

Project: *Kawana Waters*

Principal:

Stockland Developments

Consultant:

*Cardno MBK, WP Brown & Partners,
Guthridge Haskin & Davies*

Location:

Sunshine Coast, Qld



Introduction

Kawana Waters is a major development on the Sunshine Coast extending from north of Caloundra to south of Mooloolaba. The development includes a 2.5 kilometre long recreational lake, two bridges, a navigable channel connected to the Mooloolah river, a lock and weir system, five kilometres of sub-arterial roads, numerous sub-divisional roads, approximately 1200 residential lots and a major salinity rising main system. In addition to the work conducted for Lensworth further work for Caloundra Council was completed in the form of a number of soccer fields near the Lake.

The Project is the largest combined dredging and civil construction project in Australia. Various elements of the Project were supervised by different engineers with the majority of the work supervised by Cardno MBK.

A number of difficult environmental issues were encountered during the Project. The two most significant of these were the management of Potentially Acid Sulfate Soil (PASS) and the maintenance of water quality for release into the natural environment. Dredging and dry excavation of PASS at the scale seen on this Project required careful works programming, innovative water treatment and ground water management strategies. The release of water off the site required a comprehensive testing regime, careful works programming and contingency planning for all weather events; including monsoonal or near cyclonic conditions. The effectiveness of the environmental planning and implementation is evidenced by the Project winning the Queensland Case Award for Environmental Excellence - projects valued greater than \$10 million.

The Project included construction of all the sub-divisional civil works on Kawana Island and beside Lake Kawana. These developments by Lensworth have been widely recognised as high-quality residential communities. Elements of major infrastructure were a part of the development, these included two five span bridges, five kilometres of arterial roads for the Queensland Department of Main Roads and a salinity pumping system designed to replenish the water in the lake system on a monthly basis.

The Project is rare in terms of the scale and broad range of work involved. The Project encompassed almost the full range of civil work; ranging from bulk dredging to complex pumping systems and sub-arterial road construction.



Project: *Kawana Waters, cont.*

Scope of Work:

The work required by contract included:

Bulk Earthworks

- ◆ Excavation by dredge of approximately 2.4 million cubic metres.
- ◆ Excavation and controlled compaction by excavator and truck of approximately 550 thousand cubic metres.
- ◆ Excavation of a navigable channel connected to the Mooloolah River



Subdivision Construction

- ◆ Construction of civil works for approximately 1,200 residential and industrial lots.
- ◆ Construction of all subdivisional roads, stormwater and sewer for the above lots.



Infrastructure

- ◆ Construction of two five span bridges.
- ◆ Construction of 5 kilometres of arterial roads.
- ◆ Construction of a tidal lock and weir system.
- ◆ Construction of salinity exchange system including pump station and 660m rising main.



Other Works

- ◆ Construction of two soccer fields.

Challenges

- ◆ Value engineering and co-ordination with the Client with respect to land releases and external deadlines.
- ◆ Successful management of complex PASS and groundwater issues.
- ◆ Construction of deep piling foundations to five span bridge.
- ◆ The sheer complexity of the project required effective and robust project management systems and structures allowing concurrent management of wide range of diverse tasks.



Innovation

- ◆ Specialised environmental equipment including;
 - ≈ Neumann's Mobile Hydroxylator (Moxy)
 - ≈ In-line liming system
- ◆ Value engineering of bridge headstocks.
- ◆ Co-ordinated use of dredge excavation equipment with dry excavation equipment.



Outcome

The diverse nature, size, scope and duration of this Project clearly show it has been successful for all parties. The Client Representative's comment on this project was:

"We commend Neumann's on their professional and proactive approach to this difficult project. They have been an integral part in our ability to deliver a high-quality community asset to the Sunshine Coast community."