

Koala Connections

Cudgen Nature Reserve Revegetation

Final Report

June 2016

1.0 Scope of Works

Bushland Restoration Services (BRS) were contracted by Tweed Shire Council to fence, plant and maintain for a period of 12 months the old Hardy's banana land within Cudgen Nature Reserve.

NPWS Tweed Area office upgraded the three north south tracks to provide access to the site. The site was then fenced to restrict access by wallabies.

Prior to works, the site was dominated by dense Molasses Grass and woody weeds. The degraded banana land had slip areas along the upper tracks and erosion in gully lines.

2.0 Site preparation and planting

Prior to this project, large woody weeds such as Giant Devil's Fig were controlled by cut, scrape and paint. At commencement of this project there were two weed control treatments using power spray to control exotic grasses and small woody weeds. The planting of 5000 tubestock comprising koala food trees with rainforest trees and shrubs in the gully lines was undertaken between 29 May and 26 June 2014. Weed mats were placed around each plant and tubestock were well watered in.



Site preparation



Planting

3.0 Maintenance and fence removal

Year 1

Follow up control of weeds was undertaken in September and November 2014 and January/February and May 2015.

Year 2

Although the contract was only for a 12 month maintenance period, funds did allow for maintenance to extend a further five months. During this period follow up control of weeds was undertaken in September and October 2015 and January and February 2016. Funds also allowed for removal of fencing material in October 2015 so the planting could be accessed by koalas and other fauna.

4.0 Results

Year One - June 2015

Year one monitoring was undertaken by BRS in June 2015. Monitoring confirmed that all contract requirements were met, specifically:

- All woody and herbaceous weeds were treated on a regular basis during the 12 month period.
- No woody weeds remained on site. Herbaceous weed cover was estimated at <5% at completion of the 12 month period.
- No plants were replaced. Plant survival was high but variable throughout the site, estimated at 5% loss in upper areas and up to 15% loss in lower areas, averaging at 10% (therefore meeting the criteria of 90% survival rate of planted trees).
- The fence was in good condition with no breaches.

Monitoring undertaken by BRS found that the planting between the central and upper track had excellent growth of trees particularly koala food trees. Trees were in good condition with some trees over four metres in height and having a dense canopy. Weeds were minimal and were mainly confined to edges and there was evidence of natural regeneration.

The planting between the central track and lower track had lower success and growth of planted trees, with trees generally around two metres in height and with a more open canopy. Rainforest species were concentrated in this section as gullies were more defined and these areas more protected.

Year Two - May 2016

Monitoring was undertaken by Tweed Shire Council in May 2016. This monitoring found:

- Plant survivorship is similar or only marginally less than recorded in June 2015. Therefore plant survivorship across the whole site is approximately $\leq 90\%$ at year two.
- There is higher survivorship and growth in trees in the upper section of the planting when compared to the lower section of the planting. However planted tree canopy cover in the lower section of the planting is now starting to close/fill in and ranges from 50-90% across the site.
- Height of trees ranges from 1 to 10m, with rainforest spp and Forest Oak at the lower end of this scale and *Lophostemon* spp and *Eucalypt* spp at the upper end of this scale.
- Planted Swamp Mahogany is in flower and planted Pink Bloodwood have not long finished flowering and are now in fruit.
- Cover of ground cover weeds ranged from 5 to 80% across the site, obviously at the lower end of this scale where the canopy has closed and at the upper end of this scale where there are gaps in the canopy.
- Weeds are predominantly exotic grasses (Molasses Grass, Red Natal Grass, Vasey Grass, Whisky Grass, Carpet Grass, Rhodes Grass) and forbs (Balloon Cotton Bush, Milk Thistle, Blue Billy Goat Weed, Fleabane, Farmers Friend) with some Cuphea. However a few Giant Devils Fig, Guava and patches of Tobacco Bush were noted higher in the planting and it is likely bird dispersed woody weeds will start to recruit in the planting as the canopy closes and provides more bird roosting and foraging habitat.
- Native regeneration is relatively limited and comprises only a few species like Pratia, Blady Grass, Barbed Wire Vine and Blackwood. This is likely due to the disturbed nature of the site prior to planting. Ongoing weed control by experienced bush regenerators would be required at this site to result in the replacement of exotic groundcovers with native groundcovers.
- The best performing koala food tree in terms of growth is the Forest Red Gum, easily outperforming Tallowwood even on the upper slopes of the planting.
- The planting now appears to be supporting lots of small bird species. Whilst monitoring was undertaken early in the afternoon, large numbers of small birds of a variety of species were active at the site.
- Evidence of browsing by koalas has been observed throughout most of the site, although probably more on the southern half of the planting. Evidence of browsing has been observed primarily on Forest Red Gum and Swamp Mahogany, but some Tallowwood also have evidence of browsing. Evidence of browsing consists of scratches on tree stems, broken branches and crowns, browsed leaves and branches, and scats under trees.

5.0 Photo monitoring and reporting

Photopoints were set up and fifteen baseline photographs were taken by BRS in April 2014 prior to commencement of site preparation and planting (Figure 1).

The contract required BRS to repeat eight photographs at the end of the 12 month period. Eight selected photopoints were repeated by BRS in June 2015.

These photopoints were repeated by Tweed Shire Council for the purposes of this report in May 2016.

The series of photopoints is provided as Attachment 1.

6.0 Recommendations

The following recommendations are made with regard to ensure the ongoing success of the planting:

- If possible, slash and maintain the mid and top tracks before and during fire season. These now comprise dense grass to 1.2m in height. Slashing tracks will reduce bushfire hazard and improve access in the event of a fire.
- If possible, continue periodic follow up weed control at the site. This is essential to ensure woody weeds like Giant Devils Fig and Camphor Laurel do not establish. The selective control of exotic grasses and forbs is recommended to encourage the regeneration of native groundcovers.
- Record all koala sightings and evidence of koala activity. Additional observation of native fauna to be recorded if possible.
- If possible, continue monitoring of the planting on an annual basis to assist with the planning and implementation of future revegetation projects. It will be interesting to compare the longer term results of this planting to other koala food tree planting projects concurrently being undertaken in Cudgen Nature Reserve.

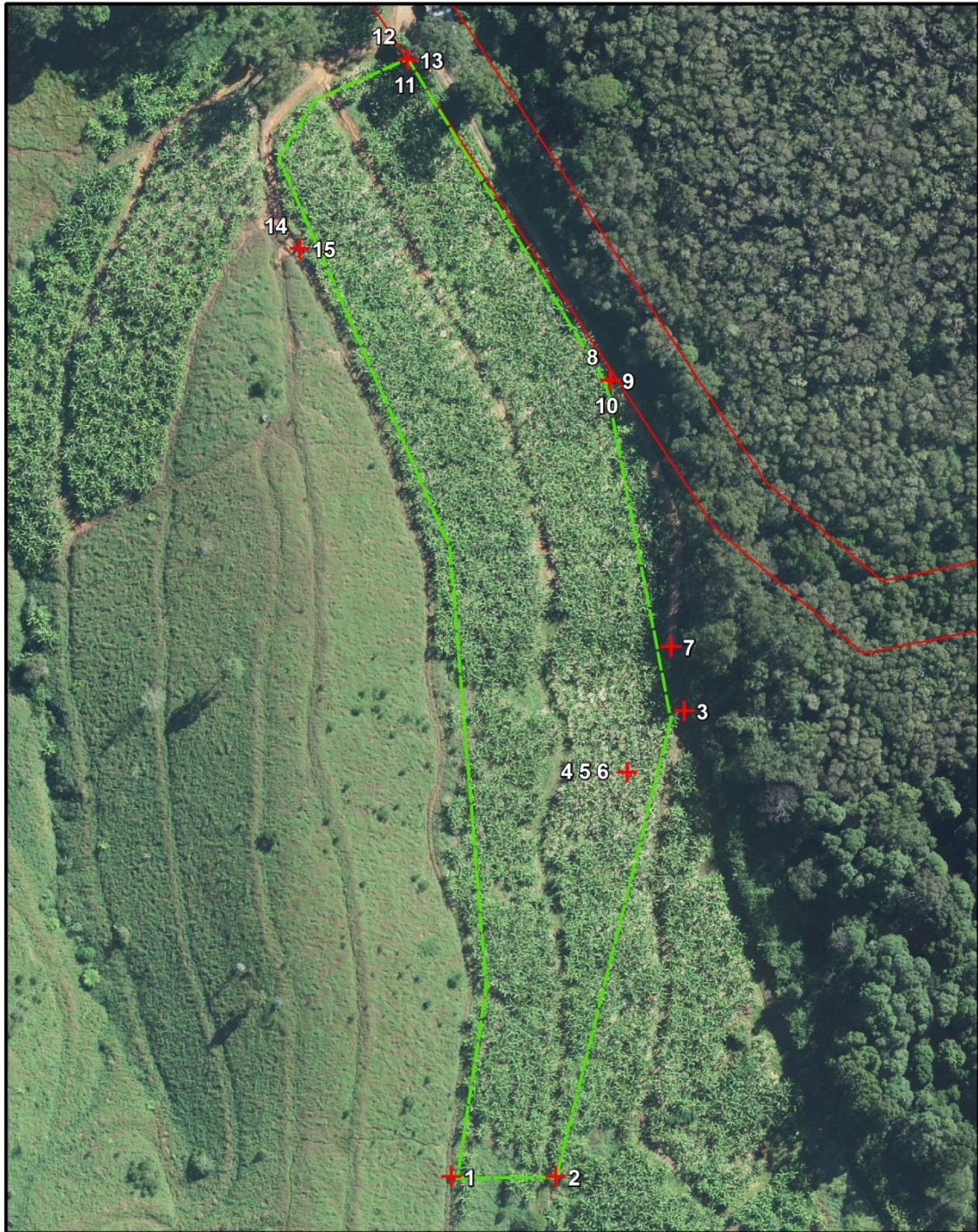


Figure One

Monitoring points

- Property boundaries
- Planting boundaries
- + Monitoring locations



Attachment 1: PHOTOPOINTS

BASELINE - April 2014

YEAR 1 - June 2015

YEAR 2 – May 2016



PP1 (553495/6865351)



PP3 553564/6866489 Looking west from lower track.

BASELINE - April 2014



YEAR 1 - June 2015



YEAR 2 – May 2016



PP4 553564/6866489 Looking south west from lower track.



PP7 553560/6865508 Looking west from lower track.

BASELINE - April 2014



YEAR 1 - June 2015



YEAR 2 – May 2016



PP11 553482/6865682 Looking south from lower track.



PP13 553482/6865682 Looking south west.

BASELINE - April 2014



YEAR 1 - June 2015



YEAR 2 - May 2016



PP14 553450/6865626 Looking north east from upper track.



PP15 553450/6865626 Looking south east from upper track.