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## **A Weir on the Murray at Wellington, SA**

### ***What is a Weir***

Generally constructed from concrete, metal, wood or rocks, weirs are built across a stream or river for the purpose of raising the water level behind it or diverting its flow.



**Example: Weir at Coburg Lake in Victoria.**

### ***What is The Wellington Weir***

The proposed Wellington Weir will be a temporary structure at Pomanda Island near Wellington, South Australia (SA) that will separate the River Murray from Lake Alexandrina (part of the Lower Lakes). The weir is expected to cost \$100m, take nine months to construct and has received Cabinet approved expenditure of up to \$14.4 m for the preliminary works.

A weir creates a physical barrier, in this case between the Murray River and the Lower Lakes. By doing so it creates a weir pool that would raise the water level around the SA Water pumps, thereby securing the water supply for Adelaide. Another function of the weir is preventing saline and potentially acidic water from flowing back upstream towards the source of the state's drinking water.

Building a temporary weir is not the preferred option for the SA Government but there may be no other option available to secure their water supply. The weir would remain in place until water storage levels and flows in the Murray-Darling Basin (MDB) improved to a level where it

was considered the system had recovered from these extremely rare low flow conditions. At that point, the temporary weir would cease to operate.

The temporary weir has been designed with a life of 3 years, which could be extended through maintenance if necessary. A process of planning for the long term future of the Coorong, Lower Lakes and Murray Mouth is now underway.

## ***Why Do They Need a Weir***

The communities of Clayton and Point MacLeay presently rely on treated water drawn from Lake Alexandrina for their reticulated water supplies. This reliance however is compounding the need for a weir.

The Lower Lakes (Lake Alexandrina and Lake Albert) are relatively shallow and cover an area of 85,000 hectares. Prior to 1940, this area was a tidal estuary (a semi-enclosed coastal body of water with at least one river flowing into it and a free connection to the ocean and was also affected by marine influences - saline water and riverine influences - fresh water).

Five Barrages were constructed (1939 – 1940) along the outside edge of the lakes to keep sea water out. At full supply level (0.75m Australian Height Datum - AHD) the Lower Lakes hold approximately 2,200GL. The lakes have fluctuated since the barrages were built.

The Lower Lakes have been partly salty for at least 6,000 years prior to 1940. The ecosystem of the Lakes benefited from seawater inflows. The barrages in particular caused an abrupt change in the water environment and reduced tidal range, and are believed to be one of the major factors contributing to habitat degradation (ref. MDBC).

Due to the large surface area of the lakes, they lose 750 to 950 GL through evaporation annually, which is approximately four times Adelaide's annual water consumption and equal to the entire amount of water currently in storage.

As of June 2009, water levels in Lake Alexandrina were 1.7 metres below the full supply level or almost 1 metre below sea level. If the water level drops a further 60cm (predictions are by February 2010 this could happen), tens of thousands of hectares of soils will be exposed and become subject to acidification. In order to get the water level back up to full supply level, it would take approximately 1,000 GL, plus a continual flow to compensate for evaporation (up to 950 GL).

## ***Other Possible Solutions to a Weir***

A range of options have been considered, including:

- Obtaining sufficient fresh water to maintain lake levels
- Desalination options for water taken from the River Murray
- Providing additional storage capacity to increase available water supplies
- Reducing water lost through evaporation by restricting flows to shallow basins with a higher evaporation rate
- Improving water efficiency through waste water recycling, stormwater harvesting and leak reduction.

Alternatives investigated may not provide enough water to maintain current water levels should the low flow conditions continue, or be deliverable in time to safeguard the water supply.

## ***Triggers for Removal of the Weir***

The weir would be removed when all of the following criteria are met, as agreed by the South Australian Water Security Council:

- Storage levels in Hume and Dartmouth reservoirs have returned to normal operating levels and SA is confident that the proposed temporary weir is no longer needed to protect public water supplies.
- Salinity levels in the lakes have dropped to below 3,000EC (drinking water must be below 1,400 EC and the Lower Lakes are currently between 7,000EC and 10,000EC)
- There are no other risks from poor quality water in the lakes moving upstream into the river.
- SA is confident that the proposed temporary weir is no longer needed to protect public water supplies.

Since the proposed temporary weir does not include any flow control structures, once the water level in Lake Alexandrina rises and exceeds +0.1 m AHD (0.1m above sea level), this temporary weir will cease to serve any useful function.

## ***NSW Irrigators' Council Position***

The NSWIC supports the proposal to build a weir at Wellington.