Mataura and Waiau Rivers

Landscape Comparisons

A Supplement to the report - Manapouri Power Scheme - Waiau River Landscape Assessment

prepared for

ECNZ

by

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The report 'Manapouri Power Scheme Waiau River Landscape Assessment' prepared for the Electricity Corporation of New Zealand Limited and submitted to the Waiau River Working Party in September 1995 concluded:

> "Minimum acceptable flows for amenity purposes are very difficult to determine. A flow of more than 10 cumecs will result in a major improvement to amenity south to Monowai. At Sunnyside a flow of 50 cumecs (the lowest experienced in these investigations) retains amenity values. A 70 cumec flow at Tuatapere retains amenity values. Lower flows at these locations may also be effective in maintaining amenity values but were not experienced.
>
> A flow of approximately 10 cumecs at the Mararoa Weir, 50 cumecs at Sunnyside and 70 cumecs at Tuatapere is adequate to retain the natural character of the river. (Note: the landscape adjacent to the weir structure is not 'natural'). Lower flows may also retain natural character but these were not experienced.
>
> Occasional flows lower than those mentioned in the previous paragraph are likely to be seen as reflecting the natural dynamics of the river. This is not to say that all groups will necessarily find this acceptable, however it is unlikely to be considered to have adverse effects by the passing tourists and visitors."
>
> pp. 41-42

This supplement to the above report attempts to shed further light on these conclusions. Will lower flows than those experienced during site investigations, particularly at Clifden and Tuatapere, have adverse effects on natural character and amenity? Is there a basis for the view that occasional lower flows are likely to be seen as reflecting the natural dynamics of the river?

To assist in answering these questions an assessment was made of the Mataura River at Gore and further down river towards the coast.

The Waiau and Mataura have many similarities. Both rivers rise in the mountains of northern Southland and have major catchments. They have highly variable flows and not dissimilar low flows, eg. 11.6 m ^{3}/s at Gore (Mataura) and 13.81 at Tuatapere (Waiau). Details of low flows are contained in Appendix 1.

The major difference between the two rivers is that the Waiau flow is 'controlled' by the Manapouri Power Scheme while the Mataura flows are uncontrolled (ie. in their natural unmodified state).

Photographs have been taken to illustrate the appearance of the two rivers as follows:

Waiau:	Clifden	Mataura:	Mataura
	Tuatapere Domain		Gore
	Tuatapere Bridge - downriver		Wyndham Bridge

It will be apparent from photographs (1-3) that there are remarkable similarities in the two rivers at these locations.

The Mataura River at Mataura and the Waiau River at Clifden are confined by rock outcrops and have a number of similarities although the Mataura is adjacent to the Mataura township and the Waiau is in a rural setting. The river through Gore is very similar to the Waiau immediately up-river of the Tuatapere State Highway bridge. Although the surroundings are more urban at Gore the river is similarly wide and shallow with riffles. The Mataura near Wyndham has many similarities to the Waiau down-river of Tuatapere.

Comment

It can be assumed that the very low flows experienced by the Mataura are recognised as being natural phenomena - reflecting excessively dry conditions in the catchment. The very low flows on the Waiau also occur in extremely dry conditions when there is very low tributary flow down river of the Mararoa Weir.

It is not unreasonable to suggest that when these very low Waiau flows occur at Clifden and Tuatapere they appear to reflect the natural dynamics of the river. Although very low flows have not been experienced during these investigations, is seems probable that the appearance of the river beds in these conditions in the Waiau and Mataura Rivers will be comparable and natural in character.

The riverbanks of the Waiau are generally less modified than those of the Mataura River which passes through larger settlements and modified rural surrounds. The general appearance of the Waiau River and its margins will be no less natural in character than the Mataura.

As stated in the earlier Waiau Landscape Assessment it is inevitable that for some people, who are aware of how the Waiau River has been modified by the hydro-electric developments, the low flows will be seen as undesirable. However, for the majority of viewers the amenity values of the 'controlled' Waiau will not be greatly different from the amenity values of the 'natural' Mataura.

Based on this brief analysis the comparison between Waiau and Mataura Rivers suggests that concerns over adverse amenity and natural character effects of occasional very low Waiau flows (at Clifden and Tuatapere) are unlikely to be justified when wider considerations of Southland river dynamics are taken into account.



Waiau River at Clifden looking upriver from suspension bridge
Photo: 9 June 1995



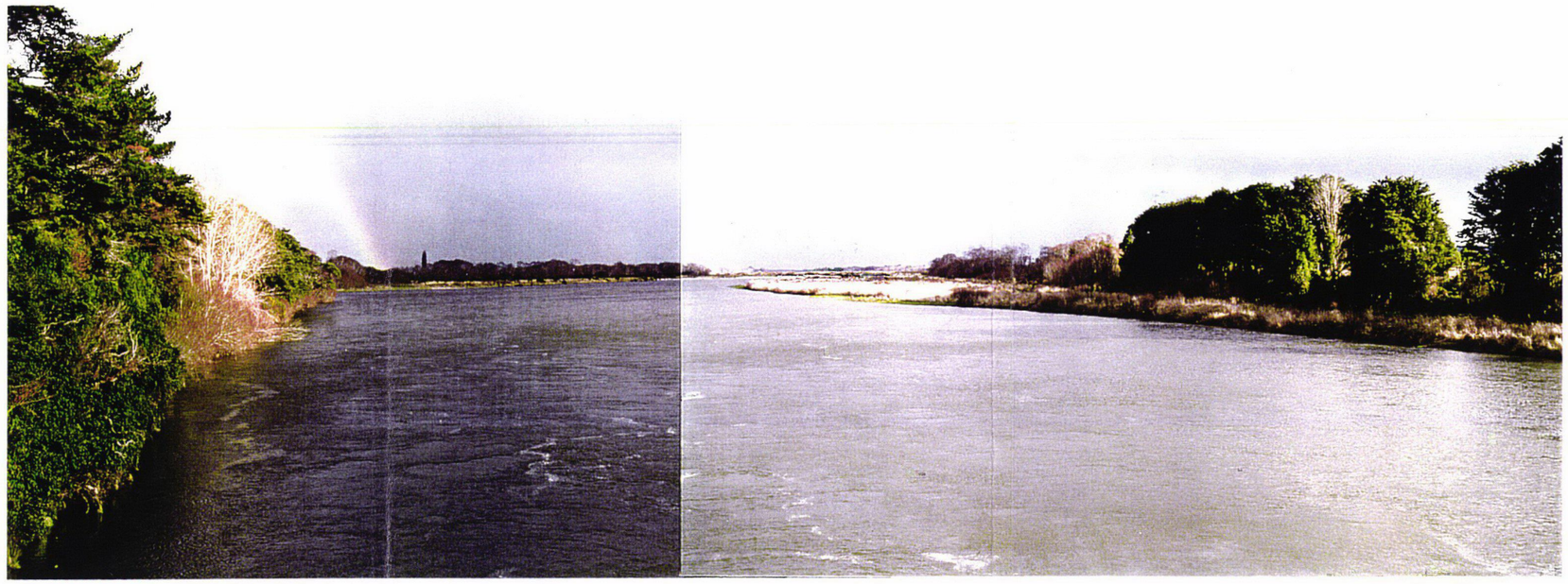
Mataura River at Mataura looking downriver from bridge.
Photo: 3 October 1995



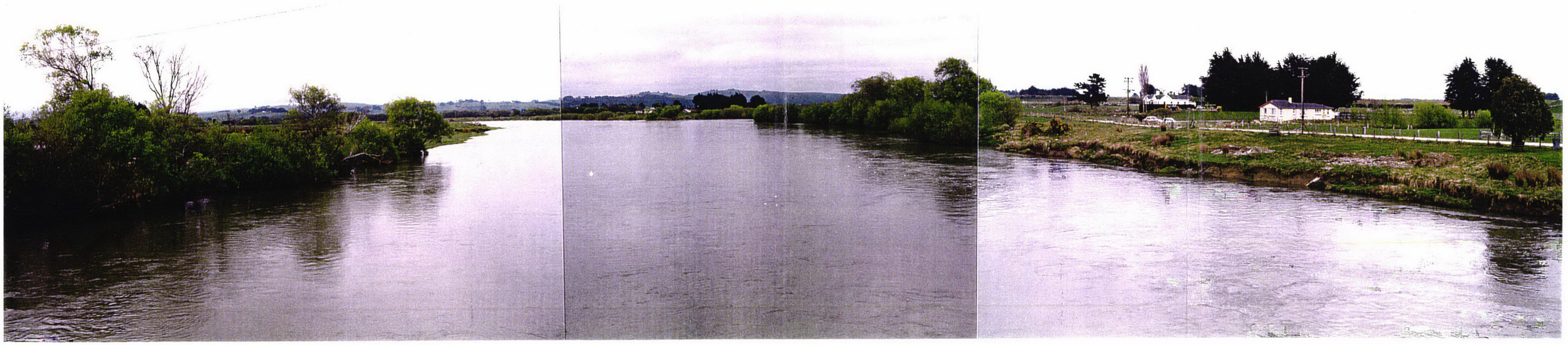
Waiau River at Tuatapere Domain. View upriver
Photo 9 June 1995



Mataura River at Gore. View upriver from State Highway bridge
Photo 3 October 1995



Waiau River from Tuatapere bridge (looking downriver)
Photo:9 June 1995



Mataura River downstream from Edendale-Wyndham Road bridge
Photo:3 October 1995

Appendix 1

Low Flows in Southland Rivers (March 1995)

Low Flows in Southland Rivers (March 1995)

Site No.	River	Name	Catchment Area (km^2)	Annual Low Flow (m^3/s)	Date	Specific Discharge $l/s/km^2$
77504	Mataura	Gore	3465	11.6	9.3.95	3.35
77519	Mataura	Seward Downs	5109	14.1	10.3.95	2.76
77561	Waikaia	Mahers Beach Rd	1164	3.93	9.3.95	3.38
78607	Oreti	Lumsden	1160	3.23	9.3.95	2.78
)01	Aparima	Thornbury Br	1268	2.13	10.3.95	1.68
79737	Mararoa	At Cliffs	1219	5.5	9.3.95	4.51
79735	Waiau	Sunnyside	6616	4.27	9.3.95	0.64
-	Waiau	Sub-catchment at Sunnyside	823	4.27	9.3.95	5.19
79701	Waiau	Tuatapere	8134	13.81	9.3.95	1.70
-	Waiau	D/S of Sunnyside	1518	9.54	9.3.95	6.28
-	Waiau	D/S Mararoa Weir	2341	13.81	9.3.95	5.90

Notes:

(1) Data supplied by Southland Regional Council for all sites other than Waiau and Mararoa.

(2) For Waiau at Tuatapere, the only flows since 1982, lower than the 13.8 m^3/s recorded in March 1995 occurred in 1989 and 1990 when the following annual minima were recorded (Waiau River Hydrology, 1993):

11 December 1989 12.0 m^3/sec
13 April 1990 8.6 m^3/sec

(3) Southland Regional Council estimate the 1995 low flows to have a return period of around 5 to 7 years.

(4) Catchment Areas, Waiau at Lake Te Anau is 3124 km^2, and at Manapouri control is 5793 km^2.

The Waiau River downstream of the Manapouri control structure has an area of 2341 km^2. This excludes the Mararoa catchment.

(5) The table of data has been compiled and checked by Works Consultancy Services of Wellington.