



DESIGN OF WETLAND RECTIFICATION WORKS

Melbourne Water

Category D.1.h
Waterways and
Environmental

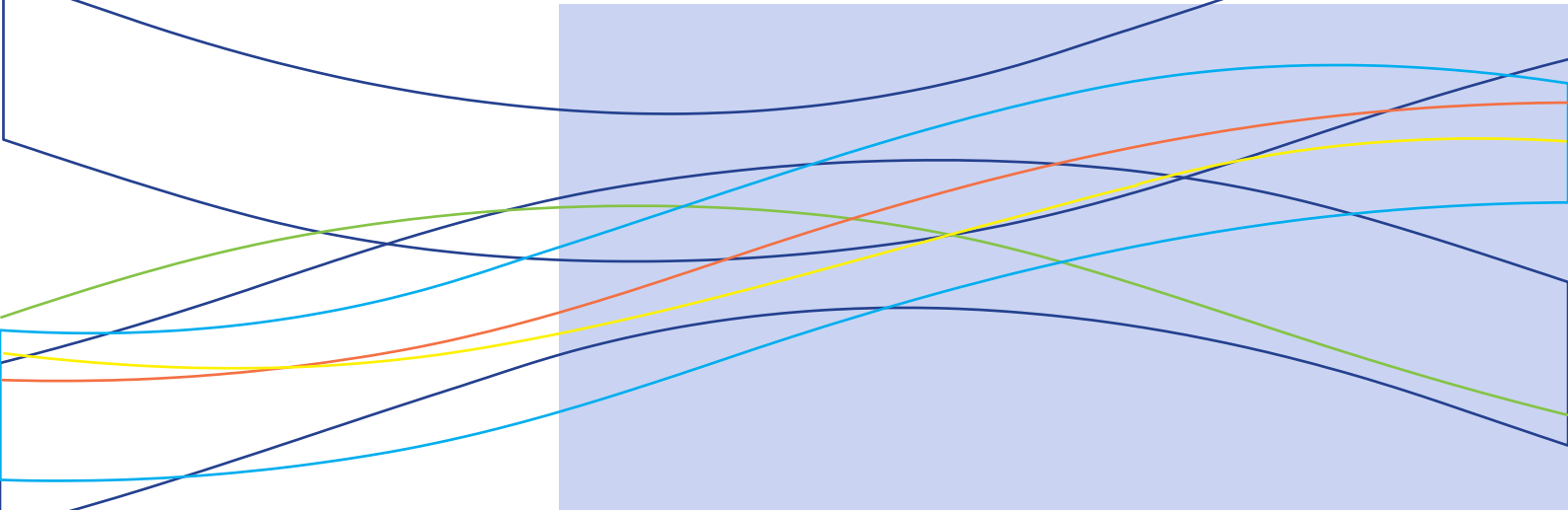
PROJECT SCOPE

Melbourne Water engaged Engeny to assess the hydraulic regime and recommend rectification works of five wetlands across Melbourne. Melbourne Water identified that these wetlands are not functioning as per their design intent.

These wetlands have minimal aquatic vegetation present, which is assumed to be the result of extended periods of inundation or raised normal top water levels (NTWL). The wetlands should have a draw down period to NTWL of up to 72 hours, and times of no inundation to ensure the survival of the vegetation within the wetland. The key factor that distinguishes a wetland from other water bodies is the presence of vegetation. Constructed wetland systems rely on vegetation, both emergent and submerged, to provide nutrient uptake from the stormwater. Without the extensive vegetation coverage, the wetland is not functioning in accordance with the intent of the asset.

Wetland design details have changed over the decades, so the design details, including outlets were compared with current Best Practice and optimal hydrologic regimes.

Engeny visited all five wetlands with Melbourne Water wetland planning and operations staff, documented all of the issues with the wetland and designed rectification works to resolve various issues. Engeny made recommendations for cost effective works to adjust the wetlands, particularly outlet structures to improve their performance.



START DATE

February 2016

COMPLETION DATE

March 2017

CLIENT CONTACT

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Design and Estimation Program

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RELEVANCE TO CATEGORY

- Review of performance of existing wetlands relative to design criteria
- Engeny applied our knowledge of wetland design, Best Practice and first principles of hydrology and hydraulics to improve Melbourne Water wetland asset performance.

This project demonstrates how Engeny can work closely with Melbourne Water on complex wetland projects.

PROJECT INNOVATION

- Engeny applied the latest Best Practice to the operation of 5 Melbourne Water wetlands
- Engeny reviewed specific details for each wetland, and allowed for non-standard existing conditions to adjust Best Practice design objectives to each site
- Engeny developed individual rectification works to suit each of the five wetlands to improve their operation and conditions to encourage better vegetation coverage and stormwater treatment.
- Engeny worked closely with Melbourne Water to share the learnings from the input of all team members.



PROJECT OUTCOMES

The outcomes for this project included:

- Sharing of design and operational issues for wetlands between consultants, Melbourne Water engineering staff and Melbourne Water operational staff
- Review of Melbourne Water wetland assets built using earlier standards
- Development of design solutions to improve wetland performance and vegetation
- Innovations were applied to inlet and outlet details to achieve significant incremental improvements for the performance of five Melbourne Water wetlands.