

# Memo

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Date	18 August 2017
To	Craig Davison
cc	
From	Dan Clark

## **Subject: Surface water flows and allocation in the Timaru Freshwater Management Unit**

### **1. Background**

The National Policy Statement for Freshwater Management (2017) (NPS-FM 2017) requires regional councils to set minimum flows and allocations on surface water bodies. A number of waterways within the Timaru Freshwater Management Unit (FMU) have not had minimum flows and allocations set through any previous plan processes. In these cases the Land and Water Regional Plan has default flow regimes that apply, these regimes are based upon a percent of 7 day Mean Annual Low Flow (7dMALF) being set for the minimum flow and allocation limit. However some of the streams already have consented allocations and some minimum flows set through consenting processes.

Allocation within the Timaru FMU has followed a similar pattern to the rest of the zone (Exner-Kittridge 2016), with much of the uptake of allocation occurring in the mid-1990s to mid-2000s and has remained reasonably stable in the last decade. The levels Plains irrigation scheme has been operating in this FMU since the 1930's and is not included in the allocations in the Timaru FMU as this water is sourced from the Opihi River. Much of the allocation within the FMU is used for irrigation, there are however a number of abstractions which are used for other urban and industrial uses.

### **2. Seadown Drain**

Seadown Drain runs parallel to the coast from Seadown to Waitarakao/ Washdyke Lagoon. It receives run off from rain events and intercepts groundwater through a number of lateral drains at the bottom of Levels Plains. Seadown Drain is one of two main sources of freshwater entering Waitarakao/ Washdyke Lagoon. Setting allocation limits and minimum flows protects the values within the drain and also its contribution to the water balance of Waitarakao/ Washdyke Lagoon.

Seadown Drain currently has a common consent minimum flow of 150 l/s which has been determined in consultation with Fish and Game. Surface water abstractions in the catchment total 217 l/s and stream depleting consents (using a 150 day assessment) total 544 l/s.

The Zone Committee has recently heard from the Seadown Water Users Group. This group has proposed a lower minimum flow and monitoring this by using a water level as an indicator of this flow. This recommendation is 100 l/s which is estimated to be equivalent to 200 mm water depth by Ryder Consulting (2016). The relationship between water level and flow is influenced by the channel cross-section. In Seadown Drain this cross section varies with macrophyte (aquatic plants) growth, as macrophytes grow they take up space in the water column, reducing water velocities and resulting in a higher water level for a given flow. For this reason Ecan currently does regular flow gaugings over the summer months for compliance purposes in Seadown Drain, when macrophyte growth can be effecting water level.

## **Key decision areas**

### **2.1. Seadown Drain minimum flow**

- **Option 1 Abstractions from the Seadown Drain catchment continue to be managed using a minimum flow.**

Minimum flows would need to continue to be monitored with regular gaugings overs summer months

- **Option 2 Abstractions from Seadown Drain be managed using a minimum water level.**

Depth and water level measurements would be influenced macrophyte growth and may not sufficiently protect inflow to the lagoon.

### **2.2. Seadown Drain Allocation**

- **Option 1 Cap current allocations of surface water and stream depleting takes from Seadown Drain as the allocation limit**
- **Option 2 Set an allocation limit for Seadown Drain at a level to protect its freshwater contribution to Waitarakao/ Washdyke Lagoon.**

Defining this limit would be dependent on the results of the water balance study underway.

## **3. Washdyke Creek and Tributaries**

The second major input of freshwater to Waitarakao/ Washdyke Lagoon comes from the Washdyke Creek Catchment. This catchment includes Papaka Stream, Oakwood Stream, King Road Stream and Rosewill Stream. There are a total of 15 stream depleting consents in this catchment with a sum of 96 l/s and one surface water abstraction for 26 l/s. As with Seadown Drain, Washdyke Creek levels are influenced by macrophyte growth.

## **Key decision area**

### **3.1. Washdyke Creek Allocation**

- **Option 1 Cap current allocations of surface water and stream depleting takes from Washdyke Creek as the allocation limit**
- **Option 2 Set an allocation limit for Washdyke at a level to protect its freshwater contribution to Waitarakao/ Washdyke Lagoon**

Defining this limit would be dependent on the results of the water balance study underway.

## **4. Taitarakihi Creek**

Taitarakihi Creek has only one consent with a stream depletion effect of 9 l/s (150day SD test) and no surface water takes. This take is used for urban recreation purposes. As this urban stream ponds at times of the year it is likely that flow is not sufficient for further abstraction.

## **Key decision area**

### **4.1. Taitarakihi Creek Allocation**

- **Option 1 Cap current allocations of surface water takes from Taitarakihi Creek as the allocation limit, and prevent further abstraction as it is not suitable**
- **Option 2 Investigate alternative sources of water to reduce allocation from Taitarakihi Creek**

## **5. Saltwater Creek**

Saltwater Creek flows from the Otipua Wetland/ Catchment to the coast south of Timaru. The Zone Committee recommended a working group be set up to find solutions to issues in the Creek. This will be presented to the Committee on the 21<sup>st</sup> of August.

Currently there is one consented water take from the Saltwater Creek catchment, this is for 26.5 l/s. As Saltwater Creek has a weir for recreational purposes the flows are backed up for a large reach of the river, this results in the creek being more like a pond or lake rather than a flowing river. Flows are difficult to measure due to the deep slow water, but the available measurements indicate that flows into Saltwater Creek are small. As the abstraction of water is from the backed up water from the weir, it is likely that further abstraction will impact on downstream values.

## **Key decision area**

### **5.1. Saltwater Creek Allocation**

- **Option 1 Cap current allocations of surface water takes from Saltwater Creek as the allocation limit, and prevent further abstraction as it is not suitable**
- **Option 2 Investigate alternative sources of water to reduce allocation from Saltwater Creek**

## **6. References**

Environment Canterbury (2017) Canterbury Land and Water Regional Plan

Exner-Kittirdge, M. 2016. Current state of surface water hydrology in the South of the Orari, Temuka, Opihi and Pareora Zone. Environment Canterbury Report No. R16/47.

Hayward, S., Scott, M,. 2017 Water quality issues and options for groundwater and surface waterways in the Timaru Freshwater Management Unit.

MFE (2017) National Policy Statement for Freshwater Management

Ryder Consulting, 2016. Seadown Drain, Minimum flow requirement assessment.