

## LAKE EPPALOCK GABION DROP STRUCTURES LAKE EPPALOCK, VICTORIA, AUSTRALIA

### ENVIRONMENTAL/HYDRAULIC ENGINEERING/GABION DROP STRUCTURES

**Product:** Maccaferri Galmac+PVC Coated Gabions and Reno Mattresses

#### Problem

The Goulburn Campaspe Link Pipeline Project is a Coliban Water project to provide greater water security for Coliban system customers. Water will be transferred from the Goulburn system to the Campaspe system via a pipeline from the Waranga Western Channel near Colbinabbin to connect with the Coliban system near Lake Eppalock.

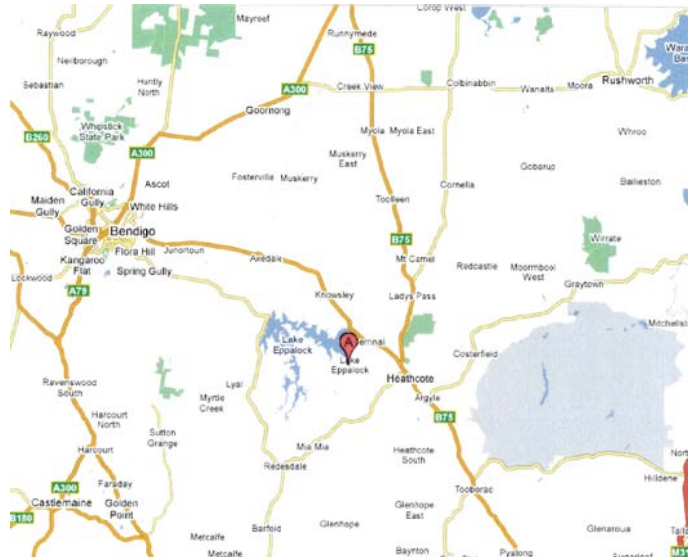
The Coliban system storages are at 13.6%, their lowest level on record for the current supply arrangements. On September 1st 2007, customers moved to the region's harshest ever restrictions—Stage 4 which includes a ban on all outside watering.

One of the challenges faced in the key projects was in getting water from a 150'000m<sup>3</sup>/day pipeline outfall structure to the water in Lake Eppalock in an attempt to fill the Lake without any erosion of the exposed Lake bottom; a total vertical drop of 22m over a distance of 317m .

#### Solution

A channel lining with a series of 2m high drop structures was designed by GHD Pty Ltd. Maccaferri Castoro Reno Mattresses (with a double internal diaphragm at 1m centres) which are able to withstand velocities in excess of 6m/s and Maccaferri woven mesh Gabions which are able to dissipate water energy on the drop structure steps were specified. Galmac (95% Zinc 5% Aluminium Mischmetal Alloy) + PVC Coated units would ensure that the structures fulfilled their design life requirement.

The water from the pipeline outfall structure flowed continuously since January 2008 until now (5 months) and continues to flow at a rate of 150'000m<sup>3</sup>/day. The Maccaferri Gabions and Reno Mattresses have withstood the high flows and velocities and performed as intended.



Map Of The Lake Eppalock Region



Pipeline Outfall Structure (150ML/Day)

Date: May 2008



During Construction

Date: Oct 2007

Client name:

COLIBAN WATER

Contractor name:

FULTON HOGAN

Consultant:

GHD

Product used:

GALMAC+PVC COATED GABIONS AND RENO UNITS

Construction date:

DECEMBER 2007



Fully Functional Gabion Drop Structures

Date: May 2008

## WHY USE MACCAFERRI GABIONS AND RENO MATTRESSES AS A SOLUTION?

**Flexible** – Unlike welded mesh, mass concrete blocks or reinforced concrete, double twist woven mesh Gabions accommodate substantial differential settlements without compromising structural integrity

**Monolithic** – the fastening (lacing) procedure ensures that the units act as one homogeneous structure

**Permeable** – pore water pressures easily dissipate through the structure due to the 30% (typical) void ratio

**Durable** – Existing 40 year old Maccaferri Gabion installations in Australia manufactured from double twisted mesh with Zinc, now Galvalume (95% Zinc 5% Aluminium Mischmetal Alloy) plus PVC coated wire disprove the fallacy that Gabion type structures are temporary solutions

**Economical** – Generally, Gabion installation does not require any special equipment (only pliers, wooden/steel formwork, fence tensioner, closing tool, Maccaferri installation guide etc.)

**Environmentally friendly** – Vegetation easily establishes, eventually re-creating the pre-existing environment. The incorporation of bio-degradable jute blankets, turf reinforcement mats or cocologs within Gabion type structures will accelerate the vegetative process



Gabion Drop Structure

Date: May 2008



Completed Structures

Date: May 2008

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