



Summary of evidence of Roderick Henderson on behalf of Ngā Rūnanga of Canterbury, Te Rūnanga o Ngāi Tahu and Ngāi Tahu Property Limited



Contents

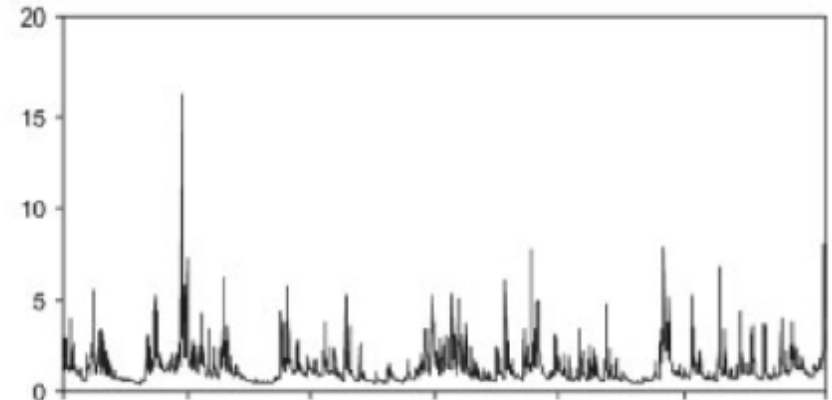
- River types
- Rivers and groundwater
- Plan matters

River Types

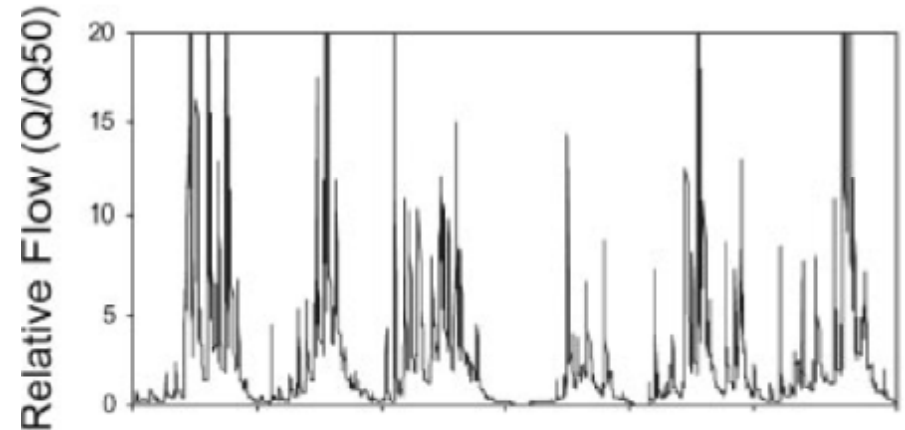
(section 2)

- Climate
 - Cool or Warm
 - Dry, Wet, or Extremely Wet
- Source of Flow
 - Glacial Mountain
 - Mountain
 - Hill
 - Lowland
 - Lake-fed
 - Spring, wetland, regulated

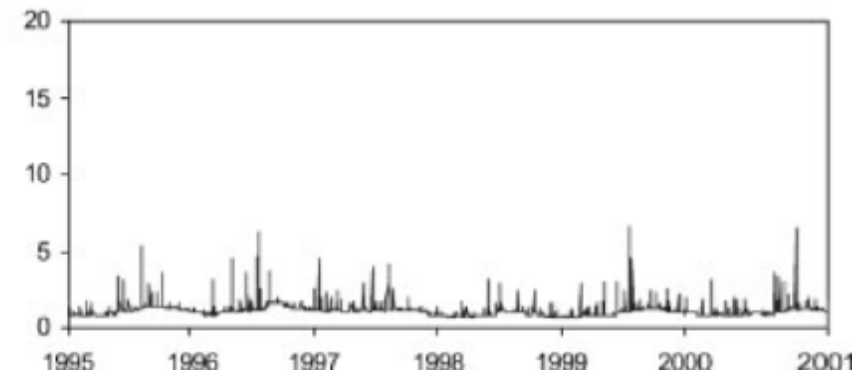
Mountain (Rangitata River)



Hill (Waipara River)



Spring (Avon River)



Rivers and Groundwater (section 3)

- All rivers have groundwater interactions
 - Some shallow and nearby
 - Others deeper and at greater distance
- Spring-fed rivers are the direct result of the intersection of groundwater systems with the ground surface e.g. Avon, Heathcote
- All other rivers have groundwater interactions, often shallow, even in confined valleys

Rivers and Groundwater (cont.)

- Canterbury rivers crossing the plains, from the Rangitata to the Ashley, have significant groundwater interactions
 - Some reaches lose water to groundwater, generally higher on the plains
 - Some reaches gain water from groundwater, generally lower on the plains
- The Selwyn is an example of complex interactions where some of the river bed is naturally dry in some years, but the extent and amount of time has increased as a result of groundwater extraction.

Plan Matters (section 4)

- River classification and groundwater interactions give rise to some questions about sub-regional sections
 - The Waihao in South Canterbury is very different in character to the Waitaki yet they are in the same zone
 - Zones for alpine rivers are very narrow and it is not clear how they were derived, nor that they include all areas where surface water and groundwater may influence each other



from 'lwrp-sub-regional-sections.pdf'

Plan Matters (cont.)

- For example, the Waimakariri River and its contributory and receiving groundwater systems are split in to four different sub-regional sections in the draft plan
- It is possible that intensification of water use on the north bank, in the Waimakariri sub-section, could affect the river which in turn could affect the Christchurch-West Melton sub-section and possibly the Selwyn-Waihora sub-section