

# Channel

## Water quality - the tides are changing

Improving water quality in Lake Macquarie is a key objective of The Project Management Committee.



Aerial view of the Swansea Channel

A common belief within some sectors of the community is that water quality would be dramatically improved if the tidal flushing of Lake Macquarie was increased. However, because the Lake contains such a large volume of water, increasing the tidal exchange would have very little impact on water quality and would in fact cause more environmental and social problems than it solved. When compared with the ocean, Lake Macquarie has a very small water level difference between high and low tides. The difference between tides is in fact usually only about 100mm, as the graph illustrates. In contrast, the graph also shows the variation between water levels in the ocean can be greater than one metre during a spring tide.

Water levels in the Lake are also affected by atmospheric pressure. This force influences the level, under normal conditions, to a

range of approximately 300mm.

To increase the tidal exchange in the Lake, the entrance would have to be made wider and deeper, but the benefits would not be significant. For example, if the entrance to the Lake was increased by 20% the impact of the tidal exchange would only be 0.2% due to the size of the Lake.

If the entrance to the Lake were to be made wider and deeper it would allow large seas to penetrate the Lake more easily and would increase the frequency of flooding in many low lying areas, including Marks Point, Swansea Flats and Belmont South.

Increased tidal exchange has been found to have little effect on water quality and can actually induce significant environmental and social consequences. Strategies to address water quality have therefore focussed on catchment management to limit the input of sediments and nutrients into our waterways.

Swansea Channel Tidal Gradients - Spring Tide

