



## Fact Sheet — Waterbird Refuge

Tidal flows into the Waterbird Refuge at Bicentennial Park are carefully regulated to provide optimum levels for its feathered and finned inhabitants, and to minimise the generation of wetland odours.

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### Restoration

- The ten-hectare wetland was created in the 1950s as a result of unfinished works to create industrial land from tidal mudflats. Clay bund walls were built to enclose the mudflats and sediment was pumped in from Homebush Bay to raise the height of the reclaimed land. The works were abandoned before the bunds were completely filled with sediment, and the enclosed wetland subsequently developed into a significant waterbird habitat with a high abundance and diversity of resident and migratory birds.
- Over time, the ecological health of the wetland diminished due to lack of tidal exchange. Species diversity declined, algal blooms frequently occurred in the stagnant waters, and the combination of rotting algae, shallow water and nutrient-rich sediments regularly caused strong odour emissions.
- Restoration of the wetland followed years of detailed scientific study and careful planning. Scientists determined that restoration of tidal flushing to the land-locked wetland would improve its ecological health and reduce algal blooms and odour generation.
- Sydney Olympic Park Authority installed a solar-powered computer-operated tidal gate in the bund wall in 2007, at a cost of \$187,000. Gate settings are varied seasonally to regulate the extent of inundation occurring with each tidal cycle.

## Managing the Wetland

- Five years later, the wetland is vastly improved. Pacific Golden Plovers have been recorded feeding in the wetland in October 2012 for the first time in over fifteen years. These annual migrants travel from breeding grounds in the northern hemisphere to Australia each spring, before making the long trip back north in autumn. Other species dependent upon the wetland include migratory Bar-tailed Godwits and Sharp-tailed Sandpipers, as well as resident Black-winged Stilts, Grey Teals and Australian Pelicans and native fish including Silver Bream and Luderick. Endangered Coastal saltmarsh vegetation is expanding around wetland fringes, algal blooms occur less often, and odour generation is significantly reduced compared to pre-2007 levels.
- Together with the surrounding mangrove forest, the wetland is listed as a 'Wetland of National Importance' by the Commonwealth Government because of its high ecological values.
- A level of odour generation continues to occur within the wetland, and this is a normal and unavoidable occurrence in this type of waterbody. Odour generation is due to chemical reactions and microbial activity in the wetland and its sediments which cause the production of hydrogen sulphide, commonly known as rotten-egg gas. Odour strength varies greatly with climatic factors and the monthly tidal cycle — the strongest odours typically occur after warm, still nights, when tides are low.
- The tidal gate is an important tool in minimising odour generation. During the warmer months, the tidal gate is typically set to enable high levels of tidal exchange. This maximises water circulation within the wetland and keeps oxygen levels high, both of which reduce odour generation. If a series of low tides occur, which can sometimes last for weeks, the amount of tidal exchange is limited until a high tide comes and flushes the wetland, assisting in alleviating odour levels.