REPORT

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Subject: Key wastewater discharge consents granted in the Otago Region in the past 10 years

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1. Précis

In the past 10 years many wastewater discharge consent applications have been processed by the Council. In addition to following consent process procedures under the Resource Management Act (RMA) there has been a conscious effort to improve historical and poor quality wastewater discharges. This report provides discharge consent process, a collation of all key waste water discharges granted by the Council in the past 10 years, and the methods and principles used to achieve significantly improved discharge quality. The paper uses several consent applications as examples to demonstrate how consent process could be used successfully in dealing with complex land and water discharges of wastewater.

2. Introduction

Based on the origin, wastewater is widely classified as farm, septic tank, municipal and industrial. Since the enactment of the Resource Management Act (RMA) 1991 there has been an increased focus on wastewater discharges (i.e. point source discharges). It has been nearly two decades since the RMA was enacted. Despite the good progress made by the Council in the first decade, there were still many consented municipal and several consented industrial wastewater discharges that were of poor quality. The treatment of these discharges was substandard and often did not match the scale and environmental risks that arose from the discharges. In many cases the Council was reluctant to impose stringent consent requirements due to financial constraints.

The resource consent process provides an ideal opportunity to address poor wastewater discharges. A resource consent process has to comply with the RMA requirements, otherwise expensive judicial reviews may occur or the community faith in the resource consent process may diminish. It is equally important to also focus on the environmental outcomes of the resource consent decisions. Without sound policies, technical knowledge and common sense, the resource consent process may not always yield the desired environmental outcomes. The exception to this is where a consent applicant voluntarily adopts best practice and promotes high environmental outcomes. This report describes how an outcome based consent process had been used in the past decade in the Otago region to improve discharge quality, and provides a collation of key consents granted during this period.

3. RMA process to deal with consented effluent discharges

What is an acceptable consented wastewater discharge under the Act? This section of the report provides some guidance on acceptable discharges. The guidance is based on

technical information, legal requirement and cultural sensitivity. For example, culturally it is offensive to Maori to discharge municipal or human effluent into waterways because the *mauri* of the water will be affected by this discharge. Under legal requirements for consent processing, compliance with any national environmental standards (NES), regional policies and rules and s15 (in cases where there is no regional rule) and s107 of the RMA provided all relevant provisions are followed as per Part 6 (Resource Consents) of the Act. Technical information enables a decision making process on the nature of the receiving environment, allowable contaminant levels, choice of treatment system or discharge medium, i.e. land or water. Processes for land and water discharges are provided separately in the proceeding sections of the report.

(a) Discharges to water

To meet the cultural requirements of the iwi, ideally a zero discharge to water is preferred particularly with regard to municipal wastewater, otherwise the discharge can be either direct (through pipes or diffusers) or indirect (to trenches). A discharge application will consist of an Assessment of Environmental Effects (AEE). The AEE will describe the discharge quality and any potential adverse effects on the receiving environment. The consent staff will ensure compliance with the s107 of the RMA:

S107 (1) Except as provided in subsection (2), a consent authority shall not grant a discharge permit [or a coastal permit to do something that would otherwise contravene section 15] [or section 15A] allowing-

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

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

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

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

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

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

(e) Any emission of objectionable odour;

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

(g) Any significant adverse effects on aquatic life. ……

S107 must be complied with hence the requirement is **bottom line**. It is easy to misinterpret the above RMA provision, particularly the issue of 'reasonable mixing'. It has been perceived by most RMA practitioners that a mixing zone shall always be provided as a 'non-compliance zone'. In the past, in New Zealand, there have been attempts made by technocrats and bureaucrats to define an acceptable mixing zone. Many consultants still require or recommend the regional councils to grant long mixing zones (several hundred metres).

The Otago Regional Council's (ORC) Regional Plan: Water (Water Plan) has a good policy on mixing zone. The Water Plan Policy 7.7.6 states, "…*where mixing zone is required for the discharge of contaminants to water, to ensure that it is limited to the extent necessary to take account of:*

(a) The sensitivity of the receiving environment;

(b) The natural and human use values identified in Schedule 1;
(c) The natural character of the water body;
(d) The amenity values supported by the water body;
(e) The physical process acting on the area of discharge; and
(f) The particular discharge, including contaminant type, concentration, and volume…"

Notwithstanding the Water Plan policy on mixing zone, the legal advice obtained on reasonable mixing by the Council emphasises that a consent authority could set higher discharge requirements than provided in s107 of the RMA. In other words, if the Council chooses to provide **no** zone of non-compliance in a consent, such a practice will not breach s107. Furthermore, if a Water Plan policy requires a waterway to be managed for a particular use (e.g. contact recreation which may result in some form of contact with water such as swimming, fishing or boating) it is assumed that the whole of the waterway is accessible to the community for contact recreation rather than only some parts. For example, Water Plan Policy 7.6.1 – *To enhance water quality in the following water bodies so that they become suitable to support primary contact recreation: (a) Mill Creek and Lake Hayes…(f) Koau Branch of the Clutha River/Mata-Au…).*

The debate on the length of mixing zone often causes a 'friction' between the applicants and the consent authority. The focus should be on the **extent** of the treatment of a wastewater including the best practicable options and alternatives. The next step is to assess any adverse effects of the discharge including the effects on contaminant assimilation. Poor proposals are easily noticeable and will be based on a philosophy of 'dilution as a solution' and use the available dilution to design a treatment system. If such poor practices are not tackled, it could be argued that a primary treatment system may simply satisfy the requirements of a sewage discharge to a large water body.

(b) Land discharges

Wastewater discharge to land is the preferred option for ORC (Water Plan Policy 7.7.1 - *To promote discharges of contaminants to land in preference to water, where appropriate).* Discharges to land face more challenges in the Otago region for the following key reasons:

- Applicants' and consultants' lack of knowledge;
- Freezing weather conditions; and
- Poor soil infiltration rates.

Land discharges could be classified as land **disposal** and land **treatment**. Often land treatment is confused with land disposal. A typical land treatment system is defined in this report as *that applies pre-treated or raw wastewater to soil to aid bio-chemical processes in soil along with crop/plant uptake of nutrients to minimise or to avoid onsite or offsite contamination*. Therefore, land treatment of wastewater requires consideration to the extent of pre-treatment of wastewater, application methods (e.g. sprinklers verses drips), effects of aerosols (where applicable), contaminant bio-chemical reactions in soil, plant uptake, nutrient budgets, contaminant leaching to groundwater and effects, and any surface water contamination.

In contrast to land treatment systems, in most cases *land disposal* does not require any complex technical expertise. Key information required is infiltration rate which will

dictate the rate of wastewater discharge. Wastewater treatment prior to discharge may require primary or secondary treatment. Often trenches are used to dispose wastewater with sufficient rotation available to avoid clogging. Council does not promote this 'trench technology' because the technology is crude with several uncertainties. However, it may be argued correctly that such a discharge option is still superior to a well treated discharge to water. Land disposal should be assessed on a case by case basis giving particular regard to depth to or distance to groundwater and surface water respectively, and contaminant plumes and their effects on aquifers and surface water. Clearly, land treatment is the preferred option.

One of the key advantages of a land treatment system that utilises any crops or trees for productive purposes is that a substantial income could be generated from a properly designed and managed system. Sewage wastewater application to non-food crops or trees is a straightforward process. Wastewater without any human or animal pathogens could be utilised by pasture, viticulture, food crops or orchards. Some industries (e.g. dairy) may restrict the use of human wastewater on food or beverage based crops.

4. Key wastewater discharge consents granted in the past decade by the Council

Appendix 1 shows a list of 20 discharge consents granted in the past decade. The list also shows the quality and quantity of historical and newly consented discharges, discharge medium (land or water) and cost of upgrading. There are 12 discharge consents from the city and district councils and eight from industries including ski-fields, airport and subdivisions. In most cases the quantity of discharge has increased with the renewal of consents because of actual or anticipated population growth (e.g. sewage) or increased activity (e.g. industry). There are two new major discharges (Jacks Point and Mt Cardrona Station Ltd), both of which are to land, with the remainder of those historical. Of the total consents granted, half of the discharges were to land (either land treatment or disposal).

a. Discharge quality

Overall there has been a major improvement in discharge quality. Where land based systems are used as alternatives to water discharge, the discharge quality was not expected to improve because of land treatment efficiency. With the exception of the Dunedin City Council Tahuna Waste Treatment Plant discharge to the Pacific Ocean, and the Clutha District Council Milton discharge to Tokomairiro River, all other water discharges have been consented at or below the in-pipe contact recreational water quality limit of 260 E.coli/100 mL.

b. Treatment systems

A range of treatment options have been deployed to achieve discharge quality limits. Council preference of land discharge has always been considered by the applicants in detail. Only in cases where land discharge was considered as not practical, water discharges were used. Treatment options such as sequencing batch reactor (SBR), trickling filter, membrane bioreactor (MBR), dissolved aeration floatation (DAF) and Biofiltro (worm treatment) were used to discharge to water, whilst discharges to land utilised MBR, SBR, packed bed reactor (PBR) and pond treatment systems. After the successful trial of the Biofiltro system at Kaka Point, Clutha District Council decided to install this system at Tapanui, Lawrence, Stirling and Owaka to meet the Council contact recreation in pipe limits. Land discharges were delivered into/onto trenches,

subsurface (drippers) and surface (sprinklers). Subsurface irrigation systems are designed for freezing conditions.

c. Cost of upgrade

The total estimated cost of upgrade or waste treatment system installation has been $232 million. Of this, in excess of 50% (i.e. $120 M) is for the upgrade of the DCC Tahuna Waste Treatment Plant to install a new ocean outfall and provide a secondary treatment system. Other significant capital expenditure has been from Queenstown ($42 M long-term), Wanaka-Albert Town ($19.5 M already committed), Fonterra ($12.4 M already committed), Silver Fern Farms Ltd ($11.67 M already committed), Jacks Point ($7.5 M long-term) and Hawea ($6.5 M long-term). Such investments are long-term based and are designed to meet the requirements of the existing and future national and regional water quality regulations and community expectations.

5. Methods, policies and principles of achieving desirable discharge qualities

In most cases a substantial amount of staff time has been spent on liaising with the applicant on preferred options pre-application. The following principles/preferences/ processes were relayed to the applicants during the process:

- Whilst good consent process is adhered to, the process would be outcome focused by upholding Council policies;
- Allow applicant to understand Council policies at the outset and work closely with the applicant towards a non-adversarial and productive consent process;
- In the absence of information on adverse effects of new and significant discharges on sensitive catchments, a conservative approach is taken;
- Where there are opportunities for effecting changes, use these to bring about desired outcomes;
- Where possible provide technical advice within limits without involving in-design details;
- Land based systems are preferred over discharges to water;
- No mixing zone will be allowed for water discharges particularly on faecal bacteria discharge and that contact recreational water quality on faecal bacteria has to be met in-pipe;
- A full 35 year term would be recommended to be granted for substantial amounts of discharge quality improvement that would meet Council policies;
- Applications with excellent discharge qualities could be processed non-notified since adverse effects are less than minor;
- A reasonable period (2 to 4 years) would be granted for the transition from existing discharge to commissioning the upgraded discharge;
- Open and without prejudice discussions during pre-application and post-application periods.

The following examples provide additional methods used to achieve desirable discharge qualities:

If necessary resist poor practices approach

Where there is a significant difference between applicants' and Council staff preference for discharge qualities and there are fundamental differences in approaches, a consent process could become adversarial, time consuming and costly. In such situations

Council policies could not be allowed to be compromised hence finding a middle ground was not possible.

Silver Fern Farms Ltd - Finegand
Pre-application the applicant approached Council for direction regarding discharge quality. Staff drew attention to Policy 7.6.1 requiring Koau Branch of the Clutha River to meet recreational water quality limits. The applicant was not satisfied with the response and wanted more detailed information on discharge quality. Unfortunately during the consent process there was a considerable amount of effort spent to argue our no mixing zone policy. The panel with two independent commissioners and a Councillor commissioner granted consent with a mixing zone. Despite this the applicant appealed the decision. Later with permission from the Court and the Council, the applicant engaged Council's external expert to trial a pilot DAF system at Belfast. Since the trial was successful the appeal was resolved with a consent memorandum. Since this process the relationship between the applicant and Council staff improved substantially which resulted in resolving other consent discharges including substantial upgrade of the boiler discharges.

Clutha District Council (CDC) – Milton discharge
Considerable amount of time and effort had been spent to achieve Policy 7.6.1 outcome to improve Tokomairiro River water quality. Unfortunately the process became adversarial and the Director Resource Management had to co-author the staff recommending report and take up the role of a recommending officer at the hearing to emphasise Council's Water Plan policies. The outcome was not satisfactory to the Council which resulted in a high faecal bacteria discharge. Whilst the process was adversarial it provided a platform to work with CDC on other consents, all of which yielded successful and win-win outcomes (see below).

Work with the applicant for a solution
When the applicants are making a full attempt to effect the desired outcomes but are struggling to find a solution, working with the applicant is the best way of progressing on an outcome.

CDC - Kaka Point, Lawrence, Stirling, Owaka and Tapanui discharges
Council staff worked with CDC staff to find options that would be cost effective whilst achieving council discharge quality limits. Eventually it was decided to trial the Biofiltro system at Kaka Point. Council staff agreed to hold all applications until the Kaka Point Biofiltro treatment system was built, commissioned and monitored. Since it was found Biofiltro system was affordable by the respective local communities and Council discharge quality limits could be met, long-term consents were granted to all five discharges.

Waitaki District Council (WDC) - Palmerston discharge
The original application in 2003 was for a stay-on for the historical flood irrigation system by the Shag River. By keeping the application on hold, a considerable amount of effort had been made by the applicant and Council staff to secure a proper land based system. As a result a consent for a proper land treatment system has been granted this year after waiting for eight years.

Identify issues/opportunities and effect changes
Where there is an opportunity to effect changes such opportunities have to be seized and used to bring about better outcomes.

Fonterra – Stirling discharge
Through routine auditing of the historical Stirling cheese factory discharge, staff identified a high amount of faecal bacteria discharge for which there was no provision in the consent. This event triggered ongoing liaison with the consent holder to identify and eliminate or treat the sources of faecal contamination. During this process there was also discussion to improve the historical and consented heavy BOD discharge (in excess of 5 tonnes per day) to the Clutha Mata-Au Branch. Following a reporting of this issue to the Council committee, the consent holder proposed a memorandum of understanding (MoU) approach to improve water quality in a collaborative way. The entire process did away with a formal and costly consent review process and a new consent with high discharge qualities was granted under non-notified consent process. Consequently the consent holder installed the first membrane bioreactor system in the region with zero faecal bacteria discharge and BOD discharge reducing from 5 tonnes to <100 kg per day.

Treble Cone and Coronet Peak discharges
There has been a history of poor treatment systems in the ski-fields in the Otago region. In early 2000 there was an outbreak of *Norovirus* at one of the region's ski-fields which resulted in a large number of ski-field staff and clients contracting the virus. Cross contamination of water supply by wastewater was found to be the cause. The opportunity allowed Council staff to liaise with two ski-fields during their consent renewal process to install a packed bed reactor system to avoid any long-term impacts of ski-field effluent discharges.

Consider long-term conservative solutions in cases where there is absence of information
In the case of new and significant discharges in sensitive catchments it is difficult to assess any future adverse effects. Under the circumstances a conservative approach is the way forward.

Jacks Point - land discharge
The large scale 400 ha subdivision in Queenstown required a sewage discharge consent. The applicant was well aware that a discharge to water would not be granted by the Council. The applicant proposed decentralised (several discharges) land based discharges. The focus was on total indirect nitrate discharge into Lake Wakatipu. The applicant wanted a direction on the maximum annual amount discharged. Since there was no information on how Lake Wakatipu could react to increased nutrient input and the fact that the water quality was in excellent condition, the approach was to maintain the historical nutrient output from the historical sheep farming from the same land parcel. Using a nutrient model approach a discharge limit of 3.6 tonnes of nitrate-N/year was set based on a historical sheep farming land use (9 kg N/ha/year).

If appropriate provide technical advice within limits
Sometimes there is opportunity for council staff to provide technical solutions without involving in design details of treatment systems. Such opportunities are a catalyst in resolving some discharge quality issues.

Dunedin International Airport Ltd - effluent discharge
The discharge was to the Main Drain and since human origin there were concerns about pathogens. Whilst the applicant's consultants' proposal satisfied nutrient discharge quality the amount of faecal bacteria discharge in the discharge was still unresolved. Council staff suggested filtration process to alleviate the bacteria issue and provided contact details for filtration technology. Subsequently the applicant adopted this technology to treat faecal bacteria to secure a 20 year consent.

Queenstown-Lakes District Council – Hawea discharge
The historical discharge was to trenches located by the Hawea River. Through ongoing liaison with Council staff, QLDC originally proposed a full (all year) land treatment system at the cost of $6.5 million. This proposal was based on an anticipated additional large number of subdivisions being in place. When the additional subdivisions were not forthcoming QLDC staff requested a status quo short to medium term consent. Since this was not acceptable to Council staff there was a site meeting to discuss the issue. Following the site visit Council staff concluded that there was sufficient land onsite for an eight month 'cut & carry' system with winter discharge to historical trenches. The estimated cost of $1.5 million was affordable for a short to medium term with an outcome of removing large amounts of nutrients that would otherwise have been discharged indirectly into the Hawea River.

6. Conclusions
In the past decade the Council has been very successful in dealing with historical and new water and land point discharges through the consent process. The success is attributed to: (a) the Water Plan policy directions; (b) consent holders' or applicants' co-operation and foresight; (c) high technical and practical knowledge on treatment systems and their limitations held by parties involved in the process; and (d) an outcome and principle based approach by Council staff using a range of approaches to achieve the outcomes.

7. Recommendation
That the report is noted.

Selva Selvarajah
Director Resource Management

Appendix 1. Key waste water discharge consents granted that required upgrades within the past 10 years

Consent holder	Site	Treatment system	Historical discharge type	Historical or consented discharge quality (90th-95th %ile or maximum)		New discharge type	New discharge quality (90th-95th %ile or maximum)		Special condition	Date of granting	Capital cost
District Councils				Volume in m^3/d unless stated							
DCC 2002.621	Tahuna waste treatment	Sequencing batch reactor	Water - Pacific Ocean	Vol BOD SS Amm FC	600 L/s 600 250 40 2,200,000	Water - Pacific Ocean	Vol BOD SS Amm FC	600 L/s 140 140 40 12,000	Secondary and UV treatment	October 2004	$120 million (ocean outfall $40M + secondary treatment $80M)
CDC 2007.090	Milton	Trickling filter	Water Tokomairiro River	Vol BOD SS TN TP E.coli	800 30 40 30 14 150,000	Water - Tokomairiro River	Vol BOD SS TN TP E.coli	1625 30 40 22 14 2,100	UV	May 2009	$2.60 million
CDC 2008.690	Kaka Point	Biofiltro	Water - Pacific Ocean	Vol BOD SS Amm TP Ent	120 87 110 29 11 29,000	Water - Pacific Ocean	Vol BOD SS Amm TP Ent	120 12 30 20 10 140	Contact recreation in pipe	January 2011	$0.30 million
CDC 2003.680	Owaka	Biofiltro	Water - Owaka River	Vol BOD SS Amm TP E.coli	436 60 120 25 12 100,000	Water - Owaka River	Vol BOD SS Amm TP E.coli	360 12 30 20 10 260	Contact recreation in pipe	January 2011	$0.74 million

Consent holder	Site	Treatment system	Historical discharge type	Historical or consented discharge quality (90^{th}-95^{th} %ile or maximum)		New discharge type	New discharge quality (90^{th}-95^{th} %ile or maximum)		Special condition	Date of granting	Capital cost
CDC 2005.246	Tapanui	Biofiltro	Water - Pomahaka River	Vol BOD SS Amm TP E.coli	200 80 120 30 12 250,000	Water - Pomahaka River	Vol BOD SS Amm TP E.coli	465 12 30 20 10 260	Contact recreation in pipe	December 2010	$0.69 million
CDC 2005.193	Stirling	Biofiltro	Water – Clutha River Matau Branch	Vol BOD SS Amm TP E.coli	130 100 200 35 12 500,000	Water - Clutha River Matau Branch	Vol BOD SS Amm TP E.coli	140 12 30 20 10 260	Contact recreation in pipe	January 2011	$0.42 million
CDC 2008.308	Lawrence	Biofiltro	Water - Tuapeka Creek	Vol BOD SS Amm TP E.coli	190 80 120 30 15 550,000	Water - Tuapeka Creek	Vol BOD SS Amm TP E.coli	250 12 30 20 10 260	Contact recreation in pipe	January 2011	$0.58 million
QLDC 2005.484	Wanaka-Albert Town	Sequencing batch reactor	Water - Clutha River	Vol BOD SS Amm FC	5,010 100 150 30 150,000	Land disposal	Vol BOD SS TN E.coli	26,400 35 35 12 1,000	TN shall not exceed 12 mg/L	July 2007	$19.50 million
QLDC 2008.238	Queenstown	Not determined yet	Water - Shotover River	Vol BOD SS TN TP FC	14,000 100 130 40 10 100,000	Land disposal (gravel beds)	Vol BOD SS TN TP FC	45,000 20 20 15 10 100		May 2010	$42 million

Consent holder	Site	Treatment system	Historical discharge type	Historical or consented discharge quality (90^{th}-95^{th} %ile or maximum)		New discharge type	New discharge quality (90^{th}-95^{th} %ile or maximum)		Special condition	Date of granting	Capital cost
QLDC RM10.308.02	Hawea	Cut & Carry and land disposal	Land disposal	Vol TN TP E.coli	440 40 9.5 250,000	Land treatment (cut & carry) and disposal	Vol TN TP E.coli	775 40 10 250,000	8 months cut and carry	November 2010	$1.50 million ($6 million long-term)
WDC RM.11.096.01	Palmerston	Cut & carry	Flood irrigation adjacent to Shag River	Vol BOD SS TN DRP FC	300 60 90 33 9 10,000	Land treatment	Vol BOD SS TN TP E.coli	420 40 60 40 12 5000		April 2011	$0.45 million
CODC RM10.306.01	Roxburgh	Maturation ponds	Water - Clutha River	Vol BOD SS TN TP E.coli	300 100 150 35 15 500,000	Land disposal	Vol BOD SS TN TP E.coli	470 100 150 35 15 500,000		October 2010	Not available
Industry											
Silver Fern Farms Ltd 2004.353 2004.312H	Finegand	DAF	Water - Clutha River (Koau Branch)	Vol BOD SS Amm DRP E.coli	20,000 1500 1200 50 12 Un-limited	Water - Clutha River (Koau Branch)	Vol BOD SS Amm DRP E.coli	20,000 210 70 63 15 15,000		May 2006	$11.67 million (2.6 million additional for composting and sludge incineration)

Consent holder	Site	Treatment system	Historical discharge type	Historical or consented discharge quality (90^{th}-95^{th} %ile or maximum)		New discharge type	New discharge quality (90^{th}-95^{th} %ile or maximum)		Special condition	Date of granting	Capital cost
Fonterra 2007.636	Stirling	Membrane bioreactor	Water - Clutha River (Mata-Au Branch)	Vol BOD SS TN TP E.coli	3,000 1800 450 180 72 No limits	Water - Clutha River (Matau Branch)	Vol BOD SS TN TP E.coli	3,700 30 200 25 20 10		June 2008	$12.50 million
Dunedin Intnl Airport Ltd 2004.309	Dunedin	Trickling filter with filtration	Water - Main Drain	Vol BOD SS Amm TP FC	153 80 150 50 15 60,000	Water - Main Drain	Vol BOD SS TN TP E.coli	153 10 (GM) 10 (GM) 10 (GM) 8 (GM) 260		October 2006	$0.70 million
Jacks Point 2009.312	Queenstown	Packed bed reactors	New discharge	New discharge		Land treatment	Vol BOD SS TN TP E.coli	1374 15 20 5 12 10,000	Total-N leaching shall not exceed the historical leaching of 3600 kg/year	Granted in October 2005 and re-granted in March 2010	$7.50 million
Dunstan Hospital 2009.474	Dunstan	Packed bed reactor	Clutha River	Vol BOD SS TN TP FC	10 96 45 55 12 73,000	Land treatment	Vol BOD SS TN TP E.coli	20 40 40 30 No limit 1000		February 2010	$0.30 million

Consent holder	Site	Treatment system	Historical discharge type	Historical or consented discharge quality (90^{th}-95^{th} %ile or maximum)		New discharge type	New Discharge quality (90^{th}-95^{th} %ile or maximum)		Special condition	Date of granting	Capital cost
Mt Cardrona Station Ltd 2009.348	Cardrona	Membrane bioreactor	New discharge	New discharge		Land treatment (cut & carry)	Vol BOD SS TN TP E.coli	2164 20 (mean) 30 (mean) 10 (mean) 8 (mean) 1,000 (GM)	<1 mg/L nitrate during winter	July 2010	$3.50 million
Treble Cone 2008.004	Queenstown	Packed bed reactor	Land disposal	Vol BOD SS TN TP FC	60 30 60 50 15 10,000	Land treatment	Vol BOD SS TN TP E.coli	72 20 20 25 12 200		August 2009	$0.90 million
NZ Ski Ltd 2009.458	Coronet Peak	Packed bed reactor	Land disposal	Vol BOD SS TN E.coli	111 180 50 74 200,000	Land treatment	Vol BOD SS TN E.coli	65 20 20 30 200		July 2010	$0.70 million
Grand Total *(Rounded)*											**$232 million**