

# Green Banks

## Sustainable management of farm drainage channels on the Tweed Floodplain

### Background



Last century, the government actively encouraged farmers by offering incentives to undertake drainage works to transform the Tweed floodplain into land suitable for agricultural production.

As a result, a vast drainage network was created to convey floodwater; new drainage channels were excavated and existing natural creeks where modified and native vegetation removed. These drains were regarded as merely infrastructure that required routine maintenance.

Until recently, the potential ecological services that farm drainage channels can provide has not been realised and there has been a lack of landholder and community will to provide resources for their rehabilitation



### Traditional Drain Maintenance



In order to maximise the drainage capacity of the channels regular drain cleaning is required which is done using a long-arm excavator.



To keep weeds under control drain banks are routinely sprayed using a variety of chemical herbicides.

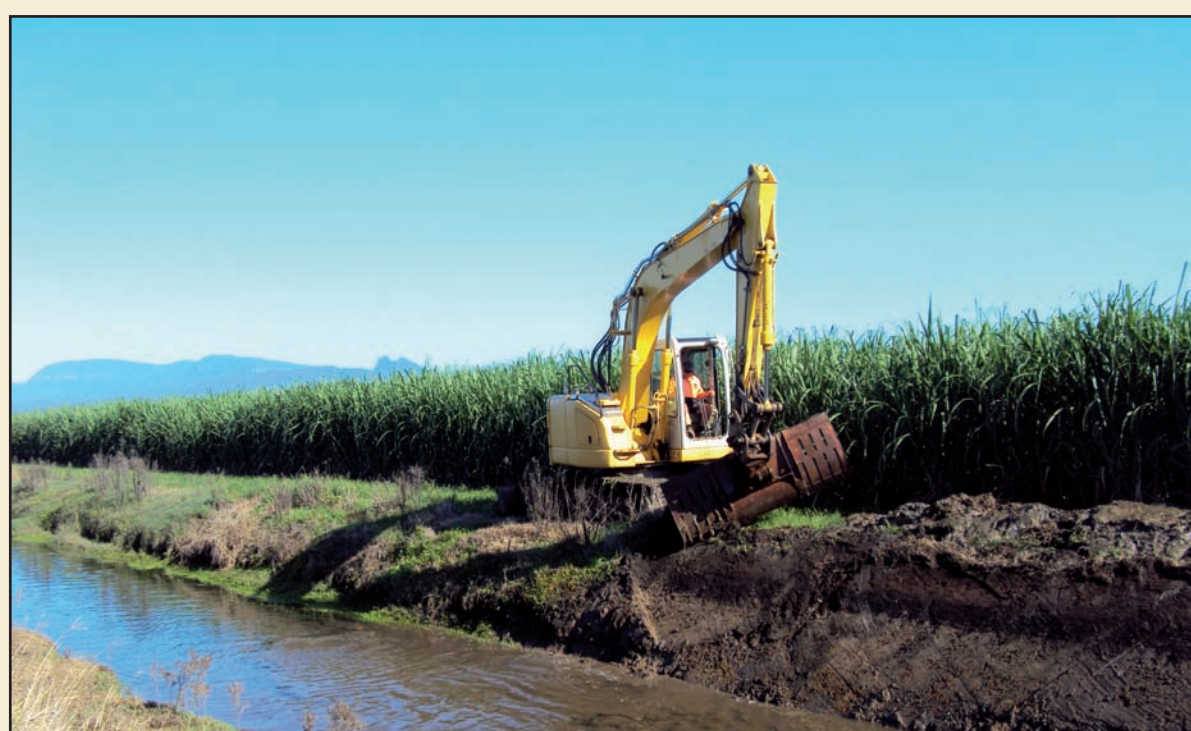
### The Issues



Without deep-rooted vegetation on the banks slumping and erosion is a major issue.



Drains become infested with weeds without shading from trees.



Drain cleaning can be costly and usually disturbs acid sulfate soils.



Acid Sulfate soil disturbance: an ongoing issue in drain management.



Non-vegetated banks allow sediment runoff to enter waterways.

### On Ground Action

To address these issues Council's Sustainable Agriculture Program has undertaken a project since 2006 to establish locally native floodplain vegetation along drain banks.

In most cases a simple mix of groundcover species is used to cover the bank; *Lomandra longifolia*, *Lomandra hystrix*, *Dianella Caerulea* and *Crinum pedunculatum* (Spider Lilly). These species are fast growing and have fibrous matting roots that are ideal for holding drain banks together to prevent erosion and slumping

Where there is no risk of interference with farm machinery, trees are planted along the northern bank to provide shade which inhibits the growth of aquatic weeds within the drain while improving fish habitat. Trees also provide great bank stability. All are locally occurring native floodplain riparian species sourced from local nurseries.

**Trees Species Commonly Used:**  
*Callistemon viminalis* (Weeping Bottlebrush)  
*Callistemon salignus* (Willow Bottlebrush)  
*Cupaniopsis anacardioides* (Tuckeroo)  
*Ficus coronata* (Creek Sandpaper Fig)  
*Tristanopsis laurina* (watergum)  
*Acmena Smithii* (Common Lilly Pilly)

*Waterhouseia floribunda* (Weeping Lilly Pilly)  
*Macaranga tenarius*  
*Commersonia bartramia* (Brown Kurrajong)

**Ground Cover Species:**  
*Lomandra longifolia*  
*Lomandra hystrix*  
*Dianella caerulea*  
*Crinum pedunculatum*



Drain bank with only groundcover species.



Trees are also used where they will not interfere with farm machinery.



On longer sections of drains groundcovers are too costly and difficult to maintain so only trees are planted

### Benefits

1. long term decrease in overall drain management = increase farm profitability
2. reduction in bank erosion and slumping = soil conservation and
3. Improved water quality
4. Improved on-farm biodiversity = increased habitat for aquatic and terrestrial
5. Reduction in pollutants entering waterways
6. Reduction in use of chemical herbicides
7. Improved visual amenity



Groundcovers act as a waterway filter during a rain event.



Increased bank stability – less erosion. Improved habitat and natural regeneration of native aquatic and riparian species.

### Examples

BEFORE

AFTER



BEFORE

AFTER

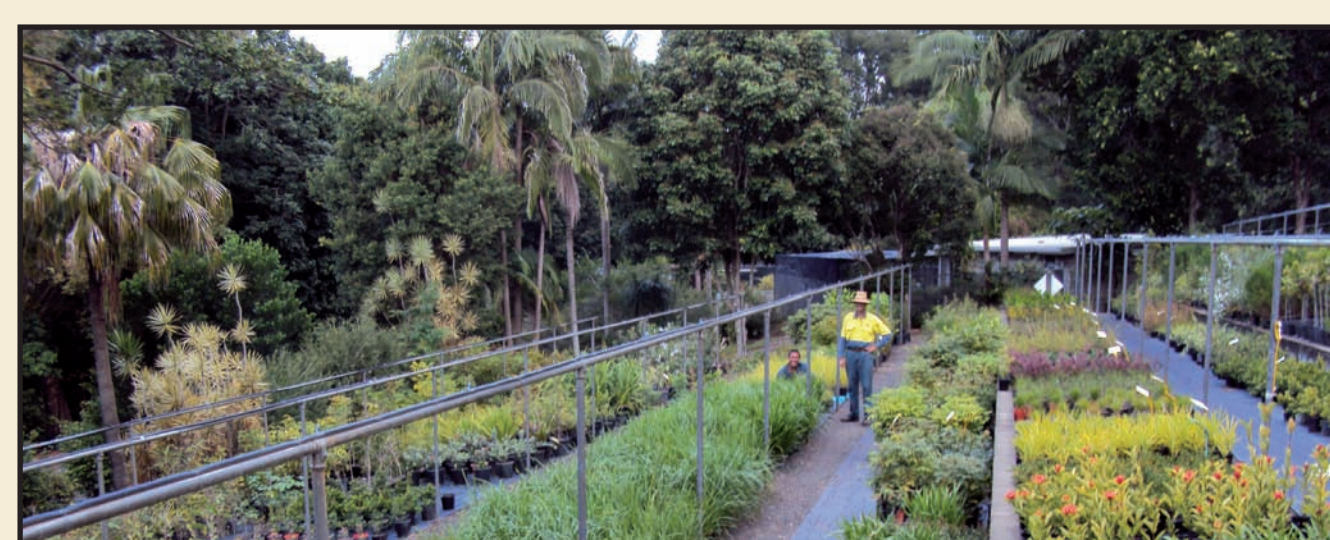


### The Process

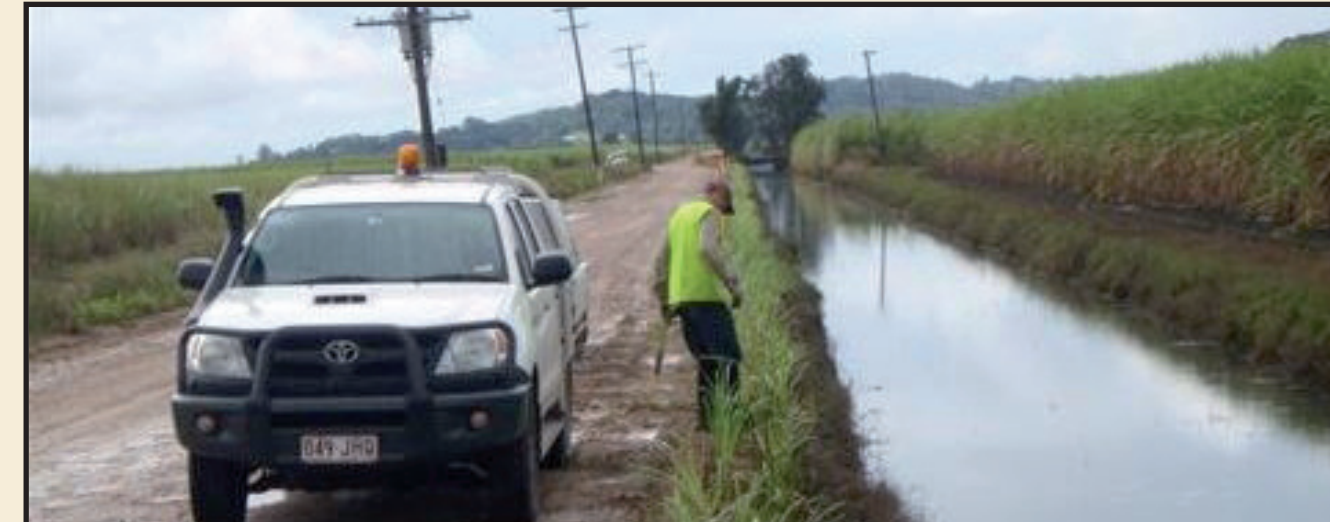
1. Apply for Funding
2. Order plant stock from local native nurseries
3. Liaise with landholders
4. Prioritise drains for work
5. Landholders prepare sites – spraying and or drain bank reshaping
6. Prepare contract/quote with Bush Regen Contractor
7. Planting
8. Two years maintenance by contractor (site visits every four to eight weeks for weed control)
9. Regular site inspections by council officer
10. Handover to landholder with training



Local bush regen contractors are used to undertake the planting.



Plants are grown to order at local nurseries.



Ongoing maintenance is required so that weeds do not outcompete the plants.



Greenbank champions - Landholder training and field days.

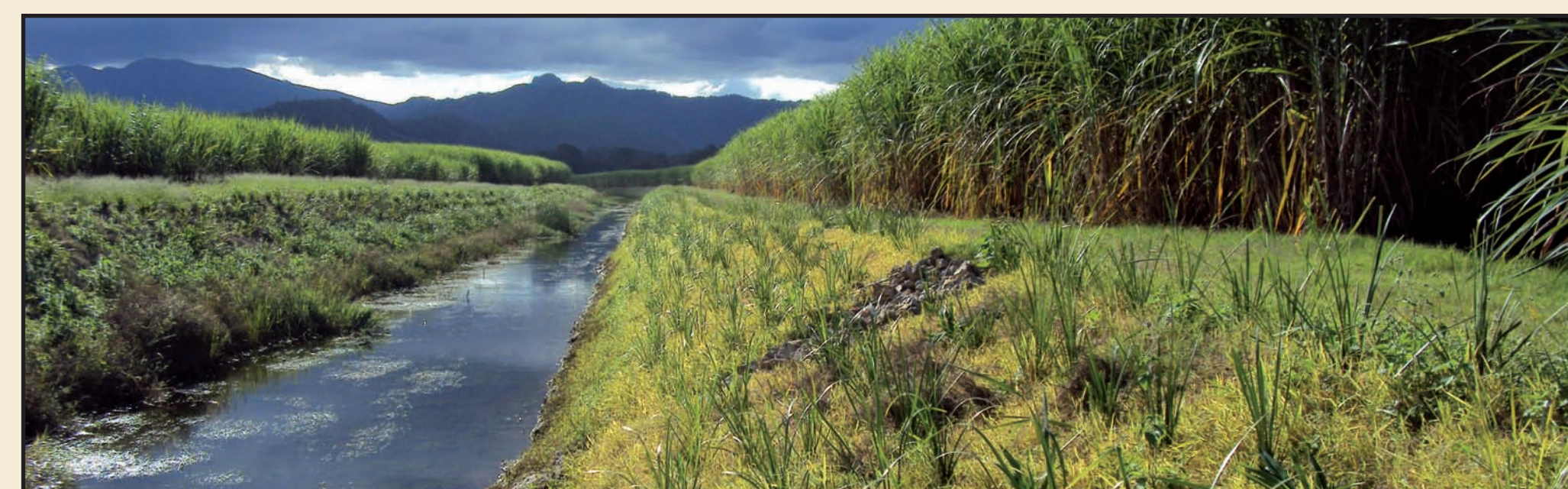
### Green Mulch

Green mulching is a technique that is being trialled on planting sites. Annual grasses are sown to suppress weeds and to provide an instant ground cover while plants become established. During the summer months annual Jap Millet is sown amongst the plants. Coming into

winter the millet dies off then rye is sown for the winter months. The process is then repeated. If proven successful, maintenance costs and herbicide use can be reduced therefore allowing more planting work to be done. The cover on the bank will also reduce erosion.

#### Green Banks Stats

Drain banks planted	> 28 km
Groundcovers planted (eg lomandra)	> 70,000 plants
Trees planted	> 3500 trees
Participating Landholders	> 30



Jap Millet covering the bank.