

Appendix 6

2015 T.E.N.T.A.C.L.E. Incorporated Rehabilitation Report

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∞T.E.N.T.A.C.L.E Inc.∞

**The Education Network Training Applying Conserving Landbased Ecosystems
Bushland Regeneration Service
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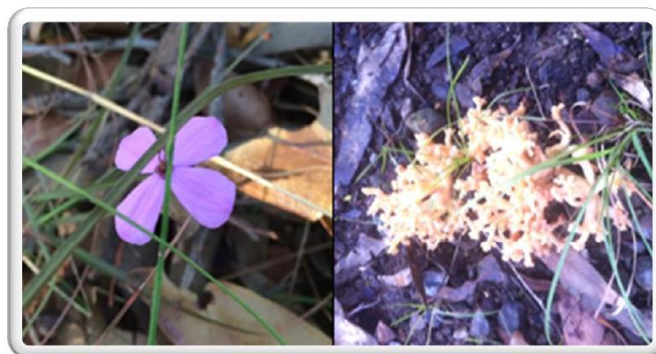
Reporting Officer

Metromix Pty Ltd.
Teralba

Bush Regeneration

End of Year Report
2015

**Property: Lots DP 1 & 2/224037,
Teralba, NSW**



Michael Mercer

METROMIX PTY LTD TERALBA, MID YEAR BUSH-REGENERATION REPORT, 2015

INTRODUCTION

The following report details methods and purpose, hours worked, weeds controlled, results and future plans from bush regeneration work completed by Tentacle Inc. at Teralba Metromix quarry & biodiversity offset/Biobanking area, during this calendar year, 2015 – February – October.

BACKGROUND

Works by Tentacle Incorporated were carried out in accordance with all current applicable legislation including:

- Environmental Protection and Biodiversity Conservation Act 1999
- Pesticides Act 1995
- Protection of Environment Operations Act 1997
- National Parks and Wildlife Act 1974
- Threatened Species Conservation Act 1995
- Lake Macquarie City Councils Local Environmental Plan 2012

All works were compliant with the conditions of the National Parks and Wildlife Services checklist, for bush regeneration activities in the habitat of threatened species, endangered populations and endangered ecological communities.

Bush regeneration techniques applied were in line with best practice guidelines outlined within the Bush Regenerators handbook (National Trust of Australia, NSW 1991).

The rehabilitation works aim to improve the overall natural condition of the site by controlling invasive weeds/species. The rehabilitation of native vegetation will increase biodiversity within the designated area. Improved native vegetation communities will also protect waterways from increased sedimentation by enhancing erosion control and protecting and conserving the habitat for native and threatened flora and fauna.

The works will improve the overall site condition encouraging an increase in native biodiversity.

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AIMS

Tentacle Inc use standard Bush Regeneration Techniques to rehabilitate native vegetation communities and manage the habitat for increased native biodiversity across the site, by reducing the population and abundance of weed species and revegetation methods.

These works are performed in the best interest of Metromix's BioBanking initiative by maintaining areas of healthy vegetative status and improving those that are degraded.

Target Species this year have been:

Lantana (*Lantana camara*)

Crofton Weed (*Ageratina adenophora*)

Pampas Grass (*Cortaderia selloana*)

OBJECTIVES

- Strive to maintain and establish a healthy soil seed bank by removing weed species for when topsoil is taken, stored and later used for rehabilitation purposes.
- Maintain and where needed, improve the health of vegetation zones categorised by EcoLogical in their Biobank Credit Assessment Report, 2013.
- Minimise and maintain the abundance and species of exotic vegetation within the quarry and workplace area, to suit the requests made by Metromix Pty Ltd, Teralba.
- Re-vegetate areas undergoing rehabilitation or otherwise deemed necessary.

HOURS WORKED

A total of **910 hours** have been worked this year on a total of **54 days** spanning from February to October , 2015.

These hours usually consist of 3-4 people working 6 hour days, 2 days per week.

A total of 2.250 Litres of herbicide (Round-up Biactive®) has been used this year.

1.5 Litres with the Spatter Gun, on large stands of *L.camara* and 750mL using cut and paint methods on various weed species.

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METHODS

Removal of weeds

In order to successfully remove the wide range of weed species on the site, several different bush regeneration techniques were employed.

These techniques were chosen based on 3 main basis –

- Success of destroying the plant
- Time taken to conduct technique; and
- Impacts the method will have on surrounding native flora and fauna.

These methods include:

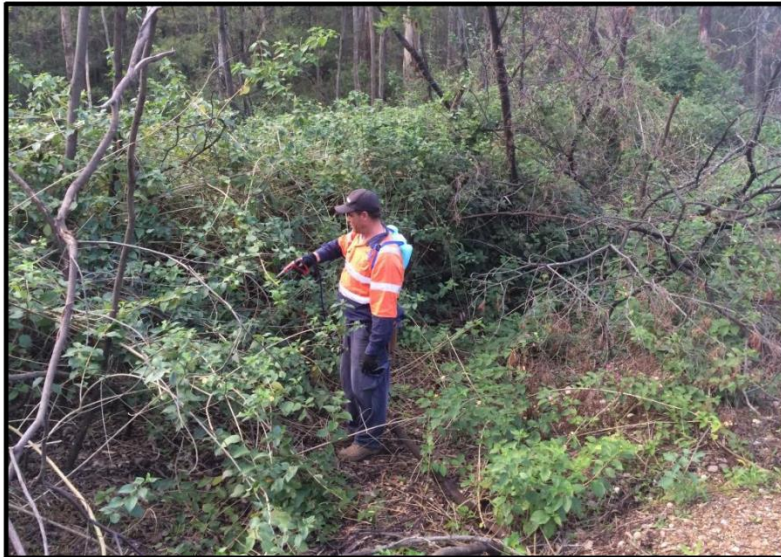
- Chemical weed control (Round-up Biactive ®) (Cutting and Painting, Splatter Gun/Spraying)
- Hand removal (Hand pulling, Crowning)
- Seed head removal

Our team predominantly worked from areas of low to medium densities to ensure maximum coverage of the large site.

Depending on the soils susceptibility to erosion and whether or not the weed is contributing to a beneficial and natural vegetative habitat for fauna, often the plant is cut and poisoned and left in situ. If weeds are not deemed to be a significant habitat for fauna or have no other factors that warrant them being left in situ, then they are removed and rafted; preferably off the ground to minimise chances of them re-shooting.

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Several large, dense stands of weeds (primarily lantana) have been treated using chemical control methods (splatter gun) with great success. This method has left the vegetation in those areas quite lifeless, but due to the abundance of surrounding habitat, the method was deemed harmless.



**Figure 1: Splatter Gun control method used on dense lantana located to the north of the main pit.
(BEFORE)**
Date Taken: 9/6/15



Figure 2: AFTER effects of Splatter Gun treatment.
Date Taken: 23/11/15

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Re-Vegetation

A mixture of 190 tree saplings were planted on the north-west section of the quarry as a part of Metromix's rehabilitation program. These species included:

- *Angophora costata*
- *Corymbia maculate*
- *Eucalyptus robusta*
- *Eucalyptus punctata*



Figure 3: Vegetation rehabilitation area in the north west part of the main pit. Date Taken: 23/11/2015

Translocation

A total of 40 endangered *Tetratheca juncea* were identified and tagged, potted, translocated and planted to a section of the quarry that is not to be disturbed in the future. These plants are endemic to this region and have a notoriously poor survival rate after translocation. However, due to researched methods, careful implementation continual monitoring and reporting a large 80% of plants have survived after 4 months since translocation.



Figure 4: Translocated *T. juncea* displaying its upside down lilac coloured flowers.
Date Taken: 1/9/15

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SUMMARY

How is the overall health of the site?

In summary, along with Figure 5, the vast majority of the site has now been treated and in moderate – good condition. Large stands of bushland void of weeds are present, particularly south of the pit. Along with these healthy environments, are areas that have been moderately – extensively treated this year, and cover a large portion of the site. There are several areas still present with dense stands of *L.camara*, but the main area of concern is located to the north east area of the site.

Where are we heading?

This year has been predominately associated with clearing stands of lantana, particularly in gully areas across the whole site. This hand removal method, mixed with chemical poisoning will continue into 2016 but with a systematic approach.

In 2016, areas that have been cleared in 2015 will be the first to be checked/ treated based on their susceptibility of weed invasion. As so much work has been done this year, it is expected that this should be completed with a small amount of effort.

Once this maintenance and secondary clearing has concluded, large stands of lantana will once again be targeted.

Adaptive management has been applied this year by assessing progress and adapting our time and methods to best treat this huge site. In 2016, a larger emphasis of re-vegetation will also take place to rehabilitate areas impacted by mining activities.

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CONCLUSION

As the map displays (Figure 5), much of the site has been cleared during this year. Therefore all that will be required for these areas in the future will be secondary or maintenance weeding, which involves minimal labour. This is the type of control we are striving to achieve.

Tentacle have adopted the approach to not allow priority areas to be left untreated for a period of longer than 3 months, by conducting maintenance or secondary weeding before this time. This will inhibit weeds from re-establishing dominance over native flora in the area.

A note to add is the large amount of Primary and Secondary weeding that has been carried out this year; attributed to the treatment of large and dense stands of medium to high density weeds, particularly in gully slopes across the site.

Much of the map remains without categorisations. This is due to the fact Tentacle has not ground proofed the area in recent times as it is not deemed likely to be drastically impacted by exotic species. These areas have been highlighted in 'red'.

The continual battle of getting on top of the weeds is slow, but definite progress is being made. With so many areas now in optimal condition, Tentacle can now continue to move on to and treat other high density weed areas.

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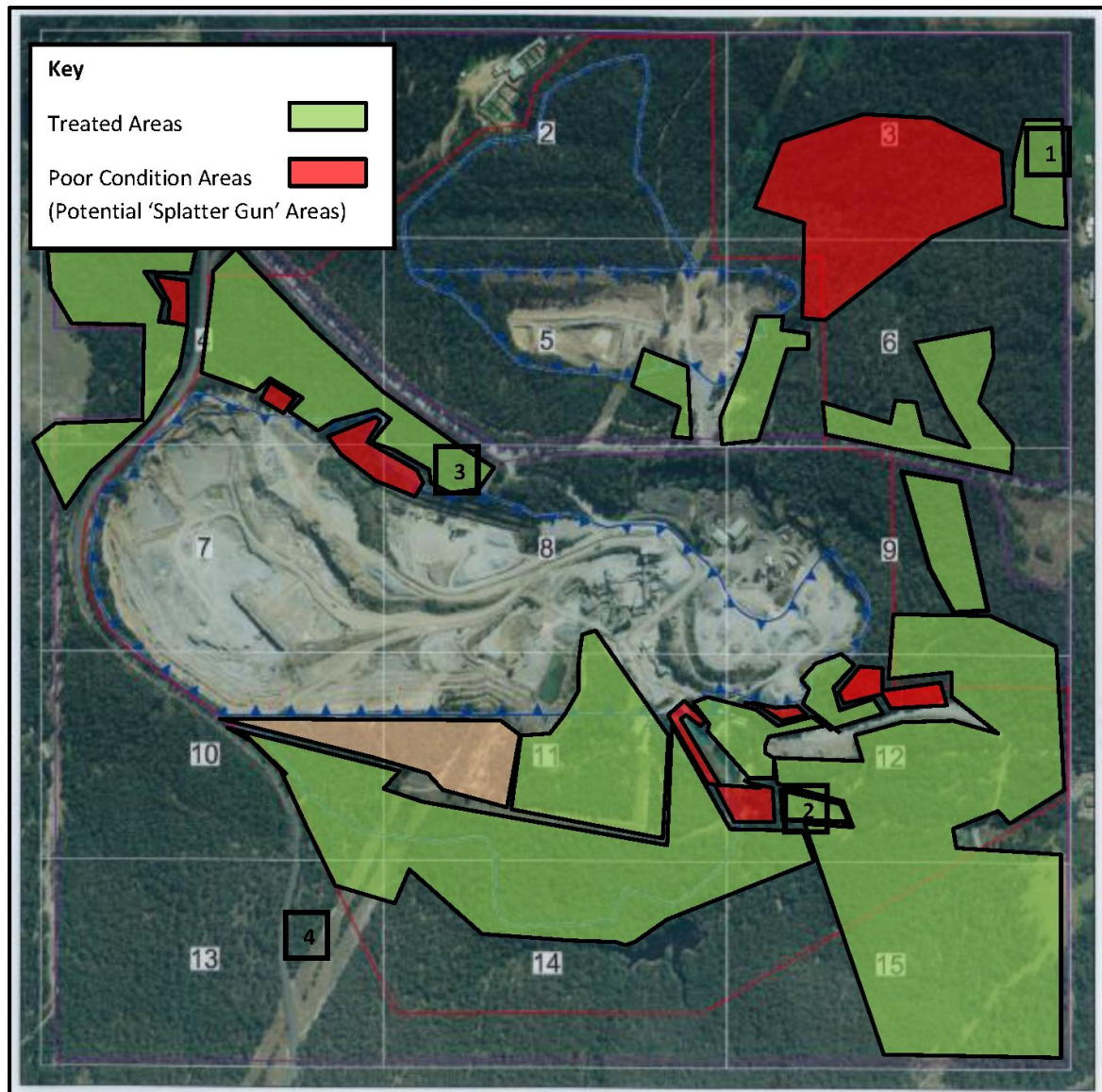


Figure 5: Map of site showing areas that have been treated and areas of interest.
Source: Google Maps

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PHOTOGRAPHS

***Note: All photographs taken and supplied by Michael Mercer.**



BEFORE-

Dense coverage of *L.camara* and other exotic species along western border of site and residential property.

Location: North eastern corner of site.

Date Taken: 19/10/15



AFTER-

Hand removal method on mainly *L.camara*.

Date taken: 23/11/15



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BELOW:

After effects of splatter gun herbicide treatment of dense stands of *L.camara*.

Location: 2- South of the entry road from the east.

Date Taken: 23/11/15



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Hand removal method used on dense *L.camara*.

Location: 3 – Centre of the site between Rhonda rd and main pit.

Date Taken: 19/5/15



Site of translocated *T.junceae*.

Location 4 – Between eastern haul road and southern power lines.

Date Taken: 1/9/15