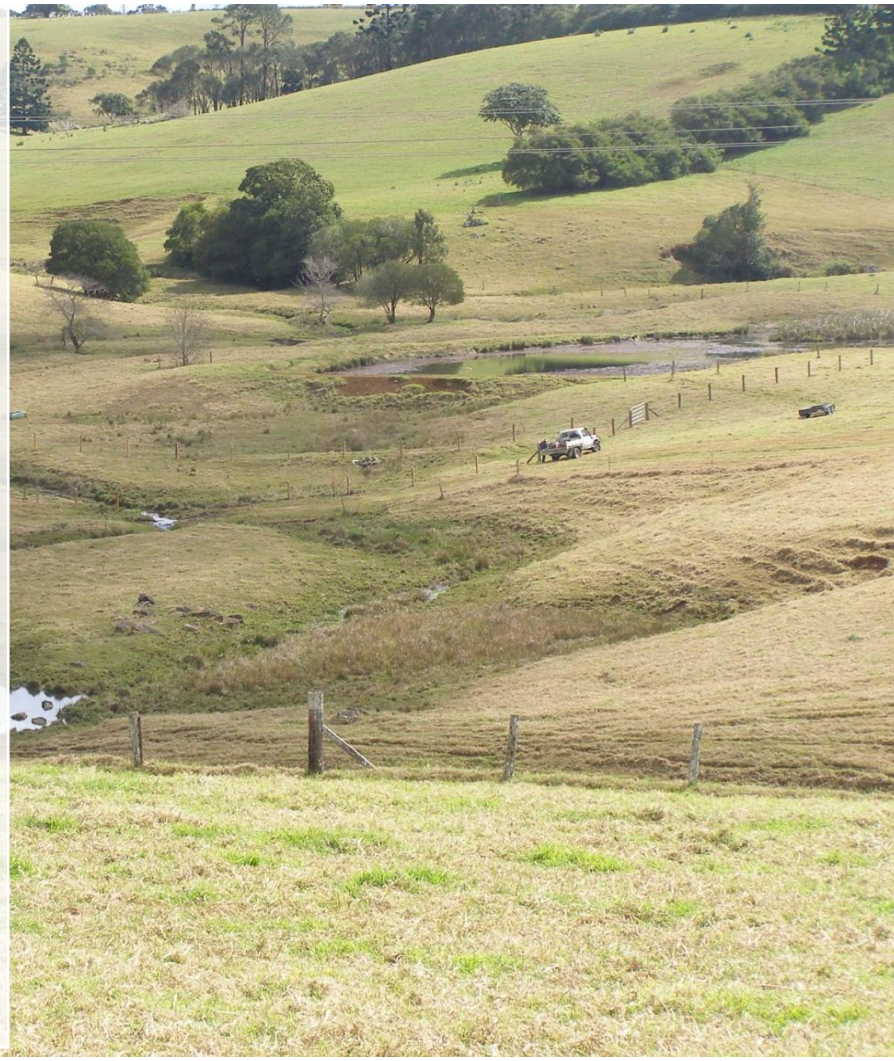
Arley Creek Wetlands Project

Lake Baroon Catchment Care Group

2009-10



A co-operative project between Lake Baroon Catchment Care Group, Queensland Primary Industries and Fisheries, Sunshine Coast Regional Council and the landowners; Peter and Fiona Stevens.

Lake Baroon Catchment Care Group
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Project No. 0910-003

PROJECT LOCATION

The Obi Obi Creek is by far the largest waterway in the Lake Baroon catchment, consisting of 71 km of waterway in a sub catchment of 2880 ha. A mere 18.45% of the sub catchment is covered in vegetation, with much of the area significantly disturbed mostly supporting beef or dairy cattle. There are nine Management Units within the Obi Obi sub catchment.

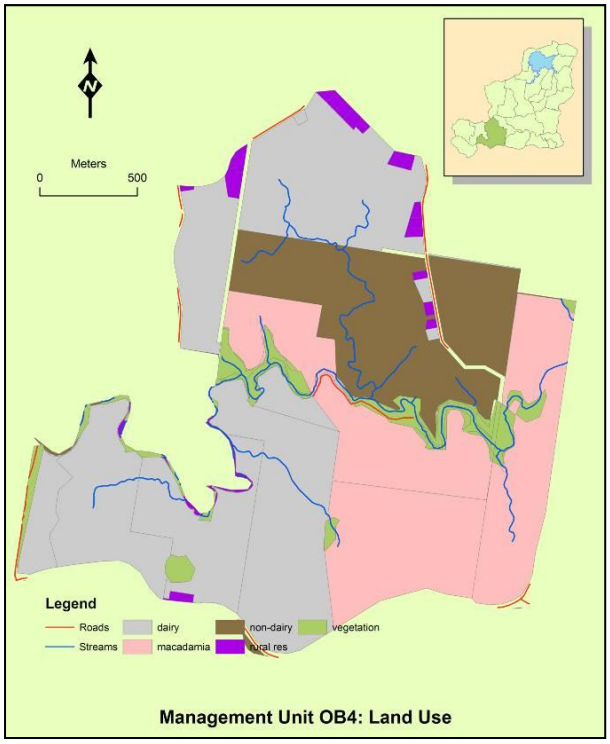
Left: Obi Obi Creek is the largest sub-catchment of Lake Baroon.
Maleny's water supply comes from two weirs on the waterway – the proposed project is immediately upstream of King's Lane Weir. This reach of Obi Obi Creek is threatened by sediment and nutrient loads entering the waterway through erosion in the catchment.

The Stevens property is in Management Unit OB4; a sub-catchment of the Obi Obi Creek.
The primary land uses in the catchment are dairying (50%), non-dairy (20%) and Macadamia horticulture (30%). Less than 3% of the sub-catchment is vegetated, although 31% of the waterways have riparian cover. There have been vast improvements to the state of the waterways in this MU over past years as landowners have revegetated large lengths of waterway and enhanced habitat corridors and the small patches of rainforest that remain.

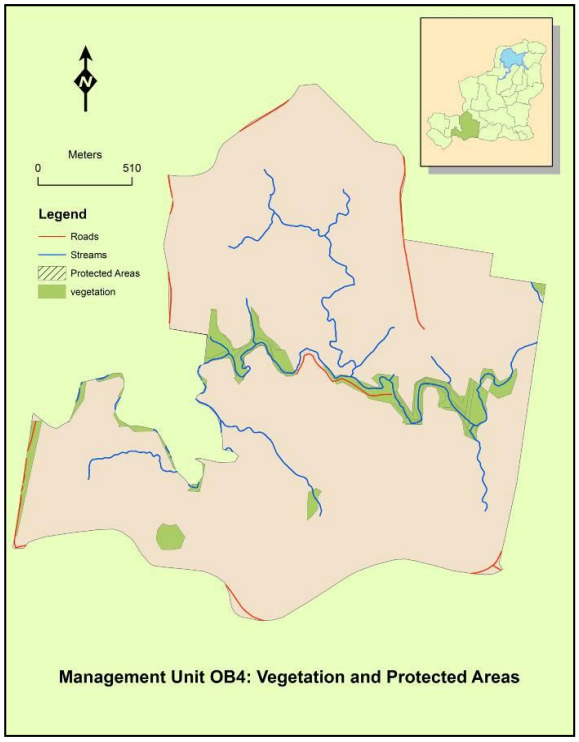
Despite the extremely stable geology of OB4, the MU contributes a significant nutrient load to the waterway (more than 70% of samples exceeded guideline levels).

Peter Steven's property has been historically used for dairying; however the property is now predominantly beef cattle with farm stay accommodation.

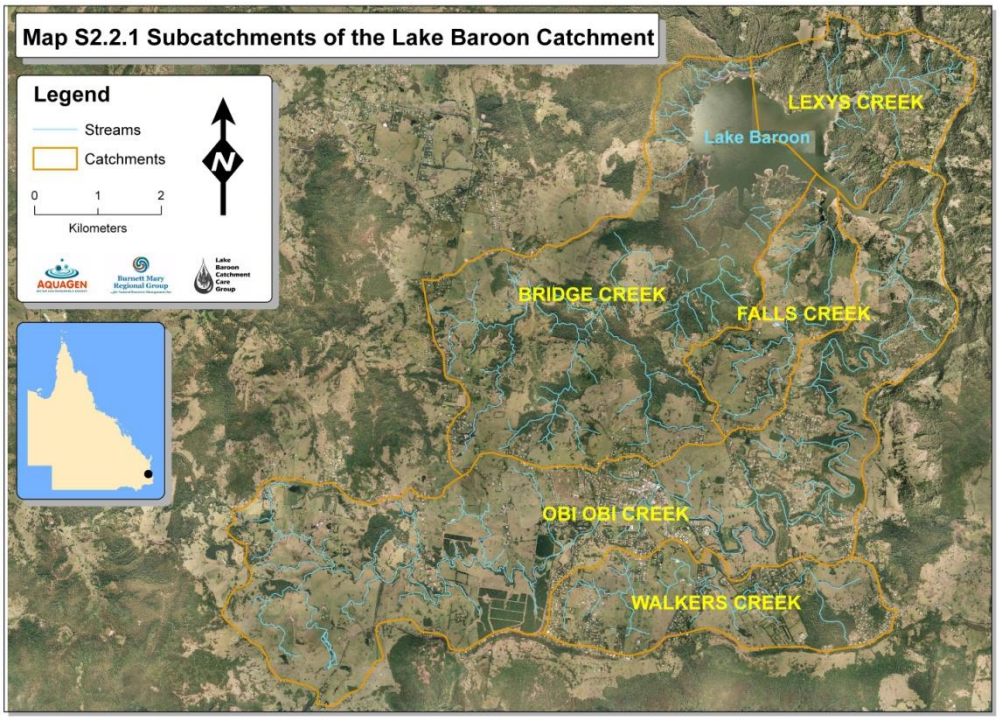
Left: Arley Creek meanders through the Stevens property with several dams providing important and valuable wetland habitats.
Fencing off and revegetating these wetlands will provide buffers, filtering overland flows and assisting in removing sediments and nutrients from the waterway.



Above: Peter Steven's property is shown as the brown shading in the map. Dairying and Macadamia horticulture surrounds the beef grazing of the Steven's property.



Above: This map shows the distinct lack of riparian vegetation in Management Unit 4. Peter Stevens has been particularly active in readdressing this imbalance.



Left: Obi Obi Creek forms the largest sub-catchment of Lake Baroon.
Maleny is situated in this catchment and draws its potable water supply from weirs on the waterway.

PROJECT BACKGROUND

In the past nine years, Peter Stevens has carried out significant on-ground works on his property, which is located immediately upstream of King's Lane Weir (an important water supply for Maleny Township). He has successfully revegetated large areas of riparian land, installed cattle crossings, fenced stock out of waterways and dams (wetlands), and installed off stream watering.

Peter Stevens - Summary of Works 2001-09

Output	2001/02	2002/03	2003/04	2007/08	2008/09	Totals
Plants	1,150	200	1,550	800	500	**4,200**
Fencing (m)	350		320	800	50	**1,520**
Off Stream Watering (troughs)	1			2		**3**
Waterway Crossings		4		1		**5**

The proposed project will build on previous on-ground works and further contribute to the long term aim of fencing and revegetating all wetlands on the property.

An example of previous works on the Stevens property, including remnant protection & enhancement; waterway crossings & sediment management; riparian fencing; off stream watering; and wetland protection.

The Lake Baroon Catchment Implementation Plan 2007 rates MU OB4 as a moderate priority for waterway rehabilitation. However the capacity of the landholder to complete and maintain on-ground works that contribute to water quality improvements in the Obi Obi Creek catchment and ultimately Lake Baroon, recommends a higher priority.

Two other landholders in adjacent Management Units have also expressed interest in carrying out on-ground works on their properties in the 2009-10 financial year. These activities combined will result in a strategic approach to on-ground works within the upper reaches of Obi Obi Creek.

PROJECT PURPOSE & OBJECTIVES

In 2008-09 Peter Stevens commenced a Property Management Planning program with Lake Baroon Catchment Care Group. The main outcome of the PMP program was the recognition of the need to improve water quality in the Obi Obi catchment (and ultimately Lake Baroon) by completing on-ground works that would also improve the productivity and sustainability of the farm business.

A significant priority identified by the Stevens' was improved riparian zone management and the importance of clean water to the farm's productivity and sustainability.

The project will enhance the filtering and buffering capacity of wetlands and waterways in the Obi Obi Catchment, while improving farm productivity by reducing nutrient, sediment and chemical export.

Through the fencing and revegetation of riparian areas, sediment and nutrient inputs into Arley Creek will be significantly reduced. Hardening of waterway crossings (previously constructed crossings require rehabilitation by further hardening of aprons), and construction of a new crossing will reduce the amount of sediment (and attached nutrients) washing into the waterways during rainfall events. Exclusion of stock from riparian zones necessitates the provision of off stream watering with the careful placement of watering points also beneficial in achieving water quality outcomes (away from waterways and in areas of low erosion potential).

Above: Arley Creek meanders through the Stevens property in the Obi Obi Creek catchment. The large shallow spring-fed constructed wetland can be seen in the background. Arley Creek has significant permanent flows all year round, with the boggy riparian zone suffering degradation from stock access; contributing to erosion, sedimentation, nutrient inputs and turbidity.

PROJECT OUTCOMES

1. **Water Quality Improvements**
   The primary aim of the project is to improve the water quality of Arley Creek (Obi Obi Creek Catchment). Ultimately this improves the quality of water entering Lake Baroon which leads to a lowering in cost of drinking water production costs, as well as improving the recreational and amenity value of the lake.

2. **Securing and improving wetland habitats.**
   The project will enhance the wetlands on the property. The wetland in the upper catchment of the property is a shallow water body that is spring fed and thus maintains good water quality, which will be improved by revegetating the eastern bank to provide a vegetative buffer from paddock run-off. A boggy spring-fed area downstream will be fenced and revegetated which will reduce sedimentation and turbidity while providing a linkage between the two larger wetlands. The large dam (which acts as a wetland) in the centre of the property will have extensive revegetation on the western bank which will provide habitat to terrestrial species as well as improve water quality and aquatic habitat.

3. **Development of riparian linkages**
   The project will continue the development of a linkage from the valuable habitat along the Obi Obi Creek to wetland habitats on the property. The completion of linkages will take several more years, however the creation of nodes and pockets of riparian vegetation will assist aquatic and terrestrial species to navigate upstream.

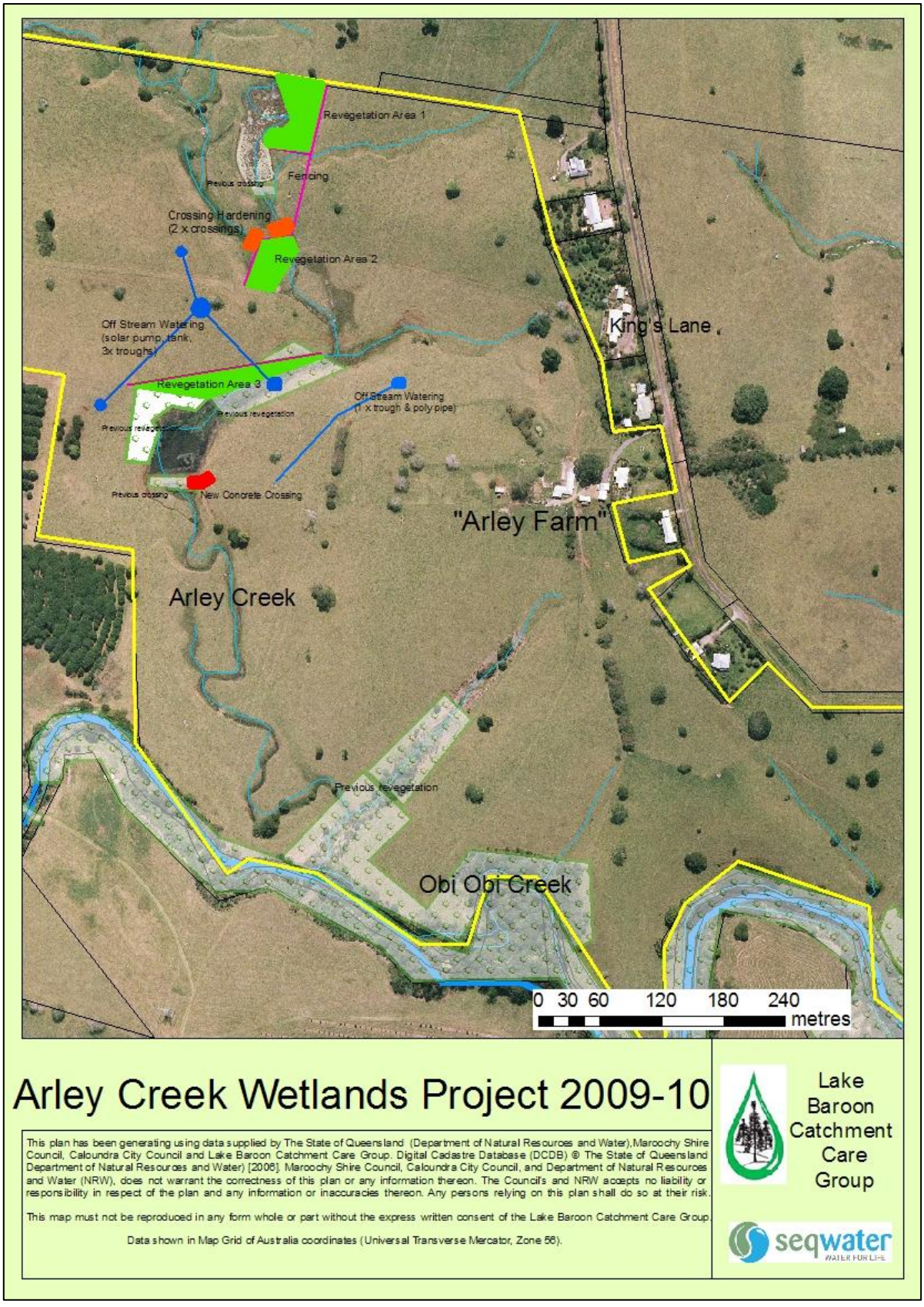
4. **Community Education**
   The property has been actively improving the waterways on the property (and the banks of the Obi Obi Creek) for many years and is often visited by various groups and stakeholders to evaluate on-ground works and techniques. The works will further enhance the properties demonstration values, and improve understanding and technical capacity of the agricultural extension community.

5. **Improvements in farm productivity**
   Farm productivity will be enhanced by improving the manageability of the property, while contributing to productivity by reducing nutrient loss, soil loss through erosion and chemical export from run-off.

6. **Whole farm approach to property planning.**
   The property has been reassessed through the Property Management Planning program which evaluated the property from both an environmental perspective and a productive agriculture perspective. This has led to a redesign of fencing layouts and overall property management. Innovative techniques are being employed to continue the evolution of best practice management and in-depth monitoring and evaluation is expected to influence future planning and project implementation.

DESCRIPTION OF WORKS

The Project Plan below shows the proposed works and previous projects relative to Obi Obi Creek.



The following on-ground works were identified that meet the objectives of the project:

1. Revegetation Area 1.

Fencing of eastern side of constructed wetland to exclude cattle; revegetation with appropriate species to create habitat and provide vegetative filter/buffer from paddock run-off to ultimately improve water quality in the wetland;

Left: Fencing of Revegetation Area 1 under construction (this part of the project is funded by "Working Wetlands – Healthy Farms").
This area will be revegetated to create a buffer/filter to the wetland.

2. Wetland bank repairs.

Minor repairs to wetland banks and overflow to reduce scouring and potential bank failure;

3. Revegetation Area 2.

Fencing and revegetation of confluence of Arley Creek and un-named tributary. This will exclude cattle from boggy spring-fed wetland area, and encourage stock to use rehabilitated hardened crossing;

Left: The boggy spring-fed area downstream of the upper wetland. Fencing will exclude stock; revegetation will create a habitat *node and stabilise creek bed and banks.*

4. Crossing rehabilitation.

Minor repairs to previously constructed waterway crossings (2) to reduce erosion and sedimentation of waterways.

Left: The waterway crossings constructed in previous projects have been effective, however road base material is required to extend the hardened surface to reduce the amount of 'pugging' leading up to the crossing.

5. Revegetation Area 3.

Fencing to exclude cattle from western side of large dam (functions as a wetland due to its variable depth and known platypus habitat) and revegetation with appropriate species to provide a wide (10 – 18 metres) vegetative buffer from paddock run-off.

Left: Fencing completed on western bank of large dam (wetland) funded by "Working Wetlands – Healthy Farms".
This area will be revegetated to widen the buffer/filter to the wetland and extend a habitat node.

6. Off stream watering.

With the fencing of the dams/wetlands, off stream watering is required to provide an alternative water supply for stock. A trough will be installed on the eastern side of the large dam with supply sourced from an existing reticulated supply. This will encourage stock to access water from a stable point rather than boggy spring areas.

The paddocks on the western side of the property require a stand alone system consisting of a solar pump, header tank and three troughs.

7. New waterway crossing.

Install concrete crossing on dam overflow to minimise erosion and potential scour;

Left: The overflow of the main dam. This area is the main waterway crossing to the south western paddocks of the property. In wet periods this crossing is damaged by stock with the resultant sediment and nutrients travelling a short distance to the Obi Obi Creek.
A concrete low-level crossing is proposed for this site.
Note the previous revegetation on the far dam bank.

Other activities:

On-ground works that contribute to water quality improvements (and other benefits such as riparian corridors, improved farm management) have been completed on the Steven's property since 2001. These projects and the continuing works showcase the role of Lake Baroon Catchment Care Group and its objectives and therefore the property is ideally placed to provide community engagement opportunities and awareness activities.

A Field Day promoting the project (and Lake Baroon Catchment Care Group, Sunshine Coast Regional Council, Dept Primary Industries & Fisheries, and Seqwater) is proposed to demonstrate best practice waterways management and its adoption into agricultural system