

Memo

Date	7 November 2017
To	OTOP Zone Committee
CC	Dan Clark
From	Barbara Gilchrist

Groundwater-surface water interaction in the Coopers Creek catchment.

Coopers Creek is a spring-fed stream that lies between the Rangitata and Orari rivers in the upper plains of the Orari catchment. With four spring-heads, the stream has flow year-round, but as flow is lost into the ground, the stream is often dry within 1.5km of the spring-heads. A rare example of a spring-fed creek on the Canterbury Plains without a silt-bed, areas of the creek have high ecological values, however it is sensitive to low flows, which affect water quality and ecological habitat.

Consents for groundwater abstraction were granted between 1997 and 2005, and some of these had minimum flow conditions to protect the stream. In 2013, conditions were changed on two of these consents, linking them to flows in the Orari River, 26 kms away, rather than Coopers Creek. This was an interim measure while assessment was undertaken by Environment Canterbury to determine if Orari flows are a suitable proxy for low-flow conditions at Coopers Creek. This assessment, which combined previous data with new information, has now been completed.

This work focussed on two main questions:

1. Is Orari River flow measured upstream of the confluence with the Ohapi Creek a suitable proxy for determining low flow conditions in Coopers Creek at SH72?
2. Do shallow groundwater abstractions affect the flows in Coopers Creek?

Investigations were undertaken between March 2015 and September 2016, and further details of these are included in the report by Peaver, Kaelin, Durney and Trewartha (2017).

The results of the field monitoring, conceptual model review and numerical modelling indicate that there is a poor correlation between flows in the two catchments, therefore the Orari River does not offer a suitable proxy for determining low-flow conditions in Coopers Creek. Based on this, values in Coopers Creek are not as well protected as they could be. Secondly, the stream is hydraulically connected to the groundwater, therefore any groundwater abstraction in the local area has potential to reduce flows in Coopers Creek. The OTOZ zone committee have made a recommendation in principle in their Draft ZIPA that while the Environmental Flow and Allocation Regime for the Orari River is retained, it is subject to the addition of a suitable flow monitoring site on Coopers Creek. The results of this study affirm this recommendation.

Key decision area: The Zone Committee recommend the provision of an additional minimum flow monitoring site on Coopers Creek.