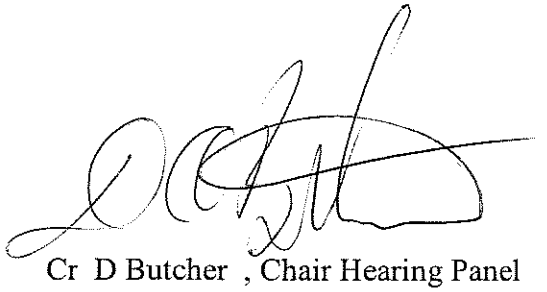
Otago Regional Council

In the matter of	the Resource Management Act 1991
and	
In the matter of	Application for Resource Consents 2005.484-2005.487 For discharges to air and land from a sewage treatment plant and to lay a pipeline across the Cardrona River.
By	**Queenstown Lakes District Council**

Decision on Applications 2005.584- 2005.487 inclusive

Hearing Panel:

Cr Duncan Butcher (Chair)	ORC
Cr Louise Croot	ORC
Cr John Mann	QLDC
Mr Neville Marquet	QLDC



Cr D Butcher , Chair Hearing Panel

Date 17 October 2006

Background

1. The applicant Queenstown Lakes District Council (QLDC) anticipates growth in the Wanaka- Albert Town area, and has decided that a new waste water treatment and disposal system is required. They have applied to discharge up to 26,400 cubic metres per day (m^3/d) of treated wastewater to land, to discharge contaminants (odour) to air, and to place a pipe under and disturb the bed of the Cardrona River, and to discharge contaminants (sediment) to water.

2. QLDC as a requiring authority has also applied to itself for a designation for the area of land on which the treatment plant and disposal trenches are to be located, and to change the designation that applies to the existing Albert Town oxidation pond facility. The oxidation pond is to be retained as an emergency holding pond.

Location

3. For the discharge to land and air:- At Wanaka Airport, approximately north and north-west of the existing Wanaka Airport buildings, approximately 1,600 metres (m) south-west of the Clutha River/Mata-Au (at its closest point) and 800 m north of State Highway 6 (at its closest point).

4. To place a pipe under and disturb the bed of a river, and to discharge contaminants to water: Cardrona River, adjacent to State Highway 6, approximately 2.5 km east of Wanaka and approximately 500 m south-east of the intersection of State Highway 6 and State Highway 84, Wanaka.

5. The construction of the new wastewater treatment plant (the plant) will include reticulation network and associated pumping stations, the treatment plant itself and the land disposal system. The reticulation network and pumping stations will be designed to convey the wastewater from Wanaka and Albert Town to the proposed site of the new plant.

6. The new rising main, conveying wastewater from the two townships to the new plant, is proposed to cross the Cardrona River in the vicinity of the State Highway 6 (SH 6) bridge across the river, approximately 500m east of the intersection of SH 6 and SH 89. The pipeline is proposed to be buried under the bed of the river.

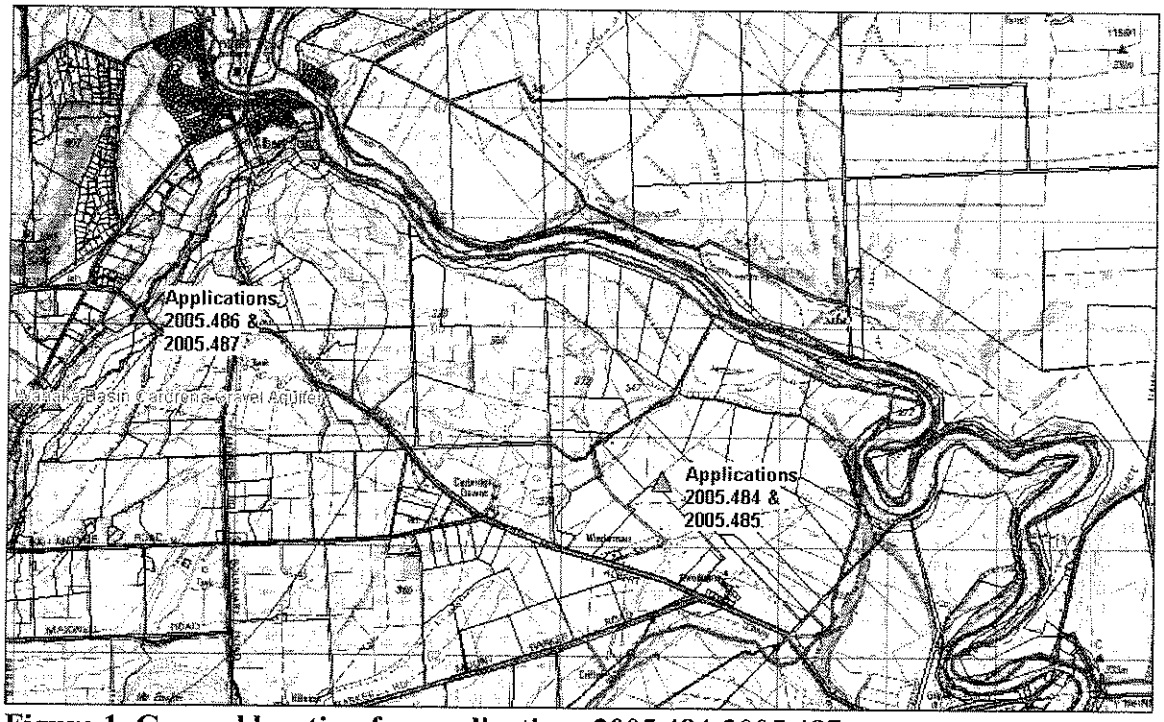


Figure 1. General location for applications 2005.484-2005.487

The area to be designated for wastewater treatment lies adjacent to the built infrastructure of Wanaka Airport and is 2.32 hectares. The disposal field area effectively covers the majority of land owned by Wanaka Airport and is 175 hectares.

The closest developments to the proposed designations apart from the airport are in the Poplar Grove subdivision, which comprises 16 rural lots alongside the Clutha River Mata-au.

Status of the Applications

7. The regional plan rules, under which each application is to be considered, are outlined below:

Application Number	Replacing Consent Number	Description	Regional Plan Rule(s)	Rule/Activity Status
2005.484	96662	Discharge of up to 26,400 m^3/d of treated wastewater to land	Regional Plan: Water Rule 12.6.2.1	Discretionary
2005.485	New	Discharge of contaminants (odour) to air from the proposed WWTP	Regional Plan: Air Rule 16.3.7.3	Discretionary
2005.486	New	Placement of a pipe under the bed of Cardrona River Disturbance of the bed of Cardrona River, for the purpose of placing a pipeline	Regional Plan: Water Rule 13.2.2.1 Regional Plan: Water Rule 13.5.3.1	Restricted Discretionary Discretionary
2005.487	New	Discharge of contaminants (sediment) to Cardrona River, associated with the placing of a pipeline	Regional Plan: Water Rule 12.13.1.1	Discretionary

8. We may grant or decline the applications and, if granted, may impose any conditions that fall within the Council's powers under section 108 of the Act.

Joint Process

9. The applications for designations and resource consents were advertised at the same time by CivicCorp on behalf of QLDC and the Otago Regional Council (ORC) respectively. The applications are sufficiently related to justify the hearing and consideration of them together by a joint hearing panel. We must have separate decisions at the end of the considerations, but in making the decisions on the applications to each consent authority, all members of the hearing panel have been involved. The joint hearing of the applications is also more efficient use of time and resources for the applicant and submitters.

Matters Considered

10. We have considered the relevant parts of the Resource Management Act 1991, the Queenstown Lakes District proposed and operative plan, the Regional Policy Statement, the Regional Plan: Water, Regional Plan: Air, all application documents placed before us, all submissions made and all evidence brought to the hearing. We also conducted a site visit on the morning of 31 August 2006.

The Hearing

11. We heard these applications on the afternoon of 31 August and on 1 September 2006. We reserved our decision, and closed the hearing on 15 September 2006. Those appearing at the hearing were:

12. **For the applicant**:

Mr Graeme Todd	Counsel for applicant
Mr Mark Kunath	General Manager Utilities QLDC
Mr David Gamble	Managing Director, Traffic Plan Ltd
Dr David Stewart	Environmental Scientist/Engineer MWH NZ Ltd
Mr Thomas Caithness	Consultant applied/aviation ornithology
Mr Derrick Railton	Engineer, Duffill Watts & King Ltd
Mr Ben Espie	Landscape Architect, Vivian & Espie Ltd
Mr Edward Ellison	Kaitakawaenga Kai Tahu ki Otago
Mr Craig Evans	Hydrologist, MWH NZ Ltd
Ms Hilary Lough	Environmental Engineer Pattle Delamore Partners Ltd
Ms Sally Dicey	Resource Planner, MWH NZ Ltd

13. **Submitters**

Mr Phil Page	Counsel for Mr Mark Fraundorfer
Mr Mark Fraundorfer	
Mr Bruce Ansley	
Capt Mark Jaquiery	NZ Airline Pilots Association (NZALPA)
Mr John Pawson	
Mr Aaron Heath	

14. **Council Staff**

Mr Daniel Curley	CivicCorp, author of s42A report
Mr Anthony Rewcastle	Landscape Architect, CivicCorp
Ms Annemarie Robertson	Engineer, CivicCorp
Ms Annica Lindgren	Senior Resource Officer ORC

Dr Selva Selvarajah	Director Resource Management ORC
Hearing Panel assistant	Ms Marian Weaver, ORC

The Applicant's case

15. **Mr Todd** gave a history of how the wastewater is presently treated and disposed of, and that a Working Party was set up in 2003 to address the issue of a replacement treatment facility and disposal method. He described the areas to be designated and said that the Airport, which owns the land is owned by the QLDC. He remarked that some land had been sold to the airport by persons who are now concerned that it is to be used for wastewater treatment or disposal. Mr Todd said that at the time of the land sale the proposed use of the land for wastewater treatment or disposal purposes was not envisaged.

16. Mr Todd said the issues to consider are above and below the land. The advantage for the proposal is the relative isolation, the disadvantage being the distance for the sewage to be reticulated. He said by 2020 a second reticulation pipe might be necessary but the land available is large enough to cope with an increase in wastewater volumes.

17. Mr Todd said that the groundwater issues have been extensively analysed by 4 separate groundwater experts, who have all come to the same conclusion

18. He said the treatment plant will be a design and build project therefore he can't say what it will look like at this time, however conditions have been offered as to land coverage, height restrictions, colour of buildings, screening and so on.

19. Mr Todd then said that the granting of the applications was consistent with the provisions of Part 2 and S168A of the RMA, and the Regional Policy Statement, Regional Plans and the District proposed and operative plans.

20. **Mr Kunath** read his evidence. He described the problems with the existing wastewater system, the establishment and membership of the Working Party and its conclusion in 2004 that the discharge needs to be moved away from the Clutha River, to land. He then described the public consultation that took place, the establishment of the Project Pure team, the process the team followed and the various alternative sites that were considered. He listed the criteria applied to each site in considering its suitability.

21. Mr Kunath said that once Wanaka Airport had been identified as the most suitable site, further investigations were carried out, and estimates of probable cost prepared, the total being $19.5 million.

22. Mr Kunath described the design basis and area to be served by Project Pure, noting the possibility of adding additional areas for reticulation in the future. He described access to the site from State Highway 6, noting that once construction is complete there will be only 2-3 vehicle movements at the site each day.

23. Mr Kunath said that existing water supply bores are all up gradient of the projected effluent plume destination, and that groundwater will be regularly monitored to ensure it remains potable. He said in the unlikely event that water supply bores become contaminated then the applicant will provide an alternative potable supply to affected properties.

24. Mr Kunath concluded by saying that the new scheme is essential to the future development of the greater Wanaka area, that "state of the art" technology will be used to produce a high standard of effluent, and the location of the scheme is remote with sufficient room to provide for the long term. He said all practicable steps will be taken to minimise the impacts of the scheme.

25. In answering questions Mr Kunath said that reticulation of the Cardrona area is a possibility for the future. He said the regular monitoring of groundwater would be as proposed in the ORC staff report, and that the scheme could be operational within 5 years depending on appeals to the Environment Court. He said that if an alternative water supply had to be supplied to people it would be at no cost to them. Mr Kunath said that the regular vehicle movements would be for contractors maintaining the scheme, for sludge removal (which would first be dewatered) and for monitoring to be done.

26. **Mr Gamble** read his evidence which described the existing vehicle movements in the area and the flow of traffic once construction of the new treatment plant commences. He noted that a temporary road will be constructed for vehicles to move from the existing right of way off SH6 to the plant site. He produced numerous views of roads looking in various directions about the proposed designated areas and surrounds.

27. Mr Gamble said the Poplar Beach subdivision once developed would create up to a further 100 vehicle movements per day which combined with existing use would be 150-200 movements per day. He noted recent upgrading of SH6 where visibility was improved, and this with Stevenson Road and their intersection would cope with the projected traffic volumes.

28. Mr Gamble described the likely traffic effects during construction and suggested some temporary measures such as a give way sign and a construction management plan that could address dust, hours of construction, and parking.

29. Mr Gamble concluded by saying that there will be medium construction and very minor operational numbers, that the full use of Stevenson Road as a result of the subdivision is unlikely to be realised before the treatment plant is completed, that a construction management plan should be implemented; and that the first bend on Stevenson Road will require active traffic management during the construction phase.

30. In answering questions, Mr Gamble said that the Pittaway's house closest to the site could be affected by dust, which can be controlled, and noise. Mr Gamble said that corrugations in the road could give rise to vibration from the road but if well managed this would not happen. Mr Gamble said the road

should not have to be sealed. Mr Todd said the Pittaways have given their written approval to the applications.

31. **Dr Stewart** said the Working Party favoured a design and build approach therefore the exact nature of the treatment plant will not be known until a tender is accepted. He said the plant will have to be a type of activated sludge process in order to meet the effluent quality required. He said the system will be designed with sufficient capacity to handle wastewater flows up to 2021, and will have the ability to be expanded beyond that date. The designer will run the treatment plant for the first year. The effluent disposal system will be designed by MWH.

32. Dr Stewart said there could be odour where the wastewater enters the plant because of the length of the pipeline from Wanaka to the plant site. This entry point will be housed in a building and the air passed through a biofilter to remove odour. Other odour generating parts of the plant will also be in buildings in order to trap and treat odour.

33. Dr Stewart then described the suitability of the proposed disposal site. He said the airport site was good compared with other sites as it is 1.5 km from a river and the depth to groundwater is 76 metres. He said a soakage trial at the airport was carried out and the results together with hydro geological investigations indicated that an area of 7.6 hectares would be required for the disposal field by 2021, and 13.2 hectares could be required by 2040.

34. Dr Stewart said the pipeline and pumping requirement is critical to the new system because of the distances involved, and that as a contingency the existing Albert Town pond is proposed to be kept as an emergency storage pond, which would contain existing wastewater flows for up to 3.1 days. If the event cannot be contained he said a discharge into the Clutha River would occur. Otherwise pond contents would be pumped up to the plant for normal treatment once the event is over. There will be a back up generator to ensure the pipeline remains functional during power cuts.

35. Dr Stewart said that activated sludge will produce one tonne of waste sludge per day which will need to be dewatered on site to at least 20% solids before it is disposed of , initially to the Victoria Flats landfill and long term maybe for some kind of use. By 2040 this amount could increase to 3.8 tonnes per day, by which type hopefully an alternative disposal method will be available.

36. Dr Stewart said he found the ORC recommending report reasonable and acceptable, but wanted clarification of condition 6(a) which relates to the expression of BOD_5, and condition 11 which refers to the "80%ile". He said the CivicCorp report was unacceptable in requiring a site plan before consent is granted, because the basis of the project is a design and build approach. Similarly he objected to the height restrictions proposed, adding that structures could be set into the ground or located within the swale to meet height restrictions. Some items would still penetrate the height restriction in places.

37. Dr Stewart strongly disagreed with the comment in the CivicCorp report that areas of open water will be a dangerous attractant of birds. He said in his long experience he had not seen birds on or near aeration basins, and that these basins have scum on them and are not reflective. He said it would be difficult to cover these due to the presence of moving machinery. He added that netting over ponds has not been required at plants near other airports such as Mangere and Wellington. Dr Stewart also objected to the planting recommended in the disposal field area, adding that the farmer should be able to choose the type of plants.

38. Dr Stewart concluded that the site near Wanaka airport is the most suitable of those considered and is able to serve the community well into the future. He had attached to his evidence some photos and drawings of a typical activated sludge facility.

39. In answering questions Dr Stewart said that in the immediate environs of the plant there would be a musty smell, but this would not be evident beyond the boundary of the plant site. Odorous activities would be within buildings and the air treated to eliminate odour from those sources. Dr Stewart described how biofilters work, and said that the water race used for testing disposal field soakage was the one that runs near the site.

40. **Mr Caithness** described his extensive career as an ornithologist with extensive understanding of birds as a hazard to aircraft. He commented on the NZALPA submission, agreeing that historically wastewater systems could increase bird numbers, however Project Pure will be modern technology. He said that only gulls are likely to attempt opportunistic feeding on the particulate material swirling in an oxidation ditch and a simple over-screen would solve that problem.

41. Mr Caithness said that contrary to the NZALPA submission, except for kiwis, birds have a very poor sense of smell, and instead birds are attracted to things by visual cues and sound. He said that the US FAA Advisory Circular that was attached to the NZALPA submission is not law, and that the circular is a sound document to assist with planning facilities near airfields. He said advanced technology, methodology and management can address the FAA's concerns.

42. Mr Caithness concluded by saying that the treatment plant will remove fats and solids such that any gull attempting to feed would need good hovering skills, and the flow rate would preclude gulls from landing. A simple screen could totally prevent this. He said that the land disposal area will not be an attractant to birds, and the waste water system is benign in a bird hazard sense.

43. In addressing the Civic Corp report Mr Caithness said that if the chosen treatment process is an oxidation ditch birds will not develop an attraction to the plant, and they could not use it as a source of food or habitat.

44. **Mr Railton** said his company is designing the trunk sewer and providing support for consent applications. He described his sources of information for

projections for population growth, noting that Wanaka has had annual growth rates for 5-6% in the 10 years to 2001, with projected growth of 10% for the next 5 years to 2006. Growth rates are expected to drop from 6% now to 2-3 % by 2021. This means peak projections of 22,880 in 2021 and up to 48,200 in 2040. For that reason the major trunk sewer sections will be designed and installed in stages

45. Mr Railton described the factors that must be considered in designing a system for daily and peak flows. These are assessed for 2040 as 12,000 cubic metres per day dry flow and 26,400 cubic metres per day wet flow, with a 460 litre per second design flow rate for the main trunk sewer to the airport site.

46. Mr Railton described the factors to be considered in designing the sewer and pumping stations in order to make the pipeline reliable and sustainable, noting the Albert Town pond would be used as an emergency storage area. He then described the difference in costs of pumping raw wastewater compared with treated effluent, noting that it is cheaper to pump the latter, and concluded that the additional cost of pumping raw wastewater to the airport site is small in the overall decision making process of deciding which site to use.

47. Mr Railton then described the installation of the pipe across the Cardrona River, noting that it will be 3 metres below the bed, not 3.5 as described in the ORC recommending report. Excavation required to install the pipe will be substantial therefore the work will be done away from any existing structures and when flows in the river are low.

48. In addressing the ORC recommending report Mr Railton said that conditions 1(c) and (d) need to be changed to recognise the staging of work, and requested that condition 4 about hours of work for installing the river crossing should be deleted. He also wanted condition 5 changed to extend the timing of the work into April, and for the definition of riparian planting under condition 16 to be clarified.

49. In answering questions Mr Railton said that he was not expecting a lot of sediment to be released into the Cardrona if work is done during low flows. He said that whereas stormwater is not supposed to go into sewers there is always some leakage eg through manhole keyholes and unlawful connections. A worst case scenario would be New Year's Eve when it is raining. He said that pump stations can be fitted with biofilters if necessary to control odour.

50. **Mr Espie** noted that the application includes a number of volunteered conditions intended to restrict future activities. These relate to

- all structures and car parking to be within the designated site
- fencing and height of fencing to 2.5 metres,
- structures to be less than 4 metres above ground
- buildings to be to be finished in specific resene natural colours
- external light to be triggered by movement only
- off site areas to be mown or grazed to maintain pastoral appearance
- tree planting and existing shelter trees

- bunding

51. Mr Espie said that since lodging the application he has developed a Structural Landscape Plan which provides more detail and he attached it to his evidence. It included:
    - a 310 metre double row of trees along the boundary with the Big River company property
    - a 65 metre double row of trees parallel to and south of an existing vehicle track which continues on to the Pembroke Stud property
    - retention of a 180 metre double row of existing mature conifer trees running in an east-west direction southeast of the designation area
    - earth mounding
    - retention of pastoral appearance around the designated areas.

52. Mr Espie said that his understanding is that Wanaka Airport wishes to further develop various airport facilities therefore the proposed designated area must stay in their present location, and cannot accommodate all of the plant within the existing swale, nor can there be significant planting within the swale, or outside of the area as Mr Rewcastle suggests. It also means that existing shelter trees to the south –west of the south-west edge of the proposed designation area cannot be guaranteed to remain in the long term; however trees to the north east of that edge can and should be retained.

53. Mr Espie rejected Mr Rewcastle's requirement for structures to remain below 349masl and instead structures would be no greater than 4 metres above the ground. He also offered a condition that 75% of the total area of the designation shall contain no structures that protrude through a height pane of 349 masl .

54. Mr Espie agreed with Mr Rewcastle's recommendations about mounding, rapid regrassing or revegetation of areas disturbed for installing trenches, security lighting and fencing He did not agree with the remarks that open water areas should be covered with netting to discourage birds because there will be no areas of still water.

55. Mr Espie then addressed submitters' comments. He said in respect of Mr Fraundorfer's submission that the structure is non complying, that the application is not for a resource consent but instead for a designation where the underlying zone is Rural General Zone, therefore the proposed structures would be discretionary.

56. Mr Espie said that proposed structures and mounding would be visible from surrounding land in the short term. He said buildings in the Rural General Zone must be within an approved building platform and in this case the closest is that of Pembroke Stud Ltd, being 580 metres from the edge of the proposed designation area.

57. He said after 6 months or so the earth mounding will be grassed and given the distance of viewers it will be difficult to tell where the mounding begins and

ends. In the long term the site will be screened except for views from the west and southwest where the upper part of dark coloured structures against the backdrop of tree planting may be visible.

58. Mr Espie said that once the proposal is complete there will be no significant degradation of the landscape or its present character. He said some features will be visible, but someone unfamiliar with the area would assume the screened structures were associated with agriculture or the airport.

59. Mr Espie reiterated the above opinion concerning the Ansley property which is around 1 km from the proposed designation. After trees grow he said the Ansleys would see only shelter trees.

60. Mr Espie noted that in respect of other recent developments in the area that these have been referred to as visual amenity landscapes, and not outstanding natural landscapes or features as asserted by some submitters.

61. In respect of the Pembroke Stud Ltd submission about degradation of amenity Mr Espie said that the Poplar Beach subdivision has brought a significant degree of domestication to this rural area, and that the proposed facilities will not appear to be domestic but instead agricultural or associated with the airport He also said that the Council has no particular policies on mounding, that he thinks it is appropriate or not depending on circumstances, and in this case it is appropriate.

62. Mr Espie also disagreed with Pembroke's assertion that the area is pastoral and Arcadian. He considers this area of the Upper Clutha to be highly modified considering the agriculture, roading, airport and residential development.

63. In answering questions Mr Espie said that trees on the North East boundary would be a solid shelter belt that people would not be able to see through. For trees on the North West boundary this area has a height recession plane because of the airport runway.

64. **Mr Ellison** opened with a greeting in Maori to the panel. He discussed the meaning of Part 2 of the RMA in light of Maori issues and values, noting section 5 and the requirement for sustainable management of resources and the differentiation between people and communities; section 6 where Maori issues are matters of national importance; section 7 and the need to have regard to Kaitiakitanga; and section 8 and the principles of the Treaty of Waitangi.

65. Mr Ellison described the ancestral connections between the inland part of Otago and Kai Tahu, noting that the names Hawea and Wanaka were bestowed by Rakaihauti, and the historical activities that occurred.

66. He said Kai Tahu have long advocated for the removal of the direct discharge of human effluent to waterways, because such discharge contravenes Kai Tahu values. He said the RMA has provided a framework for tangatawhenua to have concerns heard about this issue, and it is pleasing therefore that Te

Runanga O Ngai Tahu was on the Working Party, and to be in support of a land based disposal system.

67. Mr Ellision then described the values of water in Kai Tahu culture and in particular the values and mauri associated with the Clutha /Mata-au. He said that Kai Tahu policy is not to mix human wastes directly with water but instead to return it to the earth. He described the importance of food in Kai Tahu custom and ceremony, and that contaminated food is unsuitable for sharing with visitors or in a ceremony.

68. Mr Ellison set out his support for the proposed land disposal system, hoping it will set a precedent for other communities, and it will assist in restoring the waters of the Clutha/Mata-au. He said the Clutha/Mata-au is a statutory acknowledgement water body under the Ngai Tahu Claims Settlement Act 1998, and the benefits of the scheme will be for all people who have an association with the river. Mr Ellison attached excerpts from the Kai Tahu ki Otago Natural Resource Management Plan 2005 and the te Runanga O Ngai Tahu Claims Settlement Act 1998.

69. **Craig Evans** described the geology of the Wanaka airport area and the various bores that were drilled or monitored to establish the depth to groundwater of 76 metres, and the direction of groundwater flow to the southeast and below the Clutha River. He produced a bore log that showed the various material encountered, this being silty/sandy gravels/cobbles/boulders with some layers tighter than others. He said on the basis of investigations and modelling it will take 30 – 47 days for effluent to percolate through the gravels and reach groundwater once the discharge to land begins. This equates to a vertical flow rate of 1.7-2.5 metres per day.

70. Using nitrogen as a worse case indicator Mr Evan's model indicated that the plume would be fully mixed in groundwater to background levels over 215 metres. ie there would be no modelled increase above background levels in nitrogen beyond a 215 metre distance downstream.

71. Mr Evans said Pattle Delamare & Partners (PDP) had peer reviewed his work, but he did not agree with their comments about the infiltration rates that should be applied to the model. He did agree with the PDP observation that the groundwater probably lies beneath the Clutha/Mata-au and does not flow into it.

72. Mr Evans commented that the SKM report by Tom Heller was based on a larger range of data than Mr Evans had used. Mr Heller concluded the groundwater direction is to the northeast, and Mr Evans noted despite the differences that both of them identify movement to the east as the primary direction of flow.

73. Mr Evans was critical of Mr Heller's modelling of the nitrogen plume because of the use of MODFLOW/MT3D and the application of the projected 2040 loading rate of effluent. Despite the differences in the distance and dilution of nitrogen between the two models Mr Evans noted the predicted concentration

of nitrogen would be less than the NZ Drinking Water Standard of 11.3 mg/litre. He added that all three technical experts on groundwater agree that the effects on the aquifer are minor and on the Clutha/Mata-au less than minor.

74. Mr Evans then asked for the number of background bores to be monitored to be less than what was recommended in the AEE. He also said that it was not necessary to monitor for neither total nitrogen nor total phosphorus and to add Electrical Conductivity instead.

75. In answering questions Mr Evans noted that his model shows effluent percolating up to the surface of the land, and said that the model must be incorrect as this will not happen. He described how electrical conductivity is measured with a field meter. He said that effluent will not reach the Clutha/Mata-au and that the difference in groundwater direction between his model and that of Mr Heller is because Mr Heller used more real data.

76. Mr Evans said faecal coliforms are not an issue for the groundwater quality and the real issue is about nitrogen.

77. **Ms Hilary Lough** said she works with Andrew Brough, at PDP who had peer reviewed the AEE. She described how the peer review had been carried out, and set out her response to the MWH response to the recommendations of PDP.

78. The first recommendation of PDP was that further test pits be excavated in the disposal field area, because the test pit used was 1 km away from the disposal area and because this is the requirement of the USEPA rapid infiltration design manual 1984. Ms Lough noted that ORC had made a similar request, the applicant replying that this will be done as part of the design process, not as part of the consent process. Ms Lough agreed with the applicant's response providing there is allowance within the consent conditions to change the total area used for rapid infiltration.

79. Ms Lough said that PDP had also recommended that long term infiltration trials be conducted for the disposal trenches. She accepted MWH's response, that full loading will not occur until peak flows are reached, and meanwhile the lower loading rates on the first trenches that are used can be studied and measured, and extra trenches installed if the 2000mm per day loading rate is not achievable.

80. Ms Lough agreed with the estimated 76 metre depth to groundwater. In the PDP peer review she said that MWH had used an infiltration rate of 1.7 to 2.5 m/day whereas PDP considered that 14m/day was the measured rate. After talking with MWH she agreed their rate was appropriate because the bore logs indicate the presence of lower permeability layers in the unsaturated zone beneath the disposal field.

81. PDP had also recommended that testing should be done to assess the effect of the lower permeability layers, which could cause ponding and lateral spread of effluent. Ms Lough recommended that bore holes and test pits planned prior

to the final design are excavated to at least 3 metres below ground level to check that there are no lower permeability layers beneath the trenches. If such layers are encountered then the base of the rapid infiltration trenches can be set below these layers to ensure effective operation of the system.

82. Ms Lough said that PDP had recommended that in addition to modelling predicted concentrations of contaminants at the Clutha/Mata-au River, modelling should also be done for nearby wells used for water supply. MWH replied that there are no water supply wells between the disposal field and the river and on that basis the PDP recommendation was dropped.

83. Ms Lough said she had reviewed the contaminant transport modelling carried out by Tom Heller of SKM for the ORC. She said that his use of 1000 cfu/100ml for E Coli was very high as it did not allow for die-off within the soil column, noting that Mr Heller had acknowledged he was taking a conservative approach. She noted a difference in the average pore velocity used by MWH and Tom Heller in their respective modelling. She said that neither is incorrect, rather the difference reflects the some uncertainty in what the rate of flow is, but this should not have a significant effect on the modelling of E Coli nor nitrogen.

84. Ms Lough also noted a conservative approach by Mr Heller for dispersivity value, therefore she carried out her own modelling exercise using the same parameters as Mr Heller except for a different dispersivity value. Her modelling results were generally consistent with that of Mr Heller. The modelling showed that E Coli concentrations greater than the maximum allowable value in the NZ Drinking Water Standards can be expected to be contained within 200 metres of the disposal area. The concentration of nitrogen in groundwater would approach the concentration in the effluent at the point it reaches the water table over a distance of up to 700 metres down gradient of the disposal area. Nitrogen concentrations in the Clutha/Mata-au River could increase by up to 7.5 mg/litre after several years.

85. She added that this modelling is based on no removal of nitrogen in the land disposal system, however in practice a well operated rapid infiltration scheme with appropriate wetting and drying cycles can result in significant nitrogen removal due to coupled biological nitrification and denitrification.

86. Ms Lough agreed with the ORC staff recommendations for groundwater monitoring. She added that it was a generous approach for QLDC to offer a condition that requires them to install a potable water supply should groundwater become contaminated, as none of the potable bores are down gradient of the disposal field and there are other factors that can cause contamination of groundwater. She recommended that additional monitoring bores be installed alongside the Clutha River if significant changes appear in existing wells that are to be monitored.

87. Ms Lough noted that there are no drinking water supplies in the area where groundwater nitrogen levels could be affected.

88. In answering questions Ms Lough said that with low application rates when the disposal field is first used, there will be an opportunity to do one day tests and longer term tests across the disposal field area. If ponding occurs then a new trench can be used. She added that there will be inspection pipes at the end of each soakage trench and effluent can be seen to be rising therefore surface ponding should never occur.

89. In addressing the flow of groundwater - whereas in her paragraph 39 she spoke of groundwater reaching the Clutha/Mata-au, Ms Lough said she agrees with Mr Evans, that groundwater will in fact flow beneath the river.

90. Ms Lough said that the lower permeability layers are made of gravel, and will still pass water, if more slowly than other layers. They are not impermeable layers. She also said that the nitrogen level in groundwater will not go above the concentration of 11.3 mg/litre which is what will come out of the treatment plant.

91. **Ms Dicey's** written evidence was taken as read. Her evidence addressed MWH's involvement in Project Pure, and the approach taken by "the Council" (applicant) in preparing the applications. She referred to the growth in the population in the area, that a discharge to water is unacceptable, the approach of the Working Party and the preferred option of land disposal. She noted that there are only 14 submissions in total with 5 in opposition, indicating community support for the proposal.

92. Ms Dicey discussed the design and build approach, the distinction between the three areas sought for designations, that Wanaka airport has given its written approval to the applications, and set out a summary of the consent applications sought.

93. Ms Dicey said that except for some conditions she agreed with the ORC staff S42A recommending report. She also agreed with the CivicCorp s42A report except for comments about access to the site, landscape issues and the bird strike hazard.

94. In respect to access to the site she said some changes to the application had been made, noting the construction traffic will take a right of way section of Stevenson Road to the first corner and go across fields and airport land to the treatment site. After construction this route will be decommissioned and access will be via Stevenson Road.

95. In addressing landscape issues Ms Dicey said that three matters in the CivicCorp landscape report were at issue. The first was that some structures would have to penetrate 349masl. The second was that the applicant is limited in terms of where it can locate the treatment plant because of airport issues. She said better use could be made of the swale but this could conflict with airport plans. The third issue was that CivicCorp had recommended that a site plan be submitted before a decision on the applications is made. Ms Dicey said with a design and build approach this is not possible. Instead a site plan could be submitted before work commences, thus giving CivicCorp control

over the layout and appearance of structures, and landscaping associated with the treatment site.

96. Ms Dicey said that the CivicCorp comment about bird hazard was incorrect and referred to the evidence of Mr Caithness.

97. Ms Dicey said that Mr Espie had addressed the visual amenity issues, and suggested a revised condition that 75% of structures in the treatment plant area shall not penetrate 349 masl. She added that the area already contains the airport which impacts on the landscape, and submitters are subject to a covenant which prevents complaints about activities of the airport. She said the treatment plant visual impact will be consistent with that of the airport.

98. Ms Dicey said in addressing submitters' concerns:
- that construction traffic will be managed, any damage to roads will be repaired and once operational the traffic effects of the treatment plant and disposal system will be minimal.
- that no contamination of any existing or new groundwater bores is predicted to occur, nevertheless groundwater monitoring conditions are proposed to ensure contamination does not occur
- that noise levels will comply with the District Plan,
- that bird strike will not be an issue,
- that with proper management there will be no offensive odour issues if the Albert Town pond is used
- with proper design and management odour will not adversely affect surrounding landowners.
- that consultation with Pembroke Stud Ltd did not occur because the applications were on hold for some time and that as a member of the Working Party Aaron Heath had a better understanding of the project than most other local people
- that effects on land values has not been quantified, and therefore this is only a potential effect
- that the design and build approach will use up to date and effective technology
- that issues to do with the cost of reticulation have been considered
- that Wanaka Airport Management Committee has given its written approval therefore concerns about the effects on the airport are not relevant.

99. Ms Dicey then gave an explanation for each of the conditions suggested in the applications, and commented on the conditions recommended in the S42A reports.

100. She wanted clarification of the expression of BOD_5 – carbonaceous or total? The definition of what an 80% ile was also requested. Ms Dicey offered an addition to the condition that requires potable water to be provided in the event of contamination – her condition added that this should occur when the contamination can be attributed to the consent holder.

101. In respect of the consents to install the pipeline in the Cardrona Ms Dicey wanted the timing for this to occur to be extended into April. She said the riparian reinstatement condition needs to have willow trees excluded from it, and suggested that for the sediment control condition the condition be extended to 100 metres downstream.

102. For the CivicCorp conditions Ms Dicey wanted clarification of when sealing of access roads should occur, noting that sealing is not considered to be necessary at all. She suggested an alternative condition about use of the temporary road, and in accordance with Mr Gamble's evidence that a construction traffic management plan be submitted prior to work commencing.

103. She discussed height restriction and considered the requirement to have 2 metre high trees along the north eastern boundary impractical. She said the earth bunding will form the primary screening of the construction site. Ms Dicey wanted the condition requiring netting over water tanks to deter birds, to refer only to *still* open water.

104. Ms Dicey attached to her evidence a copy of the agreement with Wanaka Airport Management Committee.

Staff Comments

105. The Chair offered staff an opportunity to comment at this stage, to enable the applicant to respond to any issues that might raised, in their right of reply.

106. **Annica Lindgren** said in respect of Dr Stewart's changes to conditions, that BOD_5 means total BOD_5, and the 80% ile relates to every 12 month period in which the consent is being exercised.

107. Ms Lindgren accepted Mr Railton's request to have condition 1(c) and (d) of the pipeline consent changed to reflect the timing for producing design plans and work programmes. She said she had no objection to work continuing beyond the hours set out in conditions 4 providing it could be shown the noise would not affect nearby residences.

108. Ms Lindgren had no objection to the pipeline in Cardrona work being carried out in April if necessary and the change to condition 5 to accommodate this. In terms of riparian reinstatement for that work she suggested that recommended condition 16 becomes condition 1(e) which will enable the ORC engineers and the applicant to agree on whether willow trees should remain.

109. Ms Lindgren agreed with Ms Dicey's suggested change to the condition which requires a potable water supply to be installed under circumstances where groundwater is contaminated. Ms Lindgren said that after the disposal trenches are installed the land will be re –grassed, and if there is to be any grazing of that land then it should be light grazing only to equate to 9 kg/hectare per year of nitrogen, in order to protect the groundwater.

110. Ms Lindgren said that Tom Heller at SKM had been asked to model the effluent plume as if it was a direct discharge to the groundwater, and as if

there would be little die off of bacteria in order to show a worst case scenario. In doing so the concentration of nitrogen in the plume could be estimated, and working back through the process then, the amount of nitrogen that could be allowed to come out of the treatment plant was determined.

111. **Dr Selvarajah** said he agreed with Ms Lindgren's comments. He said he surprised that Mr Evans had suggested cutting back on the number of bores that should be monitored, and the range of parameters that should be monitored. He said that the proposed monitoring conditions had been agreed to by Dr Stewart before the hearing was held.

112. Dr Selvarajah said it is necessary to monitor for total nitrogen because in the long term organic nitrogen would appear in the soil, and this will not be detected on its own. Similarly there are different forms of phosphorous that make up the total phosphorus measured. He asked for both total nitrogen and total phosphorous to remain as conditions of consent.

113. **Daniel Curley** questioned why Mr Gamble was nervous about the requirement to seal the road as it might be an advantage to residents. He said that the benefits would be reduced noise and dust.

114. Mr Curley said Dr Stewart had misinterpreted the CivicCorp conditions 1&2 that require a site plan before the applications are decided. He said he would want to see an overlay of the future restrictions of the airport activities on the proposed designation areas.

115. Ms Dicey replied that her plan shows future airport activities, and that the 2.3 hectare site cannot be moved south as it comes up against height restrictions. Mr Todd added that if a second runway is installed and used by 747s then some trees would have to be trimmed.

116. Mr Curley asked what type of cover or roof could be used to deter birds from open areas of liquid. Mr Caithness replied that a cover would only be needed in a worst case scenario and he did not think there will be a problem with birds.

117. Mr Rewcastle said that according to his plans the area for effluent disposal was 104 hectares and not the 175 hectares set out in the applications. He remarked that if fencing is to be 2.5 metres high, will this be on top of the bund or alongside it?

The Submitters' Presentations.

118. **Mr Page** read his submission concerning Mr Fraundorfer's submission. Mr Page said the Big River Company Limited sold the QLDC land which is now the subject of the designation application, for airport purposes. He said Poplar Beach Limited was granted a 20 hectare subdivision and they consider themselves to be affected by the applications because the site is visible from Poplar Beach land, there is the potential for offensive odour, there are social impacts living next to a sewage plant, there is the potential for contamination of groundwater, the Council has failed to identify or adopt the best practicable

option and the Council has failed to consider alternatives promoted by Mr Fraundorfer.

119. Mr Page added that the access track down to the river was a requirement of the subdivision to allow fishing access, and that it is not appropriate for it to be used as a heavy vehicle access way for a sewage system.

120. Mr Page said for a designation application less detail is required than for a resource consent application. He said that the ORC could not consider the consent applications as there was no detail about the type of treatment because of the design and build approach. He said the only indication of the type of treatment was reference to an oxidation ditch system, and his expert Dr Daniel Martens considers that to be old technology and not the best option to mitigate effects on neighbours.

121. Mr Page said the panel is entitled to impose conditions to require the applicant to adopt the best practicable option to prevent or minimise adverse effects. He said the analysis of what is a best practicable option cannot be carried out because there are no treatment options offered, which can be compared. He said the QLDC had not responded to suggestions for treatment options from his client.

122. Mr Page expressed concerns about odour as there is no treatment plant proposed therefore the odour generation potential cannot be assessed. He said odour problems are an issue with open air treatment of human sewage. Mr Page did not like the recommended condition for odour as it relies on a Council officer's assessment of offensiveness. He said any odour from the plant will be offensive to those in the subdivision.

123. Mr Page noted the SKM conclusions about likely groundwater contamination. He said the full effects will not be known for several years, and if predictions are incorrect it will then be too late to do anything to remedy the contamination. Mr Page said the Poplar Beach subdivision is largely undeveloped and it is quite likely that future residents will want to install bores for personal and stock water drinking purposes. He said such use is permitted under the Regional Plan: Water and protected under the RMA.

124. Mr Page said that any contaminants passing under Mr Fraundorfor's land was unacceptable, because any intrusion into the subsoil beneath a plaintiff's land will constitute the tort of trespass. He added that there does not have to be proof of any actual damage for an action of trespass. He said the Poplar Beach owners are entitled to an injunction to restrain the Council from discharging contaminants to land which will pass under the owners' land.

125. Mr Page discussed visual amenity and disagreed with the CivicCorp assessment because Poplar Beach residents were expecting rural uses of land, houses in association with that and airport related activities. He said the essentially rural character of the vicinity is undermined if people are constantly reminded by vehicle movements and odour that there is sewage plant there.

126. He agreed with the landscape architect's suggestion of nestling any structures as much as possible in the swale, and was concerned that if this cannot happen because of the restraints of the airport then the proposed site cannot be in the most appropriate place and better alternatives offered by Mr Fraundorfer have not been adequately examined.

127. Mr Page was critical of recommended discharge permit conditions. He said condition 7 should refer to future, as well as existing bores, that heavy metals and other trade waste contaminants should be included in condition 12, that more background monitoring is required, and that condition 13 which provides for an alternative water supply is inadequate.

128. In respect of the discharge to air permit he said condition 3 reflects the inadequate information in the application and that the application should be declined for want of proper exploration of the best practicable option.

129. Mr Page submitted a bundle of documents which he referred to as he spoke. These included the order to provide an easement to the river in the Poplar Beach subdivision, plans of the subdivision, excerpts from "The Laws of New Zealand", "the Law of Torts in New Zealand' and a copy of the decision of the Environment Court *Saunders v Northland Regional Council 233/97.*

130. **Mr Fraundorfer** said he wants to cooperate with the Council, and does not want to block projects such as this. He said he was willing to provide land for an alternative treatment site, and had offered this to the Council but it had not responded. He then read his submission. He said he owns several lots in the Poplar Beach subdivision and is half shareholder of a farm adjacent to the airport. Mr Fraundorfer said he and others had difficulty in obtaining copies of the applications, and that consultation had been poor.

131. He said that his expert Dr Martens says that the proposed treatment plant is outdated, and that suitable alternatives have not been considered. He was concerned about contamination of groundwater and the Poplar Beach bore, odour, and the visibility of the site at the gateway to Wanaka. He said there was no agreement about access by construction vehicles to the privately owned road, with Poplar Beach lot owners, and the road is not suitable for that use.

132. Mr Fraundorfer expressed his concern at the land that was sold by Big River at a discounted price to the airport for the purposes of protecting the airport, and now intended for a treatment plant. He commended QLDC for its intention to deal with the sewage problem and said that resource consent should only be sought once a clear and detailed plan of the system proposed is available, and that the treatment site should be at Albert Town or the alterative site offered by Big River.

133. In answering a question Mr Fraundorfer said that the alternative site he had spoken of is land at the Luggate end of the airport, and that he had made this suggestion to a Council consultant but had not had a reply.

134. **Dr Marten's** evidence was tabled as he was unavailable to appear. Dr Marten wrote that the consideration of treatment technologies was inadequate and that the selection of an oxidation ditch was at odds with best practice. He set out the parameters that should be considered in selecting a treatment plant, and discussed the various types of technology that are available. He said the Working Party had failed to do a proper analysis of options for treatment and disposal, and the level of detail available is inadequate to make informed decisions and consider the effects. He was concerned no consideration of re using the effluent had been done.

135. Dr Marten listed the various parts of a treatment plant that are well known for generating odour. He said an odour impact assessment has not been done, and the description of the sludge management system was incorrect.

136. Dr Marten said groundwater contamination was the most significant impact of the proposal and was critical of the groundwater modelling provided in the application. He set out the deficiencies in the model. He said the SKM model was slightly better but still included most of the deficiencies. He said the risk of long term aquifer impact and impacts on downstream users has not been properly assessed. Dr Marten said a proper economic assessment has not been done and the proposed system is contrary to the intentions and objectives of the RMA, and does not reflect best practice.

137. He concluded that further investigation of alternatives is required; a higher level of disinfection of the effluent is required; that a detailed economic assessment should be done; that more detailed groundwater modelling should be done, and this is likely to show a large disposal field is required.

138. **Bruce Ansley** spoke to the panel in support of his original submission. He said he purchased lot 9 of Poplar Beach, in 2004. He is also a shareholder of the Burgundy Water Company Limited, which owns the bore and holds the water permit to supply water to 16 lots for domestic and stock water. Mr Ansley said he was first approached about Project Pure by Chris Hawker in February 2005, who said the foremost aims of the project were to negate effects and produce a wastewater effluent that is clear and odourless.

139. Mr Ansley said that 26,000 cubic metres of wastewater per day is a huge amount to dispose of, and to appreciate that quantity one should stand on the Luggate Bridge and observe the Clutha for two minutes flowing at 236m/second. He said that many properties have reticulated their stockwater supplies and providing an alternative supply to those would be a big task.

140. Mr Ansley was concerned that the various hydrologists involved in the applications disagree with each other as to where the groundwater goes, and its direction. He was critical of the soakage test that had been performed for the disposal field as the test pit was around one kilometre from the proposed disposal field. He noted that Mr Evans was reluctant to accept his own model which showed effluent rising to ground level. He said that QLDC has not shown that contamination will not occur.

141. Mr Ansley said that he appreciated that the sewage system has to go somewhere, and was pleased that effluent will no longer be discharged into the Clutha River. Despite this he said more investigation of a suitable site is needed, and requested that the discharge permit be declined.

142. **The New Zealand Airline Pilots Association Incorporated (NZALPA)** was represented by Capt Jaquiery. He set out the hazard that birds pose to airports around the world, causing a serious economic and public safety problem. He quoted some statements to reflect that view. He said that the US Federal Aviation Administration Advisory Circular 150/5200-33A which he had appended to his evidence recommends a distance of 5 statute miles between an airport and the hazardous wildlife attractant, and strongly recommends against the construction of new wastewater treatment facilities.

143. Capt Jaquiery said the lack of detail in the applications gives carte blanche to the treatment/disposal method. He noted that Mr Caithness in giving his evidence and in supporting the applications had only considered one type of treatment plant, and several types of plant could be built. He rejected Mr Caithness's view that most birds have a poor sense of smell, and had attached to his evidence some internet articles on that matter.

144. Capt Jaquiery said that whereas Mr Caithness had recommended "a simple over screen" Dr Stewart had stated that it will be impossible to cover aeration basins.

145. Capt Jaquiery was concerned that the Crosshill farm site which is further away from the airport had been rejected by the Working Party in favour of keeping it for industrial land., and did not think this was a good reason to increase bird hazards at the airport

146. Capt Jaquiery attached a paper from Dr Harper who is an Aviation Ornithologist. Capt Jaquiery said that the international Civil Aviation Organisation of which New Zealand is a member discourages sources attracting bird activity in the vicinity of an aerodrome.

147. Capt Jacquiery concluded with the main points of the NZALPA submission

- that the consents applied for are incompatible with safe airport operations
- that granting resource consent is contrary to the duty under the Act to avoid remedy or mitigate adverse effects
- that other sites are more acceptable and designations should be sought for them
- that the designations be declined
- that the hearing is adjourned until a specific plan of the site can be produced and further public submissions invited.

148. **Mr Pawson** spoke to his original submission. He gave his background and said that his farm bounds both sides of the Cardrona River and has a boundary

with the Clutha River. Mr Pawson was in support of removing the discharge from the Clutha River and providing a higher standard of treatment. He said the issue of an emergency discharge needs to be addressed as he did not consider it to be acceptable.

149. Mr Pawson said as the panel had heard, the airport site is not the best. He said while acknowledging some problems, the Ballantyne Road was good, and the very best option was the Emerson site which had lots of advantages, room for expansion and it could take Hawea Flat sewage in the future as well. He said negotiations over that site were not successful due to a lack of leadership by QLDC, and a non collaborative approach which was unfortunate as there was good potential for the proposal to incorporate an irrigation scheme, and there has been a tremendous loss of opportunity.

150. Mr Pawson was surprised that no visual assessment of the proposal for aircraft taking off and landing had been done, and drew a comparison with the reaction of the QLDC to a large grass sign for the 5 mile site near Queenstown which could be seen from the air. He said the treatment plant would not be a pleasant sight.

151. In answering questions Mr Pawson said that Lucerne is a crop that has deep roots and abhors "wet feet" so that in saturated soil it will die.

152. **Aaron Heath** said he owns Pembroke Stud Limited, is a shareholder of the Burgundy Water company and was a member of the original Working Party, being a QLDC councillor. He noted that buildings in the subdivision have a height restriction of 8 metres for houses and 10 metres for farm buildings. Because of reverse sensitivity issues with the airport the lots in Poplar Beach cannot be further subdivided. He said even if the treatment plant structures are restricted to 4 metres there may need to be a roof above that, if odour or birds need to be controlled.

153. Cr Heath noted that Mr Espie usually says if a development has to be screened by trees or bunds then it should not go ahead. He added that at the launch of the project at Albert Town there was a statement made that the effluent would be of drinking water standard, and this is not the case now.

154. Cr Heath was concerned that private landowners will be expected to maintain an access road to the treatment plant, and was in favour of the road being sealed by the Council and turned into a public road.

155. He was concerned about odour and said that ORC officers will not find odour offensive. He was also concerned that landowners might want groundwater in the future which will be polluted, noting that expert hydrologists had differing views on the direction of the effluent plume. He also questioned the practicality of providing an alternative potable supply to the Poplar Beach lots should their bore become contaminated.

156. Cr Heath concluded saying consents cannot be granted on the evidence so far produced for these applications.

Applicant Right of Reply

157. Mr Todd said that four expert hydrologists agree that the groundwater movement is toward the Clutha River and not in the direction of existing water supply bores, therefore there is no risk of contamination of groundwater that is now being used for potable supply. He said the condition offering to supply potable water is only on the assumption that everyone has been wrong in their professional assessments, which is highly unlikely. He added that a condition of Poplar Beach is that all 16 lots must be supplied with potable water from a communal bore. Therefore Council is entitled to say all lots have potable water, and that further abstractions for irrigation will be fine.

158. In respect of the land sold to the airport by Big River Company Mr Todd said the amount paid was based on registered valuation and it was not discounted. He acknowledged some other land was gifted by Poplar Beach.

159. Mr Todd then directed the panel to a plan showing a triangle of land which was part of lot 11, on plan DP 325795 and said that this piece of land was bought by the Council, which contained the right of way, and that lot later became lot 1. He said no restrictions were placed on the use of the right of way by the vendors. Therefore the Council has the right to use the right of way along with the other lot owners. He said that if Council damages the right of way it must also repair it.

160. He said Council was purchasing land for the airport and at the time it was intended for airport use, and there was nothing underhand about that purchase.

161. Mr Todd said once the construction is finished the right of way will be used 3-4 times per day by treatment plant traffic, compared with the 100 or so vehicles that will use it once the subdivision is fully developed. He said there was no demand to seal the road or right of way, and owners of the private road have not elected to do so.

162. Mr Todd said that the internet articles with NZALPA evidence was not helpful, and that Capt Jaquiery had not given any New Zealand examples of waste treatment plants attracting birds.

163. Mr Todd said in terms of visual effects raised by Cr Heath and others that the Court of Appeal has said that in considering the existing environment one must take into account what the environment is likely to be given consents that have already been granted. He said given time there will be 16 houses on the Poplar Beach lots, and various new facilities might appear on the airport site.

164. In addressing Mr Pawson's comments about having a buffer area at Albert Town Mr Todd said that this has not been applied for in the application for designation nor has it been requested in any submissions, and that the panel does not have the jurisdiction to consider it.

165. Mr Todd said that if Council had wanted to go further with the Emerson site then Council would have to do certain deals and/or take action under the

Public Works Act, and Council did not wish to do that. Also to use the Emerson site wastewater would have to be pumped across the Clutha River, which was not desirable.

166. In addressing Capt Jaquiery's evidence Mr Todd said that the Airport Committee is independent of the Project Pure Working Party and this consent process and made its decision about Project Pure independently.

167. Mr Todd said Mr Ansley's concerns about water contamination and odour can be addressed through consent conditions, and the Council cannot do more than to keep odour within the boundary of the treatment plant site.

168. Mr Todd said Mr Page's comments about trespass and tort were gilding the lily. He referred to page 448 and note 20 of the Law of Torts in NZ which Mr Page had produced, and said this very point deals with subsoil and airspace. He said on page 457 the difference between nuisance and trespass was set out, an example being that tree roots growing into another person's land could be nuisance, whereas depositing rock and soil on another's land would be trespass. He added that Mr Page did not produce one single New Zealand case of an effluent plume being found to be trespass by the Courts.

169. In respect of Mr Page's comments about visual effects Mr Todd said every effort is being made to mitigate those effects including bunds, trees, and restricting height of structures. He added that whereas adverse social effects had been mentioned there was no detail of what these might be. Mr Todd said Mr Fraundorfer's concerns about potential effects of groundwater contamination were unfounded as it was highly unlikely that any contamination of existing bores would occur.

170. Mr Todd said that the applications had been notified to affected parties and to the public at large correctly, noting the people and addresses who were notified and the 4 separate notices in 4 different newspapers that were placed. He added that a meeting was held at Easter time when affected parties could be expected to be around.

171. Mr Todd said there would not be an extensive dust problem at this site, and compared this with the gravel operation at the Shotover which had been given as an example of where dust control was recommended. He said the Shotover gravel site is an extremely dusty area and could not be compared with the proposed designation areas.

172. Mr Todd said that Dr Marten's consultancy had been invited to tender for the work. He said Dr Marten in his evidence has assumed that a particular type of technology has been proposed, and this is not the case as the specific type of treatment selection is part of the design and build process, and that this approach has been highlighted throughout the process.

173. Mr Marquet asked Mr Todd how the panel could be expected to understand the effects of the proposal when the treatment system has not been described.

174. Mr Todd said that it is not unlike facing a subdivision proposal where the specific design of houses is unknown; therefore conditions are imposed to restrict height of buildings, site coverage, and placement of building platforms. He said in this case the panel has heard that the maximum height of structures will be 4 metres above the ground, that less than 25% of the site will pierce the specified datum level, that there will be a temporary construction road to appease the concerns of neighbours about road use, that odour will be confined to the boundary.

175. Mr Todd said that he is not saying that the panel should ignore neighbours and they have options for conditions that can be imposed and enforcement rights if the Council does not comply.

176. Mr Marquet asked how the panel could be sure there were no effects such as birds or insects.

177. Mr Todd said it was not unlike a new sheet metal factory, where the detail of the processes therein would not be described but conditions would be imposed for hours of work, amount of noise, car parking and so on.

178. Mr Todd said the panel has heard from multiple experts and the panel should rely on the evidence put before it. He reminded the panel that Dr Stewart said he had never seen birds attracted to the many treatment plants he has seen in New Zealand and overseas, and Mr Caithness gave expert evidence about bird hazard as well.

179. Mr Todd added the Panel now has 3 options – it can decline the applications, or ask for further evidence, or put in performance standards. He said in terms of effects and issues the Council has addressed roading, odour, visual amenity, height of buildings, and groundwater effects. The relevant provisions of the District Plan about noise would also be complied with.

180. Cr Butcher asked, if an oxidation pond system was to be installed then would more land be needed.

181. Dr Stewart replied and said with the standard of effluent required and the land available only one type of system can be used and that is activated sludge. He said the configuration and specific processes can vary depending on what type of system is chosen, but all of the options Dr Marten wrote about are basically activated sludge systems. Dr Stewart said the panel can rule out oxidation ponds altogether.

182. Mr Marquet said there was no mention of activated sludge in the consent application and Dr Stewart referred him to the technology overview that was in the application AEE, and his evidence where the same is discussed. Mr Marquet said he was looking at the application form and it was not mentioned.

183. Ms Weaver said that applications for resource consent and designation cannot be received unless they are accompanied by an AEE and/or the matters set out for consideration of designations. Therefore applications should not be

considered without also considering the accompanying AEE and any other documents that are submitted as part of the application.

184. Cr Butcher thanked Mr Todd for his reply, thanked all those present for participating in the hearing and adjourned the hearing.

Close of Hearing

185. The Panel adjourned the hearing on 1 September and reserved its decision. The panel met to deliberate and decided on 15 September 2006 to close the hearing as they would not be recalling any witnesses or requiring any further information.

The Principal Issues

186. The designation applications raised concerns by submitters about visual amenity, visual impact and roading. Those are issues that will be discussed in the decision of the QLDC. The issues for this panel to consider are:

- Consideration of alternatives
- Type of treatment & Bird Hazard
- Odour
- Groundwater contamination & receiving environment
- Amenity
- River disturbance
- Sedimentation of river water while laying a pipe
- Statutory Considerations
- Monitoring
- Term of Consents

We discuss each of these in turn.

Consideration of Alternatives

187. We read in the applications and supporting documents that a Working Party was set up to consider the various options for a new treatment and disposal system. Several witnesses and submitters spoke about other sites that have been considered, and the various reasons that they were not pursued further. It may well be that there is a better site than the site that is subject to the applications before us, however there are many issues that must be settled before a site can be secured.

188. In this case we are satisfied that various other options have been considered in the process of settling on this, the airport site. It is not for us to decide between alternative sites, but instead to consider the applications for the site that are now before us, and to consider the effects that may arise against the statutory matters that must be considered.

Type of Waste Water Treatment & Bird Hazard

189. The applicant stated in the application the site that is to be designated for a waste treatment plant is 2.32 hectares. We read and heard that the specific

treatment process is to be determined by the design and build tender process for the project. We were concerned that some of the effects such as bird hazard might not be able to be assessed in the absence of knowing what type of treatment is proposed. Bird hazard is a valid concern given the close proximity of the proposed treatment plant to Wanaka airport.

190. Mr Todd said that the type of treatment has not been decided whereas Dr Stewart said in his evidence and in the right of reply that for a site this size and to achieve the quality of effluent that is required, the only option is to build an activated sludge process. Dr Stewart said these come in various guises, but that type of biological treatment will be a feature of any of the likely plant types that might be installed. He was adamant that this would not include oxidation ponds or wetlands. Dr Stewart also included in his evidence a photo to give an example of what a plant might look like, and a plan showing what the layout might be. None of this included large ponds or wetlands.

191. We also noted that Mr Caithness commented on bird hazard on the understanding that the treatment plant would be an oxidation ditch which Dr Stewart said is one type of activated sludge process. We also heard that there will be no ponds of still water or effluent on site and therefore no attractant to birds.

192. Confirmation of this came to light near the end of the hearing and on that basis we find it is fair to say that the application is to install an activated sludge treatment plant of some sort. We are therefore satisfied that the type of treatment plant that will be installed is not likely to attract birds. A condition of consent can be provided to confirm the treatment type as Dr Stewart described it, and to require any change in bird presence to be addressed.

Odour

193. Odour can be a problem at any waste processing or treatment site. Mr Page said that odour is a traditional problem associated with sewage treatment plants and this is a fair comment. However, it is also fair to say that odour capture and treatment has progressed enormously in the last 10-15 years, and there are now facilities such as dry, water or electrostatic scrubbers and biofilters that can effectively treat odour. Selection of the type of control equipment depends on the nature of the odour being addressed.

194. The control of odour relies firstly on suitable structures, collection and treatment systems being set up, and secondly sound operation maintenance and monitoring systems to ensure that odour control measures are being carried out consistently and correctly. Most issues the Regional Council has had with odour from waste premises have been generated because of poor management.

195. In this case Dr Stewart has said that any odour generating parts of the treatment process will be contained within buildings so that the odours can be trapped and directed through, for example biofilters. We assume that the buildings will be sealed to prevent fugitive odours, likewise any pump wells and so on.

196. We do believe that it is possible in a modern treatment plant to avoid offensive odours moving offsite, but this will depend largely on sound management of the site. The applicant has offered a condition, that there will be no offensive odours beyond the boundary of the treatment site, and that is a reasonable condition which we believe to be achievable. In offering such a condition the applicant must also be aware that breaches of the condition will be viewed seriously and appropriate enforcement action will be taken.

197. Mr Page was concerned that ORC enforcement officers to assess any odour would have to come from Dunedin and therefore odour incidents would not be assessed. The Regional Council has personnel based all over the region and Mr Page can be assured that any odour complaints can be assessed directly.

Groundwater Contamination

198. There was a lot of information about the soil, depth to groundwater, direction of flow of groundwater, proximity to production bores and the quality of the effluent.

199. Ms Lindgren explained that as part of the processing of these applications, the Regional Council staff calculated what level of contaminant was acceptable in the receiving environment. In this case that is the groundwater, and with very conservative modelling techniques staff back- calculated what quality of effluent would be required from the treatment plant in order to meet the groundwater quality requirement downstream. The applicant agreed with this approach and has offered conditions that mean that a good quality of effluent must be produced in the treatment plant.

200. In addition a beneficial feature of this site is that there is around 70 metres of soil and subsoil which is made up of varying types of silts and gravels, and the effluent will move through this on the way to the groundwater. Soil and subsoil provides significant renovation of effluent, the only contaminant not being significantly reduced being nitrogen. As Ms Lough discussed the disposal trenches will build up biological slimes which will reduce the amount of nitrogen to varying degrees.

201. Therefore this is an ideal site for land disposal of effluent. Land disposal is the preferred option for effluent disposal in the Regional Plan: Water.

202. Several submitters were concerned that the water supply for the Poplar Beach subdivision would be contaminated. We heard from expert hydrologists that the direction of groundwater movement is to the east and toward the large oxbow in the Clutha River/Mata-au nearby. The closest production bore is 700 metres north-north west of the edge of the disposal field, and we do not expect the effluent plume to move in that direction.

203. In terms of future bores that may appear in the area, the quality of the effluent has been fixed such that once it has passed through the soil and subsoil and enters groundwater, the groundwater will meet drinking water standards. We note that the upper limit for nitrogen in groundwater that could arise from this

discharge according to SKM is 11 mg/litre and the lower limit is 3 mg/litre. This range fits within the New Zealand standard for drinking water. The same applies to E coli which is an indicator of bacterial contamination.

204. In addition we note that a condition of subdivision consent is that the 16 lots in the Poplar Beach development are to be supplied with potable water from a communal bore, and it is this bore that is 700 metres north-north west of the disposal field. Given the direction of the groundwater we do not expect that bore to become contaminated. Should a land owner of Poplar Beach wish to obtain more ground water in the future we would expect this to be for irrigation and non potable purposes, given that a potable supply will already be in place. The water will be entirely suitable for irrigation, and is likely to be acceptable for potable supply.

Test Pits and Infiltration

205. This raises some other issues about the rapid infiltration trenches. Ms Lough said that PDP in auditing the original consent applications had recommended that further test pits and infiltration tests be carried out. Ms Lough said that the concern was about dense layers in the soil and subsoil that could slow down the passage of effluent downwards through the soil column and result in effluent spreading laterally. Mr Ansley was concerned that the test pit that had been dug was approximately 1 kilometre from the disposal area, and we can understand this concern.

206. MWH preferred to do this as part of the design and build process and not part of the consent process. PDP agreed. Ms Lough and Mr Evans were confident that the structure of the soil would be largely consistent across the whole river terrace area. Ms Lough recommended that test pits to a depth of 3 metres be made prior to any disposal trenches being installed, and if any dense layers are encountered then the bottom of the trench is to be excavated through such layers. We agree with this proposal which can be included as a condition of consent.

207. Ms Lough also recommended that further infiltration tests be carried out when the first infiltration trenches are established, and their performance monitored. This will gave an indication of whether the 2000mm per day can be achieved, and if not, then more infiltration trenches can be installed.

Amenity

208. The effects on amenity may be considered by both consent authorities, as the applications for the effluent and air discharges to the Regional Council are full discretionary activities. The amenity effect of buildings is not within the Regional Council jurisdiction, but this is closely related to the facilities for which discharge permits are sought. Any building or structures have an effect on the amenity of an area. We accept that while construction is underway there will be some effects on amenity from dust and noise and vehicle movements. These will be temporary and therefore acceptable. We heard that longer term with trees and bunding around the treatment plant and providing the structures are in natural colours they could be mistaken for farm or airport buildings, and we accept that.

209. In the longer term the effect on amenity of the air discharge should be minor. The applicant must be diligent about trapping and treating odour such that no adverse effects on amenity arise.

210. The disposal field once established should have no effect on amenity, because the reticulation will be beneath the ground the surface areas can be grassed or lightly grazed, and these are activities which exist at present. There will be some small features such as the top of pipes and so on that will be visible, but only when a person is directly alongside the disposal area.

River Disturbance

211. Mr Railton was the only witness for the applicant to address this issue. Ms Lindgren held no concerns about the proposed work to lay the pipe across and under the river. It is to be done during a period of low flow, which is a feature of the Cardrona in summer. The pipe will be 3 metres below the bed, which will be reinstated after the pipe is installed. Mr Railton asked for some recommended conditions of consent to be changed to reflect the timing for providing the work programme, adding another month to the period when the work may occur, and to remove restraints on the hours of the day during which the work can be carried out. Ms Lindgren had no objection to the suggested changes and we agree that once the work begins it will be best to have it completed in the shortest time.

212. Mr Railton also had concerns about reinstatement of the river banks as willow trees reinstatement is not necessarily desirable. Some willows are the crack willow variety that spread rapidly and can choke waterways. Liaison with ORC river engineers will confirm whether willows need to be reinstated or not.

Sediment

213. The work will involve a substantial excavation of the river bed, and will cause considerable disruption but for a very short space of time. Similarly the sediment that might be released will be of short duration. After a few seasons the banks and bed should start looking as they do now, except for the removal of some willows.

Statutory Considerations

214. Section 104 of the Act sets out the matters to be considered when assessing an application for a resource consent. Those matters which should be considered for these applications are Part 2 (sections 5-8) of the Act, sections 104(1) & 105 of the Act, the Regional Policy Statement, the Regional Plan: Water for Otago, the Regional Plan: Air, and the Kai Tahu ki Otago Natural Resource Management Plan 2005.

Part 2 of the Resource Management Act 1991

215. Part 2 of the Act is set out in sections 5 to 8. Section 5 states that the purpose of the Act is to "to promote the sustainable management of natural and physical resources". Sustainable management has two facets. The first aspect is "managing the use, development and protection of natural and physical

resources in a way, or at a rate which enables people and communities to provide for their social, economic and cultural well being and for their health and safety". In this respect, the concept of sustainable management is permissive. The purpose of the Act is achieved by allowing activities that benefit people.

216. However, there is another aspect to sustainable management. The use, development and protection of resources are only allowed while:
"sustaining the potential of natural and physical resources, (excluding minerals) to meet the reasonably foreseeable needs of future generations; and safeguarding the life-supporting capacity of air, water, soil and ecosystems; and
avoiding, remedying, or mitigating any adverse effects of activities on the environment."

217. Sustainability is an important aspect of these discharge applications. The applicant is aware that its existing sewage treatment and disposal system is unsatisfactory and certainly not sustainable. The applicant must provide for the future of Wanaka and its environs, which is developing and expanding. The treatment plant at the proposed location with the discharge to land will enable the applicant to meet its needs and responsibilities in relation to providing community wastewater treatment and disposal. It is also important that this proposal is intended to serve the expanding community well into the future. The proposed treatment and disposal systems will protect public health in the community, safeguard the life-supporting capacity of ecosystems and avoid any adverse effects on the environment.

218. There are no matters of national importance under section 6 of the Act to be considered in this instance.

219. Section 7 requires persons acting under the Act in relation to managing the use, development, and protection of natural and physical resources, to have particular regard to eleven matters, 7 of which are relevant here:

(a)	*Kaitiakitanga:*
(aa)	*The ethic of stewardship:*
(b)	*The efficient use and development of natural and physical resources:*
(c)	*The maintenance and enhancement of amenity values:*
(d)	*Intrinsic values of ecosystems:*
(f)	*Maintenance and enhancement of the quality of the environment:*
(g)	*Any finite characteristics of natural and physical resources:*

220. Regarding 7(a) and 7(aa), kaitiakitanga and the ethic of stewardship have been recognised and provided for. The applicant consulted with local runanga prior to the applications being lodged and took note of their comments on the suitability of various location options. Mr Ellison was very supportive of the applications at the hearing.

221. Considering 7 b), it is clear that a new sewage treatment and disposal site is required. The standard of effluent treatment will be high, and there should be few effects from the ongoing operation of the treatment plant. The disposal

system will be barely visible and the land where disposal occurs can still be used for growing grass or lucerne. The groundwater will receive some contamination from nitrogen, but we note that existing groundwater has some nitrate in it already, and with the addition from the disposal field the groundwater will still be of a quality that can be used for any purpose.

222. With respect to 7(c) and 7(f), the maintenance and enhancement of amenity values, and the quality of the environment, have been considered in paragraphs 208-210 above. Amenity values in the area where the plant is to be located are limited, largely due to the activities at the airport and the associated restriction of access to the public. Considering 7(d), the area is dominated by exotic grassland, reflecting an already modified environment. Modelling of the discharge plume and its effect on the underlying groundwater aquifer indicates that the groundwater will continue to meet the New Zealand Drinking Water Standards 2005, and the discharge will have less than measurable impact on surface water quality. Provided conditions of consent are complied with, any adverse effects on amenity values and the quality of environment, stretching beyond the boundary of the proposed plant are expected to be minor. The applications are therefore consistent with section 7 of the Act.

223. Section 8 requires all persons acting under the Act to take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi). Ngai Tahu and local runanga were served notice of these applications and did not raise any concerns relating to the principles of the Treaty of Waitangi. The applications are therefore considered to be consistent with section 8 of the Act.

Section 104(1) of the Act

224. The remaining matters of Section 104(1) to be considered when assessing an application for a resource consent are as follows, and we discuss them below:

(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.

Environmental Effects

225. The actual and potential environmental effects of the proposed activities were considered in detail in paragraphs 189 -213 above. We consider the environmental effects to be minor, providing the plant and disposal equipment is managed and operated in an appropriate manner. Recommended conditions of consent will ensure that any actual or potential effects are avoided, remedied or mitigated.

Regional Policy Statement (RPS)

226. The following parts of the RPS are relevant to these applications:

227. Chapter 4 sets out the Manawhenua Perspective: Objectives 4.4.1 Waahi Tapu (Sacred places); 4.4.2 Waahi Taoka (Treasured Resources); 4.4.3 wairua and mauri of Wai (Water); 4.4.4 maintaining and enhancing Mahika Kai (Places where food is produced or procured).

228. We heard from Mr Ellison that the applications are consistent with Iwi objectives in respect of natural resources management. Iwi preference is land disposal of human waste rather than surface water and this is recognised in policy 6.5.1 –"To recognise and provide for the relationship Kai Tahu have with the water resource in Otago through: (a) Working toward eliminating human waste and other pollutants from entering all water bodies;..."

229. Policies from Chapter 5 – Land, Chapter 6 – Water, Chapter 7 – Air and Chapter 13 – Wastes and Hazardous Substances, are also of particular relevance:

> Policy 5.5.3 (d) seeks to avoid activities that contaminate soil
>
> Policy 5.5.5 seeks to minimise the adverse effects of land use activities on the quality and quantity of Otago's water resources and (c) specifically relates to avoiding, remedying or mitigating the degradation of groundwater and surface water resources caused by the introduction of contaminants in the form of chemicals, nutrients and sediments resulting from land use activities.
>
> Policy 6.5.5 promotes a reduction in the adverse effects of contaminant discharges into water bodies through: (d) Promoting discharges to land where practicable and where there are no significant adverse effects on groundwater or surface water resources, or soil.
>
> Policy 7.5.1 seeks to recognise and provide for the relationship Kai Tahu have with the air resources in Otago.
>
> Policy 7.5.2 is to avoid, remedy or mitigate any discharges which have adverse effects on the air resource including effects on human health, the environment, visual impacts and odour.
>
> Policy 13.5.1 is to recognise and provide for the relationship Kai Tahu have with natural and physical resources when managing Otago's waste stream through:
> (a) Providing for the management and disposal of Otago's waste stream in a manner that takes into account Kai Tahu cultural values; and
> (b) Working towards eliminating human wastes and other pollutants from entering Otago's water ways.

230. In considering the above policies we note that the proposed discharge is not expected to give rise to contamination of the soil. The effluent will be renovated within the soil and subsoil through natural processes. There will not be any discernable adverse effect on any other person's land.

231. The proposed discharge to land is not expected to lead to a degradation of the groundwater and surface water resources. Modelling of the discharge over a period of 5 years, to a state where the soil is saturated with the contaminants of concern (i.e. nitrate-nitrogen and faecal coliform bacteria), indicates that the resulting groundwater quality will continue to comply with the New Zealand Drinking Water Standard 2005. There was some debate as to whether the groundwater reaches the Clutha River/Mata-au, but if it does, the resulting surface water quality will meet environmental guidelines because any remaining nitrate-nitrogen and faecal coliform bacteria in the discharge are expected to be diluted to negligible concentrations before the discharge plume reaches the river.

Regional Plan: Water

232. The application to discharge treated wastewater to land is subject to the provisions of the Regional Plan: Water (RPW). The following policies are relevant to this application:

> Policy 7.7.1 To promote discharges to land in preference to water, where appropriate.
>
> Policy 7.7.2 When considering the discharge of any contaminant to land, to have regard to:
> (a) The ability of the land to assimilate the contaminant;
> (b) Any potential for soil contamination;
> (c) Any potential for land instability.
>
> Policy 7.7.8 To require, as appropriate, that provision be made for review of the conditions of any resource consent for discharging a contaminant.

233. In considering these policies we note the proposed discharge to land will replace the current discharge of treated wastewater to the Clutha River/Mata-Au. The proposed discharge is not expected to lead to contamination of soil. The 70 metres of soil and subsoil available for effluent renovation means that the site is ideal for the purpose intended. No instability is expected. A review condition can be included in the discharge permit, to address any unforeseen effect, or to adjust other conditions of consent should this be necessary.

234. Policy 8.6.1 relates to disturbance of the bed or margins of rivers, and requires consideration of spawning season for fish, bed and bank stability, water quality, amenity issues arising out of reduced water quality and downstream users.

235. Staff have recommended conditions in the two permits for installing the pipe beneath the Cardrona, which take account of the issues raised in the above policy.

Regional Plan: Air

236. The application to discharge contaminants (odour) to air is subject to the provisions of the Regional Plan: Air (RPA). The following policies are relevant to this application:

> Policy 7.1.1 To recognise and provide for the relationship Kai Tahu have with the air resource through procedures that enable Kai Tahu to participate in management of the air resource.
>
> Policy 8.2.3 In the consideration of any application to discharge contaminants into air, Council will have:
>
> (a) Particular regard to avoiding adverse effects including cumulative effects on:
>
> (i) Values of significance to Kai Tahu;
>
> (ii) The health and functioning of ecosystems, plants and animals;
>
> (iii) Cultural heritage and amenity values; and
>
> (iv) Human health.
>
> Policy 11.1.1 To avoid or mitigate any adverse effects on human health or amenity values resulting from the discharge of offensive or objectionable odour through the use of:
>
> (a) Good management practices (including the use of codes of practice) and process technology that has an inherently low odour potential to ensure the amount of odorous contaminants generated by a process or activity is minimised;
>
> (b) Appropriate control technologies to reduce the emission of odorous contaminants;
>
> (c) Site planning mechanisms and other land use management techniques to reduce the potential for adverse off site effects; and
>
> (d) Tools and techniques that provide an objective assessment of odour such as olfactometry, odour dose response assessments and community surveys.

237. These matters are considered paragraphs 193-197 above. By implementing the management strategies proposed in policy 11.1.1, any adverse effects on the values in policy 8.2.3 can be effectively and sufficiently avoided or mitigated. As stated above odour control will be determined by correct design and operation of the plant. Consent conditions provide for this.

Kai Tahu ki Otago Natural Resources Management Plan 2005

238. The KTKO Natural Resource Management Plan 2005 contains several policies of relevance to this application. These policies require:

- land disposal for human effluent and contamination.
- monitoring of all discharges be undertaken on a regular basis and all information including an independent analysis of monitoring results, be made available to Kai Tahu ki Otago.
- all discharge systems be well maintained and regularly serviced. Copies of all service and maintenance records should be available to Kai Tahu ki Otago upon request.
- visible signage informing people of the discharge area, such signs are to be written in Māori as well as English.
- groundwater monitoring for all discharges to land.

239. The plan also lists iwi issues and policies for the Clutha River/Mata-Au catchment. Policies related to these applications require reticulated community sewage schemes that have the capacity to accommodate future population growth. The intention in this case is to provide for the ongoing expansion of the Wanaka and environs population as development continues in the area. Consent conditions can be imposed to ensure consistency with the above Plan.

Section 105 of the Act

240. Section 105(1) of the Act states that for a discharge permit, the consent authority shall have regard to the actual and potential effects on the environment of allowing the activity, and have regard to;

(a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and

(b) the applicant's reasons for the proposed choice; and

(c) any possible alternative methods of discharge, including discharge into any other receiving environment.

241. In considering this section we note the quality of the effluent is required to be of a tertiary treatment standard. The discharge is into a very deep soil column and then to groundwater. It is therefore a very good disposal site, and the receiving environment is well suited to the disposal of effluent. The groundwater is expected to be suitable for all uses, once the effluent plume reaches it.

242. The applicant has considered several alternatives and has set out the reasons for choosing this site. The only other receiving environment is a direct discharge to water as is happening at present, and this is neither desirable nor sustainable.

Section 107

243. Section 107 of the Act states that a consent authority may not issue a discharge permit such as this for disposal to land and then to groundwater if the following is likely to arise in water:

- conspicuous oil, grease, films, scums, foams or floatable suspended material,
- conspicuous change in colour or visual clarity
- any emission of objectionable odour
- rendering of fresh water unsuitable for consumption by farm animals
- any significant adverse effects on aquatic life.

244. We do not expect any of the above effects to occur; therefore we are able to grant consent for the discharge of effluent to land.

Conclusion

245. Granting the consents is consistent with the relevant provisions of the Act, the Regional Policy Statement, and Regional Plan: Water, Regional Plan: Air and the Kai Tahu ki Otago Natural Resources Management Plan 2005. In particular there is a strong policy direction in the Regional Plan: Water and the Kai Tahu Plan for long term planning for essential services such as sewage treatment and disposal systems, and for these to be discharges to land, where this is possible.

246. The Act calls for sustainable management of resources and this proposal is entirely consistent with Part 2 of the Act where this principle is spelt out.

247. The applicant and some submitters set out the alternatives that had been considered. It is not for us to choose between alternatives, but instead to consider the effects and apply statutory tests to the proposal that is before us. In this case the effects are likely to be minor and the proposal is consistent with the various statutory provisions we have considered.

248. In this case the applicant is taking a long term view of the facilities needed for waste water treatment. The area is already modified by pastoral practices, and limited in development options because of the presence of the airport. Once built and providing there is no offensive odour, a visitor to the area should not be aware of what the facilities are for.

249. The applicant wishes to finalise the specific treatment facilities via a design and build process. That approach is satisfactory subject to final sign off of plans before construction begins. We were told that the treatment required to achieve the quality of effluent specified will be an activated sludge system of some sort. The treatment system can be viewed as a "black box" with a high quality effluent coming out of it. Therefore the design and build process will be driven by an effects outcome, ie the effluent must be of such quality that adverse effects in the groundwater do not arise.

250. We heard evidence that an activated sludge plant does not provide an attraction for birds. A condition of consent can be imposed to monitor bird presence and take appropriate action should birds become attracted to the treatment plant.

251. The disposal field option is already identified as rapid infiltration trenches. The land where disposal is to occur is very suitable, with a long depth of some 70 metres of silty/gravely layers. Further test pits must be done before the disposal system is installed to ensure the ditches go below any dense layers, and infiltration tests should be ongoing during initial operations to verify the rates that can be applied.

252. Several Poplar Beach land owners were concerned about amenity and the effects on groundwater. None of the building platforms for the subdivision are close to the proposed treatment plant. We heard extensive evidence about the suitability of the site, the level of treatment proposed and the likely effect on groundwater.

253. Groundwater is not likely to be contaminated to the extent that it cannot be used for future uses. The Poplar Beach communal bore is upstream of the disposal field in terms of the groundwater gradient in the area. In the unlikely event that contamination of existing supplies occurs, the applicant will provide an alternative potable water supply.

254. Odour can and should be controlled at the treatment plant. The design of the facilities can be done such that odour generating parts of the plant can be sealed and have odour trapped and diverted through odour treatment facilities.

255. The installation of the sewer pipe under the Cardrona will be a major excavation of the bed and banks, but it will be carried out quite quickly with the timing to avoid spawning season and to coincide with low flows. Once the work is done and the bed and banks reinstated there should be no ongoing effect.

Monitoring & Conditions

256. There was concern about the type of plant that might be installed. Dr Stewart was adamant that it would have to be a type of activated sludge plant. As the type of plant can have an effect on the area of site coverage and the likelihood of odours and birds and because we heard evidence about all of those matters it is appropriate to confirm via condition of consent that it is an activated sludge process.

257. The prediction of where the effluent plume might go and the direction of groundwater have been based on physical measurement of groundwater levels, observation of topography, and modelling. It is important that monitoring is carried out to verify the predictions and to ensure that the limits that are placed on consents are complied with. Dr Stewart requested clarification of various parameters and these are set out in the conditions of consent.

258. Monitoring conditions were recommended in the application for consent submitted by MWH and the staff S42A report. Most applicant witnesses agreed that they were appropriate, subject to minor clarification of a couple of matters. Mr Evans on the other hand suggested that the number of background monitoring bores be reduced, and that the requirement to monitor total nitrogen and phosphorus be deleted. Ms Dicey spoke after Mr Evans and

continued to offer the full set of bores and parameters for monitoring. It would be helpful for the applicant to have a consistent stance on this matter, and it is surprising to have one witness disagreeing with other applicant witnesses, especially on this matter for which we have considerable discretion.

259. We agree with the comments of Dr Selvarajah, that as there are various species of nitrogen and phosphorus, and as this is a green fields application, it is appropriate to monitor for the total amount of nitrogen and phosphorus that is being discharged into the environment. As with any new activity it is appropriate to require comprehensive monitoring when the activity first commences. After the new treatment and disposal system has been running for some time, and consistent monitoring results are forthcoming then the applicant may apply to have monitoring conditions changed.

260. We note that Ms Dicey added a proviso to the condition about providing a potable supply to contaminated bores that this should be done if it can be shown that the effluent discharge is causing the contamination of the bores. In accepting that proviso it is important that upstream control bores are monitored, to pick up any changes in groundwater that may occur for reasons other than the effluent discharge.

261. We also noted that there are large distances between the downstream bores that are to be monitored. Mr Evans indicated a slightly different groundwater direction to that of Mr Heller. For that reason it is appropriate for the downstream groundwater to be monitored across a wider area, to ensure that the plume is being detected and monitored. For that reason and subject to access to land, we require the consent holder to install a further bore downstream of the disposal field toward the Clutha River/Mata-au and at the distance from the disposal field where effluent is expected to mix with groundwater.

262. There was some discussion about sludge generation and disposal of sludge. We heard that due to the quantity of heavy metals and other substances in sludge, it cannot be composted, or dried for subsequent use as fertiliser. It is important that the sludge be disposed of correctly and therefore an approved landfill is appropriate. We have added that proviso as condition of consent.

263. Mr Railton was concerned about restriction on hours of work for installing the pipe beneath the Cardrona River, the timing of providing plans for the work to be done and the issue with willow reinstatement on the banks. We accept his concerns and have amended the relevant conditions.

264. Otherwise the draft conditions recommended by the applicant and the author of the S42A reports are appropriate.

Term of Consents

265. Staff have recommended the longest possible term for the discharges to land and air. We concur with that approach as review conditions provide for ongoing management of the consents and the effects of exercising the consents is likely to be minor.

266. For the land use consent and discharge permit for the pipe installation, a term of 5 years is appropriate as the new system should be installed well before then. Consent is not required to occupy the riverbed; therefore the term need only reflect the time required to carry out the work.

The text of the consents is attached and forms part of this decision.

Consent No: 2005.484

DISCHARGE PERMIT

Pursuant to Section 104B of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Queenstown Lakes District Council

Address: The Civic Centre, 10 Gorge Road, Queenstown

To discharge treated wastewater to land

for the purpose of disposal of wastewater from the Wanaka Basin Wastewater Treatment and Disposal System

for a term expiring: 30 September 2041

Location of activity: North-north-west of the existing Wanaka Airport building, approximately 1,600 metres south-west of the Clutha River/Mata-Au and 800 metres north of State Highway 6, approximately 8 kilometres south-east of Wanaka and Albert Town and 4 kilometres north-west of Luggate.

Legal description of land at point of discharge: Lot 5 DP 340031, Lot 1 DP 26239, Pt Lot 1 DP 341605 and Pt Lot 1 DP 300052.

Map reference: NZMS 260 G40:119-036

Conditions

1. Discharge Permit 96662 shall be surrendered within 6 months of the first exercise of this consent.

2. The discharge shall only be effluent from wastewater originating from the greater Wanaka and Albert Town areas, which has been treated in an activated sludge plant.

3. The volume of wastewater discharged to the disposal field shall not exceed 26,400 cubic metres per calendar day, at a maximum discharge loading rate for each rapid infiltration trench of 2,000 millimetres per calendar day.

4. The consent holder shall install a flow meter on the outlet pipe from the treatment plant and continually measure and record the daily volume of effluent being discharged to the disposal field. The consent holder shall report the daily discharge volume for the previous calendar month in writing, and in electronic

form, to the Consent Authority, within two weeks after the end of each calendar month.

5. Within three months of the commencement of this consent, the consent holder shall prepare and forward to the Consent Authority an Operations and Management Manual for the treatment and disposal system to ensure its effective and efficient operation at all times. The system shall be operated in accordance with this manual, which may be updated as appropriate. The manual shall include, but not be limited to:
   (a) a description of the entire treatment and disposal system, including a site map indicating the location of the various components of the treatment and disposal system, discharge locations and monitoring sites;
   (b) specific management procedures for key components of the system;
   (c) procedures to be utilised to monitor the operation and performance of the system;
   (d) monitoring and reporting procedures, including, but not limited to:
      (i) contingency plans for system malfunction and breakdowns for each of the treatment and disposal system;
      (ii) contingency plans for maintaining effluent quality during periods of peak flows;
   (e) population numbers that the system is designed to accommodate,
   (f) a complaints and system malfunctions recording system;
   (g) details of the measures to be taken to meet the quality of discharge set out in condition 11; and
   (h) procedures for continuous reviewing and improving of the manual.

5A. The consent holder shall submit the record of complaints and malfunctions to the Consent Authority within two weeks after any complaint or malfunction occurring, together with the details of the remedial measures taken. At all times, the consent holder shall ensure that the Consent Authority has a copy of the up to date Operations and Management Manual.

6. From the commencement of this consent, and within the first week of each calendar month, the consent holder shall collect a representative sample of the final wastewater, immediately prior to discharge to the disposal field.

   Each sample collected shall be analysed for:
   (a) Five day total biochemical oxygen demand (BOD_5)
   (b) Total suspended solids
   (c) Total nitrogen
   (d) Total ammoniacal nitrogen
   (e) Total phosphorous
   (f) Dissolved reactive phosphorous
   (g) *Escherichia coli*

7. From the commencement of this consent, and within the first week of each month for the first five years, and within the first week of January and July thereafter, the consent holder shall, subject to gaining access to the bores not owned by the consent holder, collect groundwater samples from the bores denoted by the Consent Authority as G40/0238, G40/0239, G40/0240, G40/260, G40/0189,

G40/0012 and G40/0103 and marked on Map 1 attached to this consent as Appendix A. Subject to obtaining access to the land, the consent holder shall establish one new bore to the north east of G40/260, in the vicinity of the number "272" as marked on Map 1, and groundwater sampling under this condition shall also apply to the new bore.

Each sample shall be analysed for:

(a) Total nitrogen
(b) Total ammoniacal nitrogen
(c) Nitrate nitrogen
(d) Total phosphorous
(e) Dissolved reactive phosphorous
(f) *Escherichia coli*

8. Groundwater sampling procedures shall be generally in accordance with "The New Zealand Guidelines for the Collection of Groundwater Samples for Chemical and Isotopic Analysis" science report 99/9, dated April 1999 and published by the Institute of Geological and Nuclear Sciences

9. All sampling techniques employed in respect of condition 8 of this consent shall be acceptable to the Consent Authority. All analysis carried out in connection with this consent shall be performed by a laboratory that meets ISO 17025 standards, or otherwise as specifically approved by the Consent Authority.

10. The analytical sampling results for each sample collected under conditions 8 and 9 shall be reported in writing to the Consent Authority, within two weeks of the consent holder receiving the results, together with a reading of the 24-hour wastewater discharge volume for the day of sampling.

11. From the commencement of this consent, effluent discharged to the disposal field shall comply with the following criteria:

Parameter	***80 – percentile* not to exceed***
Five day total biochemical oxygen demand (grams per cubic metre)	35
Total suspended solids (grams per cubic metre)	35
Total nitrogen (grams per cubic metre)	12
Escherichia coli (colony forming units per 100 millilitre)	1,000

* The 80 percentile applies to a rolling 12 calendar month period.

12. From the commencement of this consent, groundwater quality in the bores sampled by the consent holder under condition 7 shall comply with the following criteria:

Parameter	*No sample to exceed*
Nitrate nitrogen (grams per cubic metre)	11.3
Escherichia coli (colony forming units per 100 millilitre)	< 1

13. (a) Should any groundwater sample collected and analysed under condition 7 exceed the limits set under condition 12, the consent holder must, forthwith and in writing, notify the Consent Authority and the owner of the bore from which the groundwater sample was collected.

    (b) The consent holder shall be responsible for supplying potable water that meets the Drinking-Water Standards for New Zealand 2005, to any residential dwelling whose potable water supply is obtained from groundwater bores listed in condition 7, and is found to exceed the limits given in condition 12, where the exceedance is a consequence of the exercise of this consent. The consent holder shall continue to supply potable water equivalent to existing use to the residential dwelling, until the results of two upon each other following regular monitoring occasions show that the groundwater quality is complying with condition 12.

14. The consent holder shall, at six monthly intervals, undertake a visual inspection of the disposal field, to determine there is no vegetation die-off, or slumping, as a result of the discharge of treated wastewater to land.

15. After the commissioning of the treatment system, by 30 September each year, the consent holder shall forward an annual report in writing to the Consent Authority. The annual report shall cover the period 1 July to 30 June in the previous 12-month period and shall report on compliance with this discharge permit, including, but not limited to:

    (a) Copies of the laboratory analytical results of all monitoring undertaken;
    (b) Summary of the year's monitoring results, in context of previous years' results;
    (c) Summary of volumes of treated wastewater discharged to land;
    (d) Summary of quality of treated wastewater discharged to land;
    (e) Summary of all analytical results from the monitoring bores to date, and an interpretation of the groundwater quality results, particularly with regard to the discharge of treated wastewater to land;
    (f) Comments on compliance with the conditions of this discharge permit;
    (g) Summary of any complaints received, the validity of each complaint and the corrective action taken; and
    (h) Any other issues considered relevant by the consent holder.

16. No ponding or surface run-off of treated wastewater shall occur as a result of the exercise of this consent.

17. There shall be no vehicle access over or through the land disposal area, such that it adversely affects the performance of the disposal area.

18. This permit does not authorise the discharge of sludge to land or water, other than to an approved landfill facility.

19. If the consent holder discovers koiwi tangata (human skeletal remains), or Maori artefact material, the consent holder shall, without delay:

    (a) Notify the Consent Authority, Manawhenua, the New Zealand Historic Places Trust and, in the case of skeletal remains, the New Zealand Police.
    (b) Stop work within the immediate vicinity of the discovery, to allow a site inspection by the New Zealand Historic Places Trust and the appropriate runanga, and their advisors, who shall determine whether the discovery is likely to be extensive; if a thorough site investigation is required and whether an Archaeological Authority is required.
    (c) Any koiwa tangata discovered shall be handled and removed by tribal elders responsible for the tikanga (custom) appropriate to its removal or preservation.

    Site work shall commence following consultation with the Consent Authority, Manawhenua, the New Zealand Historic Places Trust and, in the case of skeletal remains, the New Zealand Police, provided that any relevant statutory permissions have been obtained.

20. The Consent Authority may, in accordance with sections 128 and 129 of the Resource Management Act 1991, serve notice on the consent holder of its intention to review the conditions of this consent within three months of each anniversary of the commencement of this consent for the purpose of:

    (a) determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or which become evident after the date of commencement of the consent; or
    (b) ensuring the conditions of this consent are consistent with any National Environmental Standards; or
    (c) requiring the consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment arising as a result of the exercise of this consent.

Consent No: 2005.485

DISCHARGE PERMIT

Pursuant to Section 104B of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Queenstown Lakes District Council

Address: The Civic Centre, 10 Gorge Road, Queenstown

To discharge contaminants into air from wastewater treatment

for the purpose of operating the Wanaka Basin Wastewater Treatment and Disposal System

For a term expiring: 30 September 2041

Location of activity: North-north-west of the existing Wanaka Airport building, approximately 1,600 metres south-west of the Clutha River/Mata-Au and 800 metres north of State Highway 6, approximately 8 kilometres south-east of Wanaka and Albert Town and 4 kilometres north-west of Luggate.

Legal description of land at point of discharge: Lot 5 DP 340031, Lot 1 DP 26239, Pt Lot 1 DP 341605 and Pt Lot 1 DP 300052.

Map reference: NZMS 260 G40:119-036

Conditions

1. This consent shall be exercised in conjunction with Discharge Permit 2005.484.

2. There shall be no discharge of odour, as a result of the exercise of this consent, that is noxious, dangerous, offensive or objectionable to the extent that is causes an adverse effect beyond the boundary of the site, in the opinion of an authorised officer of the Consent Authority.

3. The consent holder shall adopt the best practicable option to prevent or minimise odour discharges from the site. The best practicable options shall be set out in an Odour Management Plan that is to be submitted in writing to the Consent Authority within 3 months of the commencement of this consent. The plan shall be revised annually thereafter and the consent holder shall ensure that the Consent Authority has the most recent copy of the plan at all times. The Odour Management Plan shall provide for all the best practicable options for controlling odour to be in place by the commencement of this consent. The plan shall include, but not be limited to:

(a) A description of the potential sources of discharge to air on site;
(b) The methods undertaken to prevent odour being generated from activities on site. These shall include all of the methods described in the consent application submitted to the Consent Authority on 21 October 2005, including, but not limited to, the operation and ventilation of the wastewater treatment system, and the storage and management of screenings and sludge;
(c) The operating and maintenance requirements of the plant ventilation system;
(d) A contingency plan for the breakdown of any section of the ventilation system;
(e) A method for recording and responding to complaints from the public;
(f) A system for recording all maintenance undertaken on the odour control system;
(g) A description of the monitoring required to comply with this consent; and
(h) Assignment of responsibility for implementing and updating the plan.

4. The consent holder shall keep a record of any complaints received regarding discharges of odour from the site. The record shall, as a minimum, include the following:
   (a) The time, date and place at which the complaint was generated;
   (b) The nature of the complaint
   (c) Operating conditions at the time of the complaint, including any malfunctioning or breakdown of control equipment;
   (d) Wind and weather conditions at the time of the complaint; and
   (e) Corrective action taken by the consent holder to minimise the risk and extent of the recurrence of the causes of the complaint.

   The consent holder shall submit a copy of the written record of the complaint to the Consent Authority within two weeks after any complaint occurring, together with the details of the corrective actions taken.

5. The Consent Authority may, in accordance with sections 128 and 129 of the Resource Management Act 1991, serve notice on the consent holder of its intention to review the conditions of this consent within three months of each anniversary of the commencement of this consent for the purpose of:
   (a) determining whether the conditions of this consent are adequate to deal with any adverse effects on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or which become evident after the date of commencement of the consent; or
   (b) ensuring the conditions of this consent are consistent with any National Environmental Standards; or
   (c) requiring the consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment arising as a result of the exercise of this consent.

Consent No: 2005.486

LAND USE CONSENT

Pursuant to Section 104B and 104 C of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Queenstown Lakes District Council

Address: The Civic Centre, 10 Gorge Road, Queenstown

To place a pipe under and disturb the bed of the Cardrona River

for the purpose of constructing the reticulation network associated with the Wanaka Basin Wastewater and Disposal System.

for a term expiring 30 September 2011

Location of activity: Cardrona River, adjacent to State Highway 6, approximately 2.5 kilometres east of Wanaka and approximately 500 metres south-east of the intersection of State Highway 6 and State Highway 84, Wanaka.

Legal description of land: Adjacent to Lot 1 DP 356315 and Crown Land Blk IV Lower Wanaka SD.

Map reference: NZMS 260 F40:071-051.

Conditions:

1A This consent shall not be exercised until the final design of the works to be undertaken under this consent has been approved by the River and Drainage Investigations Unit of the Consent Authority. The documentation of the final design shall include, but not be limited to, the following:

(a) An assessment of the bed material and potential for scour erosion, and the depth of erosion to be expected below the mean bed level at the pipe location and depth, including proposed measures to stabilise the bed at the pipe location, and a distance upstream and downstream of the pipe location, determined by the Consent Authority.

(b) The proposed minimum grade of the pipe at its approach to the river banks and the measures to be implemented to prevent seepage of groundwater along the pipe.

1B Prior to work commencing under this consent the consent holder shall supply to the River and Drainage Investigations Unit of the Consent Authority

(a) A work programme, detailing the staging of the work, including the diversion of water, the digging of the pipe trench, the laying of the pipe and the backfilling and stabilisation of the site, before water is diverted back over the work area.

(b) A monitoring programme and action plan to ensure avoidance of substantial erosion to the river bed and banks during the works, in

order to avoid transport of sediment from the work area to the downstream environment.

2. The consent holder shall ensure that any contractors engaged to undertake work authorised by this consent abide by the conditions of this consent. A copy of this consent shall be present on site at all times while the work is being undertaken.

3. The consent holder shall notify the River and Drainage Investigations Unit of the Consent Authority in writing, at least five working days prior to the commencement of work authorised by this consent.

4. Hours of work under this consent shall be from 7.00 am to 9.00 pm, Monday to Friday. Works shall not be undertaken on Public Holidays.

5. Works shall be undertaken during the months of October to April, when flows in the watercourse are low.

6. During the exercise of this consent, the consent holder shall ensure that no contaminants, including fuel, oil, cement or cement products, enter the Cardrona River. In the event of accidental contamination, the consent holder shall undertake remedial action and shall notify the Consent Authority as soon as practical.

7. Fuel storage tanks and machinery working and stored in the construction area shall be maintained at all times to prevent leakage of oil and other contaminants into the Cardrona River. No refuelling of machinery shall occur within the watercourse.

8. All machinery shall be water blasted prior to being brought on site, to reduce the potential for pest species being introduced to the Cardrona River. At no time during the exercise of this consent shall machinery be washed within the bed of the Cardrona River.

9. All works shall be undertaken, as far as practicable, outside the wet bed of the watercourse.

10. The consent holder shall ensure that any bed disturbance is limited to the extent necessary to carry out the works.

11. The works shall not result in any decrease of the cross-sectional area of the streambed, as the streambed exists prior to commencement of the works authorised by this consent.

12. The consent holder shall minimise damage to riparian vegetation when exercising this consent.

13. The consent holder shall ensure that fish passage is not impeded as a result of the placement of the pipeline.

14. The consent holder shall ensure the works authorised by this consent do not cause any flooding, erosion, scouring, land instability or property damage. Should such effects occur due to the exercise of this consent, the consent holder shall, if so required by the Consent Authority and at no cost to the Consent Authority, take all such action as the Consent Authority may require to remedy any such damage.

15. Prior to, or immediately following completion of the works authorised by this consent, the consent holder shall ensure that all plant, equipment, chemicals, fencing, signage, debris, rubbish and any other material brought on site is removed from the site. The site shall be tidied to a degree at least equivalent to that prior to the works commencing.

16. The consent holder shall ensure that any damage to the stream banks, including riparian vegetation, be reinstated to a quality at least equivalent to that prior to the works commencing, within one month of completion of the works. Reinstatement of trees that may be on the river banks is not a requirement of this condition.

17. Representative date verified photographs shall be taken of the site:
    (a) before works commence; and
    (b) immediately after the completion of works and rehabilitation of the site.

    These photographs shall be provided to the Consent Authority within one month of the final photographs being taken.

18. The consent holder shall supply "as built" plans and photographs of the pipe to the Consent Authority within three months of completion of the works.

19. If the consent holder:

(a) discovers koiwi tangata (human skeletal remains), or Maori artefact material, the consent holder shall without delay:
    (i) notify the Consent Authority, Manawhenua and New Zealand Historic Places Trust and in the case of skeletal remains, the New Zealand Police; and
    (ii) stop work within the immediate vicinity of the discovery to allow a site inspection by the New Zealand Historic Places Trust and the appropriate runanga and their advisors, who shall determine whether the discovery is likely to be extensive, if a thorough site investigation is required, and whether an Archaeological Authority is required.

    Any koiwi tangata discovered shall be handled and removed by tribal elders responsible for the tikanga (custom) appropriate to its removal or preservation.

    Site work shall recommence following consultation with the Consent Authority, the New Zealand Historic Places Trust, Manawhenua, and in the case of skeletal remains, the NZ Police, provided that any relevant statutory permissions have been obtained.

(b) discovers any feature or archaeological material that predates 1900, or heritage material, or disturbs a previously unidentified archaeological or heritage site, the consent holder shall without delay:

(i) stop work within the immediate vicinity of the discovery or disturbance; and

(ii) advise the Consent Authority, the New Zealand Historic Places Trust, and in the case of Maori features or materials, the Manawhenua, and if required, shall make an application for an Archaeological Authority pursuant to the Historic Places Act 1993; and

(iii) arrange for a suitably qualified archaeologist to undertake a survey of the site.

Site work shall recommence following consultation with the Consent Authority.

Consent No: 2005.487

DISCHARGE PERMIT

Pursuant to Section 104B of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Queenstown Lakes District Council

Address: The Civic Centre, 10 Gorge Road, Queenstown

To discharge contaminants to the Cardrona River

for the purpose of placing a pipe

for a term expiring 30 September 2011

Location of activity: Cardrona River, adjacent to State Highway 6, approximately 2.5 kilometres east of Wanaka and approximately 500 metres south-east of the intersection of State Highway 6 and State Highway 84, Wanaka.

Legal description of land: Adjacent to Lot 1 DP 356315 and Crown Land Blk IV Lower Wanaka SD.

Map reference: NZMS 260 F40:071-051.

Conditions:

1. This consent shall be exercised in conjunction with land use consent 2005.486.

2. No contaminants other than silt and sediment shall be discharged into the creek.

3. The consent holder shall take all practicable steps to minimise the release of sediment into the water while disturbing the bed of the watercourse.

4. Appropriate sediment control measures, which may include sediment traps, shall be undertaken so that the water quality 50 metres downstream of the disturbance does not have suspended solids content or turbidity greater than 10 percent of the suspended solids content or turbidity upstream of the disturbance.

5. No lawful take of water is to be adversely affected as a result of any discharge.

6. The consent holder shall ensure that the discharge does not give rise to any significant adverse effect on aquatic life.

Map 1, being Appendix A of condition 7 of discharge permit 2005.484.