



Lake Bellfield Operating Rules

Lake Bellfield is located on Fyans Creek in the eastern Grampians near Halls Gap. Lake Bellfield is the primary source of supply to much of the Wimmera Mallee Pipeline system and supplies the towns of Halls Gap and Pomonal.

Lake Bellfield has a relatively small but efficient catchment. Water is also able to be directed into the upper Fyans Creek between June and October via a set of weirs in the upper reaches of the Wannon River called the Wannon Diversion. This supplements the Bellfield catchment.

Lake Bellfield normally has excellent water quality and is very deep (36 metres) with a small surface area, making it one of the most efficient reservoirs because of its low evaporative losses.

Lake Bellfield is operated to keep it as full as possible throughout the year. However, between April and September each year the reservoir is operated at 2,500 ML below its full capacity for two reasons. Firstly, this freeboard reduces the potential impact of large inflows on the embankment integrity and secondly, it provides some limited capacity to absorb and manage flood flows. If levels increase during this period, controlled releases up to the capacity of the outlet valve (860 ML/day) are made to maintain levels. This lower level of operation during these months (i.e. 2,500 ML below capacity) is referred to as the 'target curve'.

Lake Bellfield's full supply level (FSL) is set by the height of its fixed crest spillway. When the reservoir is full, further inflows result in 'uncontrolled' flow over the spillway. Controlled flows released via the outlet structure alone do not cause flooding downstream, with flows contained well within the banks of Fyans Creek.

When Lake Bellfield is approaching its FSL and controlled releases are possible, water is directed in the first instance to Lake Fyans, and then to Lake Lonsdale. Similarly, spills from Lake Bellfield are directed to Lake Fyans, however the majority of large flows continue down Fyans Creek and on to Lake Lonsdale. It is also possible to direct smaller flows via Mt William Creek and the Wimmera Inlet Channel to Taylors Lake via a channel that bypasses Lake Lonsdale. Figure 1 shows the general layout of Lake Bellfield in relations to nearby reservoirs and channels.

Water may also be released from Lake Bellfield to Lake Fyans if Lake Fyans is holding less than 2,500 ML or when water quality is an issue at Fyans.



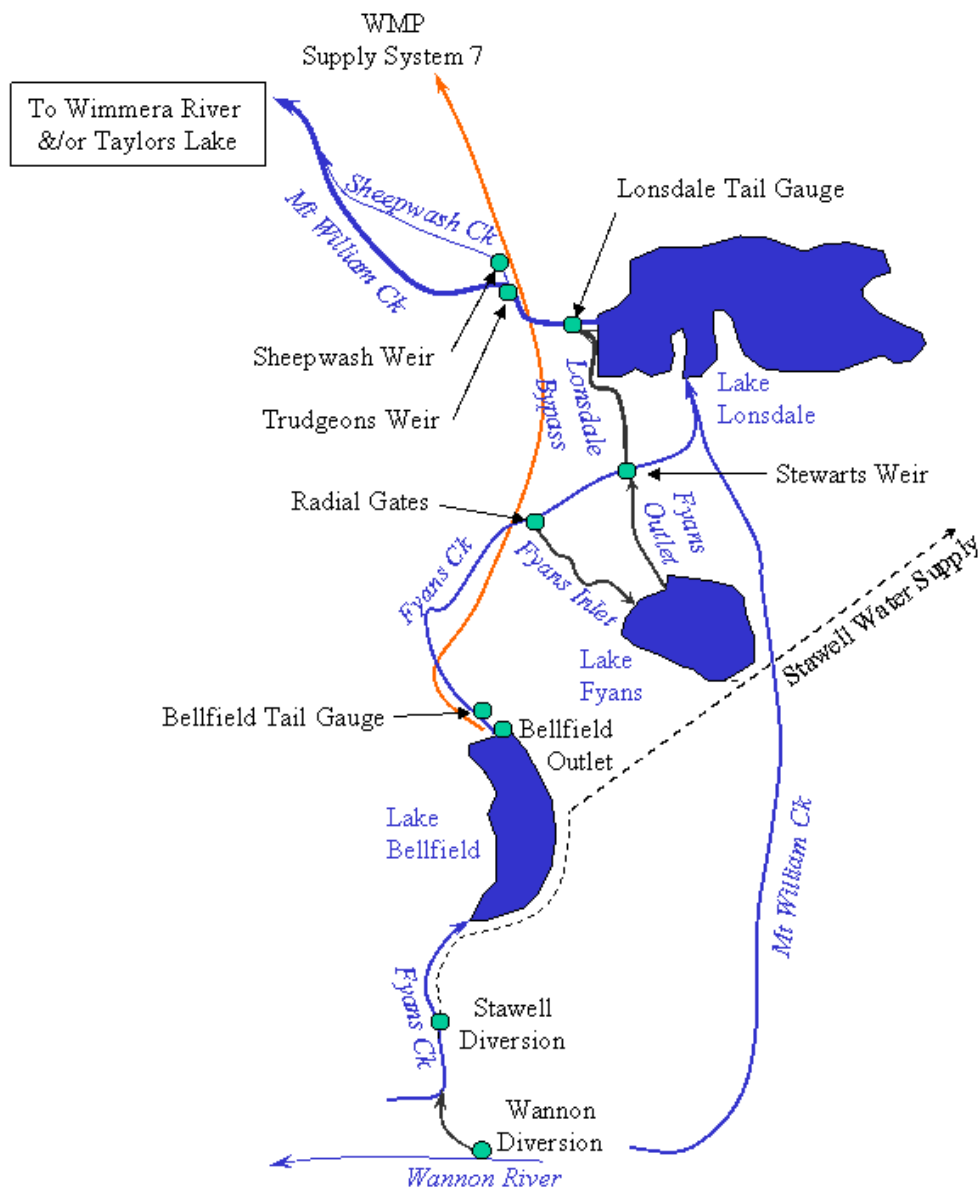


Figure 1: General layout of Lake Bellfield

Overview of January 2011 flood event

Lake Bellfield did not spill during the January 2011 flood event. The reservoir received 254 mm of rain over five days which saw the water level increase by over 3.4 m and the volume increase by about 12,000 ML over that period.

Large inflows into Bellfield brought with it large amounts of silt and sediment due to the destructive nature of this extreme rainfall event on a catchment still recovering from the 2006 fires. These flood flows have impacted heavily on water quality within the reservoir, with options to improve the water quality in Bellfield being investigated.

Lake Bellfield Facts and Figures	
Full Supply Level	276.50m AHD
Full Supply Volume	78,560 ML
Spillway Level	276.50m AHD
Spillway Length	62.5m
Spillway Capacity	18,590 ML/d
Maximum Discharge Through Outlet	860 ML/d
Catchment Area	96 km ²
Surface Area When Full	4 km ²
Major Tributary	Fyans Creek
Average Inflow	19,000 ML/year

Current Operating Rules

- > Operate to Full Supply Level as much as practicable.
- > Operate Wannon Diversion to maximise inflows to reservoir.
- > Implement the target curve between April and September inclusive.
- > Water in excess of Bellfield requirements is to be directed to Lake Fyans in the first instance and then to other downstream reservoirs where spare capacity exists.
- > Water from Bellfield may be used to support Lake Fyans during times of drought or if there is water quality issues in Lake Fyans.

Proposed Operating Rules

No change to current Operating Rules. *

Glossary

AHD – Australian Height Datum, used for altitude measurement. Zero is the mean sea level for the period 1966-68.

Freeboard - Height between normal maximum operating level and the top of the bank or spillway.

Full Supply Level - The normal maximum operating level of a reservoir behind a dam.

* – these rules are not subject to negotiation as they are necessary for water supply purposes.