

# LINDIS CATCHMENT - WATER MANAGEMENT REGIME

## Context

- Water demand in the Lindis Catchment exceeds supply during January – April most years
- Annually the Lindis River is left dry below the Lindis Crossing Bridge due to abstraction. In extreme dry seasons the river can be dry for more than 10km upstream from the Clutha River confluence (upstream of the Ardgour Road Bridge).
- Connected groundwater taking reduces surface flows in the lower Lindis River at and below the Lindis Crossing Bridge.
- Lowest recorded summer flow recorded at Lindis Peak is 608 l/s.
- Modelling indicates that the river does not 'naturally' dry up. Even in an extreme dry year such as 2005-06 it would have flowed above 600 l/s at the Ardgour Road monitoring site.
- Flood and border dyking are prevalent in the catchment.
- Most irrigation relies on run-of-the-river taking, with little storage.
- Lindis water is taken and used out of the catchment where alternative sources are available e.g. Bendigo Flats and Clutha River terraces.
- The Water Plan requires consenting that reflects actual taking, efficient use and preference for in-catchment use.
- Allocation and flow information:

MALF (average natural summer low flow)	1600 l/s
Default primary allocation limit	800 l/s
Current consented take	approx. 4,100 l/s (including connected groundwater takes)
Current actual take	approx. 2,300 l/s (as indicated by the community)



View downstream below Ardgour Road monitoring site  
24 March 2010 = 196 l/s @ monitoring site

## Vision

Community consultation identified the following community values (vision) which a water management regime needs to support:

- A prosperous community
- A river that flows below the Lindis Crossing Bridge and, in most years, to the Clutha River
- Efficient irrigation, continuity and expansion through use of multiple sources of water and infrastructure
- Improved trout spawning, juvenile rearing and recruitment to the upper Clutha fishery, particularly Lake Dunstan
- Locals and visitors enjoy the river - mahinga kai, recreation, tourism



View downstream from SH8 Bridge to Clutha River / Mata Au  
20 February 2009 = 472 l/s @ Ardgour Rd monitoring site

## Achieving the vision

The following table outlines the two minimum flow options suggested as a way of achieving the community's vision:

Scenario 1	Scenario 2: (if Tarras Scheme proceeds)												
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<p><i>Summary of Regime Outcomes</i></p> <ul style="list-style-type: none"> <li>▪ The river is expected to flow with at least 200 l/s at the Lindis Crossing Bridge</li> <li>▪ In dry seasons, flows may not reach the Clutha River for short periods of time</li> <li>▪ Irrigators will have a further drop in available water (3-11%) during low flows to meet the minimum flow</li> <li>▪ Encourage use of alternative sources for irrigation. Those who do move to an alternative source e.g. groundwater or Clutha River will have better access to water</li> <li>▪ Those takers with the Lindis as their only source may progressively have improved access to water if some takers with other sources moved off the river</li> <li>▪ Trout spawning, juvenile rearing and recruitment to the upper Clutha fishery would improve significantly</li> </ul>	<p><i>Summary of Regime Outcomes</i></p> <ul style="list-style-type: none"> <li>▪ The river is expected to flow with at least 500 l/s at the Lindis Crossing Bridge</li> <li>▪ The river is expected to flow to the Clutha River at all times.</li> <li>▪ Encourage use of alternative sources for irrigation. Those takers who move to an alternative source e.g. groundwater or Clutha River will have better access to water</li> <li>▪ Remaining river takers (those with the Lindis River as their only source) would have improved access to irrigation water (up to 10%) most years, though in extreme dry seasons there will be restrictions</li> <li>▪ Trout spawning, juvenile rearing and recruitment to the upper Clutha fishery would improve significantly</li> </ul>												

The following table outlines the future impacts, opportunities, consequences and transitions for each of the scenarios:

Irrigation	Irrigation ( <i>Lindis River takers only</i> )
<ul style="list-style-type: none"> <li>▪ <i>December to April</i> <ul style="list-style-type: none"> <li>- Some seasons there will be no change from current availability of water (existing access is on average 70% of water available on permits)</li> <li>- Rostering and rationing will still be needed most seasons.</li> <li>- If users remain taking from the Lindis River, in extreme dry seasons there will be a significant drop in the water available for irrigation: <ul style="list-style-type: none"> <li>e.g. <i>Farm scale impact on irrigation:</i></li> <li>Using February 06 data, an actual take that was already restricted to 50% of the consented amount, would reduce further to 40% in order to remain above the minimum flow</li> </ul> </li> </ul> </li> <li>▪ <i>May – November</i> <ul style="list-style-type: none"> <li>- no change from current availability of water (based on current patterns of taking)</li> </ul> </li> <li>▪ Inefficient irrigation practices and use of Lindis water for irrigation out of the catchment will have to cease</li> <li>▪ Water resulting from efficiency gains can be utilised on-farm</li> <li>▪ Initially, the ability to harvest water for storage is limited to flows greater than 3,794 l/s (natural mean flow) measured at the Ardour Road monitoring site</li> </ul>	<ul style="list-style-type: none"> <li>▪ <i>December to April</i> <ul style="list-style-type: none"> <li>- Most seasons access to water may increase to more than 80% off consented allocation due to reducing taking from 2300 l/s to 800 l/s</li> <li>- Rostering and rationing will still be needed in extreme dry seasons: <ul style="list-style-type: none"> <li>e.g. <i>Farm scale impact on irrigation:</i></li> <li>Using February 06 data, an actual take that was already restricted to 50% of the consented amount, would improve to 58% above the minimum flow.</li> </ul> </li> </ul> </li> <li>▪ <i>May – November</i> <ul style="list-style-type: none"> <li>- no change from current availability of water (based on current patterns of taking)</li> </ul> </li> <li>▪ Inefficient irrigation practices will have to change (to maximise available water)</li> <li>▪ Water resulting from efficiency gains can be utilised on-farm</li> <li>▪ Harvesting of water for storage can occur at flows greater than 1,300 l/s (summer), 2,100 l/s (winter) measured at the Ardour Road monitoring site</li> </ul>
In-stream values & river flows	In-stream values & river flows
<ul style="list-style-type: none"> <li>▪ Trout spawning supported during winter (more than 30% of Dunstan brown trout spawn in the Lindis River) <ul style="list-style-type: none"> <li>- 1600 l/s (May - July) - provides for adult migration and spawning</li> </ul> </li> <li>▪ Improved juvenile trout nursery <ul style="list-style-type: none"> <li>- 750 l/s (November) – supports juvenile rearing habitat</li> <li>- 450 l/s (December – January) – provides rearing habitat and refuge pools in extreme dry periods</li> </ul> </li> <li>▪ Improved trout recruitment to the upper Clutha fishery <ul style="list-style-type: none"> <li>- 450 l/s (December – January) – provides sufficient flows to trigger and enable migration</li> <li>- In dry seasons, flow to the Clutha River may cease, causing a delay in migration to Lake Dunstan. At least 200 l/s is expected at Lindis Crossing Bridge all year.</li> </ul> </li> <li>▪ Recreation and tourism opportunities, aesthetics / image, and mauri improved</li> </ul>	<ul style="list-style-type: none"> <li>▪ Trout spawning supported during winter (more than 30% of Dunstan brown trout spawn in the Lindis River) <ul style="list-style-type: none"> <li>- 1600 l/s (May - July) - provides for adult migration and spawning</li> </ul> </li> <li>▪ Improved juvenile trout nursery <ul style="list-style-type: none"> <li>- 750 l/s (November) – supports juvenile rearing habitat</li> </ul> </li> <li>▪ Improved trout recruitment to the upper Clutha fishery <ul style="list-style-type: none"> <li>- 750 l/s (December – January) – provides continuous flows for migration</li> <li>- Continuous flow to the Clutha River ensures juvenile habitat and migration. At least 500 l/s is expected at Lindis Crossing bridge all year</li> </ul> </li> <li>▪ Recreation and tourism opportunities, aesthetics / image, and mauri improved</li> </ul>

Scenario 1 - Timing / transition	Scenario 2 -Timing / transition ( <i>Lindis River takers only</i> )
<ul style="list-style-type: none"> <li>▪ Implementation of the regime begins 2014 / 2015 irrigation season               <ul style="list-style-type: none"> <li>- To enable individual farm decision making, and adjustment of infrastructure and management to accommodate the minimum flow regime.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Implementation of the regime on Lindis River takes one year following the Tarras Water Scheme becoming operational (estimated 2015)               <ul style="list-style-type: none"> <li>- To enable individual farm decision making, and adjustment of infrastructure and management to accommodate the minimum flow regime.</li> </ul> </li> </ul>

Timelines

