



Otago  
Regional  
Council

# **Flow Naturalisation for Island Stream in the Kakanui catchment, North Otago**

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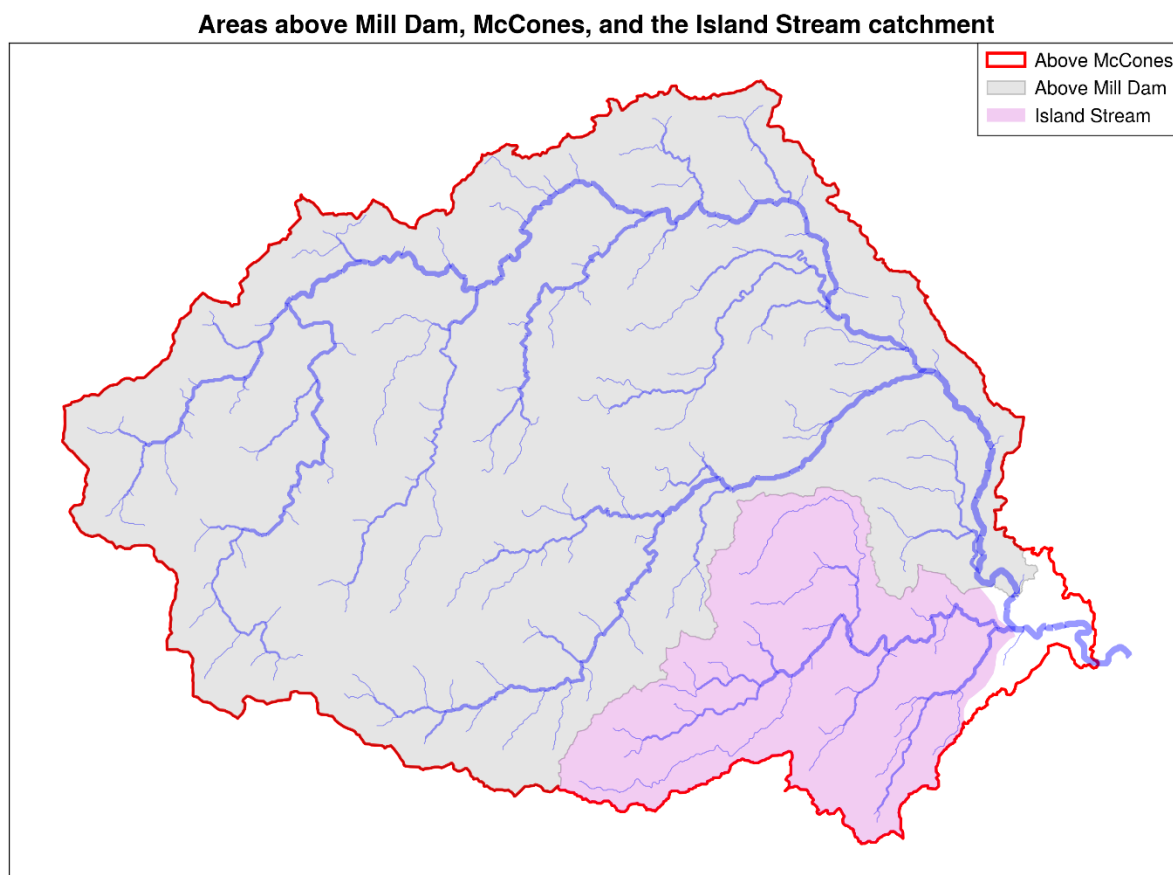
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This document describes how naturalised flow statistics were derived for the Island Stream catchment (**Figure 1**) in North Otago.



*Figure 1. The Island Stream catchment and the upstream area above Mill Dam and McCones.*

## Method

There are no current flow recorders available in the Island Stream catchment. Estimating the naturalised flow time series without observed flow records can be difficult. Therefore, the target of this flow naturalisation task will focus on the naturalised flow statistics only for the Island Stream catchment.

The difference in the flow between the Kakanui at Mill Dam and Kakanui at McCones flow sites is assumed to be the flow contribution (in terms of statistics) from the area between the two locations. Assuming the flow yield by area is uniform in this region, the following formula will apply:

$$\frac{\text{Flow statistics @Island Stream}}{\text{Area}_{\text{Island Stream}}} = \frac{\text{Flow statistics @McCones} - \text{Flow statistics @Mill Dam}}{\text{Area}_{\text{McCones}} - \text{Area}_{\text{Mill Dam}}}$$

The estimated naturalised flow statistics at Mill Dam and McCones are available (from the water year 2010/11 onwards), and the estimated naturalised flow statistics (based on the above method) for Island Stream are listed in **Table 1**.

*Table 1. The estimated naturalised flow statistics (m<sup>3</sup>/s) for the Island Stream catchment with those already derived at Mill Dam and McCones.*

Location	Mean	Median	7dMALF
Naturalised at Mill Dam	5.293	2.394	0.685
Naturalised at McCones	5.650	2.645	0.712
Naturalised for the Island Stream	0.323	0.227	0.024

The complete consent list and flow statistics estimation details can be found in the [HTML file](#) located in the same folder.

## Appendix

The detailed consent list and the estimation of the total water use in the Island Stream catchment



ex\_island.html

is located [here](#).