

Option name: **1(a) Managed Lake Sumner (HWP proposal)**

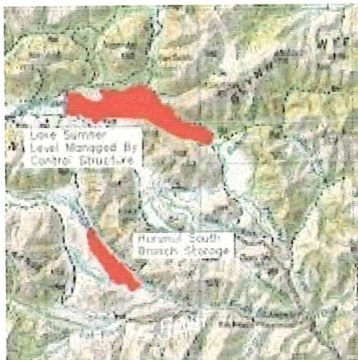
Description

Run-of-river take from south bank Hurunui River (either opposite current Amuri Irrigation Company intake or opposite Mandamus River confluence) combined with water storage based on an underwater control gate near Lake Sumner outlet.

Lake Sumner would be managed within historical lake-level range with lake being up to 1.4m higher than its historical mean level (but below flood levels) during irrigation months, and at natural levels in winter. Lake operating level managed to 543.75 m asl (mean level 543.12 m).

The Hurunui Water Project is based on the use of Lake Sumner and a reservoir in the South Branch. The option described here is for a stand-alone Managed Lake Sumner (based on HWP's proposal).

Map/photo



Location of Lake Sumner (and proposed South Branch Reservoir).

Depiction of Lake Sumner weir looking upstream during irrigation season. Both from HWP website.



Section A: Summary of key characteristics

Main stem or off-river storage:	<i>Main stem Hurunui River</i>
Source of water:	<i>Hurunui River</i>
Storage volume (million m ³):	<i>27 (with refill(s) during irrigation season)(from HWP)</i>
Irrigable area (ha)	<i>11,000 (from HWP)</i>
Net HEP energy production:	<i>Zero (though possibly some generation opportunity in distribution canal)</i>
Hydrological changes:	<i>Some reduction in winter flows (water taken to storage). Increased flows during irrigation season in river below Lake Sumner to irrigation intake (about or below Mandamus confluence) Minimum flows met (including from releases from storage when flows naturally below minimum). Minimum flows sufficient to maintain river mouth/hapua opening.</i>

- No impact on flood flows.*
- Some impact on freshes. Ability to release flushing flows from storage.*
- Some reduction during irrigation season of total volume and flow variability below irrigation intake (from increased run-of-river takes for irrigation).*
- Ecological impacts: *Inundation of lake-shore vegetation (small area) including areas with diverse (hardwood) species (incl rata, kamahi, kowhai) that are rare/absent away from lake edge under beech forest. (from DOC overview 21 Oct 2010). Loss of about 30-40% of lake-edge kowhai trees (from HWP consent application).*
- Loss of "naturalness". Lake Sumner is the only large lake of its type in Canterbury that remains unaltered by dams and retains intact original vegetation. (from DOC overview 21 Oct 2010)*
- Modification of wetland habitat between Loch Katrine and Lake Sumner. (from URS Assessment)*
- Fish passage maintained.*
- Concerns of increased nutrient & microbial loads from additional intensive land use from more irrigation.*
- Recreational impacts: *Some change to whitewater (kayaking) experience because of reduced flow variability in Maori Gully.*
- Reduction in irrigation season in fishability of river below Lake Sumner (and above South Branch confluence) because of conveyance of water from lake to meet irrigation demand.*
- Loss of "sea-to-alps" jet-boating experience through loss of passage to Lake Sumner.*
- Cultural impacts: *Probably little/no impact on mahinga kai (river mouth/hapua maintained).*
- Concerns of increased impacts from additional intensive land use (nutrient & microbial loads) (from draft kaitiaktanga assessment).*
- Uncertainty how option would restore wetlands and promote health riparian areas (from draft kaitiaktanga assessment).*
- Concern that option will see the river regulated and flow regime may not deliver cultural outcomes (from draft kaitiaktanga assessment).*
- Economics of option:
- Capital cost: s 9(2)(b)(ii) (from HWP)
 - NPV: s 9(2)(b)(ii) (from HWP)
 - Affordability (from sheep & beef to irrigated land use): 11-15% ROI (from HWP)

Section B: Evaluation against CWMS targets and Zone Committee's desired characteristics

CWMS target area	CWMS strategic evaluation (average = colour & range)	URS comment	Zone committee evaluation (G,O,R: +2,-2)	Zone committee comment
1. Ecosystem health/ biodiversity	-1 to +1			
2. Braided river character	-2 & -1	Impact on naturalness. Assessed as dam on main stem. Assessed as adverse flow impacts on river birds		
3. Kaitiakitanga				
4. Drinking water	0 & +2	Assessment for "Hurunui bulk storage" not just Lake Sumner		
5. Recreation	-2 to +2	Assessment for "Hurunui bulk storage" not just Lake Sumner		
6. Water use efficiency	+1 & -2	Assessment for "Hurunui bulk storage". -2 assessment for community supply efficiency goal		
7. Irrigated area	+2	Assessment for "Hurunui bulk storage" not just Lake Sumner		
8. Energy	+1 to -2	Assessment for "Hurunui bulk storage" not just Lake Sumner. Assumes no hydro generation.		
9. Regional/ national economy	0 to +2			
10. Environment limits	+1			

		Zone committee targets	Zone committee evaluation (G,O,R: +2,-2)	Zone committee comment
		3. Economic viability		
		5. Reliability (of supply)		
		6. Efficiency (cf CWMS target 6)		
		7. Meet nutrient load limits		
		8. Drinking water (cf CWMS target 4)		
		9. Environmental flows		
		10. Mauri of rivers		
		11. Support biodiversity		
		12. Environmental infrastructure (wetlands, hapua etc)		
		13. Community well-being		
		14. Electricity generation & efficiency (cf CWMS target 8)		
		15. Affordability		
		16. Social & economic wellbeing		
		17. Water-related recreation (storage) (cf CWMS target 5)		
		18. Irrigated area (cf CWMS target 7)		
		19. Mahinga kai		
		20. Trout & salmon		
		21. Native fisheries		
		22. Braided river characteristics incl largely natural upper catchments (specific goal from CWMS target 2)		
		23. Recreation opportunities (cf CWMS target 5)		

Section C: Conclusions about this option

Yes _____ Why? _____
 Maybe _____ Why? _____
 What else needed? _____
 No _____ Why? _____

Section D: Administration

Date undertaken: _____ By who? _____