

# Appendix 4

## 2013 Community Consultative Committee Meeting Minutes

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MINUTES OF MEETING  
TERALBA QUARRY  
COMMUNITTEE CONSULTATIVE COMMITTEE (CCC)

**DATE:** Monday 2 September 2013  
**MEETING COMMENCED:** 3.57pm  
**MINUTES TAKEN BY:** Debbie Charman

**ATTENDEES:**

**Independent Chair:** Margaret McDonald-Hill (MMH).  
**Metromix:** William (Bill) Sanderson (WS), Robert McCabe (RMc) and Debbie Charman (DC).  
**Community members:** Richard Metcalf (RM) and Susan Gleeson (SG).  
**Lake Macquarie City Council:** Symon Walpole (SW).

**APOLOGIES:** Nil.

ITEM	ACTION
<b>1.0 Welcome and introductions</b>  Margaret McDonald-Hill, as the independent chair, opened the meeting at 3.57pm and welcomed everyone to the first CCC meeting for the Teralba Quarry. Symon Walpole stated that a councillor will be determined by next meeting and that person will be attending each Teralba Quarry CCC meeting.	

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<p><b>2.0 Declaration of interest</b></p> <p>MMH advised that she was appointed by the Director General of the Department of Planning and Infrastructure as the independent Chair for Teralba Quarry. She also advised she is a Board member of the Mine Subsidence Board and a Member of the Ministers' Arbitration Panel.</p>	
<p><b>3.0 Role of the Committee</b></p> <p>MMH explained the role of the committee, which will operate in accordance with the Department's Community Consultative Committee Guidelines previously forwarded to the committee members. The committee is an advisory one and provides a forum for good communication and information exchange between the parties. Matters of compliance and approval remains with the Government agencies..</p>	
<p><b>4.0 Overview of the Teralba Quarry</b></p> <p>William (Bill) Sanderson presented a PowerPoint slide presentation (see attached). The presentation covered the following information:</p> <ul style="list-style-type: none"> <li>▸ History</li> <li>▸ Current Operations</li> <li>▸ Project Approval conditions</li>   <li>◦ Limits of extraction</li> <li>◦ Truck movements</li> <li>◦ Hours of operation</li> <li>◦ Blasting</li> <li>◦ Transport routes</li> <li>◦ Future operations</li> <li>◦ Monitoring and reporting</li> <li>▸ Discussion</li> </ul> <p>The following items were discussed by attendees:</p>	
<p><b>2.1 Sales</b></p> <p>RM – Are sales lower because of the current downturn?</p> <p>WS – Yes.</p>	

<p><b>2.2 Clearing</b></p> <p>WS: Metromix will be clearing 1Ha of land at a time and this will commence very soon.</p> <p>SG: Will all of the land be cleared at 1Ha at a time?</p> <p>WS: Yes it will be.</p>	
<p><b>2.3 Opening of the north side of Rhondda Road</b></p> <p>SG: Why was the area north of the quarry opened?</p> <p>WS: Because Metromix had current approval to quarry there and we were running out of rock. Metromix ceased sourcing rock from the north side on 22 August 2013 and will not be returning there for approximately seven years. At that time a conveyor will be built to transport the material under the road through a culvert to the existing operation for processing.</p> <p>SG: Will this area be rehabilitated now?</p> <p>WS: No, it will be maintained as a working site.</p>	
<p><b>2.4 Blasting</b></p> <p>SW: What time does Metromix blast?</p> <p>WS: Generally around 2pm.</p>	
<p><b>2.5 VENM and ENM</b></p> <p>SW: Is Metromix going to be importing VENM and ENM?</p> <p>WS: Yes we will be, but not until the Environment Protection Authority (EPA) approve it.</p> <p>RM: What is VENM and ENM?</p> <p>WS: Explained that VENM is Virgin Excavated Natural Material. It is material that has been excavated or quarried from a virgin source and is free of contaminants. ENM is Excavated Natural Material. It is material that can be reused because it doesn't contain any contaminants and has had rigorous testing to ensure it hasn't. All material that will be brought into the quarry will be tested by a NATA laboratory and the results be reported to Metromix prior to acceptance of the material.</p>	
<p><b>2.6 Zoning</b></p> <p>WS: Stated that the land at the base of the existing quarry will not be rehabilitated because the area has been zoned Industrial and is to be kept cleared for "its end use".</p>	

<p>RM: Does that mean there will be heaps of buildings erected?</p> <p>WS: We don't know what will be there because Metromix is not the land owner.</p> <p>SG: How will the rehabilitation advance?</p> <p>WS: Rehabilitation has been carried out at the Teralba Quarry for 20 years. We employ people to weed and carry out ongoing rehabilitation. Areas will be rehabilitated as per the management plan that is currently with the Department of Planning for approval.</p>	
<p><b>2.7 Biodiversity</b></p> <p>WS: Stated that the Tetratheca juneca plant was present on the Teralba Quarry site.</p> <p>RM &amp; SG: Asked what the plant was?</p> <p>SW: Explained that the Tetratheca is listed as a threatened species and the Lake Macquarie area is the most common area for the plant.</p> <p>DC: Added that it originally was found from Sydney to Taree areas, but its communities have seriously declined.</p> <p>WS: The communities of the Tetratheca plants were pointed out on the overhead of the quarry land.</p> <p>WS stated that there has 148Ha set aside for the biodiversity offset.</p> <p>As part of the Project Approval Metromix must place aside enough money with the Department of Environment and Heritage for the Landowner to operate the biodiversity offset for perpetuity after the Metromix lease over the land has expired.</p>	
<p><b>2.8 Truck movements</b></p> <p>RM: Requested clarification on the limit on truck movements. Is it only Metromix that has these restrictions?</p> <p>WS: Yes. It is only for trucks despatched from Teralba Quarry.</p>	
<p><b>3.0 General Business</b></p> <p>SG: Stated that she hoped to learn more about the Teralba Quarry operation as time went on.</p> <p>SW: Suggested that it would be informative for the committee to visit Teralba Quarry.</p> <p>MMH: Stated that had been a suggestion for the next meeting.</p> <p>SW: Stated that LMCC is undertaking an Air Quality Study and that Council would appreciate the data from Metromix's weather station. He is also very interested</p>	

in discussing the Biodiversity Offset at further meetings.

SW: Requested that any complaints received by Teralba Quarry should be tabled and discussed at each meeting.

WS: Agreed.

#### 4.0 Next Meeting

MMH asked the committee how often it would like to meet and suggested that the next meeting be held at the Teralba Quarry.

The timing and setting for future meetings, other than the next site visit, was not decided. To be discussed at the next meeting.

The next meeting will be held on **Wednesday 27 November 2013** at the Teralba Quarry. It will be necessary to wear Personal Protective Equipment (PPE) while on site, however, Metromix will supply Hi viz top, hard hat, safety glasses and steel cap boots for those that require them (it will be necessary for each person requiring boots to contact Metromix to ensure that the correct size is available for you). Can each person please wear long sleeved shirts and long pants?

#### 5.0 Meeting Closed

MMH thanked everyone for being part of the committee and their participation in today's meeting. The meeting was closed at 4.45pm.

**MINUTES OF MEETING**  
**TERALBA QUARRY**  
**COMMUNITTEE CONSULTATIVE COMMITTEE (CCC)**

**DATE:** Wednesday 27 November 2013  
**SITE INSPECTION:** 4.20pm – 5pm  
**MEETING COMMENCED:** 5.05pm  
**MINUTES TAKEN BY:** Lisa Andrews

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**ATTENDEES:**

Independent Chair: Margaret MacDonald-Hill (MMH)  
Metromix: William (Bill) Sanderson (WS), Robert McCabe (RMc) and  
Debbie Charman (DC)  
Community members: Susan Gleeson (SG)  
Lake Macquarie City Council: Cr Wendy Harrison (WH)  
Observer: Colin Wright (CW)  
**APOLOGIES:** Richard Metcalf (RM)

ITEM	ACTION
<b>1.0 Welcome and introductions</b> Margaret MacDonald-Hill, opened the meeting and welcomed those present. WS provided a bound document to all present, which contained information that would form the content of his report.	
<b>2.0 Declaration of interest</b> MMH advised that she was appointed by the Director General of the Department of Planning and Infrastructure as the Independent Chair for Teralba Quarry. MMH also advised she is a member on the Mine Subsidence Board and a member of the Ministers' Arbitration Panel.	



<p><b>3.0 Confirmation of Previous Minutes</b></p> <p>MMH asked that the previous minutes be confirmed. SG was the only community representative that could confirm the minutes, however, she had not had the opportunity to read the minutes and was not prepared to confirm them at this time. MMH stated that the confirmation would be postponed as it was preferable to have a community representative ratify the minutes, accordingly this item will be deferred until the next CCC meeting, when RM should be present.</p>	
<p><b>4.0 Business Arising from Previous Minutes</b></p> <p><b>Site Inspection</b> took place prior to the formal commencement of the meeting. WS &amp; RMc took all present on a tour of the Quarry Site, stopping at several locations around the site to explain the current and proposed operations as well as the history of the project.</p> <p><b>Complaints Register:</b> A complaints register is provided within the report document and will be reported at each meeting. (Two complaints have been received from the community since 22/1/13.)</p>	
<p><b>5.0 Report</b></p> <p>WS started his report by referring to the complaints register, which was <i>Section 12</i> within the bound document. WS explained that a resident had telephoned to complain about blasting, however, it was explained that no blasting had occurred at the time alleged. The resident was invited to the site to view the operations but declined the offer. Notwithstanding this, the conversation finished well with the invitation remaining open.</p>	
<p><b>5.0.1 – Report - Section 3:</b></p> <p>WS provided a summary of Teralba Quarry’s current approval, which was granted on 22/2/13. Extraction from Mid Pit ceased on 22/8/13. DP &amp; I have approved the EMP’s for Blasting, Air Quality, Transport and Waste as well as the Clearing of Vegetation Procedure. A meeting has been held with EPA regarding the draft variation to its licence. Further information needs to be provided to the EPA by Metromix and information to Metromix by the EPA.</p> <p>WS explained the monitoring of dust at a nearby residence and how the data links to their weather station.</p> <p>SG: Why don’t you put the monitor at the closest property?</p> <p>WS: The closest residence is at 26 Rhonnda Rd and if we put it there, we would be non-compliant, so we need to find an appropriate location.</p> <p>SG: Does it have to be in a residence?</p>	

<p>WS: Yes, it is supposed to be. <i>(5.15pm DC entered the meeting)</i></p> <p>WS explained that the VPA is currently with LMC Council's solicitors. WH advised that she will chase up. WS advised that the VPA confirms Metromix's commitment to contribute to the ongoing maintenance of Teralba Quarry Haulage Routes of \$0.66/t/km (CPI indexed).</p> <p>WS also advised that the Asphalt plant sometimes uses rubber on RMS jobs, so there was an odour issue.</p>	
<p><b>5.0.2 Report - Section 4 – Production</b></p> <p>WS detailed the production tonnages from the quarry for 2013, which were down due to market conditions and wet weather.</p>	
<p><b>5.0.3 Report - Section 5 – Blast Monitoring</b></p> <p>There are three monitoring points, one on top of Rhondda Rd and the other two at the closest houses. Only two of the three sites have to be monitored. No blast exceeded the EPA criteria.</p> <p>SG: What does NR mean?</p> <p>WS: No result, which means it was under the trigger amount; and NM means, No Monitors located there as yet as we are not firing in that area.</p>	
<p><b>5.0.4 Report - Section 6 – Truck Movements</b></p> <p>Truck movements from the period 1 July to 31 October 2013 were provided. Non-compliances were highlighted with some trucks leaving prior to 6am. From 6pm to 5am there are only supposed to be 6 per hour, but they went to 7. The weighbridge is improving, with operators being reminded every half hour to ensure compliance using outlook.</p> <p><i>At 5.25pm, WH left the meeting to attend another meeting.</i></p> <p>MMH asked WH if she had any preferences for the timing of the next CCC meeting. WH advised she would fit in with the decision of the committee and. 4pm start was suitable.</p>	
<p><b>5.0.5 Report - Section 7 – Air Monitoring</b></p> <p>High volume sampling will be undertaken, once a location is established with the EPA.</p> <p>Dust Deposition Gauges have been in place since 2004. Locations are based on where the monitors can be placed without people disturbing them. They measure nuisance dust, providing month by month results. It does fluctuate,</p>	

<p>depending on the weather conditions. October was very dry, but in spite of that, recordings are still within the requirements.</p> <p>SG: What are ash solids?</p> <p>WS: Usually mineral, the remaining being spiders, bird poo, organic material etc.</p> <p>SG: What is contained in the leaf matter?</p> <p>WS: Insects, etc. 68% of the ash is mineral. Dirt , etc.</p> <p>Weather Station – Metromix have had trouble accessing data from the weather station on line. Metromix will endeavour to retrieve the stored data.</p>	
<p><b>5.0.6 Report - Section 8 – Water Monitoring</b></p> <p>Water monitoring occurs at four locations. At 2 locations, the old coal mine adit and the surface water runoff from Dam B, metals are also monitored. EPA have provided a list of minerals that we have to monitor. EPA will monitor results over the next six months and re evaluate the monitoring program</p>	
<p><b>5.0.7 Report - Section 9 – Bio Diversity</b></p> <p>WS showed the area of the map with vegetation counts.</p>	
<p><b>5.0.8 Report - Section 10 – Upcoming Works</b></p> <p>WS advised that the company has been undertaking rehabilitation works since 1995 with weeding occurring for the past 17 years, the past 3 years with the Tentacle group. Lantana and weeds have been removed and they are working on a plan of what weeds need to be focused on. This will be part of the new Landscape Management Plan. OEH will audit these works.</p> <p>The following works are proposed:</p> <ul style="list-style-type: none"> <li>❖ Clearing and relocation of vegetation, top soil and sub soils to commence in the southern extraction area in December.</li> <li>❖ The exit road from the top gate truck wheel wash to be re-laid and asphalted in January 2014.</li> <li>❖ The dam wall on Dam D to be lifted in December 2013 and the leaking wall being re-lined.</li> <li>❖ A flocculate unit to be installed and operational by February 2014 for surface water running into Dam D.</li> </ul> <p>WS explained that once the water is stored, it has to be flocculated within 5 days. Only a certain amount of surface water can be reused on site.</p> <p>WS showed SG on the map the retention dams and monitoring points. A copy of</p>	

<p>the map was provided to the committee members.</p>	
<p><b>5.0.9 Report - Section 11 – Non Compliance Issues</b></p> <p>A table was provided detailing incidences of truck movement non-compliances with WS describing the issues.</p> <p>SG: How are these brought to your attention?</p> <p>WS: The information is extracted from the weighbridge system.</p> <p>CW: If non-compliant – what happens?</p> <p>WS: Depends on what the issue is and whether the same drivers are offending. Truck drivers arriving early for work and wanting to leave the site early, not realising that they can't go and our conditions don't allow for this to occur.</p> <p>SG: Where does this information go?</p> <p>WS: It is placed on our website and in the Annual Report. The external auditor reviews all information in his audit. The information contained in this report will allow us to prepare and budget for future requirements.</p> <p>DC: Corrective actions are reviewed internally to correct any issues.</p> <p>MMH: Asked what happens if there are repeat offences?</p> <p>DC: Depends on the offence, Drug &amp; Alcohol testing, seat belt infractions, speeding, consistent complaints about driving. If we can identify the driver we take action.</p> <p>RMc: There are a number of external trucks carting for us.</p> <p>SG: Do the drivers want to comply?</p> <p>WS: - Yes, we carry out inductions, test for drug and alcohol, check log books for fatigue management before they can start. If the trucks are overloaded, the weigh bridge won't issue a docket.</p> <p>DC: The truck drivers also work at other sites, so they are used to it.</p> <p>RMc: There is a lot of pressure on the weigh bridge staff to know all the truck and drivers' details.</p>	
<p><b>GENERAL BUSINESS</b></p> <p>CW: Asked about the coal mine under the quarry?</p> <p>WS: Advised it was part of the Great Northern and Fassifern Seams. We extract conglomerate rounded stones that washed down 240 million years ago. They have gone as hard as concrete because it is held together by sand and clay, so we</p>	

<p>have to drill and blast it so it can be used in landscaping and general construction.</p> <p>SG: Acknowledged the quarry expansion is approved but wants to understand what's going on. The community is impacted by the business.</p> <p>DC: Offered to meet with SG one on one and discuss her concerns and explain the operations.</p> <p>SG: Replied she would be more comfortable with that.</p> <p>MMH: Asked if CW was interested in joining the CCC?</p> <p>CW: Put up his hand up at the "West Wallsend, Sustainable Neighbourhood Group" and would like to be involved. He has learnt a lot today and found it very interesting.</p> <p>MMH: Advised of the process and approval by the Director General. Will send details to CW.</p> <p>CW: Lives at Wallsend and very interested in what's happening in the community.</p> <p>WS: Advised CW is actually on our traffic route.</p>	
<p><b>NEXT MEETING</b></p> <p>WS: Advised external audit is occurring in February and suggested March would be an appropriate time.</p> <p>Proposed: Wednesday 26 March 2014 commencing 4pm at Club Macquarie.</p> <p>MMH: Wished all a Merry Christmas and a Happy New Year.</p> <p><b>Meeting closed at 6.02pm</b></p>	

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# Appendix 5

## 2013 Community Complaints Register

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**2013 Community Complaints.**

Date	Issue/s	Outcome
9/9/2013	Member of the community contacted us saying she thought a rock from a passing truck had broken her rear windscreen while parked on York St Teralba. She couldn't identify the truck.	The Quarry Manager visited the lady at her home and investigated the incident. Metromix paid for the rear windscreen to be replaced. She wrote to the Quarry Manager thanking the company and the people involved for their reliable and professional help.
9/11/2013	Teralba resident rang and left a message that he could hear Metromix Blasting.	The Quarry Manager contacted the resident explained that no blasts had taken place on site since the 22 <sup>nd</sup> of October and the Company certainly doesn't blast on Saturdays.
27/11/2013	Dust compliant from visitor to site of dust coming off crushing and screening plant.	Not considered by site personnel to be plumes or excessive dust. No action taken.
5/12/2014	EPA received a complaint of dust leaving the Quarry Site at 4.45 pm on 5/12/2013.	According to the on site weather station, wings gusts of kmh were experienced at 4.45 pm on 5/12/2014. According to the crushing plant log, the crushing plant was shut down once the front came through.

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# Appendix 6

## 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 LAND BASED ECOSYSTEMS

ABN: 39 738 451 129  
Co-ordinator & Director – Christy Woolcock  
Treasurer – Kay Wotherspoon

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# METROMIX TERALBA BIODIVERSITY OFFSET AREA BUSH REGENERATION PROGRESS REPORT 2013



Prepared by Sachi See-Tonkins

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METROMIX TERALBA BIODIVERSITY OFFSET AREA BUSH REGENERATION PROGRESS REPORT 2013

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METROMIX TERALBA BIODIVERSITY OFFSET AREA BUSH REGENERATION PROGRESS REPORT 2013

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## INTRODUCTION

The following report details methods and purpose, hours worked, weeds controlled, results, observations and recommendations from bush regeneration work completed by Tentacle Inc. at Teralba Metromix quarry & biodiversity offset area, New South Wales (Appendix 1.).

## BACKGROUND

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

- 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

And supporting regulations. 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.

## AIMS

The works aimed to rehabilitate native vegetation communities and manage the habitat for increased native biodiversity by reducing or eradicating noxious weeds found within the bounds of the site according to The Noxious Weeds Act 1993.

The aims of the project were;

- reduction of noxious weeds
- reduction of WONS weeds
- reduction of target weed
- reduction of environmental weeds

Paying special attention too;

- \*Blackberry (*Rubus fruticosus agg.*)
- \*#Bitou bush (*Chrysanthemoides monilifera subspecies rotundata*)
- \*#Lantana (*Lantana camara*)
- \*#Bridal creeper (*Asparagus asparagoides*)
- Asparagus fern (*Asparagus aethiopicus*)
- \* Crofton weed (*Ageratina adenophora*)
  - # Declared a Weed of National Significance.
  - \* Declared a Class 4 Noxious Weed in the Lake Macquarie LGA.

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METROMIX TERALBA BIODIVERSITY OFFSET AREA BUSH REGENERATION PROGRESS REPORT 2013

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## OBJECTIVES

- To remove a maximum amount of the target species to increase biodiversity of endemic species using bush regeneration techniques.
- Compliance with all relevant legislation.
- Direct application of chemical control minimizing disturbance to Leaf litter habitat for micro-organisms and invertebrates.

## METHODS

Works included the implementation of ongoing rehabilitation activities within the Metromix quarry and biodiversity offset area (approximately 148 Ha), inclusive of but not limited to:

- Hand weed removal
- Chemical weed control (Round-up Biactive<sup>®</sup>)
- Revegetation of natives including plant protection
- Primary, Secondary and maintenance control of invasive flora species

The methods for control were selected for accuracy in application and effectiveness in control. Below are specified the invasive flora managed and methods of control.

**Grasses, Reeds and Rushes;** Whiskey grass (*Andropogon virginicus*), *Paspalum* spp., Pigeon grass (*Setaria pumila* subsp. *pumila*), Common pampass grass (*Cortaderia selloana*), Red Natal grass (*Melinis repens*), Kikuyu (*Pennisetum clandestinum*), Buffalo grass (*Stenotaphrum secundatum*), Lantern grass (*Bariza subaristata*), Perennial ryegrass (*Lolium perenne*), Rhodes grass (*Chloris gayana*), Stout Blue-Eyed Grass (*Sisyrinchium angustifolium*), Coolatai grass (*Hyparrhenia hirta*), Panic veldt grass (*Ehrharta* spp.), oxalises, Giant reed (*Arundo donax*), Spiny rush (*Juncus acutus* subsp. *acutus*)

\*Hand removal by crowning at the roots was the control method for most invasive grasses. The cut and paint method was applied for the control of Common pampass grass (*Cortaderia selloana*). Seed heads were bagged and removed from site.

**Herbs;** Fire weed (*Senecio madagascariensis*), Purple top (*Verbena bonariensis*), Wild aster (*Symphotrichum subulatum*), Cobbler's pegs (*Bidens pilosa*), Greater beggar's ticks (*Bidens subalternans*), Crofton weed (*Ageratina adenophora*), Flat weed (*Hypochaeris radicata*), Ribwort (*Plantago lanceolata*), Ink weed (*Phytolacca octandra*), Turkey rhubarb (*Acetosa sagittata*), Noogoora burr (*Xanthium strumarium*), Milk thistle (*Sonchus oleraceus*), Clovers (*Trifolium*), Sowthistles (*Sonchus*), Pennyworts (*Hydrocotyle*), Stinking Rodger (*Tagetes minuta*), Scarlet Pimpernel (*Anagallis arvensis*), Rabbits foot clover (*Trifolium arvense*), Blackberry night shade (*Solanum nigrum*), Paddy's Lucerne (*Sida rhombifolia*), Flea bane (*Conyza bonariensis*), Dandelion (*Taraxacum* spp.), Bridal creeper (*Asparagus asparagoides*)

\*Hand removal, and cut and paint were used as the control methods for invasive herbs.



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METROMIX TERALBA BIODIVERSITY OFFSET AREA BUSH REGENERATION PROGRESS REPORT 2013

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**Vines;** Passion fruit (*Passiflora edulis*), Morning Glory (*Ipomoea cairica* and *Ipomoea indica*), Turkey rhubarb (*Acetosa sagittata*)

\* The method applied for control of invasive vines were scrape and paint or where able, the vine was traced back to the node and cut and painted

**Ferns;** Fishbone fern(*Nephrolepis cordifolia*), Asparagus fern(*Asparagus aethiopicus*)

\*Hand removal by crowning at the roots was the control method for invasive ferns. Crowns were bagged and removed from site.

**Trees;** Camphor laurel(*Cinnamomum camphora*), Wild tobacco(*Solanum mauritianum*), Castor oil plant (*Ricinus communis*), Mulberry tree(*Morus ssp.*)

\*Drill and inject was the method used for control of mature invasive trees, and the scrape and paint method was applied to juvenile growth too large to be hand pulled.

**Shrubs;** Blackberry (*Rubus fruticosus agg*), Lantana (*lantana camara*), Broad-leaf privet(*Ligustrum lucidum*), Small-leaf privet(*Ligustrum sinense*), Bitou bush(*Chrysanthemoides monilifera subsp. rotundata*), Cotoneaster, Narrow leaf cotton bush(*Gomphocarpus fruticosus*), Mickey mouse plant (*Ochna serrulata*)

\*cut and paint and scrape and paint were the methods used for control of invasive shrubs along with frill and inject for mature privet species. Seed heads were bagged and removed from site.

Regeneration of natives canvas the entire site.

lantana rafts provide habitat for fauna and structure for native vines.

Selected areas on the site affected by erosion were revegetated with natives to stabilize the sediments and prevent further erosion.

## HOURS WORKED

T.E.N.T.A.C.L.E Inc. staff have completed a total of 1651.5 work hours on site since the previous progress report in August 2012 up until the end of December 2013.

## HERBICIDE USE

For the control of woody and other environmental weeds as shown in the methods section, T.E.N.T.A.C.L.E Inc. staff used a total of 21.065Litres of Glyphosate (Roundup Biactive). Roundup Biactive was selected as the preferred form of chemical control as it is specially formulated for sensitive environments. It has been formulated specifically to reduce the toxicity of the product to certain aquatic organisms (The surfactants in Roundup Biactive are readily biodegradable according to OECD/EEC tests). Roundup Biactive has an active ingredient of Glyphosate, which is 'poorly absorbed along the digestive tract and does not bio accumulate' (Brain and O'Connor, 1988;

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METROMIX TERALBA BIODIVERSITY OFFSET AREA BUSH REGENERATION PROGRESS REPORT 2013

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Klemm et al, 1993; PMEP, 1999). Roundup Biactive 'has a low toxicity to bees, fish and other aquatic organisms' (Brain and O'Connor, 1988; Klemm et al, 1993; PMEP, 1999), as it 'contains a substantially less toxic surfactant and was designed for use in aquatic habitats as the recommended option' (Mann, 1998). 'Glyphosate is strongly adsorbed and inactivated by soil and by organic and mineral suspended particles in water bodies, so leaching and contamination of runoff is negligible' (PMEP, 1999). 'There is no residual weed control, and an area can be seeded or replanted soon after application' (The Water and Rivers Commission, 2001).

## HUMAN IMPACTS

The site is on highly disturbed land previously used for underground coal mining. Altered topology makes access to some areas of weed infestation hard. A main road (Rhonnda road) cuts through the centre of the site providing a constant challenge for the management of these areas.

Illegal dumping of Litter in various forms has been found on the site.

Erosion found on the site was another human impact caused by the development of walking and riding tracks through vegetation. The instillation of boundary fencing is recommended to reduce the occurrence of this impact in the short term, alternately an increase of density in native vegetation cover should reduce this impact in the long term.

## RESULTS

Aims and Objectives Achieved. Ongoing bush regeneration works carried out within the bounds of the biodiversity offset area have achieved control of a maximum amount of the target species (within the reporting period) therefore increasing biodiversity of endemic species. This in turn will strengthen the resistance of these native vegetation communities against weed infestations. Compliance with all relevant legislation was successfully achieved and direct application of chemical control was successful in minimizing the impact and disturbance to Leaf litter habitat for micro-organisms and invertebrates.

Maintenance of the site has resulted in reduced weeds and seed source, a high level of regeneration and an increase in natural diversity in plant communities.

The bush regeneration works have encouraged the regeneration of canopy species including:

Cheese tree (*Glochidion ferdinandi*)

Revegetation of natives canvas the entire site where appropriate. Pioneering species include, but are not limited to:

Bleeding heart (*Omalanthus populifolius*)

Coffee bush (*Breynia oblongifolia*)

Native violets (*Viola hederacea*)

Common maiden hair (*Adiantum aethiopicum*)

True Bracken (*Pteridium esculentum*)

Wombat berry (*Eustrephus latifolius*)

Scrambling lilly (*Geitonoplesium cymosum*)

Basket grass (*Oplismenus Imbecillis*)

Native grape (*Cayratia trifolia*)

*Stephania japonica* var. *discolour*

*Billardiera scandens* var. *scandens*

*Clematis glycinoides* var. *glycinoides*

*Rubus moluccanus* var. *trilobus*

Wattle (*Acacia* spp.)

Common Reed (*Phragmites australis*)

River buttercup (*Ranunculus inundates*)

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Scurvy weed (*Commelina cyanea*)  
Matt rush (*Lomandra longifolia*)  
Dusky coral pea (*Kennedia rubicunda*)

Additional native grasses may be identified during flowering time.

The reduction of weeds from entire site has provided access to raptors.

Lantana rafts and weed debris are used as climbing structure for native vines and for habitat for smaller wrens and finches.

## OBSERVATIONS

Fauna species observed at the Teralba Metromix quarry and biodiversity offset area since the previous progress report:

### Aves

Yellow-tailed black-Cockatoo (*Calyptorhynchus funereus*)  
Diamond firetail finch (*Stagonopleura guttata*)  
Australian pelican (*Pelecanus conspicillatus*)  
Welcome swallows (*Hirundo neoxena*)  
Sulphur-crested Cockatoo (*Cacadu galerita*)  
Dollarbird (*Eurystomus orientalis*)  
Pied Currawong (*Strepera fuliginosa*)  
Yellow-throated scrub wren (*Sericornis citreogularis*)  
Noisy minor (*Manorina melanocephala*)  
White-necked (pacific) heron (*Ardea pacifica*)  
Quail (*Coturnix*) and nest  
Butcherbird (*Cracticus*)  
Fantale (*Rhipidura*)  
Tawny frogmouth (*Podargus strigoides*)  
Willie Wagtail (*Rhipidura leucophrys*)  
Variegated blue Fairy-wren (*Malurus lamberti*)  
Eastern rosella (*Platycercus eximius*)  
Wedge-tailed Eagle (*Aquila audax*)  
Grey fantail (*Rhipidura albiscapa*)  
Black and white wren (*Malurus*)  
Superb Fairy-wren (*Malurus cyaneus*)  
Red striped wren (*Malurus*)  
Olive-backed Oriole (*Oriolus sagittatus*)  
White-bellied Sea-Eagle (*Haliaeetus leucogaster*)  
Laughing Kookaburra (*Dacelo novaeguineae*)  
Bell Miner (*Manorina melanophrys*)  
Australian Raven (*Corvus coronoides*)  
Butcherbird (*Cracticus*)  
Eastern whipbird (*Psophodes olivaceus*)  
Little 'brush' Wattlebird (*Anthochaera chrysoptera*)  
Spotted Pardolote (*Pardalotus punctatus*)

### Reptiles

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Red-bellied black snake (*Pseudechis porphyriacus*)  
Marsh frog (*Limnodynastes*)  
Eastern Blue-tongued lizard (*Tiliqua scincoides*)  
Glossy Black-cockatoo (*Calyptorhynchus lathami*)  
Garden Skink (*Lampropholis delicata*)  
Jacky lizard (*Amphibolurus Muricatus*)

**Amphibians**

Frog (*Anura*)  
Australian green-tree frog (*Litoria caerulea*)  
Eastern Dwarf Tree Frog (*Litoria fallax*)  
Striped Marsh Frog (*Limnodynastes peroneii*)

**Mammals**

Flying fox (*Pteropus*)  
Eastern water dragon (*Physignathus lesueurii*)  
Garden Skink (*Lampropholis delicata*)  
European Rabbit (*Oryctolagus cuniculus*)  
long-nosed bandicoot (*Perameles nasuta*)  
Dasyurid marsupial (*Antechinus*)  
Swamp Wallaby (*Wallabia bicolor*)  
Brush-tail possum (*Trichosurus vulpecula*)  
Possum drey

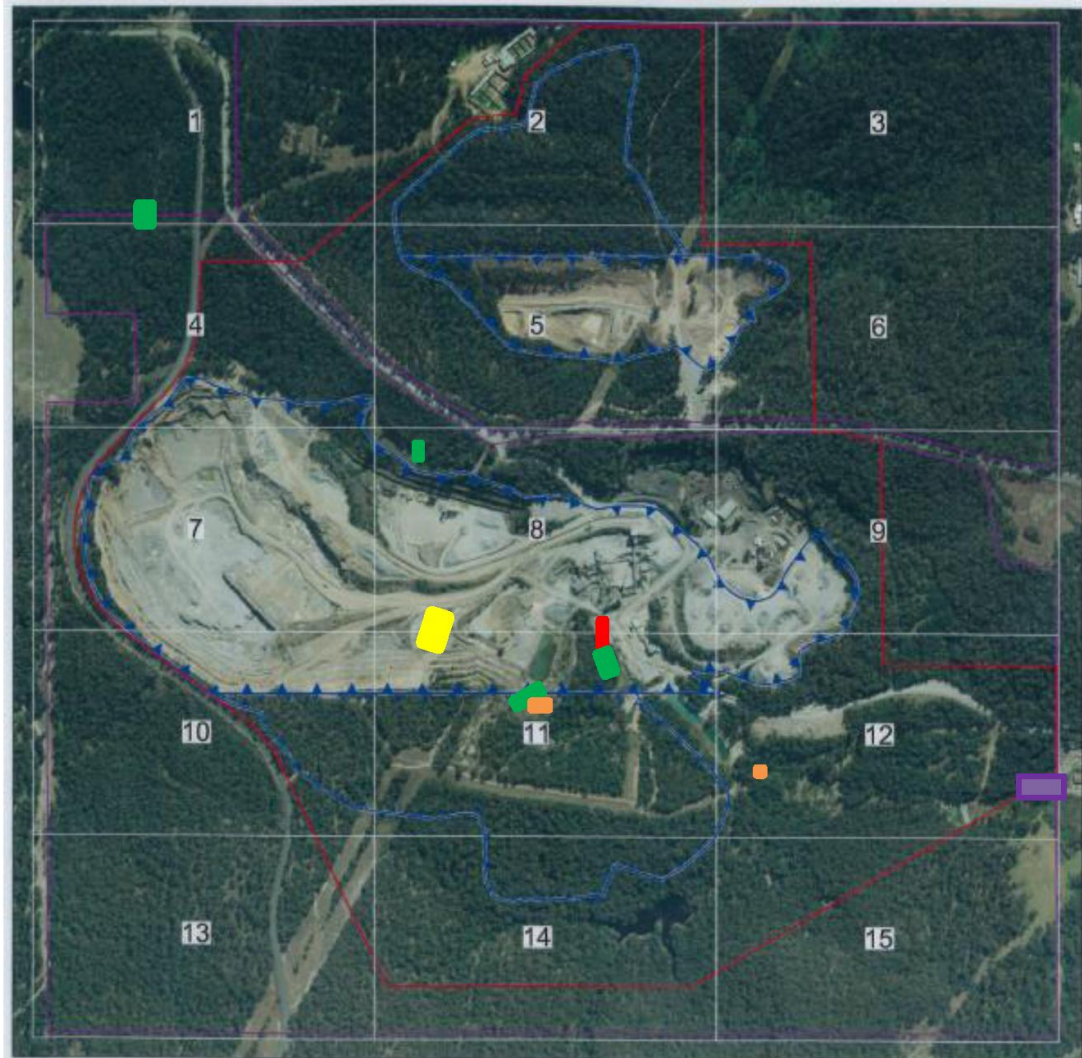
**Insects**

Dragonfly (*Odonata*),  
Stick insect (*Phasmatodea*)  
Tick (*Ixodes*)  
Funnel-web Spider (*Atrax robustus*)  
Red Dragonfly (*libellula*)  
termite (*Isoptera*) nest  
Bull ant (*Myrmecia*)  
Bush cockroach (*Diploptera*)  
Black ants (*Ochetellus glaber*)  
Dragonfly (*Odonata*)  
Australian stick-insect (*Ctenomorpha chronus*) juveniles  
Garden Orb Weaving Spider (*Eriophora* spp.)  
Wolf spider (*Lycosa*)  
Honey bee (*Apis Mellifera*)  
Hoppy joe (*Myrmecia gulosa*)  
Soft bodied:  
Leeches (*Annelida*)  
Grubs (*Coleoptera*)

An abundance of unrecognisable ant species and various other macro and meso fauna appeared present at each site visit.

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**TARGETS FOR ONGOING WORK**  
**AREAS REQUIRING MANAGEMENT FOCUS (EXCLUDING LANTANA CAMARA)**



REFERENCE  
 - Property Boundary  
 - Project Site Boundary  
 - Existing Extraction Boundary  
 - Proposed Extension Boundary  
 1 A3 Photo Page Reference

SCALE  
 0 100 200 m



- Turkey rhubarb (*Acetosa sagittata*)
- Dumping areas
- Bitou Bush (*Chrysanthemoides monilifera* subspecies *rotundata*)
- Pampas Grass (*Cortaderia* ssp.)
- Morning glory (*Ipomoea cairica* and *Ipomoea indica*)

Map provided by Metromix  
 Map alterations by Sachi See-Tonkins For T.E.N.T.A.C.L.E Inc.  
 November 2013  
 \*polygons representation only



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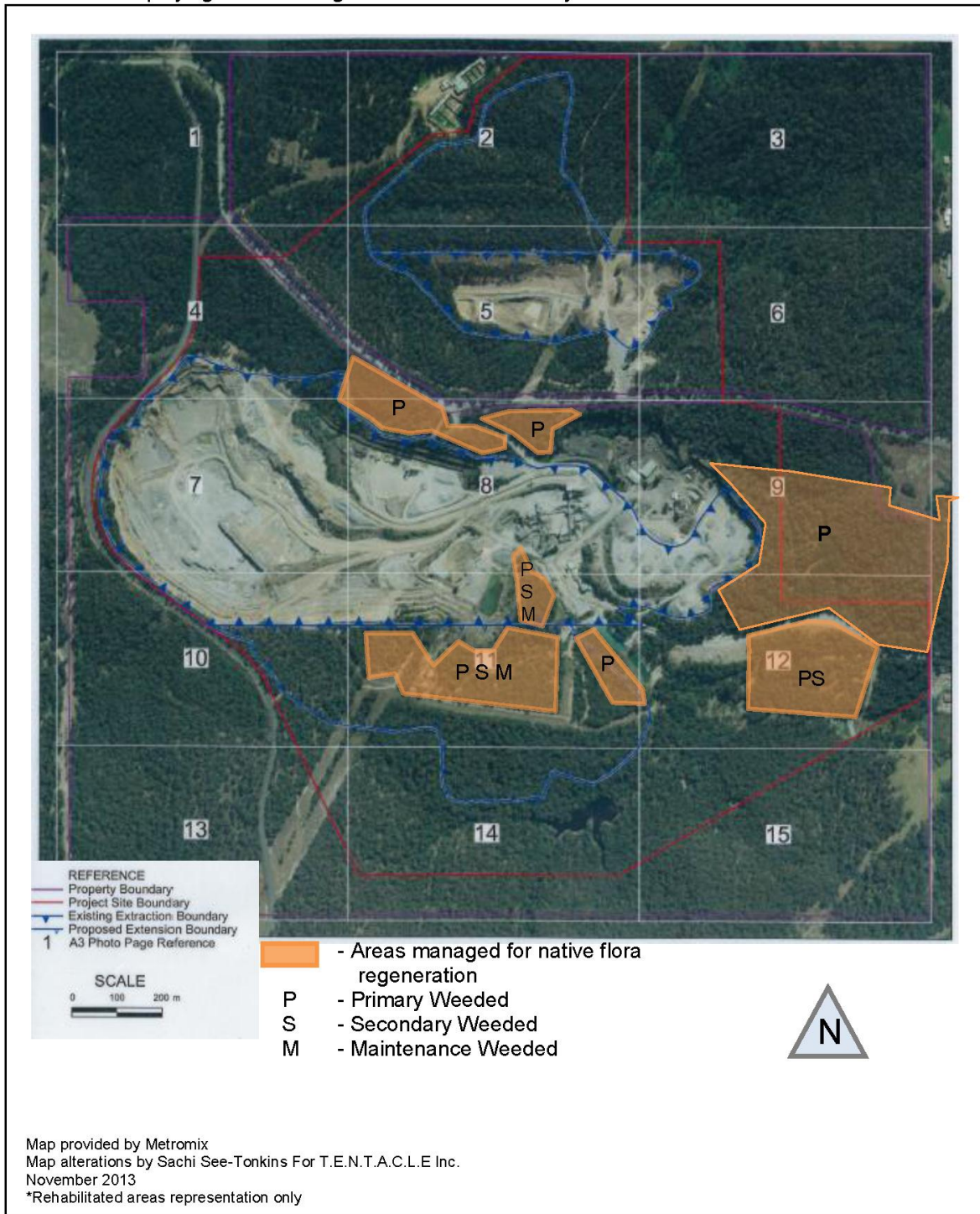
Available: <http://www.nynrm.sa.gov.au/portals/7/pdf/landandsoil/49.pdf>.

Last accessed 5/11/2012

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**APPENDICES:**

**Appendix 1.** Site map of Metromix Teralba quarry and biodiversity offset area New South Wales, Australia. Displaying areas managed for native biodiversity.



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**Appendix 2.** Photo of condition of site prior to completion of works.



**Appendix 3.** Photo of condition of site after the completion of works.



**Appendix 4.** Photo of condition of site prior to completion of works.



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**Appendix 5.** Photo of condition of site after the completion of works.



**Appendix 6.** Photo of condition of site prior to completion of works.

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**Appendix 7.** Photo of condition of site after the completion of works.



**Appendix 8.** Photo of condition of site prior to completion of works.

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**Appendix 7.** Photo of condition of site after the completion of works.



**Appendix 8.** Photo of condition of site Prior to the completion of works.

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**Appendix 9.** Photo of condition of site during the completion of works.

