METROMIX

Teralba Quarry

2013 Annual Review

Project Approval: PA10_0183

Prepared in conjunction with:

R.W. CORKERY & CO. PTY. LIMITED

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2013 Annual Review

Project Approval: PA10_0183

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Ref No. 559/33

March 2014

Document Control

Document Title	2013 Annual Review			
Document Number	559/33			
Document Owner	Metromix Pty Ltd			
Revision	**Issue Date**	**Originator**	**Reviewed**	**Approved**
Version 1		C. Dickson	R. Corkery	
Version 2				
Version 3				
Next Review Due	31 March 2014			

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LIST OF ACRONYMS AND UNITS

AHD	Australian Height Datum
ANZECC	Australia and New Zealand Guidelines for Fresh and Marine Waters, 2000
DP&I	Department of Planning and Infrastructure
DRE	Division of Resources and Energy
DTIRIS	Department of Trade & Investment, Regional Infrastructure & Services
EA	Environmental Assessment
EPA	Environment Protection Authority
EPL	Environment Protection Licence
LMCC	Lake Macquarie City Council
PA	Project Approval
POEO Act	Protection of the Environment Operations Act 1997
RWC	R.W. Corkery and Co Pty Limited

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1. INTRODUCTION

1.1 SCOPE

This report has been prepared by Metromix Pty Ltd (Metromix) in conjunction with R.W. Corkery and Co Pty Limited (RWC), in accordance with *Condition 5(4)* of Project Approval PA10_0183, to record the activities and environmental monitoring undertaken within and surrounding the Teralba Quarry ("the Quarry") during the period 1 January to 31 December 2013 (the "reporting period"). **Figure 1.1** displays the location of the Quarry with **Appendix 1** providing a full copy of PA10_0183.

It should be noted that although PA10_0183 was issued on 22 February 2013, activities continued to operate under Development Consent DA130/42 within the existing approved areas until this consent was surrendered by Metromix to Lake Macquarie City Council on 23 December 2013 in accordance with *Condition 2(12)*. Following this, activities commenced within Stage 1A of the Southern Extension as permitted under PA10_0183 (see **Figure 2.1**). This document therefore provides a brief overview of activities that occurred within the reporting period, including activities that were not necessarily undertaken under PA10_0183, but have been provided to describe the general operations at the Quarry. This document also outlines the activities and environmental monitoring planned to be undertaken by Metromix at the Quarry in 2014. *Condition 5(4)* requires the preparation of an Annual Report that contains the following.

- A description of the activities (including preparatory activities, extraction, processing and rehabilitation) that were carried out throughout 2013 (Section 2), and the activities that are proposed to be carried out throughout 2014 (see Section 6).
- A summary of community relations between Metromix and the surrounding community (see Section 3) including:
  - Community Consultative Committee meeting minutes;
  - community complaints and follow-up actions; and
  - local community involvement projects.
- A comprehensive review of the environmental monitoring results for 2013 (see Section 4), including a comparison of these results against:
  - the relevant statutory requirements, limits or performance measures/criteria;
  - the monitoring results of previous years;
  - the identification of any trends in the monitoring data; and
  - the relevant predictions in the EA.
- An assessment of compliance throughout the reporting period with the conditional requirements of PA10_0183, and a description of what actions were (or are being) taken to ensure compliance, where necessary (see Section 5).
- A list of discrepancies between the predicted and actual impacts of the Quarry's operations, and an analysis of the potential cause of any significant discrepancies (see Section 5).
- A description of the measures that will be implemented throughout 2014 to improve the environmental performance of the Quarry (see Section 6).

Figure 1.1
LOCALITY PLAN

Throughout this document, the land on which the Teralba Quarry is situated upon (Lots 1 and 2 DP 224037) is referred to as the "Quarry Site".

1.2 STANDARDS AND PERFORMANCE MEASURES

The owner and operator of the Teralba Quarry, Metromix Pty Ltd (Metromix) is required to operate the approved activities within the Quarry Site in accordance with PA10_0183 and licences listed in **Table 1.1**.

Table 1.1
Teralba Quarry – Consents and Licences

Approval/Licence	Issue Date	Expiry Date
Project Approval PA10_0183	22 February 2013	31 December 2038
Environment Protection Licence No 536	25 September 2000	01 June*
Water Access Licence No. 20BL173206	12 October 2012	No Expiry
* Licence Anniversary Date		

Relevant conditions within Project Approval PA10_0183 which nominate specific environmental criteria are as follows with **Appendix 2** providing the complete records of all measurements.

- *Condition 3(5): noise emissions (day shoulder, day, evening and night).*

  Each of the relevant noise criteria and frequencies are presented in Section 4.2.

- *Condition 3(9): blasting overpressure and ground vibration emissions*

  Each of the relevant blasting criteria are presented in Section 4.2 in conjunction with the assembled monitoring results.

- *Condition 3(17): air quality emissions (deposited dust and particulate matter).*

  Each of the relevant air quality criteria are presented in Section 4.3 in conjunction with the assembled monitoring results.

- *Condition 3(23): all surface water discharges from the site comply with the discharge limits in any EPL which regulates water discharges from the site.*

  Each of the relevant water criteria are presented in Section 4.1 in conjunction with the assembled monitoring results.

In addition to the specific environmental criteria, the following conditions within PA10_0183 specifically request further information be included in each Annual Review.

- *Condition 2(20b): Production Data – the Proponent shall include a copy of this data in the Annual Review (see Section 2.2).*

- *Condition 5(11a): Access to Information – the Proponent shall make copies of the annual review available on its website (over the last five years).*

- *PA10_0183 Appendix 3 – Action 6.6 – Ensure all groundwater monitoring data is incorporated into each Annual Review for the Teralba Quarry.*
- *PA10_0183 Appendix 3 – Action 12.5 – Include annual photographs of the progressive rehabilitation of quarry benches in each Annual Review.*

In addition, *Condition 3(21)* requires Metromix to ensure a suitable meteorological station in operational in the vicinity of the Quarry, complying with the requirements outlined in *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (DECCW, 2007) and is capable of continuous real-time measurement of temperature lapse rate, in accordance with the *NSW Industrial Noise Policy* (EPA, 2000), or as otherwise approved by EPA. Metromix operates a comprehensive meteorological station in an elevated area adjacent to the Mid Pit Extraction Area (see **Figure 2.1**).

1.3 SITE MANAGEMENT AND RESPONSIBILITIES

The management of the Teralba Quarry, to ensure all conditional requirements are satisfied, is the responsibility of the Manager Quarries, Mr Bill Sanderson. Day to day responsibility for Quarry Operations, including environmental monitoring and rehabilitation rests with the Quarry Manager, Mr Rob McCabe. Other persons involved with site management and compilation of quarry-related documentation and monitoring data include:

- Mr Col Davies, Carbon Based Environmental.

1.4 DOCUMENT PREPARATION

The following information and data for this report has been drawn from documents commissioned or held by Metromix.

- *Environmental Assessment for the Teralba Quarry Extensions – Major Project Application No. 10_0183 (2013).* R.W.Corkery and Co Pty Limited 2013.
- Teralba Quarry Environmental Monitoring Folders, specifically Air, Waste, Water, Blasting, Non Compliances, Community Complaints and CCC Minutes.

This document has been prepared by Mr Rob Corkery, M.Appl.Sc., B.Sc (Hons), Principal of R.W. Corkery & Co. Pty Limited (RWC), Mr Chris Dickson, BSc (Phys. Geog.), Mr Nicholas Warren (B.Sc., M.Bus (Marketing), M. Env. Sc) Environmental Consultants of the same company.

2. OPERATIONS DURING THE REPORTING PERIOD

2.1 INTRODUCTION

Table 2.1 lists the principal activities / milestones that occurred at the Teralba Quarry throughout 2013 with activities undertaken as part of those approved under PA10_0183 identified in **bold**. **Figure 2.1** presents the location(s) of the activities described, including activities shown within **Plates 1** to **4**.

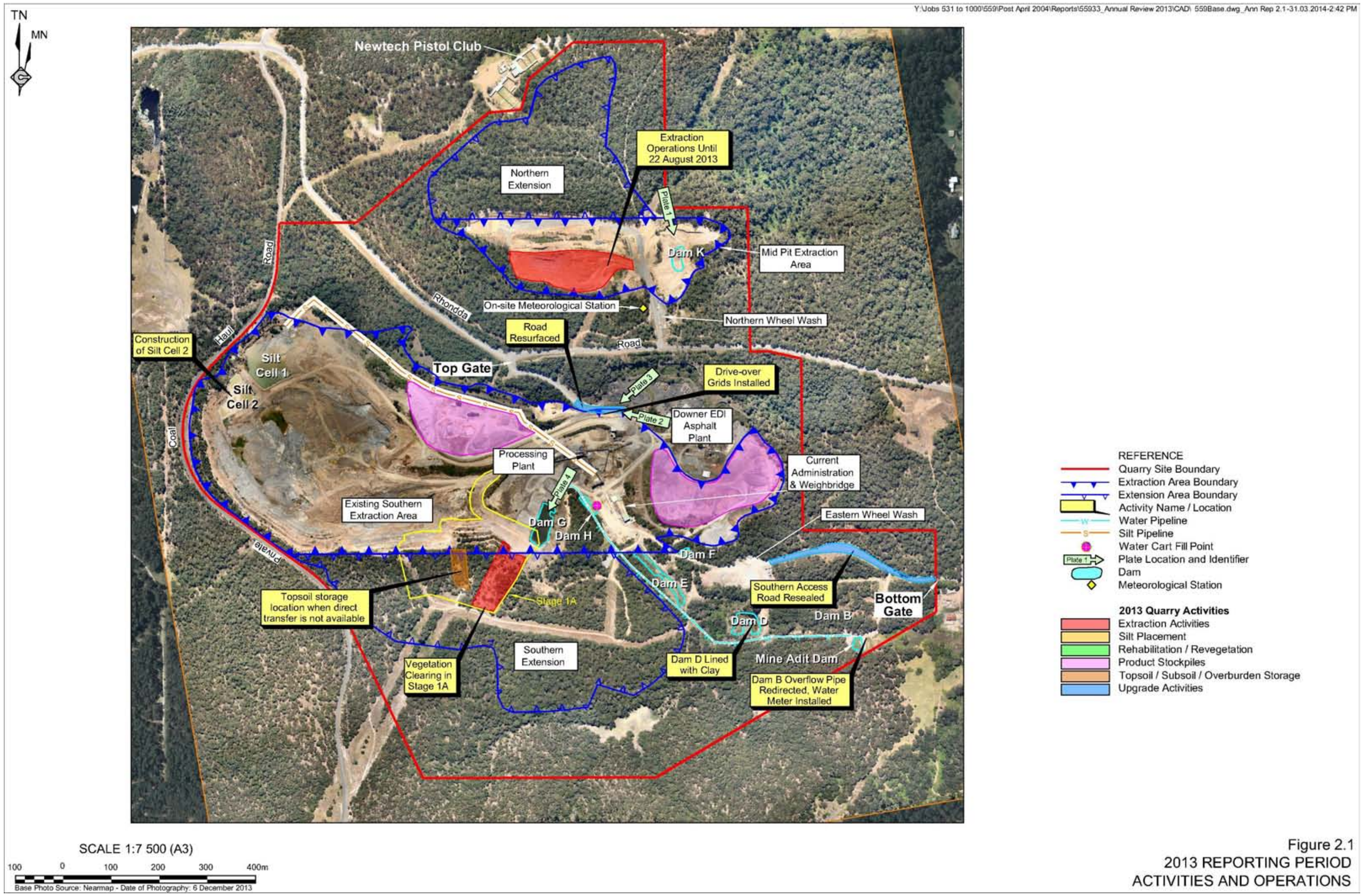

Figure 2.1
2013 REPORTING PERIOD
ACTIVITIES AND OPERATIONS

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Plate 1: Dam K within the Mid Pit Extraction Area.
(Ref: E559Y_Plate 1)

Plate 2: Resealed southern access road.
(Ref: (Ref: E559Y_Plate 2)

Plate 3: Top truck wheel wash with drive-over grids.
(Ref: E559Y_Plate 3)

Plate 4: Stage 1A - taken from across Dam G.
(Ref: E559Y_Plate 4)

Operational areas within the Teralba Quarry are referred to in the same manner as described in the 2011 *Environmental Assessment* (RWC, 2011) i.e. Northern Extension, Mid Pit Extraction Area, Southern Extraction Area and Southern Extension.

Table 2.1
Principal Activities / Milestones throughout 2013

January	• Dam B outflow pipe was redirected to flow directly into the unnamed creek that flows east of the Quarry Site, rather than the Mine Adit, following instructions from the NSW Office of Water • Four new water outlet pipes and associated concrete works were installed to assist in water flowing away from the Mine Adit
February	• Operations within the Quarry occurred normally with no significant activities occurring within February
March	• Operations within the Quarry occurred normally with no significant activities occurring within March
April	• Water meter fitted to the pipe flowing away from the Mine Adit. • EPA monitoring point No.3 commissioned.
May	• Operations within the Quarry occurred normally with no significant activities occurring within May
June	• Operations within the Quarry occurred normally with no significant activities occurring within June
July	• Operations within the Quarry occurred normally with no significant activities occurring within February
August	• Raw Primary Feed from the Mid Pit to the Crushing and Screening Plant ceased. • Water meter fitted to the pipe leaving Dam B. • EPA monitoring point No.4 commissioned. • The top truck wheel wash was installed and commissioned • Construction commenced of the silt cell walls associated with Silt Cell 2.
September	• The southern entrance road was resealed from the bottom truck wheel wash to the eastern Quarry Site boundary (exit gate). • Continued construction of Silt Cell 2 walls
October	• Flow meter on water cart installed and commissioned • Preparation of rehabilitation area above Silt Cell 1. • Continued construction of Silt Cell 2 walls.
November	• Upstream wall of Dam D lined with clay.
December	• Commissioned Wedge Pit to pump process water drained from around the Processing Plant back to Dam G. • Commenced vegetation clearing and stripping in Southern Extension (Stage 1A).

2.2 EXTRACTION AND CLEARING OPERATIONS

Table 2.2 records the monthly/annual sales of the various products produced at the Quarry during 2013. This data is drawn from information provided to the Division of Resources & Energy (DRE) of the Department of Trade & Investment, Regional Infrastructure & Services (DTIRIS) in accordance with the requirements of *Condition 2(20)*. A copy of the annual return to DRE is included as **Appendix 2**.

Table 2.2
Teralba Quarry Sales – 2013 (tonnes)

2013 Month	Washed Products	Road Pavement	Other	Total
January	22 096	6 918	49	29 063
February	27 990	7 314	1 320	36 625
March	28 933	9 916	633	39 482
April	28 829	9 481	1 448	39 758
May	36 969	9 833	210	47 013
June	27 732	8 670	1 681	38 084
July	37 219	12 805	811	50 836
August	37 201	10 381	2 375	49 957
September	30 573	3 488	2 770	36 831
October	26 608	7 865	1 028	35 501
November	34 499	4 862	2 719	42 079
December	27 731	4 912	1 384	34 026
Total	366 381	**96 446**	16 429	479 255
Source: Metromix – 2014				

Extraction operations continued to be undertaken within the existing Mid Pit Extraction Area up to 22 August 2013 to an interim depth of 40m and the existing Southern Extraction Area during the remainder of 2013 to a final depth of 21m, as displayed on **Figure 2.1**.

Vegetation clearing and stripping activities commenced in Stage 1A of the Southern Extension area in December 2013. It should be noted that this activity was the first activity to be undertaken under PA10_0183.

2.3 PROCESSING OPERATIONS

Processing operations operated continuously throughout the reporting period, producing washed products, road base products and fill materials, with a reduction of road pavement products and will materials compared to 2012.

The only change during the reporting period when compared to 2012 was that the processing plant operated in the "wet" mode for 77% of sales, compared to 57% in 2012.

2.4 OVERBURDEN AND SILT MANAGEMENT

No overburden was removed within the existing extraction areas during the reporting period as the extraction of all materials occurred at depth within the existing extraction area boundaries. All silt produced from the crushing and processing plant was pumped to Silt Cell 1 with some overflow occurring into the newly created Silt Cell 2. As of January 2014, Silt Cell 1 was 90% completed with silt continuing to overflow into Silt Cell 2.

2.5 WASTE MANAGEMENT

Silt produced as a result of processing within from the processing plant is utilised as a fill material in the Silt Cells within the Southern Extraction Area and is subsequently not classified as production waste. No other wastes produced at the Quarry are classified as production wastes.

The following non-production wastes (and quantities) were produced at the Quarry during the reporting period.

- general waste (1 x 4m^3 bin per week)
- co-mingled recyclables (2 x 200L bins per fortnight)
- Grease (24 x 205L drums as required)
- scrap steel (40 tonnes)
- waste oil (9 000L)
- waste oil filters (6x 205L drums)
- oily water (1 050L)
- batteries (minor)
- paper and cardboard (as required)
- Empty Drums (18 x 20L drums, 5 X 1000L IBC's)

All waste produced at the Quarry was removed by licenced contractors. All general waste (putrescible) was disposed of at the closest licenced facility, with the remaining industrial waste (not defined as general (putrescible)), was removed and disposed of at an appropriately licenced facilities.

2.6 SITE INFRASTRUCTURE AND SERVICES

The following outlines the changes to Quarry Site infrastructure during the reporting period.

- Installation and commissioning of the top truck wheel wash (see **Figure 2.1**)
- Installation of a wedge pit used to capture and recycle process water back to Dam G.
- Resealing of the Southern entrance road from the bottom truck wheel wash to the exit gate.

2.7 WATER MANAGEMENT

In January 2013, water leaving Dam B was redirected from the Mine Adit Dam to the nearby un-named watercourse by an underground pipe, following instructions provided by NSW Office of Water. **Figure 4.1** displays the current water management system in place at the Quarry.

In June 2013, sediment entered the un-named watercourse directly downstream of the Dam B outlet pipe as the result of inadequate maintenance of water controls. As such, Metromix was fined by the EPA and instructed to repair the water control structures. This work was completed by Metromix by 19 July 2013 with ongoing inspections scheduled daily.

In August 2013, Dam J (located within the Mid Pit Extraction Area) was expanded to contain in excess of 35 000m^3 of water with an internal drain into Dam J completed in November 2013.

The expanded capacity should ensure all sediment-laden water generated from within the Mid Pit Extraction area is retained on site until extraction resumes in that area.

In October 2013, the upstream wall of Dam D was lined with clay material to increase the retention time for water reporting to this dam.

2.8 BUSHFIRE MANAGEMENT

Due to the dry period experienced in the spring of 2013, no removal of vegetation was conducted until rain was received during November, due the possibility of bushfires. Vegetation clearing in Stage 1 was undertaken post November 2013.

No bushfire prevention activities occurred within the reporting period.

2.9 HAZARDOUS MATERIAL MANAGEMENT

Hazardous materials within the Quarry Site are appropriately managed with diesel fuel stored in above ground tanks with appropriate bunding (110% of the total diesel tank capacity).

Aerosols and paints continued to be stored within the designated hazardous material cabinets within the workshop area.

Hazardous waste materials such as batteries, oily rags and oil filters were stored as outlined within Metromix's waste management procedure and removed by a licenced contractor and disposed of at an appropriate waste facility.

2.10 PRODUCT TRANSPORTATION

The transportation of products from the Quarry is limited under *Condition 2(8)* and *2(9)* of PA10_0183 to include the following transportation constraints.

Condition 2(8) - The Proponent shall not:

- *a) transport more than 1 million tonnes of quarry products from the site in any calendar year;*
- *b) dispatch more than 326 laden trucks from the site on any day;*
- *c) dispatch more than 241 laden trucks per day or 20 per hour westwards along Rhondda Road;*
- *d) dispatch more than 85 laden trucks per day or 8 per hour eastwards through Teralba;*
- *e) dispatch laden trucks for travel through Teralba between 6 pm and 6 am; and*
- *f) receive unladen trucks via the railway street entrance between 6 pm and 7 am.*

Condition 2(9) - The Proponent shall limit the total hourly truck dispatch rates from the site to the levels shown in Table 1.

Table 1 – Truck Dispatch Hours

Dispatch Period	*Maximum Hourly Dispatch Rate*
6:00 am – 7:00 am	*Up to 28 loaded trucks*
7:00 am – 6:00 pm	*Up to 20 loaded trucks*
6:00 pm – 5:00 am	*Up to 6 loaded trucks*
5:00 am – 6:00 am	*Up to 12 loaded trucks*

The approved transport corridors are displayed on **Figure 2.2** and summarised below.

Route 1 – Northwestern Corridor
Westwards along Rhondda Rd, and then northwards along Wakefield Rd and Northville Rd to George Booth Drive.

Route 2 – Southwestern Corridor:
Westwards along Rhondda Rd, and then southwards along Wakefield Rd to the F3 Freeway.

Route 3 – Northeastern Corridor:
Northeast along Railway St Teralba, crossing the railway line, then southwards along York St Teralba, then northeasterly along Five Islands Road to either the Esplanade or Lake Road.

Route 4 – Southeastern Corridor:
Northeast along Railway St Teralba, crossing the railway line, then southwards along York St Teralba, and Toronto Road.

The monitoring records of truck movements between July 2013 and December 2013 are collated as **Appendix 2**. A review of these results indicates that the monthly average for each conditional requirement is well below the approved limits in *Conditions 2(8*) and *2(9*). **Table 2.3** provides a summary of the occurrences outside these conditions that occurred for the period from July 2013 to December 2013. The data indicates that all occurrences were of the hourly maximum limits. A further overview of non-compliance is provided in **Table 2.4** including a discussion of the circumstances leading to the subject occurrences.

In total, 15 occurrences were recorded in the 6 month period between July 2013 and December 2013 when one or more trucks departed from the Quarry beyond that nominated in *Conditions 2(8)* and *2(9)*. This number of occurrences represents approximately 0.14% of the total number of trucks (10 426) despatched during that 6 month period. Notwithstanding this very low percentage, the occurrences represent a non-compliance with *Condition 2(8)*. It is also noted that despite the listed occurrences, no complaints were received regarding truck movements, as a number of other trucks travel the four routes during the same period. In reality, the hourly number of truck movements are comparable with the nominated limits.

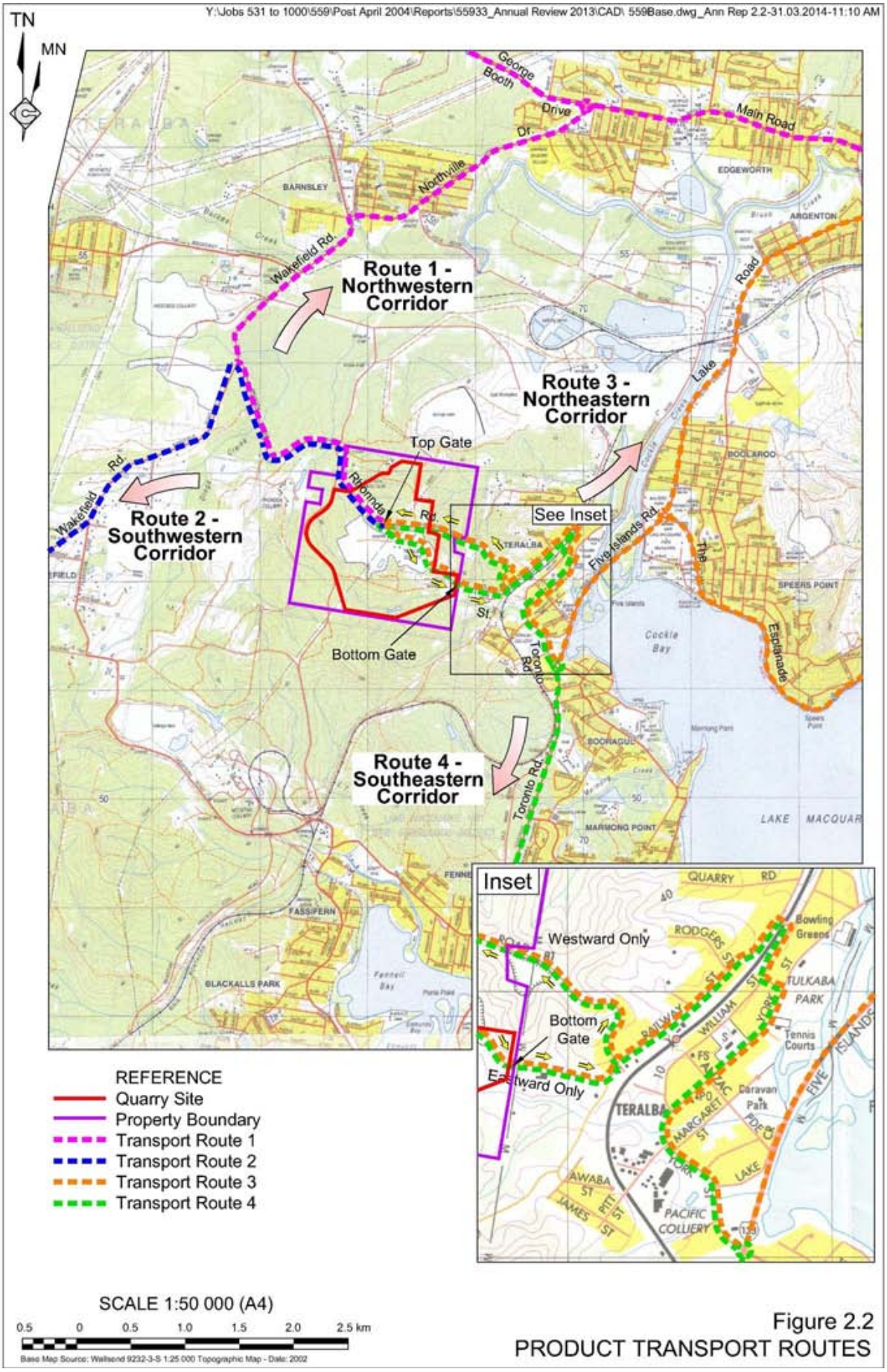


Figure 2.2
PRODUCT TRANSPORT ROUTES

Table 2.3
Transport-related Occurrences Outside Approved Hourly Maximum Limits – July 2013 to December 2013

Condition Description			No. of Occurrences					
Time Period	**Condition**	**Approved Limits**	**July**	**August**	**September**	**October**	**November**	**December**
5:00am to 6:00am	Eastwards Max Hourly	8/hour	8	2	2	0	0	0
6:00am to 7:00am	Eastwards Max Hourly	8/hour	1	0	0	0	0	0
7:00am to 6:00pm	Eastwards Max Hourly	8/hour	4	1	0	0	2	1
6:00pm to 5:00am	Westwards Max Hourly	20/hour	0	1	1	0	3	1
Total			15	4	3	0	5	2
Source: Metromix – 2013								

Table 2.4
Review of Transport Occurrences Outside Approved Hourly Maximum Limits – July 2013 to December 2013

Date	Non Compliance	Reason
July	Truck travelled through Teralba prior to 6am on 8 occasions.	Contractor had preloaded the night before and parked at their depot next to the Quarry (Teralba Storage and Business) and left their depot next morning to make deliveries on behalf of Metromix prior to 6am.
	Exceeded the hourly maximum rate through Teralba between 7:00am and 6:00pm on 4 occasions and one occasion between 6:00am and 7:00am.	Lake Macquarie Council trucks carting to a job in the middle of Teralba
August	Truck travelled through Teralba prior to 6am on 2 occasions.	Contractor had preloaded the night before and parked at their depot next to the Quarry and left their depot next morning to make deliveries on behalf of Metromix prior to 6am.
	Exceeded the hourly maximum rate westward along Rhondda Rd by 1 truck movement between 6pm and 5am.	Number of trucks incorrectly allocated for that hour.
	Exceeded the hourly maximum rate through Teralba between 7:00am and 6:00pm on 1 occasion.	Weighbridge Allocator misjudged the number of trucks per hour leaving the weighbridge.
September	Exceeded the hourly maximum rate westward along Rhondda Rd by 1 truck movement between 6pm and 5am.	Truck Driver left the Quarry prior to his allocated starting time.
	Truck travelled through Teralba prior to 6am on 2 occasions.	One at 5.55am (hadn't been to site for a long time) and 1 preload truck left at 5.30am.
October	Exceeded the hourly maximum rate through Teralba between 7:00am and 6:00pm by 1 on 2 occasions.	Weighbridge Allocator misjudged the number of trucks per hour leaving the weighbridge.
November	Exceeded the hourly maximum rate westward along Rhondda Rd by 1 truck movement between 6pm and 5am on 3 occasions	Number of trucks incorrectly allocated for that hour by the transport supervisor.
	Exceeded the hourly maximum rate through Teralba between 7:00am and 6:00pm by 1 on 2 occasions.	Weighbridge Allocator misjudged the number of trucks per hour leaving the weighbridge. Continue to monitor truck movements
December	Exceeded the hourly maximum rate westward along Rhondda Rd by 1 truck movement between 6:00pm and 5:00am on 20 December 2013	Transport Supervisor allocating trucks on the mobile phone and away from his work station. Changed operating method for allocating trucks between 6pm and 6am. Target 4 trucks per hour rather than the limit of 6 per hour.
Source: Metromix – 2013		

2.11 VENM IMPORTATION MANAGEMENT

No Virgin Excavated Natural Material (VENM) was imported to the Quarry Site for fill purposes during the reporting period.

2.12 REHABILITATION

Table 2.5 outlines the rehabilitation activities that occurred during the reporting period within the rehabilitation domains outlined on **Figure 2.4**.

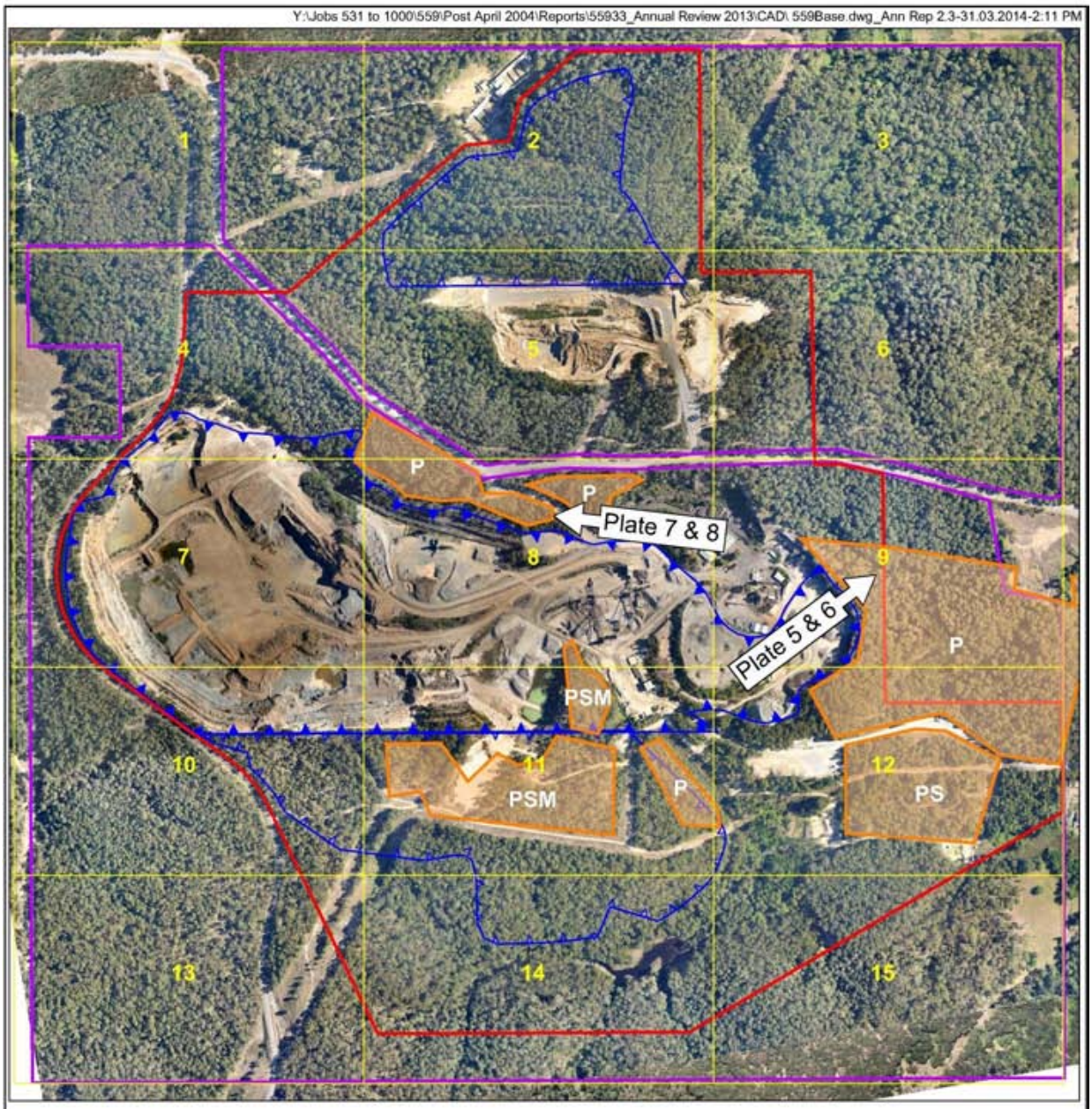
Table 2.5
Rehabilitation Activities – 2013

Rehabilitation Area (Domains)*	Domain Description+	Rehabilitation Undertaken During the Reporting Period
1A	Area to be Backfilled	Not Applicable
1B	Extraction Area Floor	Not Applicable
1C	Benches	Not Applicable
1D	Northern Access Road	Not Applicable
2A	Silt Cells / Extraction Floor	Preparation activities occurred within the Silt Cell 1 area in anticipation of covering and vegetation establishment activities scheduled for April 2014.
2B	Extraction Area Floor	Not Applicable
3	Processing and Infrastructure Area	None undertaken
4	Quarry Access Roads	None Undertaken
5	Biodiversity Offset Area	Weed eradication programs continued within the Biodiversity Offset Area and non-operational areas by T.E.N.T.A.C.L.E. Incorporated.
6	Non-Operational Areas	
7	Excluded Areas	Not Applicable

* See **Figure 2.4**
\+ Refers to final land use descriptions

The general lack of rehabilitation within the Quarry is explained by the progressive nature of operations during the reporting period in that:

- extraction activities were designed to extract material and provide a safe and stable landform prior to the cessation of extraction activities within the Mid Pit Extraction Area;
- the construction of silt cells has not yet progressed sufficiently for rehabilitation activities to occur within this area;
- the remainder of the Quarry Site has been previously rehabilitated; and
- the active extraction areas have not yet reached a point where rehabilitation activities can occur, including quarry benches.



REFERENCE

- Property Boundary
- Project Site Boundary
- Existing Extraction Boundary
- Proposed Extraction Boundary
- 13 A3 Photo Page Reference
- Areas managed for Native Flora Regeneration
- P Primary Weeded
- S Secondary Weeded
- M Maintenance Weeded

SCALE 1:10 000 (A4)

100 0 100 200 300 400 500 m

Base Photo Source: Nearmap - Date of Photograph: 30 January 2014

Figure 2.3
BUSH REGENERATION AREAS - 2013

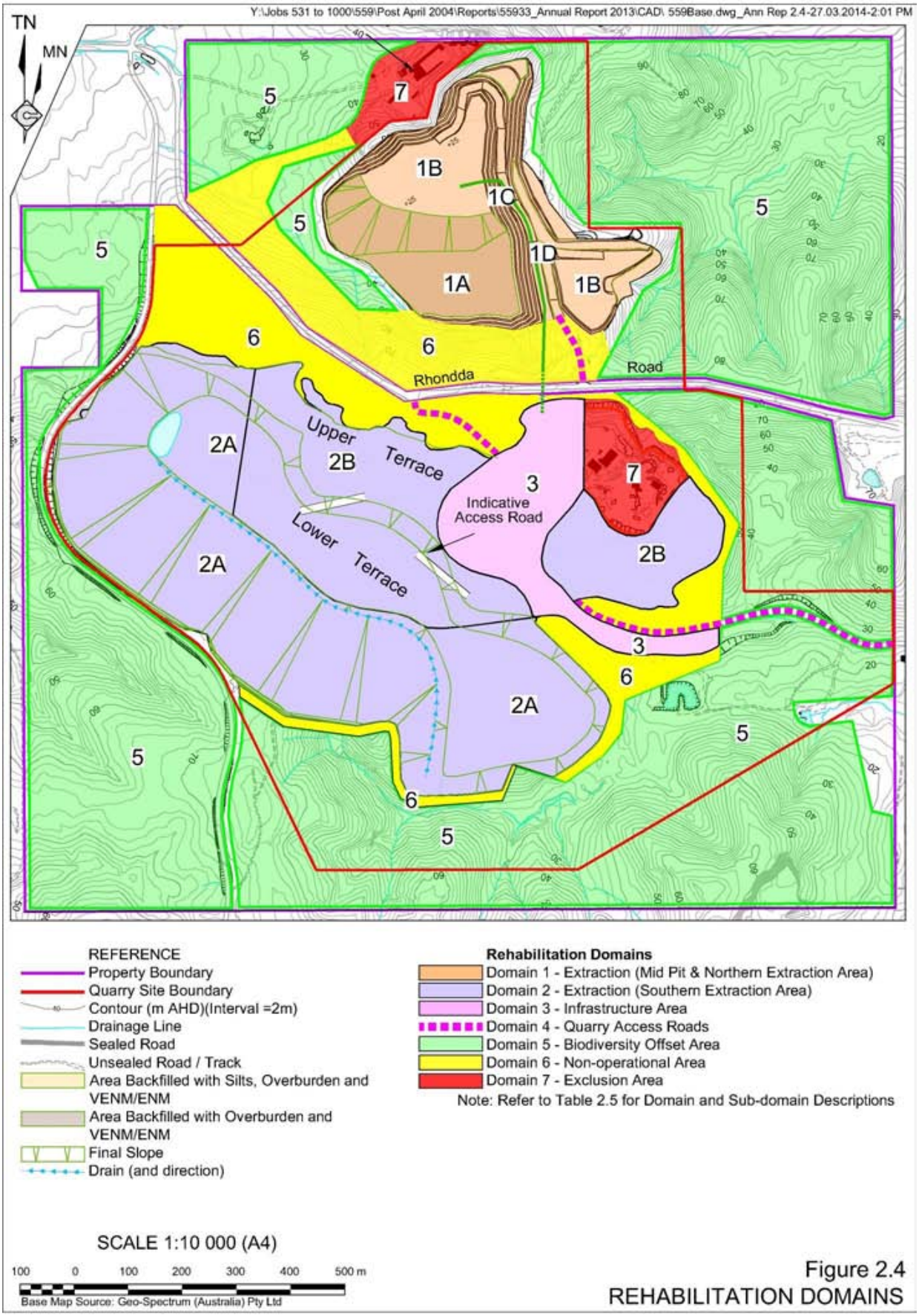


Figure 2.4
REHABILITATION DOMAINS

As a result, the majority of rehabilitation works undertaken during the reporting period occurred within the Biodiversity Offset Area and non-operational areas in the form of weed reduction eradication programs. **Figure 2.3** identifies the location of weeding activities undertaken within the reporting period with **Plates 5** to **8** showing before and after weeding photographs.

T.E.N.T.A.C.L.E. Inc. prepared on behalf of Metromix a progress report of the regeneration works undertaken during 2013 summarising the aims, methods and results of the rehabilitation works. In summary, rehabilitation occurred in non-operational areas and the Biodiversity Offset Area through the removal and control of invasive weed species and revegetation of native plants including plant protection. A variety of methods were used including the removal of target weed species through both manual and chemical controls and recovery of endemic species using bush regeneration techniques. Results indicate that the activities achieved control of a maximum amount of the target species and subsequent strengthening of native vegetation communities in the relevant areas. The work was completed with minimal impact and disturbance to the leaf-litter habitat for micro-organisms and invertebrates. A copy of the progress report by T.E.N.T.A.C.L.E Inc. is reproduced in **Appendix 6.**

2.13 NON-METROMIX OPERATIONS

The two non-Quarry-related commercial operations located within the Quarry Site boundary, the Newtech Pistol Club and the Downer EDI asphalt plant, continued to operate independently of all quarry-related operations. Civilake previously operated a pugmill adjacent to Downer Edi's asphalt plant within the Quarry Site but was fully decommissioned and removed in October 2011. The EPL for this operation is still current however until the remaining concrete is crushed and sold.

In line with the commercial agreements with Metromix to operate within the Quarry Site, regular meetings, particularly with Downer EDI, were held to discuss the ongoing operation of the Quarry and to limit interactions between the two operations. During the reporting period, a number of informal meetings were held between Metromix and Downer EDI with no follow-up actions arising from these meetings.

Metromix maintains an open door policy with the Newtech Pistol Club with no formal discussions taking place during the reporting period.

3. COMMUNITY RELATIONS

3.1 SURROUNDING COMMUNITY

Figure 3.1 displays the land ownership and residences surrounding the Quarry. During the reporting period, it is understood that there were no changes to the land ownership within the area. Metromix maintained contact with its neighbours throughout 2013 through letter box drops, informal discussions and involvement with the Community Consultative Committee.

559Base.dwg_Ann Rep Plates-31.03.2014-2:28 PM

Plate 5: Before weed eradication.
(Ref: E559Y_Plate 5)

Plate 6: After weed eradication.
(Ref: (Ref: E559Y_Plate 6)

Plate 7: Before weed eradication.
(Ref: E559Y_Plate 7)

Plate 8: After weed eradication.
(Ref: E559Y_Plate 8)

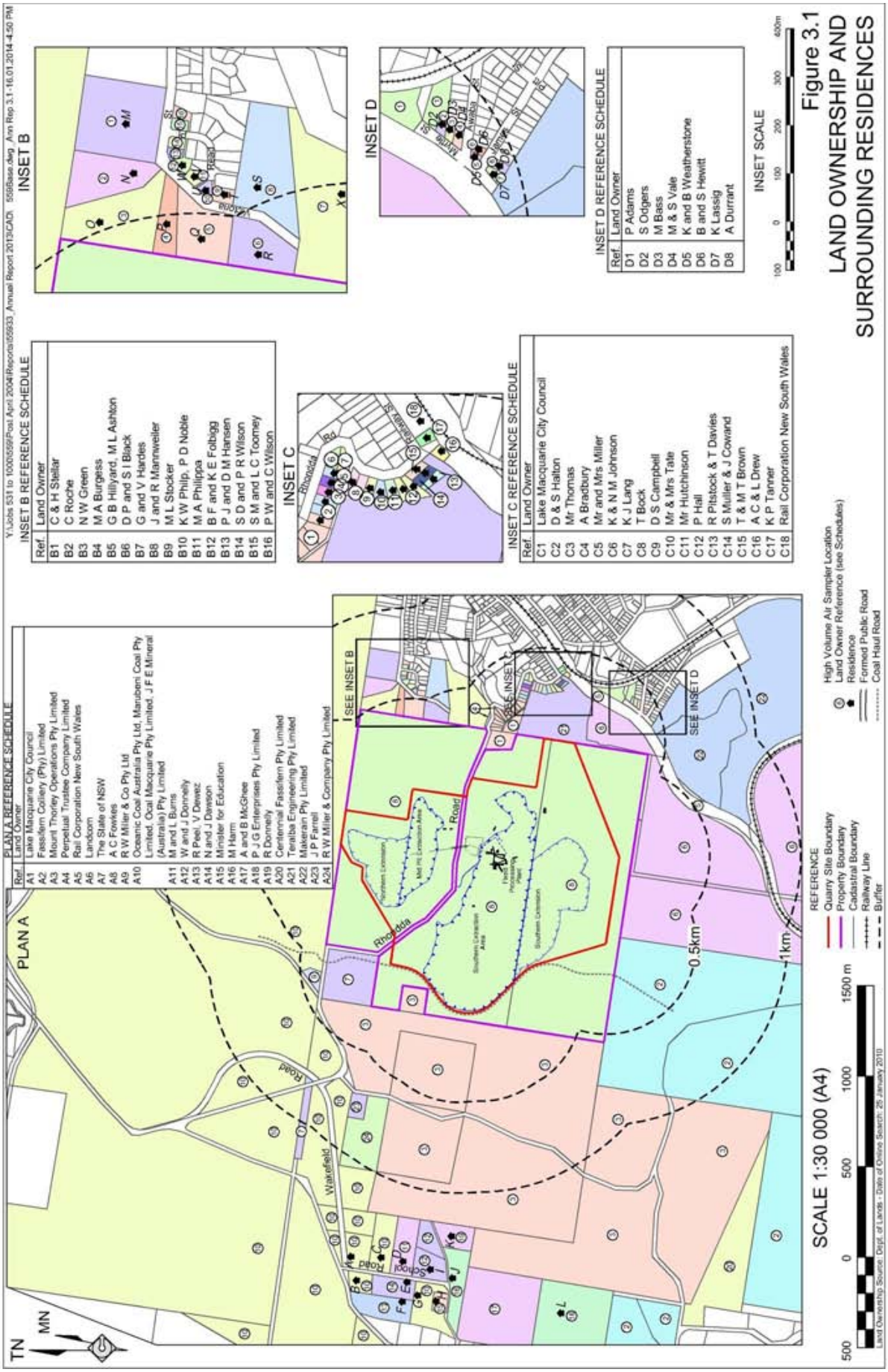


Figure 3.1
LAND OWNERSHIP AND SURROUNDING RESIDENCES

3.2 COMMUNITY CONSULTATIVE COMMITTEE MEETINGS

Two meetings of the Teralba Quarry Community Consultative Committee (TQCCC) were held during the reporting period on the following dates.

- Monday 2 September 2013.
- Wednesday 27 November 2013.

The minutes of these meetings is provided as **Appendix 4**. A brief overview of these meetings is provided below.

2 September 2013 CCC Meeting

The first meeting of the TQCCC involved a brief overview of the members and role of the committee followed by an overview of the Teralba Quarry provided by Mr Bill Sanderson. A brief question and answer session was held following this. It was agreed that the complaints register would be presented at each meeting with any complaints received during the preceding period to be addressed. No follow-up actions were required.

27 November 2013 CCC Meeting

This meeting was preceded by a site visit before members assembled to discuss current operations and allow for questions. Complaints, non-compliances and monitoring activities were discussed. No follow-up actions were required.

3.3 ENVIRONMENTAL COMPLAINTS

Metromix received four complaints from the community during the reporting period. These complaints are provided in **Appendix 5** including the date of the complaint, a summary of the complaint and actions taken to remedy the situation. Three complaints were received via the main quarry phone number and a single complaint was received through the EPA.

In summary, two complaints concerned dust emissions from the Quarry, one concerned a rock thrown up from a passing truck causing damage to a rear windscreen and the final complaint concerned blasting noise. No complaints were received from the community regarding operational or truck noise in 2013.

The blast-related complaint was received on Saturday 9 November 2013 regarding blasting occurring on a weekend and causing noise disturbance, however it was determined that no blasting occurred at the Teralba Quarry on that day.

The deposited dust complaints were resolved following the identification of strong winds causing excessive dust with the crushing plant immediately shutdown with the remaining complaint deemed not applicable as the crushing plant identified by the complainant as producing the dust was not producing levels of dust higher than normal as confirmed by site personnel.

A letter complimenting management of the Quarry on their handling of the complaint received in the instance of the damaged rear windscreen.

3.4 COMMUNITY INVOLVEMENT

Throughout the reporting period, Metromix sponsored one annual event at the Teralba Bowling Club and was heavily involved in raising over $8 500 for a local community member who required donations to fund a prosthetic leg.

Metromix also donated $20 000 to the Teralba Public School for a variety of projects throughout the reporting period.

4. ENVIRONMENTAL MONITORING

4.1 WATER QUALITY

4.1.1 Introduction

Monitoring of surface water commenced within the month of August (prior to DA130/42 being surrendered) and was subsequently undertaken on a monthly basis thereafter, in accordance with the draft *Water Management Plan* for the Quarry.

It should be noted that the water monitoring program relates principally to surface water, although monitoring of water in Dam A effectively relates to groundwater, as this water reaches the surface via a mine adit associated with historic underground coal workings. No other groundwater monitoring is undertaken at the Quarry and based upon this, all water monitoring within this document relates only to surface water monitoring.

4.1.2 Water Quality Location, Sampling and Frequency

Water quality monitoring is undertaken at EPL Point 4 (Mine Adit Dam), EPL Point 5 (Discharge to off-site from Dam B), EPL Point 6 (North-western boundary into unnamed creek) and EPL Point 7 (North-eastern boundary to unnamed creek) with these locations shown on **Figure 4.1**.

Table 4.1 presents the required frequency and method of monitoring to be undertaken at the nominated EPL points.

4.1.3 Water Quality Assessment Criteria and Results

Water quality is required to be monitored at all nominated locations for pH, and total suspended solids (TSS) with Electrical Conductivity (EC) monitoring also required at EPL Points 6 and 7 in the event of water discharge from these locations. There is no requirement within EPL 536 to monitor for oil and grease, however, if oil and grease is observed during sampling on two successive monthly sampling events, a full hydrocarbon sampling suite will be conducted on the samples collected during the following monthly period. **Table 4.2** presents a summary of the results of the surface water quality monitoring program during the reporting period. The results of the entire surface water monitoring program are provided in full in **Appendix 2.**

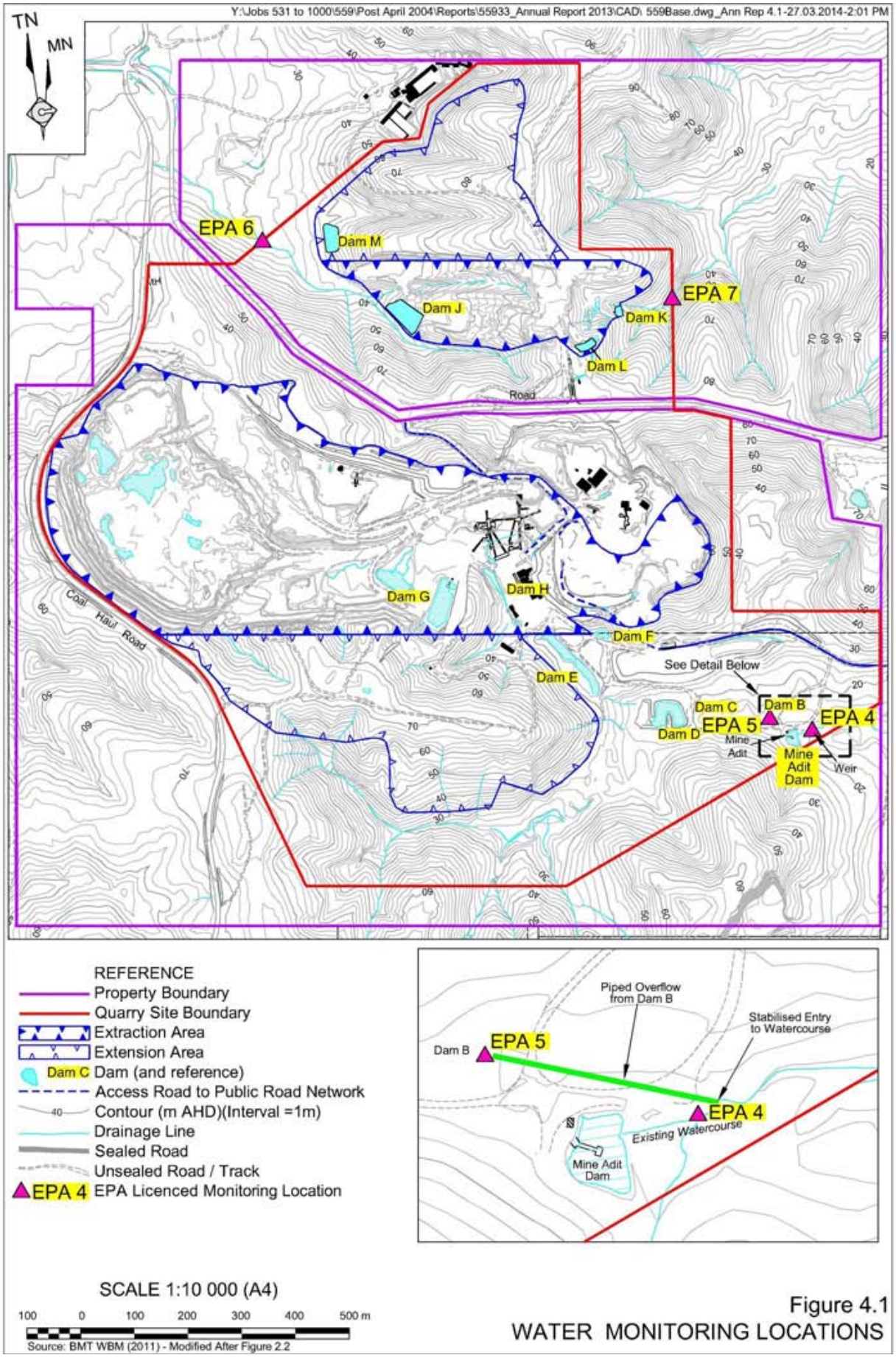


Figure 4.1
WATER MONITORING LOCATIONS

Table 4.1
Surface Water Monitoring Requirements

EPA Point	Frequency	Monitoring for:	Method
4	Monthly	pH, Total suspended solids (TSS)	Grab sample
5	Monthly and daily during discharge	pH, TSS	Grab sample
6 and 7	Within 8 hours of discharge and weekly during discharge	pH, Electrical Conductivity (EC), Total suspended solids	Grab sample
4 and 5	Continuous (during discharge from monitoring point 4 – Dam B)	Flow	Flow meter/continuous logger
4 and 5(1)	Monthly during discharge	aluminium, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt copper, iron, lead, lithium, magnesium, mercury, molybdenum, nickel, selenium, silver, silica, tin, titanium, vanadium, zinc, calcium, conductivity, nitrogen, phosphorus, potassium and sulphur	Grab sample

(1) Required as part of a "pollution study". The first 6 months of data will be submitted to the EPA for review, and, following 12 months of monitoring, Metromix will make an assessment of metals in the discharge, in accordance with the ANZECC water quality guidelines and provide this to the EPA.

Table 4.2
Surface Water Monitoring Results

Page 1 of 2

	pH	EC	TSS	Comments	Method
Units	pH Units	µs/cm	mg/L		-
EPL Criterion*	6.5-8.5	NA	<50		-
ANZECC Water Quality Limits	6.5-8.5	NA	<50		-
EPA Discharge Point 4 – Mine Adit Dam (Monthly)					
January-August	NS	NS	NS		
September	7.7	2 180	<5		Grab Sample
October	7.8	2 410	<5		
November	7.3	2 210	<5		
December	7.1	1 890	26		
EPA Discharge Point 5 – Dam B (Daily during Discharge)					
Date	Monitoring Results – Daily during discharge events only				
13/11/2013	8.0	ND	25	First flow from Dam B in 3 months.	Grab Sample
14/11/2013	7.6	ND	6		
15/11/2013	7.6	ND	<5		
18/11/2013	7.2	ND	293	Rainfall Event – 132mm – Water from Dam D over spillway	

Table 4.2 (Cont'd)
Surface Water Monitoring Results

Page 2 of 2

	pH	EC	TSS	Comments	Method
EPA Discharge Point 5 – Dam B (Daily during Discharge) (Cont'd)					
19/11/2013	7.2	ND	228	Rainfall Event – 29mm – Water from Dam D over spillway	
25/11/2013	7.3	ND	6		
26/11/2013	7.3	ND	9		
27/11/2013	7.4	ND	14		
28/11/2013	7.4	ND	7		
29/11/2013	7.3	ND	6		
03/12/2013	7.3	ND	9		
EPA Discharge Point 6 – Northwestern Boundary to Creek (Within and Following Discharge					
Criterion					
Date	Monitoring Results – Within 8 hours of discharge and weekly during discharge				
There were no instances of water discharged from EPL Point 5 during the reporting period					
EPA Discharge Point 7 – Northeastern Boundary to Creek (Within and Following Discharge					
Criterion					
Date	Monitoring Results – Within 8 hours of discharge and weekly during discharge				
There were no instances of water discharged from EPL Point 6 during the reporting period					
* EPL 536 *Condition L1.1* nominates the licensee must comply with Section 120 of the Protection of the Environment Operations Act 1997. As such, the ANZECC water quality guidelines have been adopted.					
NA = Not Applicable	ND = Not Determined		NS = Not Sampled		

Although the Quarry does not discharge water to the Mine Adit, this dam regularly naturally discharges to the creek, and as it is located within the area of management for the Quarry, Metromix has committed to monitor the water quality and discharge volumes.

The draft *Water Management Plan* includes a commitment to monitor water pumped throughout and discharged from the Quarry. Metromix has installed (or is in the process of installing) continuous flow meters to monitor the water pumped (or discharged) at a number of locations throughout the Quarry. The final locations of these flow meters will be provided within the final *Water Management Plan* and the 2014 Annual Report.

Reporting is currently only required for water pumped from the Adit Dam to Dam G and represents groundwater intercepted from the Mine Adit. **Table 4.3** displays the water flow measurements monitored between the Mine Adit to Dam G during the reporting period.

Table 4.3
2013 Surface Water Flow Measurements
Mine Adit to Dam G

Date	Flow Meter Readings	Quantity (m^3)	Usage (ML)
24/12/2012	12 833 621		
31/01/2013	12 899 785	66 164	66.2
28/02/2013	12 982 686	82 901	82.9
31/03/2013	13 060 159	77 473	77.5
30/04/2013	13 154 200	94 041	94.0
31/05/2013	13 261 906	107 706	107.7
30/06/2013	13 336 760	74 854	74.9
31/07/2013	13 450 706	113 946	113.9
31/08/2013	13 564 470	113 764	113.8
30/09/2013	13 670 276	105 806	105.8
31/10/2013	13 794 697	124 421	124.4
30/11/2013	13 915 660	120 963	121.0
31/12/2013	13 995 827	80 167	80.2
Total	**-**	**1 162 200**	**1 162.2**

4.1.4 Discussion of Results

In comparison to the water quality limits nominated in **Table 4.2**, the following comments are relevant.

1. pH values within the Mine Adit Dam were consistently within a neutral range in all monitored instances varying from 7.1 to 7.8. When discharges were required from Dam B, the pH values ranged between 7.2 and 8.0 and were within the EPL and ANZECC criterion of 6.5 to 8.5 in each instance.
2. EC values were monitored within the Mine Adit Dam and recorded to be between 1 890 and 2 410.
3. TSS values were within the EPL and ANZECC guideline levels, excluding two discharge events occurring on 18 and 19 November 2013. Due to a high rainfall event of 161 mm of rain over 2 days, Dam D overflowed. As a result, collected samples each day from Dam B had TSS levels of 293 and 238 mg/L respectively.

Metromix has also committed to undertake a 'pollution study' of water from the Mine Adit, a proportion of which eventually enters Lake Macquarie, to determine the levels of suspended and dissolved metals. The results of monitoring undertaken at EPL Point 4 and EPL Point 5 as part of this 'pollution study' are provided in **Appendix 2**. Metromix will continue to monitor suspended and dissolved metals until December 2014 with results regularly submitted to the EPA for review. It is anticipated that following a review of the results up to December 2014, the EPA would provide revised parameters and request ongoing, albeit reduced surface water monitoring to continue. The revised parameters and results would be provided in 2014 Annual Review.

The current results of the dissolved metals monitoring from the Mine Adit Dam outline that the majority of metal analytes displayed levels either below detection levels or at very low concentrations.

4.1.5 Discussion

Two uncontrolled discharge events, related to heavy rain occurring in November 2013, resulting in exceedances of TSS from Dam B. The storm even exceeded the design criteria of Dam B and subsequently is deemed not to be a non-compliance.

4.1.6 Conclusion

The water monitoring program commenced in August 2013 and has not gathered sufficient data to judge trends or patterns in the results. The majority of results for pH and TSS were within the levels provided in the Quarry's EPL and the ANZECC guidelines. Following a full year of data collected in 2014, the 2014 Annual Report will include a full analysis of patterns or trends.

4.2 NOISE AND BLASTING

4.2.1 Introduction

PA 10_0183 - Appendix 3 (Statement of Commitments) details Metromix's commitment to commence noise monitoring within three months of operations beginning in the Southern and Northern Extensions. As described in Section 1.1, operations began within Stage 1A of the Southern Extension from 24 December 2013. As such noise monitoring was not undertaken within the reporting period with the results of this noise monitoring included within the 2014 Annual Report.

The *Noise Management Plan* prepared in accordance with *Condition 3(8)* of PA10_0183 and approved on 16 January 2014, details the locations and frequency of noise monitoring that is to be undertaken at the Quarry.

Table 4.4 lists the address and coordinates of each noise monitoring location.

Table 4.4
Noise Monitoring Locations

Noise Monitoring Locations*	Address	Easting	Northing
EPL-A	Awaba Street, Teralba	369080	3651470
EPL-B	Rhondda Road, Teralba	369250	6351915
EPL-C	Rhondda Road, Teralba	369205	6352015
EPL-D	Rhondda Road, Teralba	369150	6352135
EPL-E	Victoria Avenue, Teralba	369060	6352620
EPL-F	Victoria Avenue, Teralba	369130	6352945
EPL-H	School Road, Wakefield	366210	6352520

* See **Figure 4.2**.

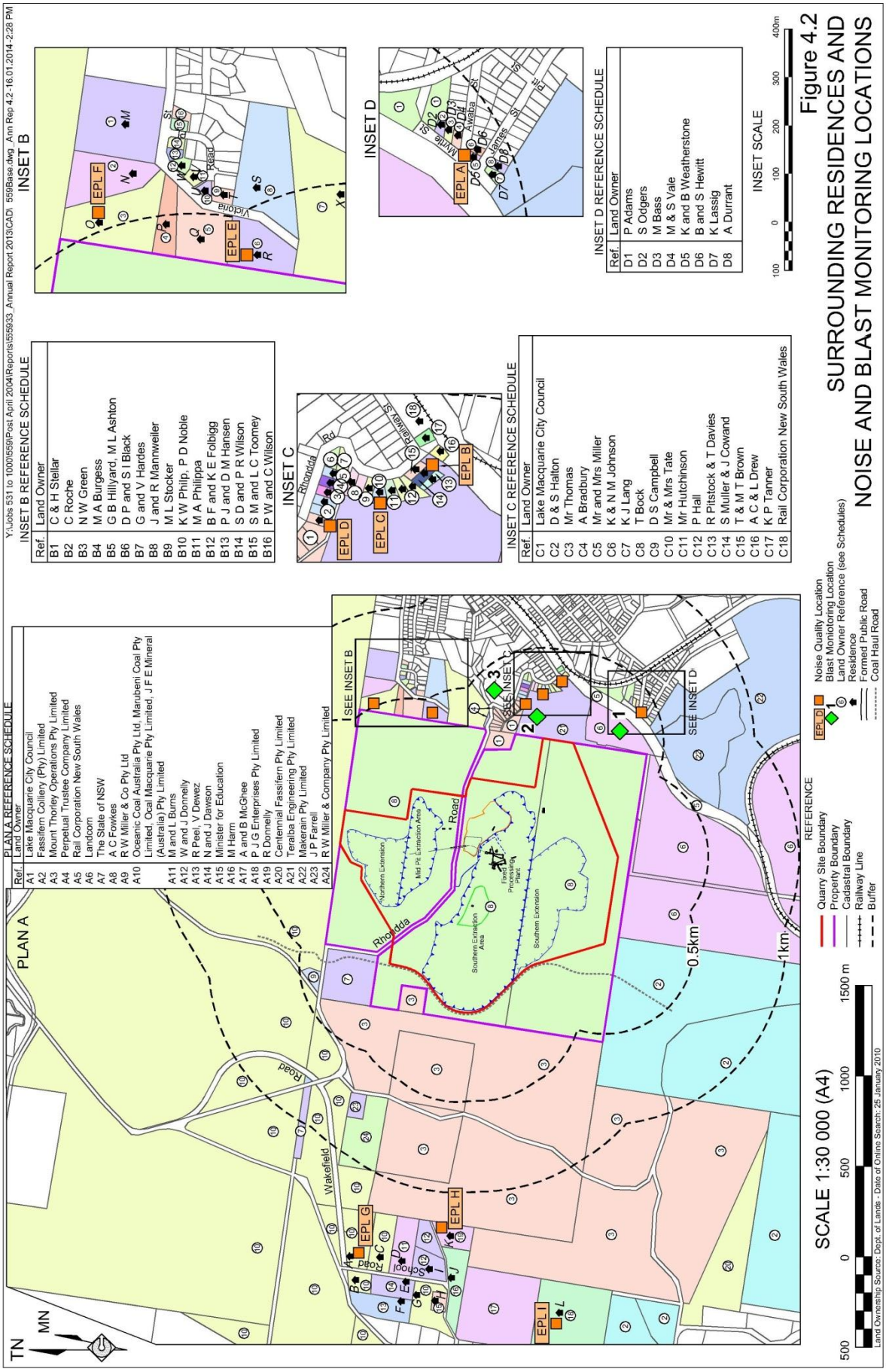


Figure 4.2
SURROUNDING RESIDENCES AND
NOISE AND BLAST MONITORING LOCATIONS

Independent monitoring at the nominated locations will be undertaken during the first 2 years of operations as prescribed under PA10_0183, at 6 monthly intervals coinciding with wind blowing in a predominantly easterly or westerly direction. The frequency of monitoring will then revert to annual monitoring during a period of wind blowing from the western quadrant towards residences in Teralba.

Metromix has committed to also commission independent monitoring of the mobile earthmoving equipment within the Quarry on an annual basis, particularly the bulldozer and haul trucks, to ensure the sound power levels are comparable with the levels nominated in the *Noise Management Plan*.

4.2.2 Noise Criteria

Table 4.5 presents the noise criteria for the Quarry during the specific time periods as nominated in *Condition 3(5)* of PA10_0183.

Table 4.5
Teralba Quarry – Noise Criteria

Residence*	Time Period				
	6:00am-7:00am	7:00am-6:00pm	6:00pm-10:00pm	10:00pm-6:00am	
Residence A					
Criterion	$L_{Aeq(15\ min)}$				$L_{A(1\ min)}$
	38	38	37	35	45
Residence B					
Criterion	$L_{Aeq(15\ min)}$				$L_{A(1\ min)}$
	42	46	36	35	45
Residence C					
Criterion	$L_{Aeq(15\ min)}$				$L_{A(1\ min)}$
	42	42	35	35	45
Residence D, E, G, H, I					
Criterion	$L_{Aeq(15\ min)}$				$L_{A(1\ min)}$
	35	35	35	35	45
Residence F					
Criterion	$L_{Aeq(15\ min)}$				$L_{A(1\ min)}$
	37	38	38	35	45

* See **Figure 4.2**.

4.2.3 Noise Monitoring Results

Noise monitoring has not yet been undertaken at the Quarry and will be undertaken during 2014 with the results provided in the 2014 Annual Report.

4.2.4 Blasting Criteria

Table 4.6 presents the blasting criteria for the Quarry provided in PA10_0183 with all blasts to occur between 10:00am to 4:00pm, Monday to Friday only.

Table 4.6
Teralba Quarry – Blasting Criteria

Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance
Any residence on privately owned land, or any public infrastructure	120	10	0%
	115	5	5% of the total number of blasts over a period of 12 months

4.2.5 Blasting Monitoring results

Table 4.7 presents the result of blast monitoring against the criteria for the Quarry

Table 4.7
Summary of Blast Monitoring Results 2013

Page 1 of 2

Blast Date	Blast Time	Location 1@		Location 2@		Location 3@*	
		Airblast (dB(L)) Over pressure	Ground Vibration (mm/s)	Airblast (dB(L)) Over pressure	Ground Vibration (mm/s)	Airblast (dB(L)) Over pressure	Ground Vibration (mm/s)
11/01/13	10:32am	< 100	< 0.8	< 100	< 0.8	NM	NM
15/01/13	10:47am	101.0	NT	102.8	NT	NM	NM
30/01/13	11:57am#	NT	NT	102.8	0.223	102.8	0.22
18/02/13	12:05pm#	< 101	< 0.81	< 100	< 0.8	NM	NM
08/03/13	12:05pm	< 101	< 0.81	< 100	< 0.8	NM	NM
22/03/13	2:50pm	109.5	0.127	< 100	< 0.8	NM	NM
05/04/13	1:30pm	NR	NR	< 100	< 0.8	94	0.73
10/04/13	1:45pm	NR	NR	NR	NR	NM	NM
03/05/13	11:35am	NR	NR	NR	NR	NM	NM
14/05/13	12:02pm	NR	NR	NR	NR	NM	NM
21/05/13	10:42pm	NR	NR	NR	NR	NM	NM
03/06/13	10:55am	NR	NR	NR	NR	NM	NM
03/06/13	12:00pm	NR	NR	NR	NR	NM	NM
07/06/13	1:05pm	NM	NM	NR	NR	NR	NR
20/06/13	11:10am	NR	NR	NR	NR	NM	NM
20/06/13	12:10pm	NR	NR	NR	NR	NM	NM
03/07/13	2:25pm	NR	NR	NR	NR	NM	NM
12/07/13	1:00pm	NM	NM	NR	NR	NR	NR
26/07/13	11:55am	NR	NR	NR	NR	NM	NM

Table 4.7 (Cont'd)
Summary of Blast Monitoring Results 2013

Page 2 of 2

Blast Date	Blast Time	Location 1@		Location 2@		Location 3@	
		Airblast (dB(L)) Over pressure	Ground Vibration (mm/s)	Airblast (dB(L)) Over pressure	Ground Vibration (mm/s)	Airblast (dB(L)) Over pressure	Ground Vibration (mm/s)
02/08/13	1:20pm	NR	NR	NR	NR	NM	NM
09/08/13	2:00pm	NR	NR	NR	NR	NM	NM
23/08/13	12:10pm	NR	NR	NR	NR	NM	NM
30/08/13	12:45pm	NR	NR	NR	NR	NM	NM
12/09/13	1:20pm	NR	NR	NR	NR	NM	NM
27/09/13	11:50am	NR	NR	NR	NR	NM	NM
27/09/13	12:58pm	NR	NR	NR	NR	NM	NM
30/09/13	12:30pm	NR	NR	NR	NR	NM	NM
21/10/13	12:28pm	NR	NR	NR	NR	NM	NM
11/11/11	10:32am	NR	NR	NR	NR	NM	NM
11/11/11	12:28pm	NR	NR	NR	NR	NM	NM
28/11/13	12:31pm	NR	NR	NR	NR	NM	NM
13/11/13	2:47pm	NR	NR	NR	NR	NM	NM

Note: NR – Not Registered NT – Not Triggered NM – Not Measured
# Indicates that the wrong date was provided on the blast monitoring register and has been corrected in this table.
* Monitoring only undertaken at Location 3 when blasting is conducted in the Mid Pit Extraction Area.
@ See **Figure 4.2.**

4.2.6 Analysis of Results

Noise monitoring at the Quarry is yet to commence as operations within Stage 1A of the Southern Extension only commenced in December 2013.

The airblast overpressure and ground vibration results monitored throughout 2013 were well below the nominated criteria or did not register a response. Airblast overpressure and ground vibration were not measured at Location 3 after 22 August 2013 as extraction ceased in the Mid Pit Extraction Area.

All blasting was undertaken within of the prescribed hours for blasting.

4.2.7 Conclusion

As the result of monitoring, Metromix has complied with all blasting criteria during the reporting period.

4.3 AIR QUALITY

4.3.1 Introduction

Air quality monitoring is required to be undertaken in accordance with *Condition 3(17)* (reproduced in **Table 4.8)** and the approved *Air Quality Management Plan* required under *Condition 3(20)* of PA10_0183.

Air quality monitoring at the Quarry has historically been undertaken for deposited dust only with *Condition (3)17* requiring that Total Suspended Particulates and PM_{10} also be monitored through the ongoing use of a High Volume Air Sampler (HVAS). Following discussions with the EPA, it was determined that TSP is not required to be monitored as it is recognised that the concentration of PM_{10} particles is of greater importance given its nexus with potential health issues and background deposited dust levels (<4g/m^2/month). It is anticipated that this will be reflected in the modified EPL, following other non-air quality related issues are addressed. As such, TSP will not be monitored by Metromix, however if required, annual average TSP concentrations can be estimated from the PM_{10} measurements by assuming that 40% of the TSP is PM_{10}. This relationship was obtained from data collected by co-located TSP and PM_{10} monitors operated for long periods of time in the Hunter Valley (NSW Minerals Council, 2000).

The HVAS required to monitor for PM_{10} has been purchased by Metromix but following consultation with surrounding landowners, no locations were identified as suitable during the reporting period. Following advice by the EPA in March 2014, the HVAS will be installed as EPA Point 3 and installed at the same location as the Rodgers Street deposited dust gauge.

The results from the HVAS will be included in the 2014 Annual Report.

It is noteworthy that the HVAS is only being installed to increase the overall network of stations throughout the Hunter area to enable EPA to better understand the PM_{10} concentrations throughout the Hunter area. The comparative low deposited dust results for almost 10 years strongly indicate PM_{10} dust levels attributable to the Quarry will be well within the air operating goals and that the HVAS can be removed after this relationship is confirmed.

4.3.2 Meteorological Station

Condition 3(21) requires that a meteorological station operate in the vicinity of the Project Site for the life of the Project. Metromix has installed a meteorological station (location shown on **Figure 2.1**), ensuring that the meteorological station complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline.

The meteorological station currently monitors the following parameters.

- Temperature (at 2m and 10m above ground level)
- Wind Speed and Direction
- Rainfall
- Humidity
- Solar Radiation
- Barometric Pressure
- Fire Danger Index
- Sigma Theta

Figure 4.3 provides the monthly and annual wind roses for the Quarry. It should be noted that due to a cancellation of the meteorological station's SIM card by the SIM card operator, weather data was not available for the months of June and July 2013, hence the omission of wind roses in **Figure 4.3** for those months.

4.3.3 Air Quality Monitoring Locations and Frequency

The current air quality monitoring network consists of five deposited dust gauges (see **Figure 4.4**). **Table 4.8** provides the coordinates of each location and the date established / sampling frequency respectively. It is anticipated that the HVAS will be installed in April 2014.

The location of the air quality monitoring equipment (primarily to the east of the Quarry / west of Teralba) was deduced given the prevailing and dominant winds originate from the southwestern quadrant during Autumn and Winter. Northerly winds and winds from the northeastern quadrant dominate during Spring and Summer.

Table 4.8
Locations of Dust Monitoring Equipment

Monitoring Location	Easting	Northing	Date Established	Sampling Frequency
Hillside	369422	6352680	June 2004	Monthly
Margaret	369622	6351763	April 2011	Monthly
Myrtle	369071	6351492	June 2004	Monthly
Rhondda	369240	6351972	June 2004	Monthly
Rodgers	369467	6352369	April 2011	Monthly
Weather Station	368413	6352751	March 2013	Continuous
HVAS	369467	6352369	Not Yet Applicable	6 days

4.3.4 Air Quality Criteria

The air quality criteria for the Quarry, as outlined within *Condition 3(17)* of PA10_0183, are provided in **Table 4.9**.

Table 4.9
Air Quality Criteria

Pollutant	Criterion [d]	Averaging Period
Total suspended particulate matter (TSP)	90µg/m^3 [a]	Annual mean
Particulate matter <10µm (PM_{10})	50µg/m^3	24-hour maximum
	30µg/m^3 [a]	Annual mean
	50µg/m^3 [a]	(24-hour average, 5 exceedances permitted per year)
Deposited dust [c]	4 g/m^2/month [a]	Annual mean
	2 g/m^2/month [b]	Maximum Increase

[a] Total impact (i.e.: incremental increase in concentrations due to the project plus background concentrations due to all other sources);
[b] Incremental impact (i.e.: incremental increase in concentrations due to the project on its own);
[c] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580010.1.2003: Methods for Sampling and Analysing Air-Determination of Particulate Matter – Deposited Matter – Gravimetric Method.
[d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Director-General in consultation with EPA.

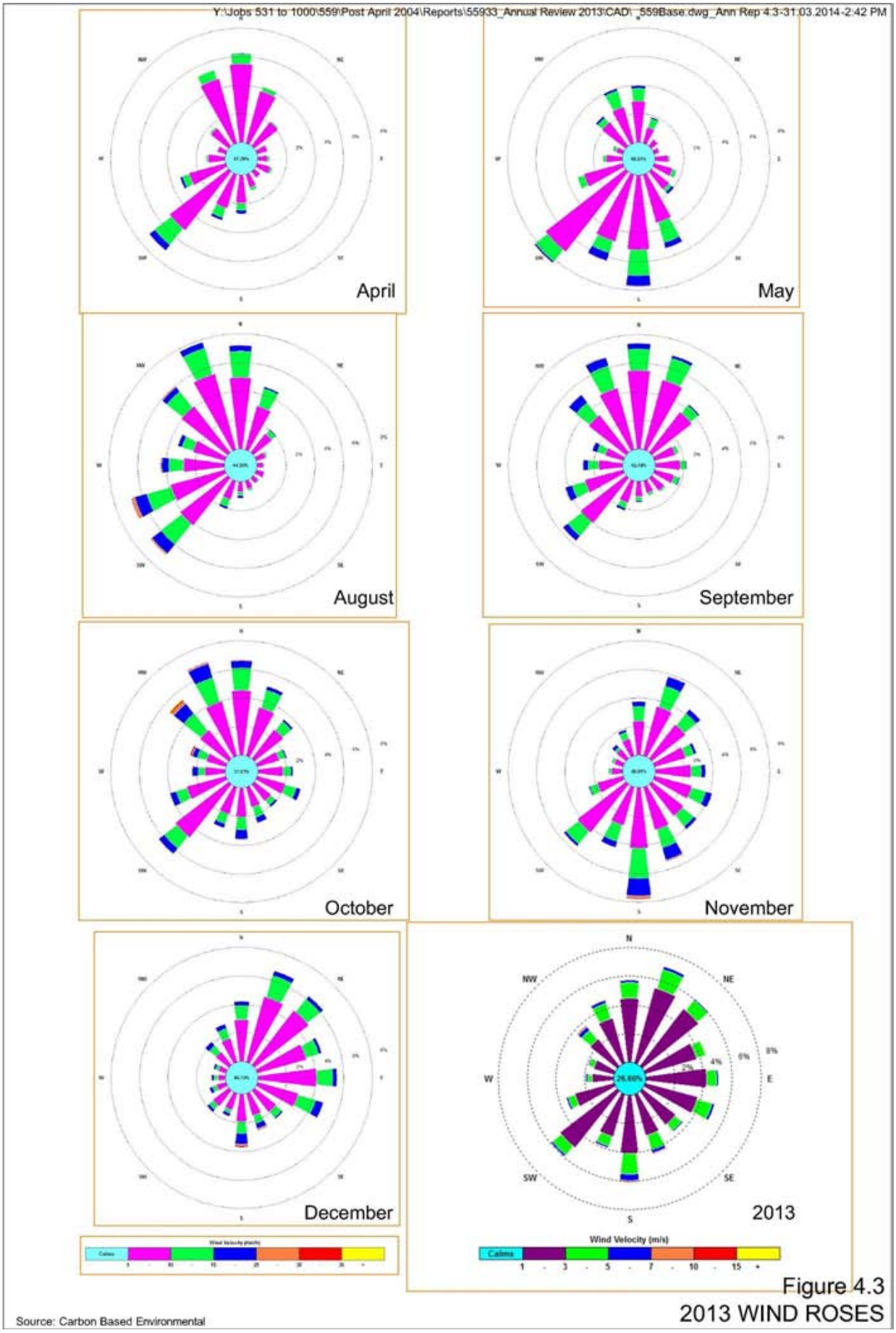
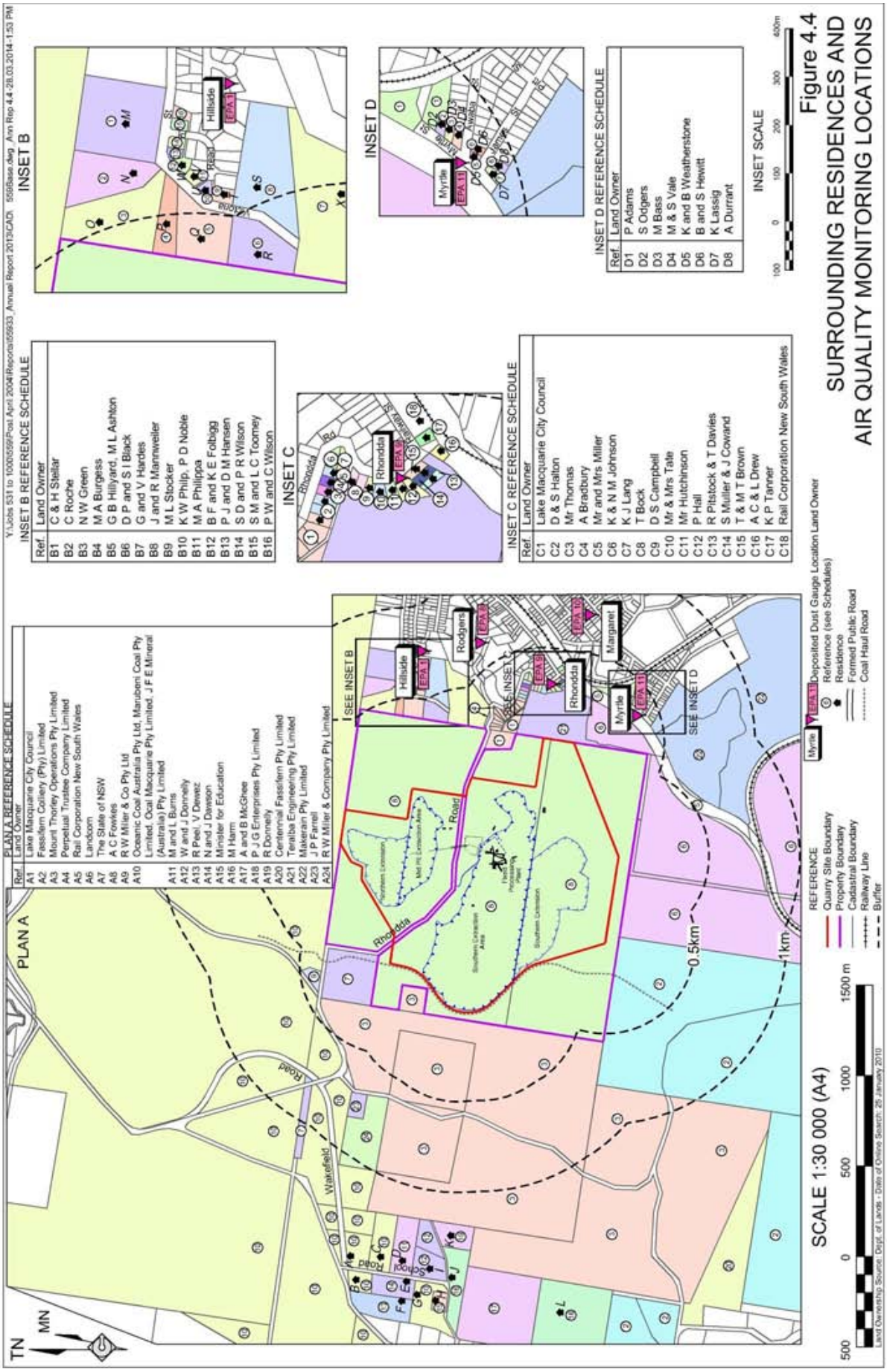


Figure 4.3
2013 WIND ROSES

Source: Carbon Based Environmental



PLAN A REFERENCE SCHEDULE		
Ref.	Land Owner
A1	Lake Macquarie City Council
A2	Fassifern Colliery (Pty) Limited
A3	Mount Thorley Operations Pty Limited
A4	Perpetual Trustee Company Limited
A5	Rail Corporation New South Wales
A6	Landcom
A7	The State of NSW
A8	A C Fowkes
A9	R W Miller & Co Pty Ltd
A10	Oceanic Coal Australia Pty Ltd, Marubeni Coal Pty Limited, Ocal Macquarie Pty Limited, J F E Mineral (Australia) Pty Limited
A11	M and L Burns
A12	W and J Donnelly
A13	R Peel, V Dewez
A14	N and J Dawson
A15	Minister for Education
A16	M Harm
A17	A and B McGhee
A18	P J G Enterprises Pty Limited
A19	R Donnelly
A20	Centennial Fassifern Pty Limited
A21	Teralba Engineering Pty Limited
A22	Makerain Pty Limited
A23	J P Farrell
A24	R W Miller & Company Pty Limited

INSET B REFERENCE SCHEDULE	
Ref.	Land Owner
B1	C & H Stellar
B2	C Roche
B3	N W Green
B4	M A Burgess
B5	G B Hillyard, M L Ashton
B6	D P and S I Black
B7	G and V Hardes
B8	J and R Mannweiler
B9	M L Stocker
B10	K W Philp, P D Noble
B11	M A Philippa
B12	B F and K E Folbigg
B13	P J and D M Hansen
B14	S D and P R Wilson
B15	S M and L C Toomey
B16	P W and C Wilson

INSET C REFERENCE SCHEDULE	
Ref.	Land Owner
C1	Lake Macquarie City Council
C2	D & S Halton
C3	Mr Thomas
C4	A Bradbury
C5	Mr and Mrs Miller
C6	K & N M Johnson
C7	K J Lang
C8	T Bock
C9	D S Campbell
C10	Mr & Mrs Tate
C11	Mr Hutchinson
C12	P Hall
C13	R Pitstock & T Davies
C14	S Muller & J Cowand
C15	T & M T Brown
C16	A C & L Drew
C17	K P Tanner
C18	Rail Corporation New South Wales

INSET D REFERENCE SCHEDULE	
Ref.	Land Owner
D1	P Adams
D2	S Odgers
D3	M Bass
D4	M & S Vale
D5	K and B Weatherstone
D6	B and S Hewitt
D7	K Lassig
D8	A Durrant

4.3.5 Air Quality Monitoring Results

The following information presents the results of the deposited dust monitoring program only. Following the imminent installation and operation of the HVAS in 2014, PM_{10} information will be provided in the 2014 Annual Review.

Table 4.10
Deposited Dust Monitoring Results

Analyte	**Deposited Dust (g/m^2/month)**				
Residence ID	Rhondda[1]	Myrtle[1]	Hillside[1]	Rodgers[2]	Margaret[2]
Criterion	4	4	4	4	4
Pre -2013 Average*	1.1	1.1	1.3	1.1	1.2
2013 Results					
Jan-13	0.7	0.6	2.6	1.3	1.7
Feb-13	1.2	0.7	0.7	1.4	2.6
Mar-13	0.5	0.8	1.3	1.2	0.9
Apr-13	0.6	0.5	1.1	0.8	0.9
May-13	0.6	0.2	1.1	0.3	0.5
Jun-13	1.0	0.9	1.2	0.8	1.0
Jul-13	1.0	0.7	0.9	0.6	0.7
Aug-13	0.6	0.7	0.6	1.9	0.6
Sep-13	0.8	1.0	0.2	0.5	0.8
Oct-13	1.7	1.2	2.9	0.6	1.5
Nov-13	2.2	1.5	1.0	1.3	2.4
Dec-13	1.1	1.6	2.2	0.9	0.9
Average	1.0	0.9	1.3	1.0	1.2

* Based upon deposited dust collected information prior to PA10_0183 being approved.
[1] Installed and operated since 2004
[2] Installed and operated since 2011

4.3.6 Analysis of Results

Deposited dust levels monitored during the reporting period indicate the Quarry is compliant with the relevant air quality criteria.

4.3.7 Discussion

No follow-up actions were required as all deposited dust levels remained well below the nominated criteria.

4.3.8 Conclusion

Outside of the increase in deposited dust greater than the maximum allowable 2g/m^2/month increase during October 2013 (but still within the annual mean criteria), the Quarry was compliant with air quality criteria throughout the reporting period.

4.4 FAUNA HABITAT

4.4.1 Introduction

The installation of nest boxes is required to be undertaken for the following species as outlined within *Condition 3(50)*, specifically;

- 20 microbat nest boxes;
- 20 Little lorikeet nest boxes; and
- 30 Squirrel glider nest boxes.

It should be noted that *Condition 3(50)* outlines that 30 nest boxes are required for 'Sugar Gliders', however, this was noted as being an error as the Teralba Quarry Extensions *Environmental Assessment* (RWC 2010) identified Squirrel gliders as requiring nest box habitat (EA Section 5.5.4.2 and Commitment 8.7 (EIS Table 5.1)) as this is a "vulnerable" species listed within the Schedules of the *Threatened Species Conservation Act 1995* and not Sugar Gliders which are not listed as 'threatened' or 'vulnerable' under the relevant legislation. This error was brought to the attention of the Department of Planning and Infrastructure in March 2014, with the resulting reply confirming that it was an administrative error and the nest boxes should indeed be installed for Squirrel Gliders. It was also noted that this error would be amended in any future applications to modify PA10_0183.

Furthermore, as outlined within PA10_0183_Appendix 3, the nesting boxes are not required to be installed prior to the commencement of activities within the Northern Extension, however, Metromix has committed to installing the nesting boxes during the 2014 period.

4.4.2 Nest Box Usage

In order to mitigate against the impact of loss of hollow-bearing trees, the nesting boxes will be installed to provide for replacement nesting sites for the targeted species. An analysis of the usage of the nesting boxes will be provided following the installation and survey of the nesting boxes within the 2014 Annual Report.

Further, in accordance with *Condition 3(50)*, the nesting boxes would be relocated or replaced if it is not used by targeted fauna within a 12 month period.

5. COMPLIANCE ASSESSMENT

5.1 PROJECT APPROVAL PA10_0163

As prescribed by *Condition 5(9)*, an independent environmental audit is required to be undertaken within a year of the commencement of activities within the Quarry approved under PA10_0183.

An independent environmental audit was undertaken in February 2014 by Trevor Brown & Associates (Trevor Brown, 2014) with the following three recommendations resulting from the audit. A copy of the Independent Environmental Audit is included in this document as **Appendix 3**.

Recommendation 1 – Water Management Plan

The final *Water Management Plan* should address the comments received from DP&I on 16 January 2014 on groundwater assessment criteria, including trigger levels, a program to monitor surface water inflows into the groundwater system beneath the site and a program to monitor the impacts of the project on the local aquifer, should be addressed along with any relevant requirements under the draft Notice of Variation to the Environment Protection Licence 536, and the revised document resubmitted to NSW P&I.

Recommendation 2 – Water Quality Monitoring

The nomenclature used for the water monitoring locations should be consistent with the EPA approved monitoring points identification numbers in Environment Protection Licence C*ondition P1.3*.

This nomenclature has since been updated internally and reflected within the document.

Recommendation 3 – Heritage Management Plan

The Aboriginal Heritage Management Plan should be revised to address the comments received from DP&I on 16 January, and the revised Plan re-submitted to DP&I for approval.

The following up actions to the three recommendations will be provided in the 2014 Annual Report, as well as the identification of any further recommendations / actions to be followed up as the result of the 2014 Audit.

5.2 ENVIRONMENT PROTECTION LICENCE

Metromix hold Environment Protection Licence 536 for a 'land-based' extractive industry. The licence has an anniversary date of 01 June. The annual return covering the reporting period identified no non-compliances with the conditions of the licence.

As noted within the Independent Environmental Audit, "The operation of the Teralba Quarry development is generally in accordance with the predictions in the Environmental Assessment and demonstrates compliance with the Project Approval conditions, Statements of Commitment and the Environment Protection Licence conditions".

5.3 DISCREPANCIES WITH PREDICTED AND ACTUAL QUARRY OPERATIONS

As prescribed by *Condition 5(4)(e),* the identification of discrepancies between the predicted and actual impacts of the Quarry are to be provided within this document with any significant discrepancies analysed to determine the potential cause and follow up actions taken.

An analysis was undertaken by Trevor Brown and Associates as part of the Independent Environmental Audit, noting that "the operation of the Teralba Quarry development is generally in accordance with the predictions in the Environmental Assessment", with no significant discrepancies identified.

6. ACTIVITIES PROPOSED DURING THE NEXT REPORTING PERIOD

6.1 INTRODUCTION

The following section provides a brief summary of the operational activities planned throughout the 2014 reporting period. **Table 6.1** provides a summary of the proposed quarry activities and **Figure 6.1** presents the location(s) of the activities described.

Table 6.1
2014 Proposed Quarry Activities and Key Events

Page 1 of 2

January	• Continue the construction of Silt Cell 2, 3, 4 & 5 walls. • Commence extraction activities within Stage 1A in February. • Continue stripping of subsoils in Stage 1A. • Line mine adit discharge drain with both geotextile and gabion rock.
February	• Continue extraction activities within initial sections of Stage 1A. • Continue the construction of Silt Cell walls.
March	• Install 'drive over grids' on the top truck wheel wash. • Commission and install flow meters 6 and 7 for water leaving Dam G to either the processing plant or the pugmill. • Lift overflow pipe between Dams E & D to increase the holding time of water in Dam E.
April	• Relocate subsoil, topsoil and biomass from Stage 1A and commence planting of additional seedlings on prepared rehabilitation area over completed sections of Silt Cell 1. • Undertake 2m lift on Dam D Wall plus spillway to increase capacity. • Complete initial access ramp into Stage 1A pit. • Commission and install flow meter 5 (from wedge pit) • Spray a ground cover of grasses within the compound area of the Mid Pit Extraction Area. • Resurface the access road to the mine adit with stabilised road base.

Table 6.1 (Cont'd)
2014 Proposed Quarry Activities and Key Events

Page 2 of 2

May	• Undertake extraction activities in western section of Stage 1A following completion of access ramp. • Resurface sections of Mid Pit Extraction Area exit road from top truck wheel wash to Rhondda Road. • Complete Silt Cell 3 walls • Relocate the silt pipeline from the completed Silt Cell 1 to undertake the infilling of Silt Cell 3.
June	• Complete Silt Cell 4 walls • Commission and install flow meter 8 for the silt pipeline.
July	• Continue extraction activities within western section of Stage 1A • Complete Silt Cell 5 walls
August	• Prepare final rehabilitation activities over remaining areas in Silt Cell 1. • Install dust extraction unit to Surge Bin 1.
September	• Clear vegetation and strip second area in Stage 1A
October	• Relocate vegetation, subsoils and topsoil onto prepared area on Silt Cell 1 from Stage 1A. • Finalise rehabilitation of Silt Cell 1
November	• Commence capping of Silt Cell 2
December	• Continue extraction activities within western section of Stage 1A • Continue to undertake capping of Silt Cell 2.

6.2 EXTRACTION OPERATIONS

Extraction would continue in the existing Southern Extraction Area and Stage 1A (See **Figure 6.1**). Construction of the new haul road into Stage 1A will commence in February 2014.

6.3 PROCESSING

The forecast for 2014 is to process approximately 600 000t of conglomerate, 70% being washed.

6.4 OVERBURDEN AND SILT MANAGEMENT

Overburden will be moved in stages during the year as the Stage 1A pit develops. The first stage will be completed during the period February to April and the second stage during the period October to November. Silt Cells 3 and 4 will be completed during 2014 through the placement of overburden within the areas displayed on **Figure 6.1**. Waste water with a 6% silt content will be continued to be pumped from the processing plant to Silt Cells 1 to 4 in 2014.

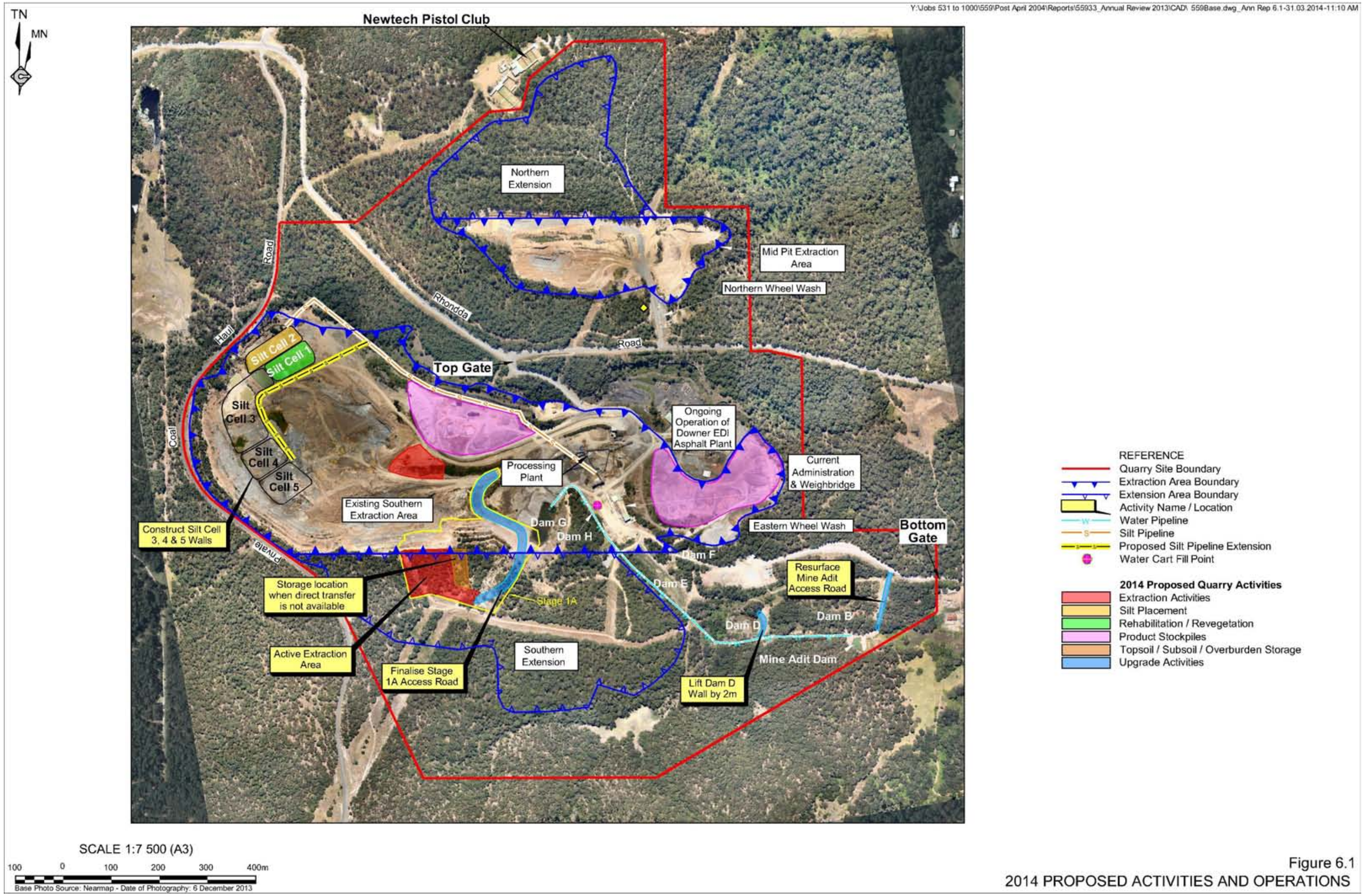


Figure 6.1
2014 PROPOSED ACTIVITIES AND OPERATIONS

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6.5 WASTE MANAGEMENT

General waste, co-mingled Council recycling, paper and cardboard, scrap steel, waste oil, oil filters, and etc. will continue to be collected by licenced contractors and volumes and dates recorded.

6.6 SITE INFRASTRUCTURE AND SERVICES

The access road to the Adit Dam will be resurfaced during 2014. A 100m section of the top access road will be resurfaced in 2014 beyond the top truck wheel.

6.7 WATER MANAGEMENT

The dam wall on Dam D will be lifted approximately 2m in 2014 to increase the dam's holding capacity to 26 000 m^3.

6.8 BUSHFIRE MANAGEMENT

The recently developed *Bushfire Management Plan* will be discussed and reviewed with both the local Teralba Fire Service and the Wakefield Rural Fire Service.

6.9 HAZARDOUS MATERIAL MANAGEMENT

The existing diesel tank bunding and management of aerosols and paints within the workshop area would continue as is current practice. Each of these activities would be monitored as part of Metromix's internal auditing.

6.10 PRODUCT TRANSPORTATION

Product despatch will continue in the same manner as it has during the past reporting period. Truck movements will be recorded in and out of the Quarry i.e. with respect to routes, weights and times as per the *Transport Management Plan*. All efforts would be placed on minimising any exceedance of the limitations nominated in Conditions 2(8) and 2(9).

6.11 VENM/ENM IMPORTATION MANAGEMENT

It is not envisaged any VENM/ENM would be imported into the Teralba Quarry during 2014.

6.12 REHABILITATION

The subsoil, topsoil and biomass from Stage 1A will be relocated in April 2014 together with the planting of additional seedlings on prepared rehabilitation area over portion of Silt Cell 1. This activity will be repeated in October 2014 over the reminder of Silt Cell 1. Bush regenerators, T.E.N.T.A.C.L.E Inc. will continue to be used on site for approximately 1 000 man hours per year to control weeds throughout the Site as well as plant additional seedlings.

6.13 NON-METROMIX OPERATIONS

Road surfacing company Downer EDI is expected to continue business as normal producing and supplying asphalt to the local markets.

No coal is expected to be hauled on the Coal Haul Road to Eraring during 2014.

The Newtech Pistol Club is expected to continue activities in a similar manner to previous years.

7. REFERENCES

ANZECC (2000) – *Australian and New Zealand Guidelines Fresh and Marine Water Quality*.

DEC (2007) *Approved Methods for Sampling of Air Pollutants in New South Wales*

DECCW (2007) *Methods for the Sampling and Analysis of Air Pollutants in NSW*

EPA (2000) *NSW Industrial Noise Policy*

NSW Minerals Council (2000) *Technical Paper – Particulate Matter and Mining Interim Report*

RWC (2011) *Environmental Assessment for the Teralba Quarry Extensions – November 2011*. R. W. Corkery and Co Pty Limited

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