need a formal change to the consent conditions.*
- 5) *The buffer zone is measured from where the wastewater is discharged to land and not the position of the irrigator. The discharge must cease or the volume of discharge reduced or irrigator moved when necessary to meet conditions 5.8 and 5.9.*
- 6) *Bay of Plenty Regional Council will consider an odour effect to be offensive or objectionable to have occurred if any appropriately experienced council officer seems it so after having regard to:*
  - a) *The frequency, intensity, duration, nature of odour and location of the effect(s); and/or*
  - b) *Relevant written advice from an Environmental Health Officer, territorial authority of health authority.*
- 7) *Once approved, the additional monitoring bores will be added to Schedule 3. The consent holder may also propose that existing monitoring bores be removed from the Schedule as part of this process.*
- 8) *Additional consents may be required to drill new monitoring bores or replace existing bores.*
- 9) *Failure to comply with the conditions of this consent may result in enforcement action being taken. Therefore, it is advised that all staff, and contractors, associated with the wastewater disposal system be made aware of the requirements of this consent.*
- 10) *The Bay of Plenty Regional Council does not anticipate being asked to review and approve administrative changes or corrections to typographical errors with regard to the Management Plans required by this consent.*
- 11) *Non-return valves and other appropriate technology can be used to prevent the incidental discharge of wastewater following disconnection of pipe-work.*

- 12) *The consent holder will use best endeavours to ensure that staff comply with the relevant clauses in the Management Plans relating to spotlights. Of particular concern is Clause (iv), which reads: "When operating at night, be mindful of the vehicle spotlights illuminating the neighbours house. This is particularly disconcerting if the lights are left shining into a neighbour's house for any length of time. A vehicle should be turned to minimise this nuisance."*
  
- 13) *The Bay of Plenty Regional Council recognises the importance of the consent holder managing and operating the wastewater irrigation system on a day-to-day basis and the benefits that have been gained since the consent holder took over this management from individual landowners.*

## SCHEDULE 1

### PROPERTIES ONTO WHICH MEDIUM STRENGTH WASTEWATER IS IRRIGATED AND PROPOSED TO BE IRRIGATED

#### 1. Property Legal Descriptions:

Parties	Legal Description	Area (Ha)	Title Ref	Address
Fonterra (Omeheu Farm)	Pt lot 3 & 4 DP 19552	38.4375	816/123	Omeheu Road
	Lot 3 DP 21192	11.8747	624/3	Omeheu Road
	DP 24954	16.1874	6512/182	Omeheu Road
Fonterra (Brophy Block)	Lot 2 DP 377149	29.8992	310012	Awaiti South Road
	Lot 4 DP 21027	22.6881	25A/1218	
McLean F A & Searle G G	Lot 1 DPS 71866	11.1076	57D/166	Awaiti South Road
	Lot 2 DPS 71866	23.0185	57D/167	Awaiti South Road
AB & MI McLean	Lot 1 DPS48858	7.3349	42C/312	Awaiti South Road
	Lot 1 DP 21931	75.0482	42C/312	Awaiti South Road
Mullins P J & K J*	Lot 1 DP 350387	8.7280	SA639/216	Awaiti South Road
	Lot 1 DPS 29959	21.1650	206081	Awaiti South Road
Shakes*	Lot 2 DP 62758	60.9487	SA50C/438	Awaiti South Road
Woods B H & JF "Dreamfields Family Trust"	Lot 2 DP 333367	63.278	136786	Grieve Road
Gow Family Trust*	Lot 3 DP 21027	66.9577	25A/1217	Awaiti North Road
	Lot 2 DP 21027	60.6649	487/134	Awaiti North Road
	Lot 1 DP 21027	40.4584	10D/1349	Awaiti North Road
	Lot 2 DPS 16556	48.1575	36D/854	Awaiti North Road

\* Proposed additional irrigation areas

#### 2. Summary of Irrigation Properties and Land Area over which irrigation occurs and is proposed to occur

Farm	Owned by	Irrigation Land area (ha)	Irrigation type
Omeheu	Fonterra	51	Fixed In-ground
Brophys	Fonterra	41	Fixed In-ground
McLeans	Private Farm	40	Fixed In-ground
Mullins*	Private Farm	67	Pod system
Gow*	Private Farm	80	Pivot combined with movable sprinklers
Woods*	Private Farm	39	Pivot combined with movable sprinklers
<b>Total</b>		<b>318</b>	

\* Proposed additional irrigation areas

## SCHEDULE 2

### PROPERTIES ONTO WHICH HIGH STRENGTH WASTEWATER IS IRRIGATED (AWAROA AND OMEHEU FERTILISER SCHEMES)

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#### 1. Property Legal Descriptions:

Owner	Legal Description
Morgan	ALLT 148 Rangitaiki PSH
	ALLT 146 Rangitaiki PSH
	LOT 1 DPS 92285
Baird	ALLT 282 Rangitaiki PSH
Walker	LOT 9 DPS 28741
	LOT 13 DPS 28742
	LOT 12 DPS 28742
	LOT 6 DPS 53150
	LOT 5 DPS 53150
Oliver	LOT 1 DPS 25935
	LOT 3 DP 9093
	ALLT 152 Rangitaiki PSH
MacDonald (Angle Park Ltd)	LOT 2 DP 9896
	LOT 3 DP 9896
	LOT 2 DP 9896
	LOT 1 DP 9896
	LOT 2 DPS 15867
	LOT 3 DP 10444
	LOT 6 DP 9896
	LOT 2 DP 10444
Carter- Brian	PT LOT 2 DP 32694
	PT LOT 1 DP 32694
Barr	PT ALLT 1 Rangitaiki PSH
	LOT 2 DP 22567
	ALLT 12B2B Rangitaiki PSH
	LOT 1 DPS 77635
Campbell	LOT 2 DPS 3619
	LOT 2 DPS 81525
	PT LOT 2 DP 18069
	ALLT 164 Rangitaiki PSH
	PT ALLT 87 Rangitaiki PSH
Reeves	LOT 5 DPS 70925
	LOT 3 DPS 70925
	PT ALLT 87 Rangitaiki PSH
	LOT 2 DPS 15170
	LOT 4 DPS 70925
	LOT 1 DPS 70925
	LOT 6 DPS 70925
	LOT 4 DPS 9156
Haultain	LOT 3 DPS 57409
	1B4 Omataroa
	PT 1A Omataroa
Zink	1B2B2 Omataroa
	PT LOT 5 DPS 57409
	LOT 2 DP 16162
	LOT 1 DP 33363
	(3A1A&B)1B Omataroa

Owner	Legal Description
Zink (continued)	LOT 4 DPS 57409
	(3A1A&B)1A Omataroa
	1B2A Omataroa
	1B2B1 Omataroa
Ngati Awa farms	6A Omataroa
	PT 1B5B Omataroa
	PT LOT 1 DPS 30796
McCracken- William	LOT 2 DP 36308
McCracken- Bernard	PT LOT 1 DP 36308
Fonterra- Awaroa	LOT 4 DPS 33289
	PT LOT 1 DPS 33289
	LOT 3 DPS 33289
	LOT 5 DPS 33289
	LOT 2 DPS 33289
	PT LOT 2 DP 33506
Gow	PT LOT 1 DP 21192
	LOT 5 DP 21192
Martin	LOT 1 DP 330781
	LOT 1 DP 365672
	LOT 3 DP 365672
	LOT 2 DP 365672
Watkins	LOT 2 DPS 81986
	PT LOT 1 DP 22903
	LOT 2 DP 22903
Virbickas	SECT 1 SO 50615
	LOT 1 DPS 5827
	LOT 1 DPS 91296
	SECT 2 SO 50615
	ALLT 256 Matata PSH
	PT LOT 2 DPS 5827
	ALLT 199 Matata PSH
	LOT 4 DPS 62758
	LOT 2 DPS 91296
	PT ALLT 257 Matata PSH
	LOT 2 DP 366378
LeLievre	LOT 1 DPS 75379
	LOT 4 DPS 15910
	LOT 1 DPS 75292
	LOT 2 DPS 75292
	LOT 5 DPS 15910
	PT LOT 6 DPS 15910
B Sullivan	Lot 1 DPS 88398
Bradley	Pt lot 4 DP 18069
	Lot 1 DPS 35290
	Lot 2 DPS 35290
	Allot 289 Rangitaiki Parish (SO 50006)
	Allot 287 Rangitaiki Parish (SO 50005)
	Allot 307 Rangitaiki Parish (SO 50866)

## 2. Summary of Irrigation Properties and Land Area over which irrigation occurs

Line	Current Land owner	No. Irrigators	Irrigable area 2009/10
Angle	BAIRD	1	37
	OLIVER	2	82
	B. McCRACKEN	1	43
	CARTER	2	49
	MacDONALD	2	62
	WALKER	2	67
Awakeri	BARR	1	47
	BRADLEY	1	35
	CAMPBELL	1	79
	SULLIVAN	1	46
	REEVES	1	94
	NGATI AWA	1	120
	W. McCRACKEN	1	52
	ZINK	2	65
	HAULTAIN	1	39
			577
Omeheu	VIRBICKAS	2	105
	GOW	2	48
	MARTIN	1	38
	WATKINS	2	87
	LELIEVRE	3	144
Putiki	AWAROA	1	58
	MORGAN	2	60
	OLSEN	1	37
	LANGDON	1	12
<b>Total</b>		<b>36</b>	<b>1506</b>

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### SCHEDULE 3

#### GROUNDWATER MONITORING BORES ASSOCIATED WITH THE FONTERRA EDGE CUMBE IRRIGATION OPERATIONS

Bore identification number or description	Physical location	GPS Coordinates	
Bore 1	Omeheu Zone 8	37°57.312S	176°47.108E
Bore 2	Omeheu Zone 2	37°57.686S	176°47.542E
Bore 3	McLeans Zone 4	37°57.607S	176°47.292E
Bore 4	Omeheu Zone 7	37°57.672S	176°46.816E
Bore 5	Omeheu Zone 1	37°57.927S	176°47.542E
Bore 6	McLeans Zone 6	37°58.399S	176°46.750E
Bore D1	Corner Omeheu Rd and SH2	37°57.775S	176°48.130E
Bore D2	Corner Gow Rd and SH2	37°57.771S	176°48.185E
Mullins 21800	Awaiti Rd South	37°57.380S	176°46.810E
Sturme 21747	State Highway 2 – north side	37°57.604S	176°47.907E
Orr 21854	Omeheu Road - cowshed	37°58.180S	176°47.948E
Ngati Awa (Skillings)	Hydro Road	38°00.842S	176°49.496E
Awaroa	Eastbank Road – tankerturnaround	37°58.454S	176°49.496E

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## SCHEDULE 4

### WASTEWATER MONITORING PROGRAMME

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1. The consent holder shall undertake the sampling and analyses for both the medium strength and high strength wastewater are provided in Table 1, unless otherwise agreed to in writing by the Chief Executive of the Bay of Plenty Regional Council or delegate:

Frequency	Sample Type	Parameters
Weekly	24 hour composite samples	Total Kjeldahl Nitrogen Nitrate-nitrogen Nitrite- nitrogen
Monthly	24-hour composite	Sodium Calcium Chloride Potassium Magnesium Total phosphorus COD Total BOD <sub>5</sub> Conductivity pH

The requirements for analyse the wastewater for BOD may be dropped after a two year sampling period if a good condition correlation between COD and BOD can be demonstrated by the consent holder.

2. Sample collection, storage, analyses and reporting of results shall be carried out in accordance with sections 1 and 10 of the *Australian/New Zealand Standard AS/NZS 5667:1998 Water Quality – Sampling* (unless otherwise agreed to in writing by the Chief Executive of the Bay of Plenty Regional Council or delegate).

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## SCHEDULE 5

### GROUNDWATER MONITORING PROGRAMME

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1. The water level, corrected to the Moturiki datum, in the groundwater monitoring bores shall be measured and recorded at least once in February, April, June, August, October, December of each year.
2. A representative sample of water from each of the groundwater monitoring bores shall be collected and analysed for the following constituents:

<b>Parameter</b>	<b>Units</b>
Conductivity	mS/m
Total nitrogen	mg/L
Nitrate-nitrogen	mg/L
Total phosphorus	mg/L
Dissolved reactive phosphorous	mg/L
Sodium	mg/L
Potassium	mg/L
Calcium	mg/L
Total BOD <sub>5</sub>	mg/L
pH	

3. The consent holder shall undertake the monitoring required by condition 3 of this Schedule, within 24 hours of the soil moisture measuring equipment required to be installed by condition 11.2 of this consent indicating field capacity has been exceeded. This monitoring shall be undertaken up to 3 times per year, and if possible 2 of these monitoring events being undertaken in the winter and spring periods. The consent holder shall by 30 November notify the Bay of Plenty Regional Council if soil moisture conditions in the winter and spring periods have not exceeded the soil field capacity.
4. Sample collection, storage, analyses and reporting of results shall be carried out in accordance with sections 1 and 10 of the *Australian/New Zealand Standard AS/NZS 5667:1998 Water Quality – Sampling* (unless otherwise agreed to in writing by the Chief Executive of the Bay of Plenty Regional Council or delegate).

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## SCHEDULE 6

### SURFACE WATER MONITORING PROGRAMME

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1. A representative sample of water from each of the surface water monitoring points identified in condition 10.1 shall be collected in February, April, June, August, October, December of each year and analysed for the following parameters:

<b>Parameter</b>	<b>Units</b>
Conductivity	mS/m
Dissolved oxygen	mg/L
Temperature	°C
Total nitrogen	mg/L
Nitrate-nitrogen	mg/L
Nitrite-nitrogen	mg/L
Ammonium-nitrogen	mg/L
Total Kjeldahl nitrogen (TKN)	mg/L
Dissolved Reactive Phosphorus	mg/L
Sodium	mg/L
Total BOD <sub>5</sub>	mg/L
Total suspended solids	mg/L
pH	Mg/L

The depth of water in the drain and any visual observations of a general nature shall be recorded.

2. Sample collection, storage, analyses and reporting of results shall be carried out in accordance with sections 1 and 6 of the *Australian/New Zealand Standard AS/NZS 5667:1998 Water Quality – Sampling* (unless otherwise agreed to in writing by the Chief Executive of the Bay of Plenty Regional Council or delegate).

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## SCHEDULE 7

### SOIL MONITORING PROGRAMME

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1. Prior to the commencement of spraying each season, the consent holder shall take a representative soil sample from each irrigation farm, identified in Schedule 1, from each of the main soil types at a depth of 0-7.5cm. These samples shall be analysed for the following parameters:

<b>Parameter</b>	<b>Units</b>
pH	
Olsen phosphorus	mg/kg
Total carbon	%
Total nitrogen	%
Exchangeable potassium	meq/100g
Exchangeable calcium	meq/100g
Exchangeable magnesium	meq/100g
Exchangeable sodium	meq/100g
Total extractable copper	mg/kg
Sodium adsorption ratio	
Sulphate-S	mg/kg
Salinity or electrical conductivity	mS/m

2. Prior to the commencement of spraying each season, the consent holder shall take a representative soil sample, at a depth of 0-7.5cm, from two of the irrigation farms from each of the travelling irrigator schemes (Putiki, Awakeri, Angle Road, Omeheu), (eight farms are to be sampled in total), identified in Schedule 2. The consent holder shall identify from which soil type each sample is taken. These samples shall be analysed for the following parameters:

<b>Parameter</b>	<b>Units</b>
pH	
Olsen phosphorus	mg/kg
Total carbon	%
Total nitrogen	%
Exchangeable potassium	meq/100g
Exchangeable calcium	meq/100g
Exchangeable magnesium	meq/100g
Exchangeable sodium	meq/100g
Total extractable copper	mg/kg
Sodium adsorption ratio	
Sulphate-S	mg/kg
Salinity or electrical conductivity	mS/m

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- 3.** The consent holder shall monitor the microbiological properties of soils on farms receiving medium strength wastewater and high strength wastewater, against similar soils receiving no wastewater irrigation. This monitoring shall be undertaken in 2015 and 2025 and shall attempt to replicate the monitoring undertaken by Fonterra and Landcare Research (and referred to on pages 55-58 of the application) at the Edgecumbe site (Awaiti and Paroa soils). This monitoring shall, as a minimum, include the following parameters:

  - a) Basal respiration;
  - b) Microbial biomass;
  - c) Mineralisable N;
  - d) Nitrification potential; and
  - e) Denitrification potential.
  
- 4.** Sample collection, storage, analyses and reporting of results shall be carried out to a recognised standard to the satisfaction of the Bay of Plenty Regional Council.