Futureproofing
Orari-Temuka-Opihi-Pareora
(OTOP)

17 October 2016
Brett Painter – CWMS Infrastructure
Winchester VCSN: Sept-Feb incl. Totals (mm)

Winchester Sep-Feb Rain

Winchester Sep-Feb PET (Potential Evapotranspiration)
Long term trends

High country
• Increasing min temperature and decreasing snow pack
• Increasing rainfall intensity

Coastal
• Increasing evapotranspiration
• Decreasing rainfall
• Increasing drought length
Orari/Opihi
Geology
The journey since 2010

• Preliminary Strategic Assessment
• Regional Distribution Model & Infrastructure Node Groups
• Preliminary water quality and COMAR assessments
• Aoraki Water Trust and Tekapo supply
• Irrigated Area Assessment
• LWRP stream depletion assessments
• Coastal demand study & Geraldine Water Solutions
• Water resource and infrastructure modelling
Potential “top-up” demand due to Land and Water Regional Plan rules

- North OTOP: Conjunctive use zones, stream depletion assessments and increasing minimum flows expected to reduce reliability for \( \leq 9500 \) ha irrigated land to \(<50\%\).
  - Coastal demand study addressed this

- South OTOP: stream depletion assessments expected to reduce reliability for 600-900 l/s.
  - No ‘spare’ Opuha water currently
  - Follow up investigations and demand study required

Significant risks to future supply for existing irrigated area
North OTOP Demand Study

• ~135 potentially affected consent holders surveyed
• Additional ‘new’ users identified for consideration in modelling
• 61 positive surveys (9500 irrigated ha + 1700 new ha equiv.)
  • 82% would consider ‘top up’ reliability water
  • 35% would consider total replacement supply
  • 37% would consider additional supply

– Geraldine Water Solutions Ltd registered 4 May 2016
OTOP Water resource and potential infrastructure

2015/16

• OTOP North: ~20 M m³/y and 2 m³/s max pipe capacity for (9500 ha ‘top-up’ plus 1700 ha new equiv.)
• OTOP South: (TBC) Stream depletion reliability top-up and new irrigation via Rangitata water swap.
• Opuha system improvements TBC (lake storage, on-farm storage, distribution efficiency, environmental releases).
• Optimisation required for Coleridge/Klondyke/OTOP storage sizing plus distribution sizing.
South Canterbury Infrastructure Entities

- Environment Canterbury/MPI/CIIL
- Ashburton/Timaru/MacKenzie DC
- Ngāi Tahu
- CWMS Regional/Ashburton/OTOP Committees and catchment groups
- Trustpower/Rakaia River consent holders
- Rangitata Diversion Race
- Barrhill Chertsey Irrigation
- Rangitata South
- Opuha Water Ltd
- Geraldine Water Solutions/Alpine Water Solutions
- Aoraki Water Trust
Regulatory and collaborative processes

• Land and Water Regional Plan (2015/16)
  – Orari River flow plan
  – Stream depletion assessments

• OTOP Healthy Catchments project (2016-19)
  – Sub-regional chapter to LWRP
  – Reviews river plans and groundwater allocation
  – Determines nutrient load limits
  – Considers infrastructure development concepts
Next steps (2016/17)
IAF proposal to CIIL confirmed 11/10/16

• Additional demand assessments
• Future climate assessments and modelling
• Infrastructure optimisation (existing model)
  – Coleridge+pumps, Klondkye, OTOP storage, on-farm storage, distribution sizing
• Concept distribution design and costings
• Development entity governance and business case development
Future Steps (2018-)

• South Canterbury entities raise shareholder funds, assume project leadership and future contracts with CIIL
• Feasibility assessments, updated infrastructure design and costs
• On-going supply/demand assessment
• Commercial arrangements (storage, distribution, pumping, hydro generation)