

Physical Hydraulic Models

Merrimac WWTP, Gold Coast, QLD

Background

The Merrimac Waste Water Treatment Plant is located on Queensland's Gold Coast and is currently being upgraded to meet the future needs of the Gold Coast population by the Waterfuture Alliance. MWH commissioned Manly Hydraulics Laboratory (MHL) to undertake physical modelling of the preliminary design for a new pump intake structure, RWPS2.

Project Scope

The main objective of the study was to carry out physical model testing on the preliminary RWPS2 sump design to evaluate the adequacy of the preliminary design and, if necessary, modify the design to ensure acceptable flow conditions at the pump intakes.

Our Role

MHL constructed a 1:5.56 scale 3D model of the RWPS2 sump and tested the hydraulic behaviour for all possible pump operating conditions. The testing programme included measurements of swirl angle, vortice observations and general hydraulic observations.

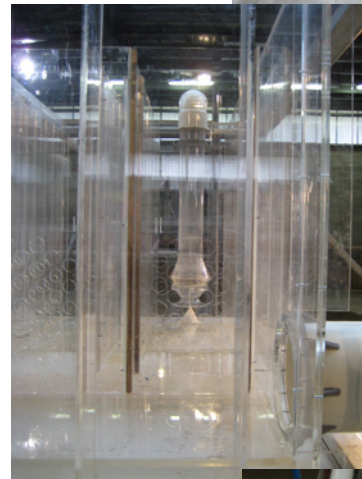
Outcomes

Through the phases of testing the design for RWPS2 was refined until a performance criterion was met. This was done through implementing a series of modifications in the model and testing them to assess their effectiveness. At the conclusion of testing RWPS2 met all acceptance criteria for all expected operating conditions.

Bellmouth pump intake pipes



Sump bay and baffle arrangement



Overhead view of sump, as modelled

