

To:
Consents Administration Section
Environment Canterbury
P O Box 345
Christchurch

Submission on an Application for a Resource Consent

Organisation Making Submission:
Avon Heathcote Estuary Ihutai Trust
P O Box 2657
Christchurch

Contact person:
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Consent Applications: To change conditions of resource consent CRC012011, which authorises the discharge of up to 500,000 cubic metres per day of treated wastewater from the CWTP oxidation ponds at Bromley into the Avon-Heathcote Estuary

Name of applicant: Christchurch City Council,

Application numbers: CRC012011.1

We oppose any change to conditions 16(a), 16(b) and 17(a)

The reason for making our submission is to protect the ecosystem of the Avon-Heathcote Estuary/Ihutai

We wish the consent authority to decline the changes to the conditions 16(a), 16(b) and 17(a)

We wish to be heard in support of our submission

Signed: _____ Date: _____
Alex Drysdale, Chairperson

Submission:

1. The Christchurch City Council (CCC) is applying for significant changes in relation to discharges of ammonia and nitrogen to the Avon Heathcote Estuary/Ihutai (the Estuary).
2. We are represented on the Discharge Audit Group (DAG) set up to monitor the resource consent CRC012011 to continue to discharge to the Estuary. The DAG group is facilitated by the CCC and provides an opportunity for informal sharing of information, but nothing more than that. The ammonia issue has been discussed many times but DAG has not endorsed this resource consent application. Our presence at the Discharge Audit Group has always been without prejudice.
3. Because the Council cannot meet the current conditions it has chosen to seek a variation to legalise the current non-compliances. CCC insists that it cannot comply with the existing conditions, even though these conditions were set by a lengthy hearing process and Environment Court appeal.
4. There are 43 months remaining before the ocean outfall will be operational – another 43 months with elevated ammonia levels affecting fish species in the Estuary. To us this is not ‘short term’ as described by the applicant.
5. The AEE for this variation application states that “the objective of the ponds is to reduce pathogens ...in the wastewater ...” (S 2.3.2) and “The design of the system and the various improvements have never been intended to remove nutrients such as nitrogen and ammonia.” (S 2.8). We dispute this.
6. The reason given for this application is an overly optimistic commitment by CCC in 2003. The modifications to the oxidation ponds were predicted by the consultants and reported in the 2001 AEE to reduce the total nitrogen and ammoniacal nitrogen to annual medians of 30 and 20g/m³ respectively. The conditions granted are those that were offered by the Council at the consent hearing.
7. The pond modifications have generally met the predicted levels for faecal coliforms, but the levels ammonia, and in particular the proportion of ammonia to total nitrogen, have **increased** since the ponds were modified.

Means of selected properties for Pond 6 discharge for 1995-97 and 2004-05

	Mean TN ppm	Mean NH4 ppm	NH4/TN %	NO2+NO3 range	Mean SS g/m³	Mean Org N ppm	Mean pH
Year 1995-97	38.6	25.8	66.7	0.1-4.9	50	12	7.9
Year 2004-05	33.9	28.9	85.3	0.05-0.6	27.3	4.8	8.3

(from O’Connor letter to ECan 8 August 2005)

8. While the total nitrogen, organic nitrogen and suspended solids have all reduced, a greater proportion of total nitrogen appears as ammonia.
“Nitrification is barely evident, even over the warmer months of last summer. The evidence seems plain that the present ponds are hardly functioning as biological communities of phytoplankton and zooplankton.” (O’Connor, letter to ECan, 8 August 2005)
9. The Trust submits that the Council has had more than ten years warning about the increasing ammonia levels.
In the Issues and Options 1998 document:
“Since there is very limited dilution available within the receiving waters of the estuary, a relatively high effluent quality will be required prior to discharge. Improved nutrient removal will be required, particularly of ammoniacal nitrogen which is toxic to aquatic life and present at quite high concentrations (20-35g/m³) in the existing pond effluent.”
10. We see no reason why there should be any variation from the current consent values, especially for ammonia. From Dr Bolton-Ritchie (2005 hearing):
“Ammonia is a toxic compound and even a small pulse of wastewater with a high concentration of ammonia could kill some organisms in the receiving environments.”
11. We believe too much weight has been put on the consultant’s theoretical predictions, with little emphasis put on practical research for reducing ammonia levels and understanding the ecological effects of raised ammonia levels specific to this Estuary.
12. Over the years a number of studies have been suggested to the Council to give better information on which to base planning and design.
For example, from Gavin James’ evidence, 2001 hearing:
“Recent experimental studies have shown that both the duration and frequency of exposure has an important influence on the toxicity of ammonia to fish (Milne et al 2000). The issue of ammonia toxicity has been commented on by several submitters, and likely impacts on fish species in the Estuary should be investigated more fully.”
It is only in the last few months that a contract has been agreed to investigate toxicity for fish in the Estuary.
13. We question the analysis presented in the AEE for this application (Pages 4-17 to 4-19) which shows no significant correlation between the total ammonium concentration in the Estuary and the CWTP ammonia daily mass discharge. We would wish to see additional analysis with Estuary concentrations shown against CWTP discharge concentration (g/m³), and some time series analysis done comparing discharge concentrations with estuary concentrations.
14. We disagree with the conclusion (page 4-19) that the reductions in the wastewater discharge ammonia concentrations are unlikely to have a consistent effect of reducing ammonia concentrations in the estuary receiving environment. The levels of

ammonia in the Estuary are too high; the largest sources of ammonia is the CWTP (AEE, page 4-17) ; so any reduction in ammonia levels from the CWTP will obviously reduce the ammonia levels in the Estuary.

15. The level of ammonia acceptable in the Estuary will be one of the main discussion points at the hearing for this resource consent, with discussion centered on the ANZECC Guidelines and the USEPA Criteria. It is a circular argument to use a 90% level of protection because the Estuary is a highly disturbed system. It is a highly disturbed system because of the presence of the CWTP discharge. We submit an ANZECC 99% trigger value of 0.5g/m³ total ammonia must be used in the analysis for the Estuary. Using this 99% protection level 28.6% of the samples in Appendix B have exceeded the 0.5 g/m³ value.
16. The AEE was published in October 2005, but the last data set in Appendix B was on 12 July 2005, with only four dates since April. What trend does this missing data show?
17. There are a number of methods available to the Council to decrease the ammonia levels in the ponds and hence in the discharge to the Estuary. Possibilities for some or all of the ponds are increased residence time; providing increased surface area near the surface to provide substrate for nitrifying bacteria; and increasing carbon levels to promote algae growth and assimilation of ammoniacal nitrogen into algae.
18. We understand that the treatment process and ponds are a biological system and steps taken to remove ammonia may affect other properties of the discharge – such as water clarity. It is time that ammonia removal is seen as a priority even with these other changes.
19. We ask that the variations to conditions 16 (a), 16(b) and 17(a) are not granted and that the CCC is required to make changes to the treatment and pond system to reduce the ammonia levels being discharged into the Estuary.