

Bridge Creek Rehabilitation (Watter)

Lake Baroon Catchment Care Group

2009



A cooperative project between Lake Baroon Catchment Care Group, and the landowners: Kurt & Sally Watter.



**Lake
Baroon
Catchment
Care
Group**

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Project No. 0910-007**

PROJECT LOCATION

The Bridge Creek sub-catchment is the second largest in the Lake Baroon catchment (behind the Obi Obi Creek catchment) consisting of 52 kilometres of waterways and covering an area 2,134 hectares. The sub catchment has a moderate covering of vegetation (43%), although much of this is significantly disturbed and degraded by weed invasion.

Bridge Creek has been divided into six management units that reflect property boundaries, physiography, vegetation, land use, point and diffuse source impacts, and administrative convenience.



Figure 1: Bridge Creek near the River School. The waterways generally have good riparian vegetation, with excellent bed diversity and bank stability. The creek however is threatened by sediment loads entering the waterway through erosion in the catchment.

The Watter property is located within Management Unit BR2, a sub-catchment of Bridge Creek. The Management Unit is located in the headwaters of Bridge Creek with part of urban Maleny encroaching into the catchment.

The MU is 323 hectares in size and has almost 10km of significant waterways. The dominant land use in the MU is beef production. Riparian vegetation is present alongside 85% of the waterway lengths, with LBCCG supporting several landholders in the MU expanding and re-establishing riparian vegetation along waterways.

Although parts of the catchment are steep, relatively good areas of vegetation maintain fair stability, and limit nutrient inputs into the waterways (especially phosphorus).

The Lake Baroon Catchment Implementation Plan (2007) rates BR2 a HIGH priority for rehabilitation works. Assessment of the Management Unit using a modified version of the Prioritisation Process, which prioritises MU's on pollution input levels and land instability parameters, BR2 rates as a MODERATE priority ⁽²⁾.

This particular land parcel however has less than 5% vegetation cover, and as the landholders are not reliant on primary production for income, they have shown considerable interest in waterway rehabilitation.

(1) Dunstan, M. 2007, Lake Baroon Catchment Implementation Plan, Aquagen Water & Renewable Energy, Palmwoods.

(2) LBCCG is currently developing a decision-making process to evaluate the priority of particular projects. For projects that predominantly focus on water quality improvements, an evaluation that uses pollution and instability Indicator Measures to assess their priority was used.

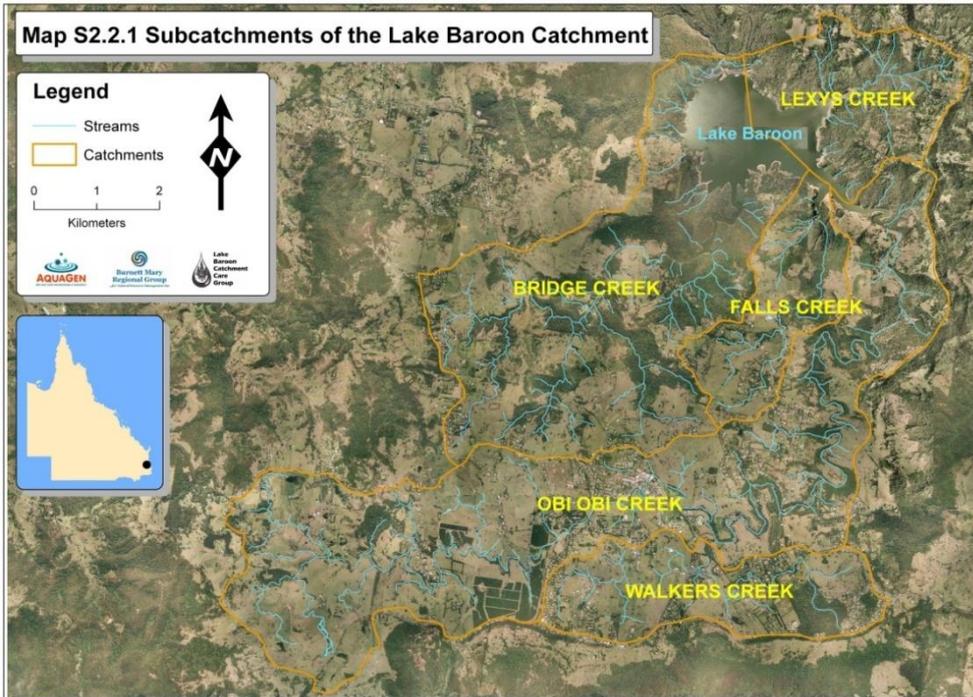


Figure 2: Bridge Creek forms the western sub-catchment of Lake Baroon. Part of Maleny is situated in the headwaters of Bridge Creek.

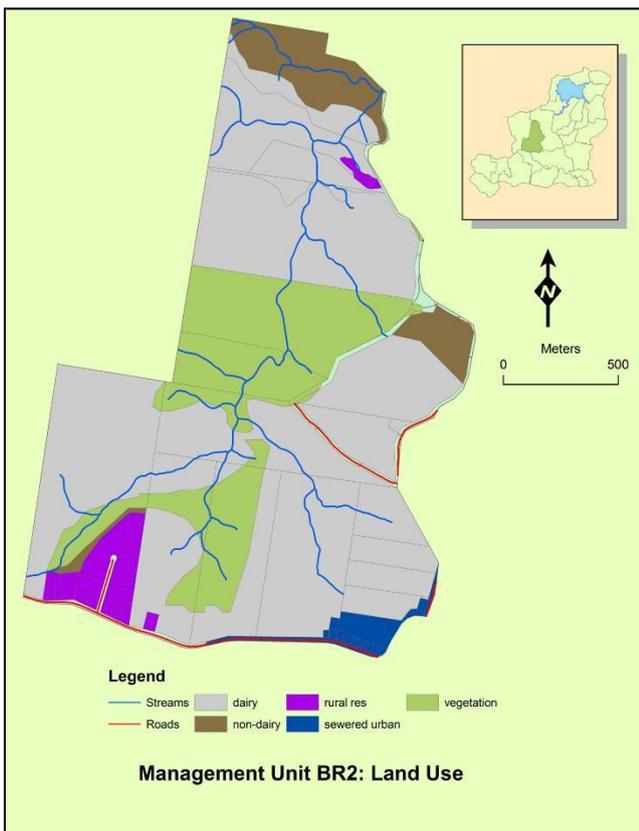


Figure 3: The Watter property is situated in the middle-right of the figure. Beef production is now the dominant land use in the Management Unit with a significant proportion of the catchment becoming rural residential.

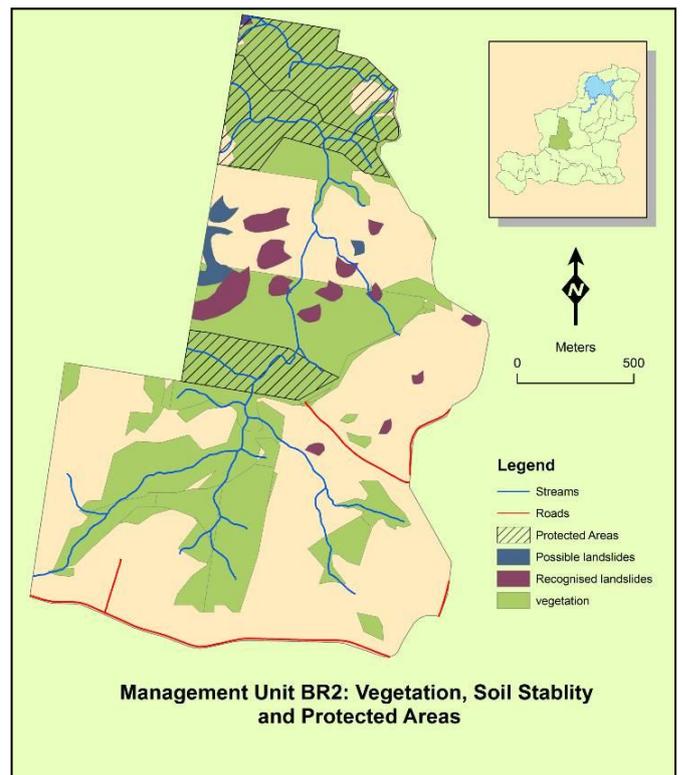


Figure 4: This map shows BR2's instability and likelihood of suffering mass movement (land slides & slips). The proposed project site is now relatively stable due to good property management and can be successfully rehabilitated.

PROJECT BACKGROUND

The Watter's until recently owned and operated a veterinary practice in Maleny. With the sale of the business Kurt and Sally have the time and commitment necessary to commence environmental and water quality improvement activities on their 16 hectare property.



Figure 5: The Watter property from Bridge Creek Road. A steep slope on the eastern side leads to fertile flats on the western side of the property. Three distinct waterways split the property from east to west.

The Watter's unsuccessfully applied to the Lake Baroon Catchment Care Group in 2008/09 for assistance to fence and revegetate the main waterway on their property. The project was considered to have merit, however the project was deemed too minor to have major water quality improvement benefits. Not taken into account however was the property's proximity to neighbouring remnant vegetation and the quantity of water generated from the property (when visited in mid October the main waterway was still flowing despite the extremely dry conditions and lack of substantial rainfall).

Furthermore, the Watter's share a boundary with Col Cork; with both landholders commencing Property Management Planning with LBCCG in 2008/09. Col Cork has expressed interest in carrying out on-ground works on his property, and combined with lower sub-catchment works on Rob McLauchlan's, will result in a strategic approach to on-ground works in the catchment.

The Bridge Creek catchment is recognised as being prone to mass movement (land slides & slips). This property has had minor landslips in the past, however recent good property management has left the property stable and suitable for revegetation. The geology of the property (and most of the Bridge Creek catchment) however, results in numerous springs on the property that continually provide waterlogged areas which are frequented by livestock which 'pug' the soils and results in the loss of soil during rainfall events.

PROJECT PURPOSE & OBJECTIVES

The proposed project will enhance the filtering and buffering capacity of a degraded waterway in the Bridge Creek catchment; restrict livestock access to an area of hill-slope erosion while improving farm productivity by reducing nutrient, sediment and chemical export.

In 2008-09 Kurt and Sally Watter commenced a Property Management Planning (PMP) program with Lake Baroon Catchment Care Group. The main outcome of the PMP program was the identification of environmental and water quality issues on the property, and the actions required to improve these areas while also contributing to the improvement of the properties' productivity and sustainability.



Figure 6: Uncontrolled livestock access to the main waterway on the property has left it degraded and eroding – sediments and nutrients flow downstream to Bridge Creek and ultimately Lake Baroon.

The primary issue identified by the Watter's was the lack of native vegetation on the property – particularly in riparian zones and on a steep hill-slope that has sheet erosion.

The main waterway on the property has uncontrolled livestock access and combined with the lack of soil binding vegetation, results in bank and bed erosion and the transport of sediment and nutrients from the property to Bridge Creek. Despite this, the waterway still retains isolated pockets of native sedges and aquatic vegetation which, if livestock was excluded, would relatively quickly form an effective filter to trap sediments and nutrients. Revegetation of the banks of the waterway would provide further stabilisation and provide habitat and biodiversity.



Figure 7: Even during the driest part of the year, the waterway has flows. Despite the degradation to the waterway, native sedges and rushes persist. Fencing of the waterway will exclude livestock; allow the existing vegetation to spread and provide an effective filter and revegetation will buffer overland flows.



Figure 8: The remnant vegetation at the downstream end of the waterway. Note the bedrock crossing immediately in front of the trees – this crossing will be retained as it is very stable.

Furthermore fencing of the waterway would also effectively split the property in two, improving grazing management, which indirectly improves water run-off by allowing rotational grazing.

A steep slope on the eastern side of the property has unrestricted livestock access and has become a livestock ‘camp’ due to the presence of scattered native and non-native trees. Pasture coverage is poor due to the heavy grazing pressure by livestock and the thinness of topsoil resulting from continual hill-slope erosion. Sediment (and nutrients) from this area ‘flow’ off this hill-slope during rainfall events, entering waterways on the property, resulting in sediment ‘slugs’ forming, which further contributes to the water logging of the waterways.

Fencing would enable pasture to re-establish, forming a protective covering, minimising erosion and nutrient transfer. Furthermore natural regeneration by native tree species (currently regeneration is not allowed to establish due to grazing pressure) will be encouraged, which can be augmented by enhancement planting if necessary, once regeneration rates are known.

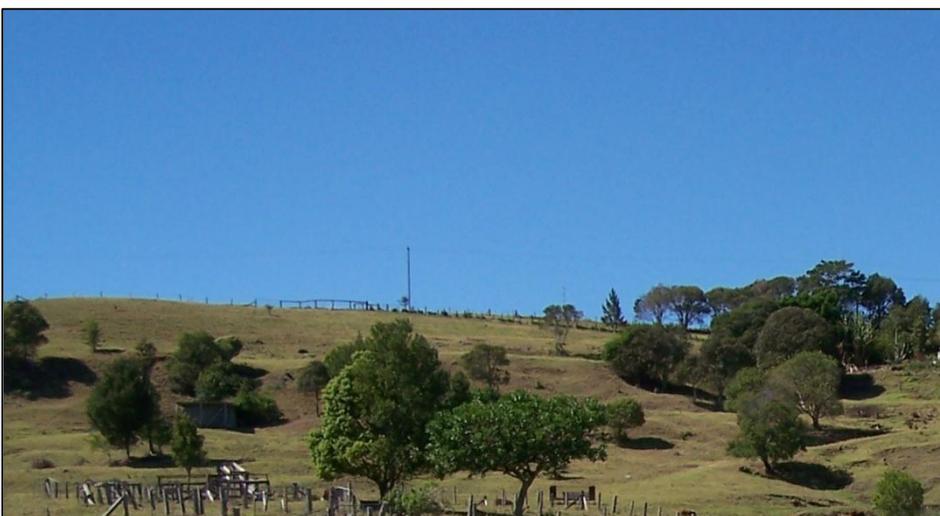


Figure 9: The slope in the centre of the photo can be clearly seen as a brown area, indicating the poor pasture condition caused by excessive hill slope erosion and thin topsoil. Eroded material is washed into the waterways of the property.

PROJECT OUTCOMES

1. Water Quality Improvements

The primary aim of the project is to improve the water quality of Bridge Creek by targeting a permanent waterway in the upper catchment. By reducing erosion and the associated sediment and nutrient inputs into the properties waterways, the quality of water in the Bridge Creek catchment will be improved. 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 Bridge Creek and the lake.

2. Securing and improving wetland habitats.

The project will remove stock from year-round spring-fed wet areas that will provide valuable habitat to amphibian species (frogs) and other animals that inhabit the zone between aquatic and terrestrial areas. These areas will act as small wetlands and perform a filtering function, removing sediment and nutrients before flows reach Bridge Creek.

3. Development of habitat clusters and corridors.

The project will establish clusters of native vegetation and expand the vegetation in a high priority area. The property is adjacent to a large area of remnant/regrowth vegetation with the project expanding this area. Furthermore the property backs onto Trail Road which provides an important wildlife corridor. Species selection will be consistent with the Regional Ecosystems of the immediate area and will also include rare and threatened flora species of these RE's so that the site will also assist in the long term preservation of species.

4. Community Education

The project will demonstrate waterway rehabilitation within a moderate sized, continuous reach of waterway (in a strategic and high priority reach) and improve awareness of catchments, water quality and sustainable farming. The landowners have an excellent understanding of the local district, livestock management and the environmental, and water quality issues unique to Maleny. 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 agricultural sustainability by reducing nutrient loss, soil loss through erosion and chemical export from run-off. The owners have shown excellent property management in the past and the property could be used for Field Days demonstrating the links between good environmental management and improved farm manageability.

6. Whole farm approach to property planning.

The property has been assessed through the Property Management Planning program which evaluated the property from both an environmental perspective and a productive agriculture perspective. Innovative techniques are being employed to continue the evolution of best practice management and in-depth monitoring and evaluation will inform and influence future planning and project implementation.

DESCRIPTION OF WORKS

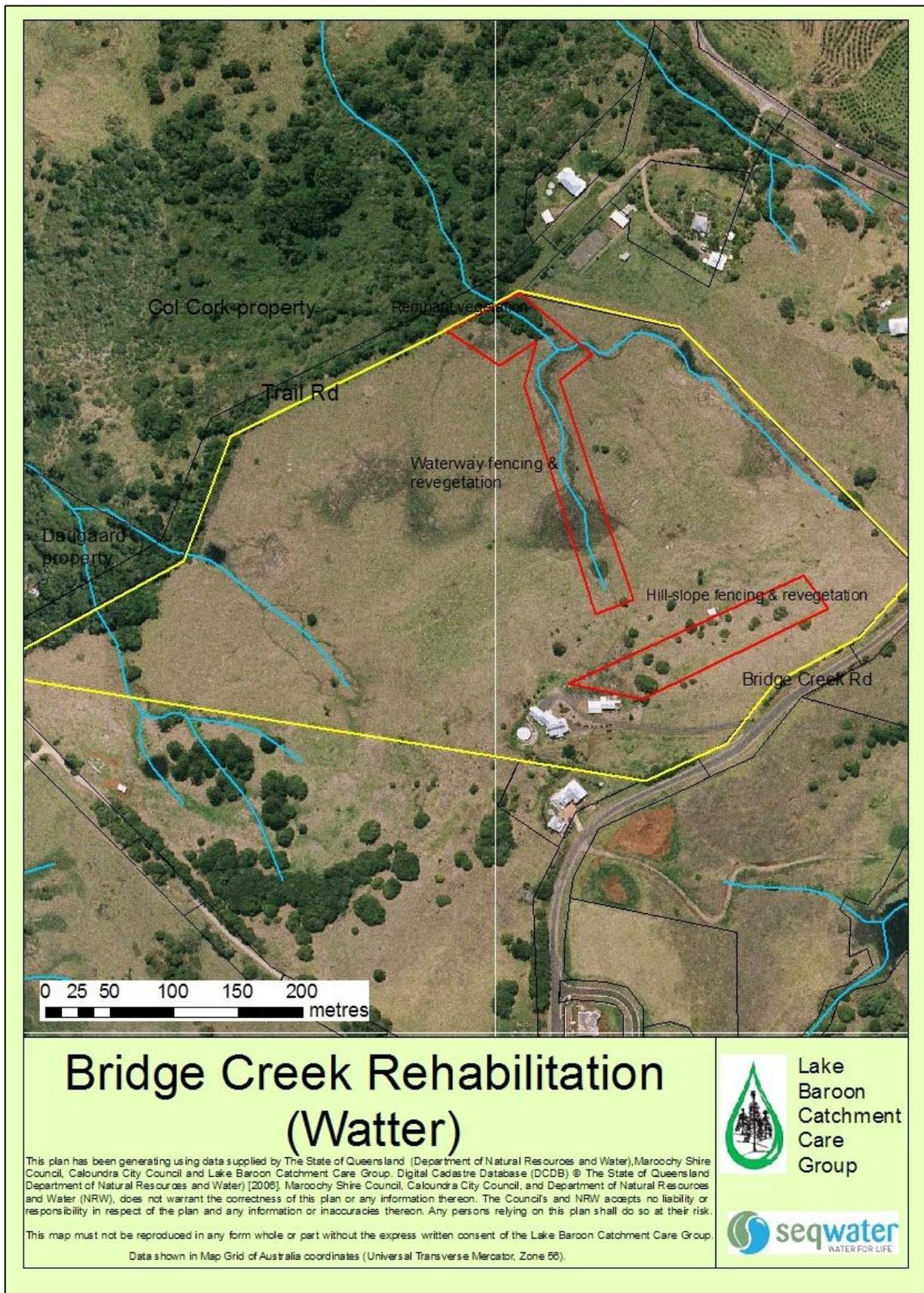


Figure 10: The property showing the neighbouring properties of Col Cork and David Daugaard.

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

1. Revegetation Area 1.

The main waterway on the property will be fenced to exclude livestock and revegetated over a three year period with appropriate species to provide a vegetative filter/buffer from paddock run-off, stabilise the bed and banks and retain existing sediment on site. Included at the downstream end of the fencing will be a small area of remnant vegetation.



Figure 11: The main waterway on the property and Revegetation Area 1. Fencing to exclude livestock will run either side of the waterway and be revegetated with appropriate species. Note the sedges growing in the waterway.

A bedrock crossing will be retained at the downstream end, immediately before the waterway enters the remnant. Planting of the waterway will be carried out over a period of three years to ensure the landholders can effectively manage maintenance.



Figure 12: Bedrock crossing that will be retained for access to the northern side of the property. Note the effectiveness of the rock bar at halting previous head-ward erosion.

2. Fencing of hill slope.

Fencing to exclude livestock will allow existing pasture to recover and provide stabilisation of a steep eroding hill-slope. Water quality downstream is impacted by sediment and nutrient run-off from the slope. The area has scattered native (*Mallotus* sp.) and exotic trees (Privet and Coral) which improve stability but also attract livestock seeking shade and shelter, thus contributing to further erosion.

Natural regeneration is expected to occur (currently any regeneration is affected by livestock) and will be enhanced with revegetation in the second and third years of the project. This is to allow stabilisation by pasture initially before any revegetation attempts.



Figure 13: The steep hill-slope requiring fencing to exclude livestock and allow pasture to re-establish and stabilise. Revegetation of the slope can be completed once the level of natural regeneration is determined.

POTENTIAL FUTURE ACTIVITIES

The property inspection by Alan Wynn from Land for Wildlife recommended the fencing of a small area of remnant vegetation on the southern waterway. This waterway could be targeted for rehabilitation in the future. Furthermore a waterway on the northern boundary could be easily fenced as it already has fencing along half its length on one side. Both these areas would benefit from fencing to exclude livestock and revegetation activities.

If all waterways on the property were fenced, off stream watering would be essential for livestock watering.