

Flaxton R.D.
Karapiro
5/9/19

Environment Canterbury
Dear Sir/Madam
Please find enclosed
submission on Waimakariri Water
Zone.
I wish to speak to it
at the hearing

Yours faithfully
Craig M. Ford

EC - CRON		
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- 9 SEP 2019		

3.1.2.1 Canoeing

The rivers identified by Eggar and Eggar (1981) as canoeing waters (Table 3.1), particularly the Kaiapoi River, are also used by salmon. The minimum depth required for salmon passage is greater than that for canoe passage (Mosley, 1983a). Therefore, if minimum flows are sufficient for salmon passage, they should be adequate for canoe passage.

3.1.2.2 Effluent dilution

The minimum flow of 484 Ls⁻¹ is required to ensure that the discharge from the Belfast oxidation ponds does not cause Otukaikino Creek to exceed the USEPA water quality criterion for ammonia. This flow is well within the minimum flow proposed for fishery maintenance purposes (Table 3.4). However, the minimum flow for effluent dilution in the Cam River is 800 Ls⁻¹, compared with 670 Ls⁻¹ for maintenance of the salmon fishery.

3.2 Critical instream values

The critical instream value that was selected for each stream or river on the basis of the values identified in the previous sections, is listed in Table 3.2.

3.3 Regressions between critical reaches and existing gauging sites

Where the critical reaches and existing flow gauging sites differed, flow data for the two sites on each stream were regressed against each other (ie, Otukaikino Creek, Kaiapoi River, Cam River, Styx River, Ohoka River, and Greigs Drain; Table 3.3). A large tributary on the Kaiapoi River resulted in a poor correlation between the two sites on that river ($r^2 = 0.74$). For similar reasons a meaningful relationship could not be established for data from sites on the Styx River or Greigs Drain. The flow in Greigs Drain increases greatly between the current monitoring site and the critical reach because of inflow from a large tributary between the two sites. In the Styx River, a correlation could not be established because of excessive weed growth at the continuous recorder site (Radcliffe Road), which made the water flow sluggish and affected water levels at the site.

Table 3.2 Critical instream values for determining minimum flows for each stream or river

	Juvenile trout	Adult trout	Adult salmon	Effluent dilution
Styx River			✓	
Otukaikino Creek			✓	
Greigs Drain		✓		
Kaiapoi River			✓	
Cust Main Drain		✓		
Cust River	✓			
No. 7 Drain		✓		
Ohoka Stream			✓	
Cam River				✓
North Brook			✓	
South Brook			✓	

Graph which forms part of condition 4 of CRC990501.2

