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Aus-10 Rhyolite Pty Ltd

TINDA CREEK SAND QUARRY ANNUAL REVIEW

JANUARY 2016 – DECEMBER 2016

Aus-10 Rhyolite Pty Ltd

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JANUARY 2016 – DECEMBER 2016

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Aus-10 Rhyolite Pty Ltd

Project Director:	Peter Jamieson
Project Manager:	Peter Jamieson
Report No.	1731/R38/FINAL
Date:	March 2017

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This report was prepared using Umwelt's ISO 9001 certified Quality Management System.

Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	**Date**	**Name**	**Date**
FINAL	Peter Jamieson	31/03/2017	Peter Jamieson	31/03/2017

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Table 1 Annual Review Title Block

Name of operation	Tinda Creek Sand Quarry
Name of operator	Aus-10 Rhyolite Pty Ltd t/a Hy-Tec Concrete and Aggregates
Development consent/project approval No.	SSD_4978
Name of holder of development consent/ project approval	Aus-10 Rhyolite Pty Ltd
Mining lease No.	No Mining Lease applicable to site under *Mining Act* (1992).
Name of holder of mining lease	N/A
Water licence #	N/A
Name of holder of water licence	N/A
MOP/RMP start date	N/A
MOP/RMP end date	N/A
Annual Review start date	1 January 2016
Annual Review end date	31 December 2016

I, Raymond Bygraves, certify that this audit report is a true and accurate record of the compliance status of Tinda Creek Sand Quarry for the period 1 January 2016 to 31 December 2016 and that I am authorised to make this statement on behalf of Aus-10 Rhyolite T/A Hy-Tec Concrete and Aggregates.

Note.

a) *The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.*

b) *The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement – maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents – maximum penalty 2 years imprisonment or $22,000, or both.*

Name of authorised reporting officer RBG	Raymond Bygraves
Title of authorised reporting officer	Quarry Manager
Signature of authorised reporting officer	
Date	31.3.2017

1.0 Statement of Compliance

Aus-10 Rhyolite Pty Ltd t/a Hy-Tec Concrete and Aggregates (Hy-Tec) operates Tinda Creek Sand Quarry. The sand quarry is located approximately 67 km north of Windsor along Putty Road, NSW (refer to **Figure 2.1**). Quarrying activities have been undertaken at Tinda Creek Sand Quarry for approximately 30 years. The quarry has approval to produce up to 300,000 tonnes of product per year. The existing operations have been developed in accordance Development Consent (SSD_4978) and Environment Protection Licence (EPL) 12007.

During the 2016 annual review period, there were no non-compliances with Development Consent and licence conditions detailed in **Section 3.0** below. No independent environmental audits were undertaken during the report period up to December 2016. An independent audit is scheduled for January 2017 in accordance with Condition 9 of Schedule 5 of Development Consent SSD_4978. In the instance that non-compliance is recorded, all non-compliances are assessed using the key for the compliance status in **Table 1.1** below.

Table 1.1 Compliance Status Key (NSW Government, 2015)

Risk Level	Colour Code	Description
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-compliant	Non-compliance with: • potential for serious environmental consequences, but is unlikely to occur • potential for moderate environmental consequences, but is likely to occur.
Low	Non-compliant	Non-compliance with: • potential for moderate environmental consequences, but is unlikely to occur • potential for low environmental consequences, but is likely to occur.
Administrative non-compliance	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

2.0 Introduction

Aus-10 Rhyolite Pty Ltd t/a Hy-Tec Concrete and Aggregates (Hy-Tec) operates Tinda Creek Sand Quarry. The sand quarry is located approximately 67 km north of Windsor along Putty Road, NSW (refer to **Figure 2.1**). Quarrying activities have been undertaken at Tinda Creek Sand Quarry for approximately 30 years. The quarry has development approval to produce up to 300,000 tonnes of product per year under State Significant Development Consent SSD4978. The existing operations have been developed in accordance with Development Consent SSD_4978 and Environment Protection Licence (EPL) 12007.

On 10 April 2015, Hy-Tec was granted development consent to increase production levels from Tinda Creek Sand Quarry from approximately 125,000 tonnes per annum (tpa) up to 300,000 tpa and to increase the area subject to sand extraction to include additional identified resource domains (the Project). The duration of the Project is expected to be approximately 30 years.

The development consent allows for extraction operations outside of the area of the Tinda Creek Sand Quarry approved under DA 134/95 (refer to **Figure 2.2**).

Extraction operations outside of the area approved under DA 135/94 commenced in late September 2015. Up until this time all activities on the site were undertaken in accordance with the requirements of DA 135/94 which was surrendered on 10 December 2015 in accordance with SSD_4978 consent conditions.

This annual report has been prepared by Umwelt (Australia) Pty Limited (Umwelt) on behalf of Hy-Tec Concrete & Aggregates in compliance with Condition 4 of Schedule 5 of the Development Consent (SSD_4978) and the Environmental Management Plan (EMP) for Tinda Creek Sand Quarry for the year 2016.

2.1 Quarry Contacts

The Tinda Creek Quarry Manager is responsible to the regulatory authorities for all aspects of environmental compliance at the site including day-to-day site environmental management and reporting such as monitoring and supervision of environmental works. The details of the Quarry Manager are listed in **Table 2.1.**

Table 2.1 Tinda Creek Sand Quarry Contacts

Name	Position	Company	Contact Phone No.
Raymond Bygraves	Quarry Manager	Aus-10 Rhyolite Pty Ltd t/a Hy-Tec Concrete and Aggregates	02 4565 0257

Source: Google (2002)

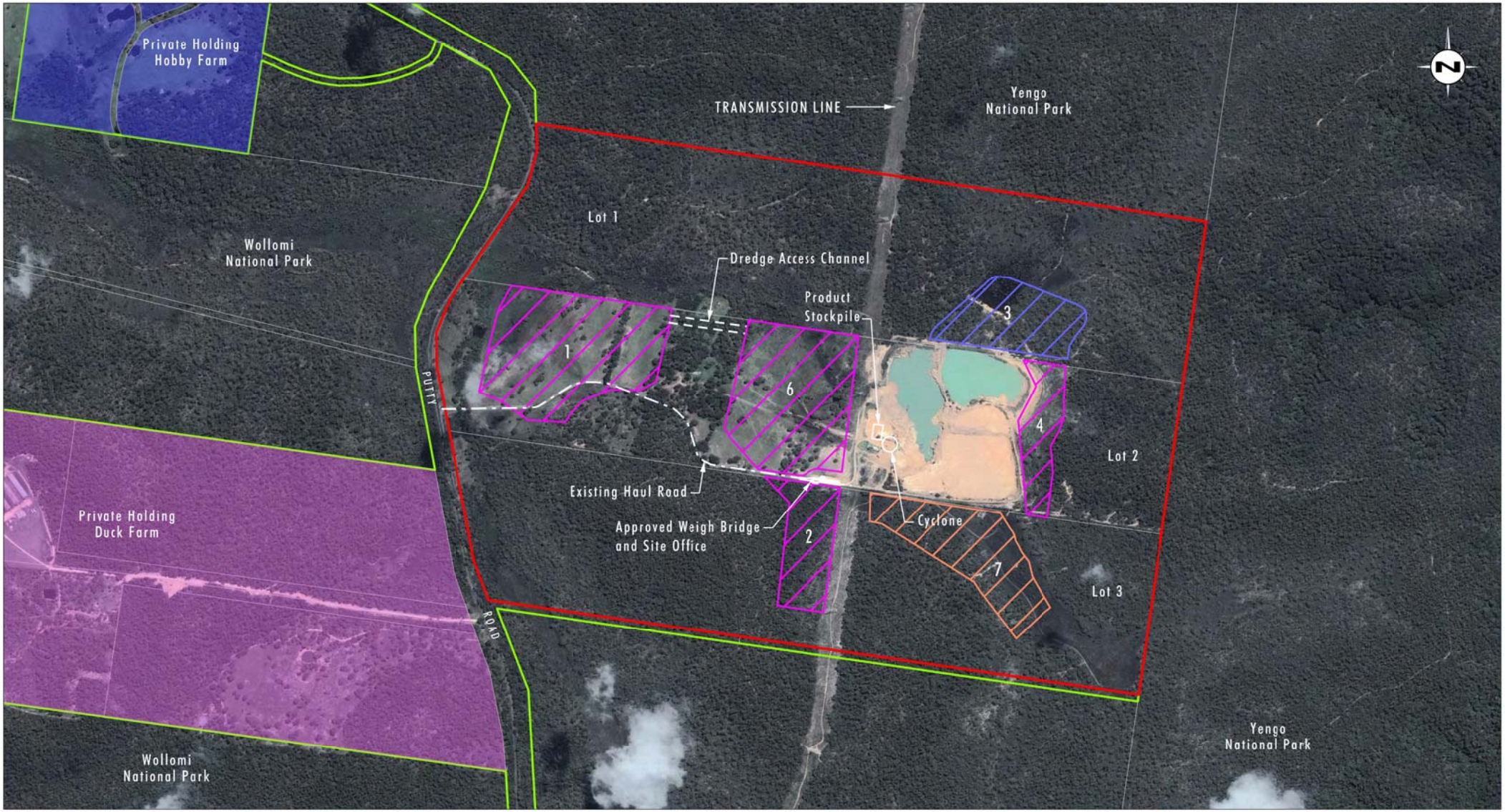
0 0.5 1.0 2km
1:35 000

Legend

Project Area

FIGURE 2.1

Locality Map



Source: Google Earth (2012), LPI NSW (2007)

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Legend

- Project Area
- Approved Extraction Area
- Domain 3 Extraction Area
- Domain 7 Extraction Area
- Private Holding Duck Farm
- Private Holding Hobby Farm
- National Park Boundary

FIGURE 2.2

Approved Expansion of Tinda Creek Sand Quarry Project

File Name (A4): R38_V1/1731_560.dgn

3.0 Approvals

The operations at Tinda Creek Sand Quarry were subject to a range of statutory approvals during the annual review period. These are summarised below and discussed in further detail in the following sections:

- Development Consent SSD_4978 (commenced September 2015)
- EPL 12007.

In accordance with the Development Consent (SSD_4978), Tinda Creek is required to implement a range of environmental management plans as part of the Tinda Creek Environmental Management Strategy (EMS). The quarry commenced operations under SSD_4978 in September 2015. Draft Management Plans and Strategy documents as required by SSD 4978 were prepared for the quarry but as of December 2016 had not been finally approved by relevant authorities. Operations were undertaken generally in accordance with these draft plans and strategy documents which included

- Environmental Management Strategy (EMS)
- Noise Management Plan (NMP)
- Air Quality Management Plan (AQMP)
- Water Management Plan (SWMP)
- Landscape Management Plan (LMP)
- Transport Management Plan (TMP)
- Cultural Heritage Management Plan (CHMP).

3.1 Status of Development Consents

3.1.1 Development Consent SSD_4978

On 10 April 2015 Hy-Tec was granted development consent SSD_4978. On 10 December 2015, Tinda Creek Sand Quarry formerly surrendered DA 134/95. Since that time Hy-Tec has operated the quarry in accordance with SSD_4978. A copy of SSD 4978 is provided at **Appendix 1**.

Condition 4 of Schedule 5 of SSD_4978 requires an annual review to be prepared as set out in **Table 3.1** below.

Table 3.1 Project Approval Conditions for the Annual Review

Project Approval Condition	Section of Document
4. By the end of December each year, or other timing agreed by the Director-General, the Proponent shall review the environmental performance of the development to the satisfaction of the Secretary. This review must:	Whole Document
a) describe the development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the next year	**Section 4.0** and **Section 8.0**
b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against the: • relevant statutory requirements, limits or performance measures/criteria • monitoring results of previous years • relevant predictions in the EIS	**Section 6.0**
c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance	**Section 11.0**
d) identify any trends in the monitoring data over the life of the development	**Section 6.0**
e) identify any discrepancies between the predicted and the actual impacts of the development, and analyse the potential cause of any significant discrepancies	**Section 6.0** and **Section 12.0**
f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the Development.	**Section 6.0**

This report provides a review of operations in accordance with Condition 4 of Schedule 5 of SSD 4978 for the period up to December 2016.

3.1.2 Consent Surrender

As part of Development Consent conditions Hy-Tec was required to surrender development consent DA 134/95 which was surrendered on 10 December 2015. Since that time Hy-Tec has operated the quarry in accordance with SSD_4978.

3.2 Status of licences and Permits

3.2.1 EPL 12009

Hy-Tec holds EPL 12007 and operates Tinda Creek Sand Quarry in accordance with the requirements of EPL 12007 as at May 2016. A copy of EPL 12007 is provided at **Appendix 2**.

Condition M2 requires Hy-Tec to keep records of all complaints.

Condition M3 requires Hy-Tec to maintain a telephone complaints line.

EPL 12007 was varied on 18 December 2015 to include monthly inspections of the surface water management system, annual noise monitoring and associated reporting. The EPA further reviewed the licence in late 2016, with a revised version being issued on 3 March 2017. Results and analysis of these monitoring requirements are detailed in **Section 6.0**.

3.2.2 Water Licences

Hy-Tec holds groundwater bore licences for the site with a total approved extraction capacity of 55 million litres (ML) per year, comprising Licence 10WA112523 (WAL24381) (40 ML) and Licence 10WA112531 (WAL 24367) (15 ML).

4.0 Operations Summary

A summary of the operations undertaken at Tinda Creek Sand Quarry during the reporting period are included in the following sections.

4.1 Quarry Operations

Sand extraction was undertaken within Domain 6 during the report period which was approved under SSD_4978. During 2016, a total of 152714.74 tonnes of sand product was transported from the quarry which is below the 300,000 tpa approved under development consent SSD_4978. An overview of the operations within the extraction area is detailed within **Table 4.1** with monthly production detailed in **Table 4.2**.

Sand is extracted from the quarry pit using a cutter-suction dredge that floats on a dredge pond within the quarry pit. Water, sand, silt and clay are pumped from the dredge pond to the processing area as a slurry. Sand product is then loaded to trucks for transport across NSW.

Table 4.1 Production Summary 2016

Material	Approved Limit (Source – SSD_4978)	2016 Reporting Period (Actual Tonnes)	2017 Reporting Period (Forecast Tonnes)
Total Saleable Product from Tinda Creek Sand Quarry	300,000 tpa	152714.74	158,000 tonnes

Table 4.2 Monthly Sand Production Summary 2016

Date	Monthly Product Tonnage
Jan-16	6,276.02
Feb-16	11,257.72
Mar-16	11,340.58
Apr-16	11,968.60
May-16	14,458.16
Jun-16	11,960.88
Jul-16	12,066.20
Aug-16	13,316.90
Sep-16	14,935.34

Date	Monthly Product Tonnage
Oct-16	14,047.24
Nov-16	16,867.76
Dec-16	14,249.34
Total 2016	**152,744.74**

4.1.1 Hours of operations

Sand extraction and haulage activities at Tinda Creek Sand Quarry may only occur within the hours specified by Schedule 3, Condition 3 of the Development Consent (SSD_4978), refer to **Table 4.3**. Tinda Creek Sand Quarry continued to operate within the operating hours specified by Schedule 3, Condition 3 of the Development Consent (SSD_4978), throughout the report period.

Table 4.3 Tinda Creek Sand Quarry Approved Operating Hours (Development Consent SSD_4978)

Activity	Operating Hours
Extraction operations and deliveries	7 am to 6 pm, Monday to Friday
	7 am to 3 pm, Saturday
	No activities on Sundays of Public Holidays
Dispatch	5 am to 10 pm, Monday to Friday
	6 am to 3 pm, Saturday
Construction Activities	7 am to 6 pm, Monday to Friday
	8 am to 1 pm, Saturday
	No construction to be undertaken on Sundays of Public Holidays
Maintenance Activities	24 hours a day, 7 days per week, providing maintenance activities are inaudible at any privately-owned residence

4.1.2 Vehicle Movements

Haulage activities at Tinda Creek Sand Quarry are specified under Condition 7(b) of Schedule 2 of the Development Consent (SSD_4978), which specifies:

> 6*(b)* *the Applicant shall not dispatch more than 34 trucks per day or receive more than 34 trucks per day, averaged over a calendar month.*

Total and average vehicle movements during the report period at Tinda Creek Sand Quarry are summarised in **Table 4.4**. There were no non-compliances with Condition 7(b) of Schedule 2 during the report period.

All heavy vehicles seen during the site inspections arriving and leaving the site had their loads suitably covered in accordance with quarry requirements. Daily vehicle movements were not exceeded during the report period.

Table 4.4 Monthly Sand Production and Transport at Tinda Creek Sand Quarry

Date	Monthly Laden Truck Movements	Average Daily Laden Movements
Jan-15	195	6.5
Feb-15	348	11.6
Mar-15	355	11.8
Apr-15	372	12.4
May-15	449	15.0
Jun-15	370	12.3
Jul-15	359	12.0
Aug-15	392	13.1
Sep-15	426	14.2
Oct-15	404	13.5
Nov-15	477	15.9
Dec-15	398	13.3
Total 2015	4545	N/A

4.2 Construction Activities

No construction activities or establishment of any advertising structures were undertaken during the report period up to December 2016. Should any new facilities be constructed, certification of these facilities will be undertaken as required and any future development applications will be submitted to the appropriate authority for assessment as required.

4.3 2017 Report Period Extraction Operations

The 2017 report period will see continuation of sand extraction in Domain 6 with additional extraction activities proposed for Domains 1, 2, 3 and 7 in accordance with statutory approvals once the sand resource in Domain 6 has been extracted. It is anticipated that, during 2017, upgrades will be undertaken to current plant and equipment utilised on-site including the addition of a new suction cutter dredge to allow for increased production in accordance with the increased production limits approved under SSD_4978.

Tinda Creek Sand Quarry will continue with current rehabilitation procedures during the 2017 report period. In addition, Tinda Creek Sand Quarry will continue discussions with the Office of Environment and

Heritage (OEH) regarding the biodiversity offset strategy for the proposed biodiversity offset area surrounding the operation as detailed in the LMP.

5.0 Actions from 2015 Annual Review

Prior to the completion of this 2016 review, the Department of Environment and Planning (DP&E) had not provided any feedback in regards to the Tinda Creek Sand Quarry 2015 Annual Review which was submitted to DP&E in accordance with Condition 4 of Schedule 5 of the Development Consent.

6.0 Environmental Performance

In accordance with the Development Consent (SD_4978) Tinda Creek Sand Quarry has prepared a number of management plans in consultation with relevant stakeholders. The management plans have been prepared for a number of environmental management aspects. The management plans prepared for Tinda Creek Sand Quarry are detailed below:

- Noise Management Plan
- Air Quality Management Plan
- Water Management Plan
- Landscape Management Plan
- Heritage Management Plan
- Transport Management Plan.

A summary of the environmental monitoring and performance of Tinda Creek Sand Quarry during the 2016 reporting period is included in **Table 6.1** below with further contextual information included within the following **Sections 6.1** to **6.7**.

Table 6.1 Summary of Environmental Performance during 2016

Aspect	Approval Criteria/EIS Prediction	Performance during the reporting period	Trend/key management implications	Implemented/proposed management actions
Noise (refer to Section 6.1)	Condition 4 – 6 of Schedule 3 of Development Consent SSD_4978 and L3 of EPL 12007 Tinda Creek Sand Quarry will ensure that the noise generated by the project does not exceed the prescribed criteria.	A noise monitoring program has been developed as part of the Noise Management Plan required by Development Consent (SSD_4978). No complaints in relation to Noise were received during the report period.	No complaints in relation to Noise were received during the report period.	The annual attended noise monitoring program will be implemented in accordance with the Development Consent (SSD_4978) and EPL 12007.
Air Quality (refer to Section 6.2)	Condition 7 – 9 of Schedule 3 of Development Consent SSD_4978 and O3 of EPL 12007.	An air quality monitoring program has been developed as part of the Air Quality Management Plan required by Development Consent (SSD_4978). No complaints in relation to Air Quality were received during the report period	No complaints have been received in relation to air quality during the report period.	Monitoring will continue at Tinda Creek Sand Quarry in accordance with the Development Consent (SSD_4978).
Meteorological (refer to Section 6.3)	Condition 10 of Schedule 3 of the Development Consent (SSD_4978).	Compliant.	Meteorological data obtained as required during the report period.	Tinda Creek Sand Quarry will continue to utilise the meteorological station on site.
Soil and Water Management (refer to Section 7.0)	Condition 11 – 10 of the Development Consent (SSD_4978) and M2 and R4.2 of EPL 12007.	Compliant.	All water is captured and managed via the existing closed water management system.	Continued implementation of existing controls.

Aspect	Approval Criteria/EIS Prediction	Performance during the reporting period	Trend/key management implications	Implemented/proposed management actions
Ecology **(refer to Section 6.4)**	Condition 15 to 21 of Schedule 3 of the Development Consent (SSD_4978) Tinda Creek must implement the biodiversity offset strategy described in the EIS. Ecology monitoring undertaken in accordance with Table 6.16 of Section 6.4.	Each of the eight monitoring sites was found to be in good condition	Ongoing monitoring will be undertaken across the site in accordance with SSD_4978.	Actions will be implemented where applicable to align with the Landscape Management Plan.
Heritage **(refer to Section 6.5)**	Condition 14 of Schedule 3 of the Development Consent (SSD_4978) Tinda Creek Sand Quarry shall manage both Aboriginal and Non-Aboriginal Heritage items in accordance with approved management plan and in consultation with OEH and relevant Aboriginal community.	No salvage works were undertaken during the report period.	Hy-Tec will notify all registered Aboriginal parties of any proposed salvage works to be undertaken.	All registered Aboriginal parties will be consulted as required prior to any proposed salvage works.

Aspect	Approval Criteria/EIS Prediction	Performance during the reporting period	Trend/key management implications	Implemented/proposed management actions
Traffic and Transport **(refer to Section 10)**	Condition 23 of Schedule 3 of the Development Consent (SSD_4978). Tinda Creek Sand Quarry shall ensure that all vehicles have appropriate signage, have their loads covered, are clean of sand and other material when exiting the site and ensure that no vehicles queue at the quarry entrance before 6 am. Entrance gate is opened at 5 am in accordance with approved transport operational hours.	Compliant. No exceedances of vehicle movements were recorded during the report period up to December 2016.	All vehicle movements are undertaken in line with the limits on consent.	Ongoing monitoring and recording of average daily truck movements will continue to be implemented at Tinda Creek Sand Quarry.
Rehabilitation **(refer to Section 8)**	Condition 17 of Schedule 3 of the Development Consent (SSD_4978). The final landform must be generally consistent with the proposed rehabilitation strategy in the EIS and comply with the prescribed rehabilitation objectives.	Compliant. Rehabilitation works have commenced adjacent to the silt pond in accordance with the rehabilitation strategy.	All rehabilitation works were undertaken progressively as areas became available following quarrying operations	Rehabilitation works are proposed to continue progressively as areas become available during the 2017 report period.

6.1 Operational Noise

Unattended noise monitoring was conducted between 14 July 2016 and 18 July 2016. Attended noise measurements were conducted on 14 July 2016 and 18 July 2016 during placement and retrieval of the noise logger in accordance with Condition 6 of Schedule 3 of the Development Consent (SSD_4978).

6.1.1 Noise Criteria

Noise criteria are set for day shoulder, day and evening periods to protect the amenity of neighbouring residents. Noise criteria are expressed as a $L_{Aeq\ (15\ min)}$ limit and are specified in the development consent for the Tinda Creek Sand Quarry. Project specific noise criteria for the Tinda Creek Sand Quarry are outlined in Table 2 of the development consent and are reproduced as **Tables 6.2** and **6.3**. Hy-Tec ensures that the noise generated by the development does not exceed the criteria at any residence on privately-owned land.

Table 6.2 Industrial Noise Impact Assessment Criteria, dB(A)

Location	Day/Evening[1] $L_{Aeq,\ 15\ min}$	Evening[1] $L_{Aeq,\ 15\ min}$	Night[1] $L_{Aeq,\ 15\ min}$	Night[1] $L_{A1,\ (max)}$
All receivers	35	35	35	45

Note 1: Day time is 7.00 am to 6.00 pm Monday to Saturday and 8.00 am to 6.00 pm Sundays and Public Holidays, evening is 6.00 pm to 10.00 pm (NSW Industrial Noise Policy (INP) EPA, 2000).

Table 6.3 Traffic Noise Impact Assessment Criteria, dB(A)

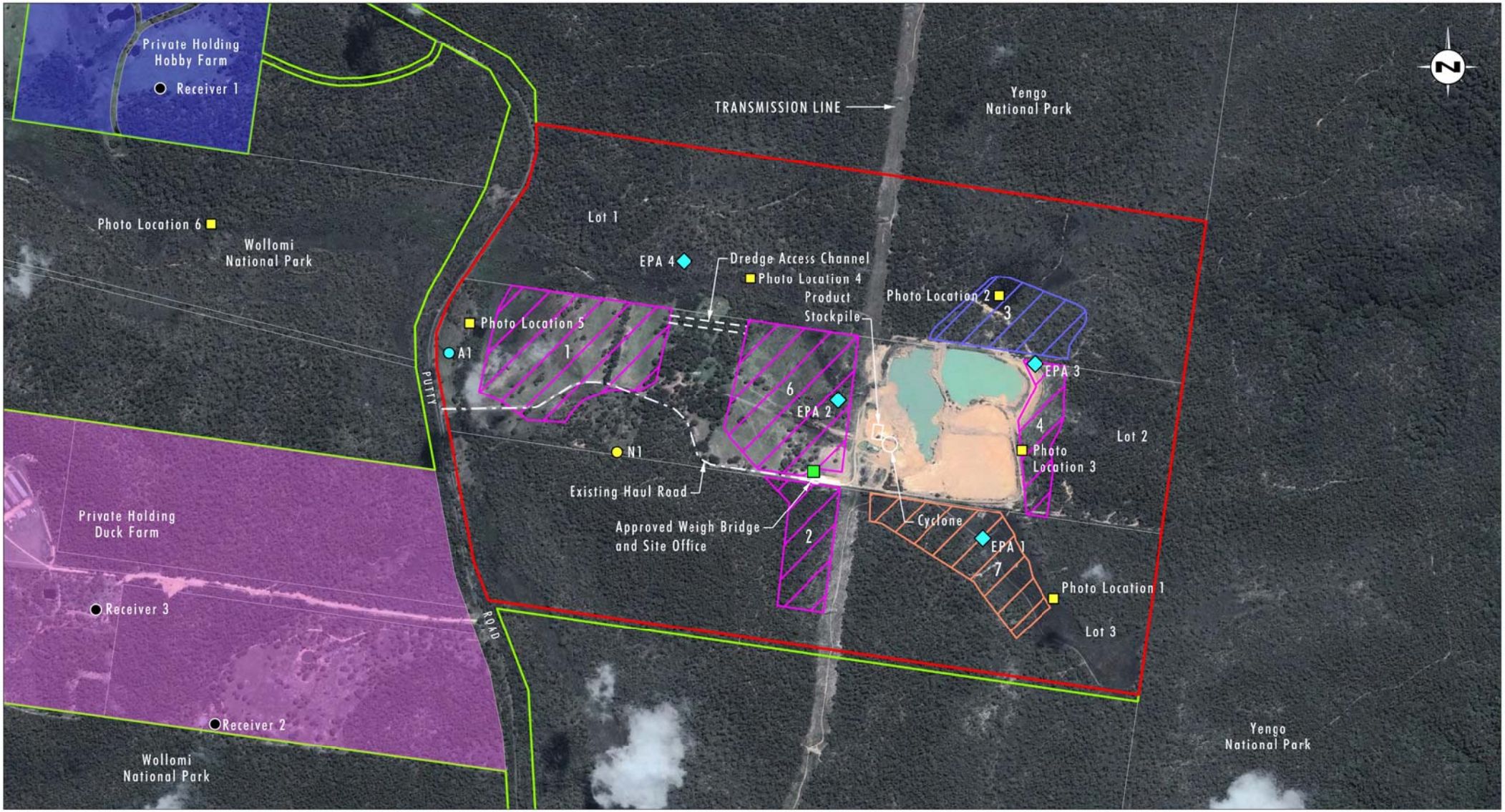
Road	Day[1] $L_{Aeq,\ 1\ hour}$	Night[1] $L_{Aeq,\ 1\ hour}$
Freeway/arterial/sub-arterial roads	60	55

6.1.2 Noise Monitoring Locations

Attended noise monitoring will be undertaken at the location specified in **Table 6.4**. The location of the attended noise monitoring site is shown on **Figure 6.1**.

Table 6.4 Noise Monitoring Location

Monitoring ID	Location	Description
Site 1	Lot 24, DP 753826 6255 Putty Road, Mellong NSW	The residential dwelling is located approximately 260 metres from the monitoring location. Measurements were undertaken at the gate of the residence



Source: Google Earth (2012), LPI NSW (2007)

0 250 500 750m
1:15 000

Legend

- Project Area
- Approved Extraction Area
- Domain 3 Extraction Area
- Domain 7 Extraction Area
- Private Holding Duck Farm
- Private Holding Hobby Farm
- National Park Boundary
- Noise Monitoring Location
- Receiver Location
- Dust Deposition Monitoring Location
- Meteorological Station
- Reference Photo Location
- EPA Photo Monitoring Site

FIGURE 6.1

Tinda Creek Sand Quarry Monitoring Locations

File Name (A4): R38_V1/1731_561.dgn

6.1.3 Monitoring Data

During the attended noise monitoring program, the ambient noise levels surrounding the Tinda Creek Sand Quarry site were recorded with particular attention paid to the contribution of the Tinda Creek Sand Quarry site operations.

The results of the attended noise monitoring program undertaken on 14 July 2016 and 18 July 2016 are summarised in **Table 6.5**. Under the meteorological conditions at the time of monitoring, the results indicate that Tinda Creek Sand Quarry Operations were compliant with both the LA1 - 1 minute industrial noise assessment criteria and the LAeq - 15minute industrial noise assessment criteria for day, evening and night time periods.

Table 6.5 Day Time Industrial Noise Levels – Quarrying Operations versus Noise Criteria dB(A)

Location	LAeq, 15minute		LA1, 1 minute	
	Noise criteria	Noise criteria Tinda Creek Sand Quarry noise contribution	Noise criteria	Noise criteria Tinda Creek Sand Quarry noise contribution
R1	35	<25	35	N/A (Inaudible)

6.2 Air Quality

There was no air quality monitoring undertaken during the report period up to December 2016. Air quality monitoring is proposed for the 2017 report period in in the locations shown on **Figure 6.1** in accordance with Condition 9 of Schedule 3 of the Development Consent (SSD_4978).

6.2.1 Air Quality Criteria

Goals for dust concentration are referred to as long term (annual average) and short term (24 hour maximum) goals. The goals relate to the total ambient dust concentrations and dust deposition levels, i.e. quarry contribution in addition to the background contribution. Condition 7 of Schedule 3 of the Development Consent (SSD_4978) sets out air quality impact criteria for Tinda Creek Sand Quarry. These criteria are used to assess the potential impacts of operations at nearby residential receivers. Criteria which apply to operations are specified in **Tables 6.6**, **6.7** and **6.8** below.

Table 6.6 Long-term criteria for particulate matter

Pollutant	Averaging period	[d]Criterion
Total suspended particulates (TSP)	Annual	[a]90 µg/m^3
Particulate matter <10 µm (PM_{10})	Annual	[a]30 µg/m^3

Table 6.7 Short-term criteria for particulate matter

Pollutant	Averaging period	[d]Criterion
Particulate matter <10 µm (PM_{10})	24 hour	[a]50 µg/m^3

Table 6.8 Long-term criteria for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total dust level
[c]Deposited dust	Annual	[b]2 g/m^2/month	[b]4 g/m^2/month

Notes to **Tables 6.6, 6.7** and **6.8**:

a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources)

b Incremental impact (i.e. incremental increases in concentrations due to the development on its own)

c Deposited dust is to be assessed as insoluble solids as defined by AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method

d Excluded extraordinary events such as bush fires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Director-General in consultation with the EPA.

6.2.2 Air Quality Management Measures

Hy-Tec is committed to implementing all reasonable and feasible air quality mitigation measures, to reduce the potential impact of the operation on sensitive receivers. In order to mitigate any potential air quality impacts from the operation, a number of air quality management controls will be implemented throughout the life of the operation.

The dust control measures available for quarry operations are generally a combination of engineering controls, operational controls, and planning controls with existing dust control measures in place continuing to be implemented as part of the quarry expansion. As the majority of the quarry extraction processes are 'wet', the operation has inherent dust control. Additional dust control measures include:

- checking visually to ensure that appropriate stockpile moisture content is maintained
- sealing of the haul road from weighbridge to Putty Road
- use of a water cart on other trafficked areas as required
- minimising the areas and duration of exposed soils
- prompt commencement of stabilisation/rehabilitation in accordance with the existing Environmental Management Plan (Umwelt, 2015).

6.3 Meteorological Monitoring

A meteorological station is to be installed at the Tinda Creek Sand Quarry as detailed on **Figure 6.1**. The meteorological monitoring data obtained from the station will be in accordance with the requirements of Condition 10 of Schedule 3 of the development consent.

6.3.1 Rainfall

Rainfall has been recorded daily at Tinda Creek Sand Quarry since 2007. A copy of the aggregated monthly rainfall records for the period 2007 to 2016 is provided in **Table 6.9**.

Table 6.9 Tinda Creek Sand Quarry Monthly Rainfall

Month	Monthly Rainfall (mm)									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
January	50.5	95.5	29	48.5	66.5	133	138	8	163	272
February	152	146.5	137.5	119.5	47	179	202	64	46.5	0
March	80.5	43	30	85.5	97	145	103	135.2	96.5	0
April	61.5	81.5	117	26	60	64	63.5	60.5	285.5	0
May	29	10.5	56.5	59.5	96	N/A	31	0	56.5	0
June	210	94	39.5	43	85.5	29	84.5	29	20.5	126
July	13	24.5	17.5	38.5	25.5	27	18.5	13	34	55
August	107	40.5	4	13.5	90	4	11	74.5	26.5	36.5
September	18.5	58.5	21	18	69	27.5	31.5	29	26.5	45.5
October	22	93.5	85.5	85	65.5	17.5	26.5	48	34	40.4
November	157.5	75	31.5	127.5	159	70.5	106.5	16.5	141	72.2
December	76	71	103.5	120.5	72.5	18.5	27	150	116	
Totals (mm)	**977.5**	**834**	**672.5**	**785**	**933.5**	**715**	**843**	**627.7**	**1046.5**	**647.6**

Note: Monthly rainfall for 2016 taken from the Putty (the Gibba) weather station approximately 1.3 kilometres north-west of the site.

As can be seen from **Table 6.9**, 2016 was a low rainfall year with 501 mm of rain recorded compared to the annual average of 772 mm for the period 1964 to 2014 recorded at Putty. Highest annual rainfall recorded over this period at Putty was 1178 mm. For 2016, the most significant falls occurred in June when 129 mm was recorded for the month.

No breaches of the closed water management system were recorded during 2016.

6.4 Ecology

Short, medium and long term ecological monitoring is undertaken in accordance with the requirements of the Draft Landscape Management Plan for the site which has been prepared in accordance with Condition 19(h) of Schedule 3 of the Development Consent (SSD_4978).

Ecological monitoring required under the Development Consent (SSD_4978) is summarised in **Table 6.10**. The details of ecological monitoring undertaken during the report period are discussed in **Section 6.4.1**.

Table 6.10 Ecological Monitoring Regime

Monitoring Type	Location	Parameters Monitored	Frequency of Monitoring	Monitoring Method	Responsibility
Rehabilitation	Rehabilitation Areas	General status of creek lines and rehab areas	Monthly	Observation	Quarry Manager
Long term Rehabilitation	Rehabilitation Areas and Analogue sites	Soil conditions and erosion, drainage and sediment control structures, runoff water quality, germination rates, plant health, natural regeneration, weed infestation	Six monthly	Field survey	Quarry Manager
Habitat Assessment	Biodiversity Offset Areas	Erosion, vegetation health, floristic structure, presence of weeds, signs of disturbance, fire impact, ground cover, fauna usage, water resources	Annually unless otherwise agreed	Field Survey	Quarry Manager
Koala	Biodiversity Offset Areas	Targeted Spot Assessment Technique, Call playback surveys, Spotlight surveys.	Annually unless otherwise agreed	Field Survey	Quarry Manager
Grevillea parviflora	Biodiversity Offset Areas	surveys during known flowering period (July to December), stem counts in permanent plots, photo monitoring, habitat quality,	Annually for first 5 years	Field Survey	Quarry Manager
Nest Box	Biodiversity Offset Areas	Condition assessment	Annually for first 5 years	Field Inspection and LED camera	Quarry Manager

Monitoring Type	Location	Parameters Monitored	Frequency of Monitoring	Monitoring Method	Responsibility
Threatened Fauna Species Monitoring		Koala, eastern pygmy possum, squirrel glider, forest owls, threatened micro-bat species, introduced species	After 5 years of operation	Diurnal bird area searches, diurnal reptile/ amphibian area searches, nocturnal spotlight surveys, nocturnal call playback surveys remote camera surveys, nocturnal Anabat surveys	Quarry Manager
Aquatic monitoring	Drainage Lines upstream and downstream of site	Macroinvertebrates, stream width and description of edge habitat, description of stream features including substrate, vegetation, and organic material, site observations including catchment description and local land use practises/impacts, riparian characteristics	Annually	Field survey and photo monitoring	Quarry Manager

6.4.1 Drainage Lines

Drainage lines to the south-east and north of the existing quarry have been diverted around the quarry to ensure that flows from undisturbed areas drain to downstream sections of Tinda Creek and Blue Mountains World Heritage Area with negligible impact on surface flow volumes in the creek system. All drainage channels are constructed to avoid turbulence and scouring. Flow dissipation and channel stabilising structures such as rock weirs and rock armouring have been installed at several locations around the diversion drain system to minimise turbulence and scouring.

During November 2015 an assessment of Tinda Creek Sand Quarry drainage line was undertaken and photographs recorded at each of the nominated photo-monitoring location. The condition of the drainage system continued to be monitored during the 2016 report period.

6.5 Aboriginal Heritage

6.5.1 Aboriginal Site Impacts

One Aboriginal archaeological site, AHIMS #45-2-2545 Tinda Creek Artefact Scatter 1, has been recorded within Domain 3 of the Tinda Creek project area (Umwelt, 2014).

No actions or impacts in relation to this known site occurred during the report period.

6.6 Non-Aboriginal Heritage

No actions or impacts in relation to non-Aboriginal heritage occurred during the report period.

6.7 Erosion and Sediment Control

The location of erosion and sediment controls around the quarry's closed water management system are shown on **Figure 6.2**.

As shown on **Figure 6.2,** the diversion drains around the western edge of Domain 6 extraction area had been recently relocated to allow for the continued expansion of Domain 6. This involved excavation of sand to form the drains which was temporarily stockpiled to the south-west of the southern-most Domain 6 diversion drain. This sand stockpile has been subsequently removed. Any final diversion drains have also been finally shaped and have had spray grass applied to the batters to facilitate establishment of vegetation on the excavated batters. The aerial photo used in **Figure 6.2** was captured on 29 January 2017.

Detailed sediment and erosion control plans will be developed and implemented prior to commencement of operations within each of the new extraction Domains and then reviewed and updated as required over the life of the quarry for all disturbance and rehabilitation areas.

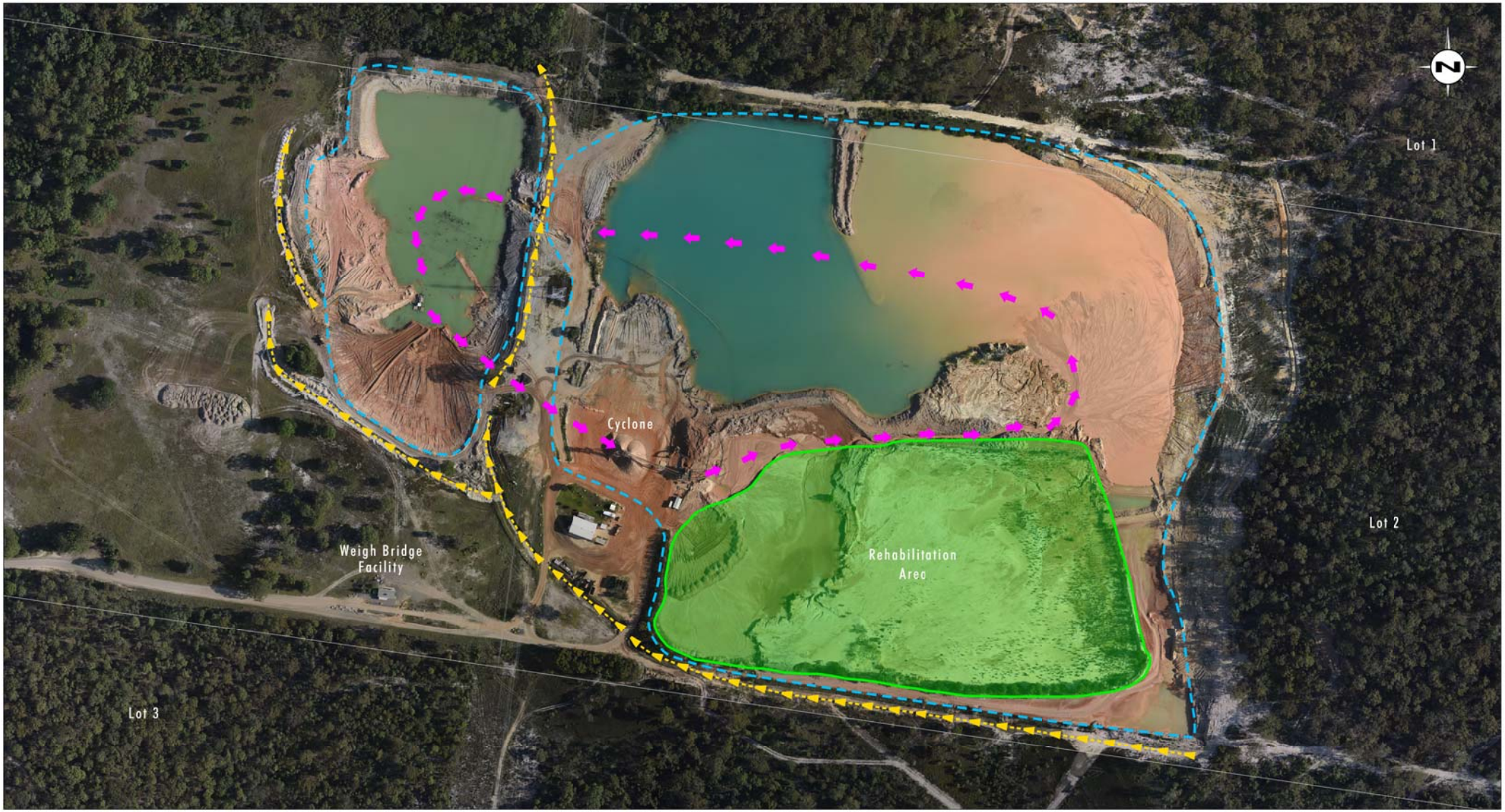
During regular site inspections undertaken during the report period, erosion and sedimentation control devices were observed around and within quarry site.

All stockpiles are located within the perimeter of the quarry water management system and are clear of any active watercourses. Erosion controls to reduce sediment runoff have been installed as required.

All erosion controls are constructed as per Blue Book (Managing Urban Stormwater: Soils and Construction, Landcom, 2004) with inspections and maintenance undertaken on these areas as required.

6.8 Waste Management

The current waste management practice on site utilises licensed waste contractors to incorporate recycling, in addition to the disposal of wastes in accordance with the waste provisions of the *Protection of the Environment Operations* (Waste) *Regulation 2014 (NSW EPA, 2014)*. There were no changes to the waste management system at Tinda Creek Sand Quarry during the report period.



Source: Anditi (Jan 2017)

0 50 100 200m
1:4 000

Legend

- Clean Water Diversion Drain
- Rehabilitation Area
- Closed Water Management System
- Direction of water movement

FIGURE 6.2

Tinda Creek Sand Quarry
Existing Water Management System

File Name (A4): R38/1731_563.dgn

7.0 Water Management

7.1 Groundwater

7.1.1 Groundwater Monitoring

Groundwater quality has been monitored at 11 bores on a six monthly basis at all groundwater monitoring bore locations shown on **Figure 7.1**.

During 2016, all groundwater monitoring undertaken at the site was conducted in accordance with the requirements of the site Groundwater Monitoring Program. A total of two monitoring events were undertaken at an approximate six monthly interval during 2016. The current water quality controls have not failed and as such no incident specific contingency plan has been required or submitted to Council.

Water quality parameters that are currently being monitored and will continue to be monitored include:

- pH
- Conductivity
- Nitrate
- Ammonia
- TPH (now Total Recoverable Hydrocarbon – Silica).

Groundwater quality results for the 2016 period are summarised in **Table 7.1**.

Table 7.1 Groundwater quality results – 2016

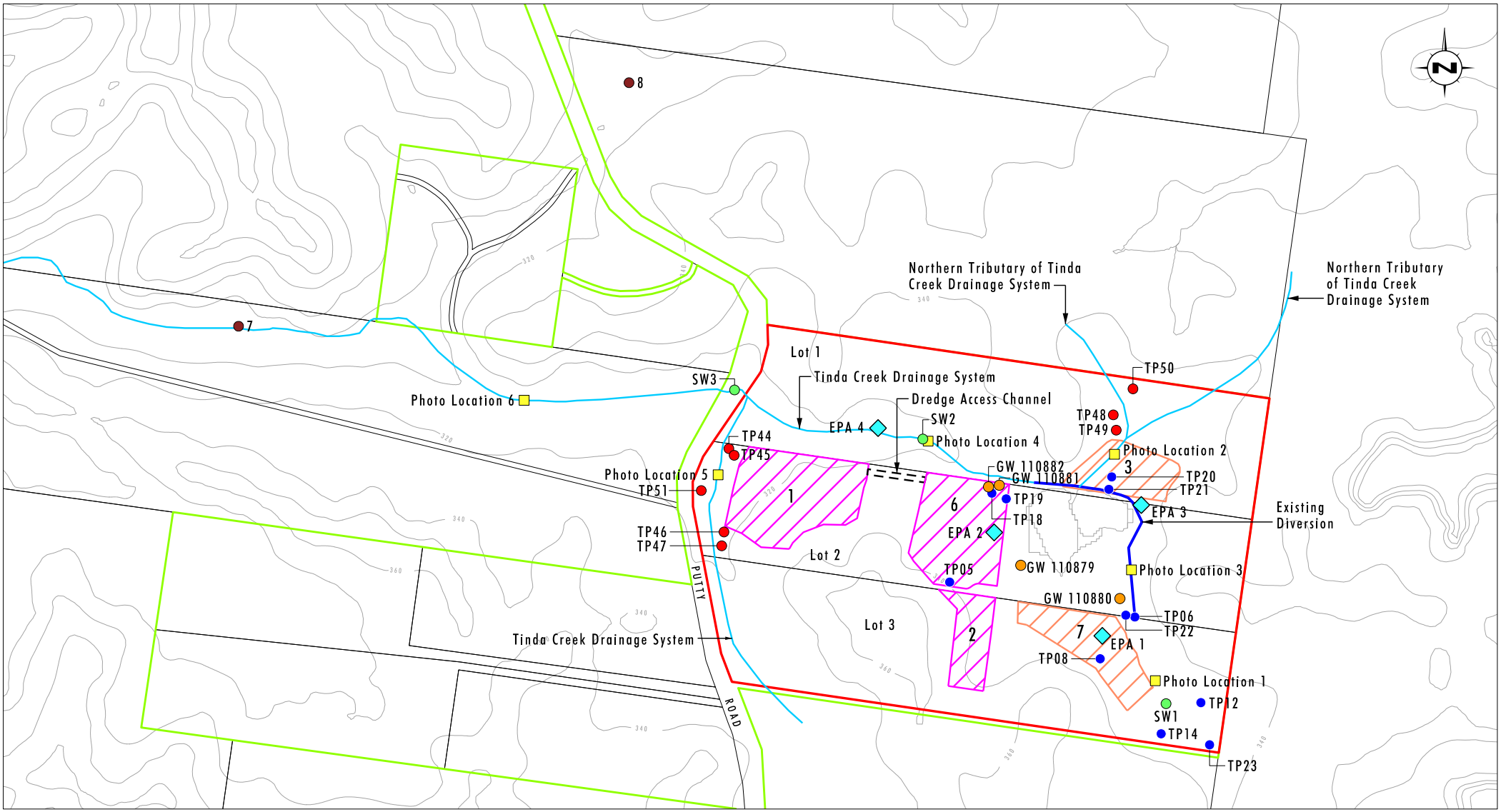
Ground-water Bore	pH		Conductivity (µS/cm)		Nitrate (NO_3) (mg/L)		Ammonia ($NH_{4)}$ (mg/L)	
	26/05/16	29/11/16	26/05/16	29/11/16	26/05/16	29/11/16	26/05/16	29/11/16
TP05	5.1	5.1	100	90	<0.1	<0.1	<0.1	<0.1
TP06	5.5	5.3	80	60	<0.1	<0.1	<0.1	<0.1
TP08	4.9	5.0	95	80	<0.1	<0.1	<0.1	<0.1
TP12	5.4	5.3	70	60	1.5	<0.1	<0.1	0.2
TP14	5.6	5.7	60	75	<0.1	<0.1	<0.1	<0.1
TP20	5.4	5.4	75	70	0.80	1.1	<0.1	<0.1
TP21	5.6	5.3	60	65	0.26	0.44	<0.1	0.3
TP23	5.6	5.3	60	55	1.1	0.89	<0.1	<0.1

Total Reactive Hydrocarbon was below detection samples for all TRH fractions (see **Appendix 3**)

A summary of trigger values developed in analysis of previous data is presented in **Table 7.2**.

Historically, groundwater pH tends to be slightly acid due to the generation of organic acid from the breakdown of plant material Conductivity was low except for the monitoring period Nitrate and Ammonia levels were also low for the 2016 period.

Available monitoring data indicates that quarry activities are not adversely impacting on groundwater quality which is generally very good. There were no exceedances of the trigger values during the 2016 report period.



Source: LPI NSW (2007)
Note: Contour Interval 20m

0 0.25 0.5 1.0km
1:20 000

Legend

- Project Area
- Proposed Extraction Area Domain
- Domain 3 and 7 Extraction Area
- National Park Boundary
- Licensed Production Bores
- Groundwater Monitoring Bores
- Proposed Groundwater Monitoring Bore
- Surface Water Quality Monitoring Site
- Ecological Monitoring Site
- Reference Photo Location
- EPA Photo Monitoring Location

FIGURE 7.1

Surface, Groundwater and Drainage Line Monitoring Sites

File Name (A4): R38_V1/1731_562.dgn

Table 7.2 Groundwater Quality Trigger Criteria for Tinda Creek Quarry Operations

Groundwater Analyte	Minimum Monitored Value	Maximum Monitored Value	Lower Trigger Value	Upper Trigger Value
pH	4.5	6.7	<4.5	>7.0
Conductivity (uS/cm)	45	1320	N/A	900
Nitrate (mg/L)	<0.1	9.3	N/A	7.5
Ammonia (mg/L)	<0.1	0.4	N/A	0.2
TPH (C6-C9) (ug/L)	<10	<50	N/A	25
TPH (C10-C14) (ug/L)	<50	<50	N/A	25
TPH (C15-C28) (ug/L)	<100	650	N/A	100
TPH (C29-C36) (ug/L)	<50	320	N/A	100

7.1.2 Groundwater Levels

Groundwater level is monitored monthly using the quarry's existing groundwater bore network. All groundwater levels were monitored in 2016 by manual dipping method to assess potential impacts from dredging activities on site.

A summary of maximum, average and minimum groundwater levels (metres Australian Height Datum (mAHD)) and depths (metres Below Ground Level (mBGL)) at the existing 11 monitoring locations for the period 2010 to 2016 are set out in **Tables 7.3** and **7.4** respectively. Trigger levels used to trigger investigations of groundwater levels relative to each of the monitoring bores are set out in **Table 7.5**. There were no exceedances of trigger levels during the 2016 report period.

Table 7.3 Maximum, Minimum and Average Groundwater Elevations at Monitoring Bores (mAHD) (2010-2016)

Bore Location	Final Depth (m)	Max (mAHD)	Average (mAHD)	Min (mAHD)
TP22	12.0	327.85	326.49	323.72
TP06	18.0	329.25	327.25	324.20
TP12	15.0	331.14	328.89	325.29
TP23	15.0	330.90	328.67	324.99
TP14	20.0	333.71	329.82	326.25
TP08	18.0	329.59	327.86	325.62
TP05	15.0	333.61	328.12	327.06
TP18*	18.0	320.81	319.65	317.31
TP19	12.0	320.68	319.11	316.53
TP20	12.0	324.94	322.17	319.70
TP21	12.0	325.36	322.82	320.16

*TP18 bore collar height above ground has not been established. An average bore collar height of 0.62 m has been used

Table 7.4 Maximum, Minimum and Average Groundwater Depths at Monitoring Bores (mBGL) (2010-2016)

Bore Location	Ground Level (mAHD)	Max (mBGL)	Average (mBGL)	Min (mBGL)
TP22	327.85	4.85	2.09	0.72
TP06	329.25	6.33	3.28	1.28
TP12	330.87	6.73	3.13	0.89
TP23	330.57	6.63	2.95	0.71
TP14	333.09	8.81	5.25	1.35
TP08	329.59	6.45	4.21	2.48
TP05	333.61	7.55	6.49	1.00
TP18*	320.81	3.62	1.28	0.12
TP19	320.68	4.43	1.86	0.29
TP20	324.26	5.95	3.48	0.71
TP21	324.92	6.22	3.56	1.02

*TP18 bore collar height above ground has not been established. An average bore collar height of 0.12 m has been used

Table 7.5 Groundwater Investigation Trigger Levels

Bore Location	Ground Level (mAHD)	1 m below Minimum Recorded Groundwater elevation (2010-2016) (mAHD)	Depth to Groundwater Trigger Level (2010-2016) (mBGL)
TP22	328.57	322.72	5.85
TP06	330.53	323.20	7.33
TP12	332.03	324.29	7.73
TP23[3]	331.61	323.99	7.63
TP14	335.06	325.25	9.81
TP08[2]	332.07	324.62	7.45
TP05[2]	334.61	326.06	8.55
TP18[1,2]	320.93	316.31	4.62

Bore Location	Ground Level (mAHD)	1 m below Minimum Recorded Groundwater elevation (2010-2016) (mAHD)	Depth to Groundwater Trigger Level (2010-2016) (mBGL)
TP19[2]	320.97	315.53	5.43
TP20[2]	325.65	318.70	6.95
TP21[2]	326.38	319.19	7.22

[1]TP18 bore collar height above ground has not been established. An average bore collar height of 0.62 m has been used

[2]Monitoring bores TP 05, TP 08, TP 18, TP 19, TP 20 and TP 21 are within extraction Domains and will be removed as quarrying progresses over the life of the quarry. These bores will be replaced by monitoring bores TP 44, TP 45, TP 46, TP 47, TP 48 and TP 49 with each of the bores being established at least 2 years in advance of quarrying commencing in the adjacent extraction Domain. Two additional bores TP 50 and TP 51 will also be established at the northern and western boundaries of the quarry area. Once these bores are established, relevant details will be updated over the following two years as more groundwater level information is recorded.

[3]Reference Bores shown in **bold**

As shown in **Tables 7.3** and **7.4**, recorded groundwater levels range from approximately 316.53 mAHD at Monitoring Bore TP19 to approximately 333.71 mAHD at Monitoring Bore TP14 with variation in groundwater levels over the monitoring period. Total rainfall over the report period up to December 2016 was 501 mm making the rainfall during the period of groundwater record below average. This followed on from an above average rainfall year in 2015 when 1046.5 mm was received. Trends in groundwater levels are presented graphically in **Graph 7.1**.

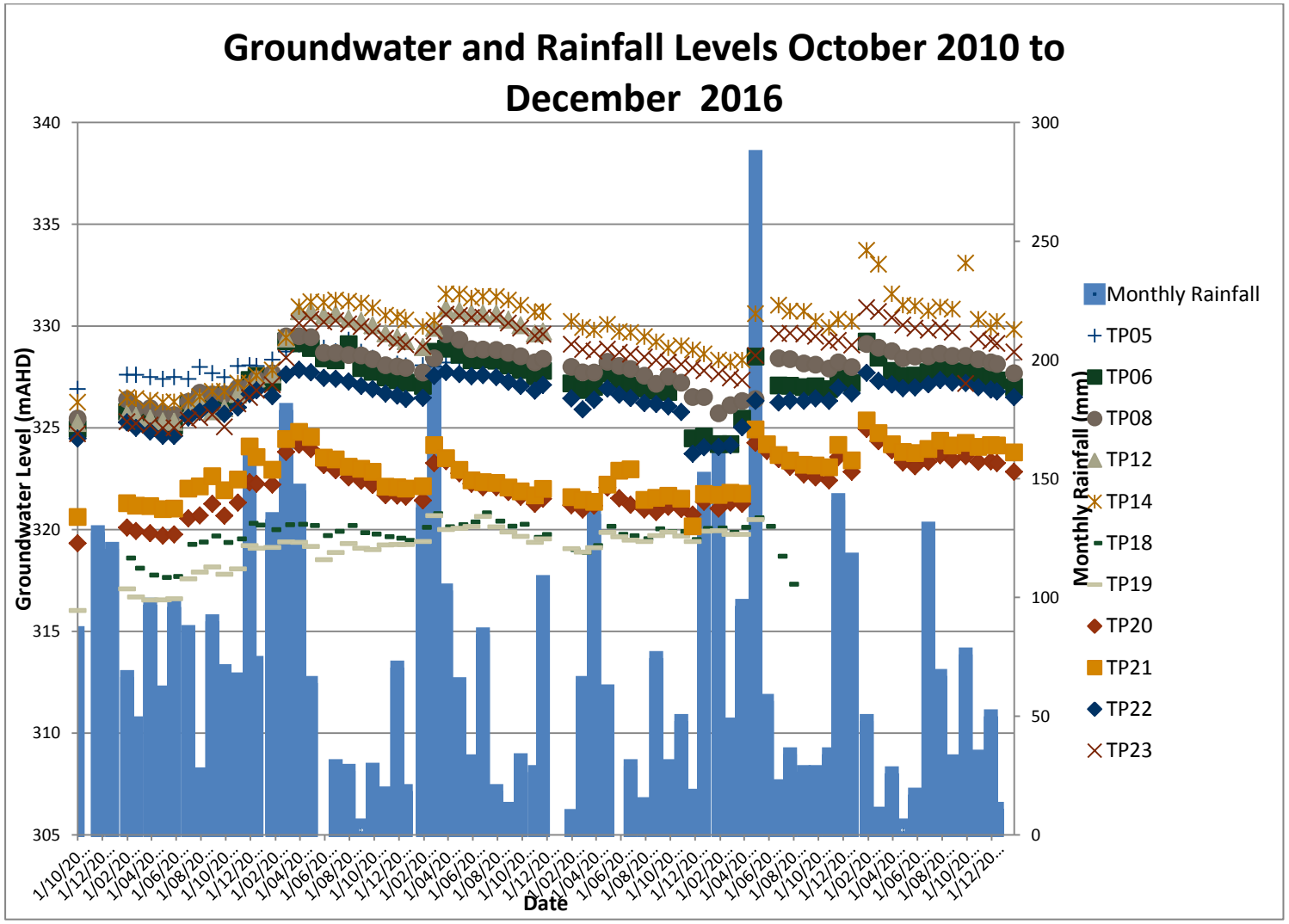
Groundwater monitoring undertaken for the project indicates that groundwater levels are typically 1 to 9 m below the surface in the area surrounding the existing and proposed quarry operations.

As shown on **Figure 7.1**, a series of three paired monitoring bores each approximately 50 m apart have been established around the perimeter of the existing quarry operation, those being:

- Monitoring Bores 19 and 18 immediately to the north-west (These have subsequently been quarry through)
- Monitoring Bores 21 and 20 immediately to the north-east
- Monitoring Bores 22 and 6 immediately to the south-east.

Groundwater levels in the bores closest to the dredge pond are typically 1 to 2 m lower than in the adjoining paired bore during dry periods with the difference in water levels reducing during prolonged wet periods. Groundwater levels rose during the 2010 to 2016 monitoring period which received above average rainfall following on from the below average rainfall received in 2009 and 2014.

Analysis of the available monitoring data for monitoring bores TP22 (adjacent to the south-eastern corner of the dredging area), TP 6 approximately 50 m further from the dredge pond to the east of TP 22 and TP 14 approximately 500 m south-east of TP 14 shows that groundwater levels in all the bores respond similarly to rainfall. Monitoring indicates that groundwater levels in TP 14 are approximately 1 m higher than those in TP 22 and TP 06 in dry periods with the difference in groundwater level increasing to approximately 4 to 5 m after prolonged high rainfall events.



Graph 7.1 Groundwater Levels and Rainfall (October 2010 to December 2016)

7.1.3 Groundwater Usage

Hy-Tec holds groundwater bore licences for the site with a total approved extraction capacity of 55 million litres (ML) per year, comprising Licence 10WA112523 (WAL24381) (40 ML) and Licence 10WA112531 (WAL 24367) (15 ML).

Groundwater from production bores is used for makeup water for the dredge pond during prolonged dry periods and for dust suppression when insufficient water is available from the quarry's closed water management system. In June 2014 a meter was fitted to monitor groundwater usage from production bores. Since September 2015, the meter has been read on a monthly basis.

Groundwater usage for the period June 2014 when the meter was installed until December 2016 is set out in **Table 7.6**.

Table 7.6 Groundwater Usage from Production Bores

Date	Meter Reading (KL)	Average Monthly Usage (ML)
June 2014	0	-
15 September 2015	3464	0.23
30 October 2015	3551	0.087
30 November 2015	3638	0.087
30 December 2015	3763	0.125
30 January 2016	3763	0
30 February 2016	3840	0.077
30 March 2016	3891	0.051
30 April 2016	3923	0.032
30 May 2016	4002	0.079
30 June 2016	4014	0.012
30 July 2016	4029	0.015
30 August 2016	4048	0.019
30 September 2016	4075	0.027
30 October 2016	4317	0.242
30 November 2016	4520	0.203
30 December 2016	4596	0.076

In October 2015, Hy-Tec started using water from the dredge pond for dust suppression, reducing the amount of clean water used on-site by approximately 3 ML/year. In addition, Hy-Tec sealed the haul road during November 2015 reducing the demand for water for dust suppression by approximately 10 ML per year.

Where possible, Hy-Tec will continue to use water from the dredge pond for all water needs on-site other than for potable use in the workshop and offices. Water from production bores may still be occasionally used for dust suppression however with sealing of the haul road this will only occur very occasionally and only when water cannot be accessed from the dredge pond system.

7.2 Surface Water

The quarry is located near the top of Tinda Creek catchment. The creek in this area has no base flows and only flows intermittently and for short durations in response to intense and prolonged rainfall events. Aquatic baseline monitoring of Tinda Creek was undertaken in 2008 and again in 2015. This monitoring indicated that quarrying had not adversely impacted on the condition of Tinda Creek with the condition of the creek in the vicinity of the quarry being consistent with that of the creek system in the surrounding area.

The quarry operations including pump lines and catch drains that collect and convey sediment laden runoff are all located within the closed water management system. This has enabled the quarry to operate over the past 30 years with minimal impact on surface water quality, the flow regime or habitat values within the Tinda Creek drainage system.

7.2.1 Closed Water Management System

To minimise potential for water quality impacts on Tinda Creek and the downstream Greater Blue Mountains World Heritage Area, the current quarry operations are serviced by a series of sediment dams and internal bunds that contain potential sediment laden runoff within the closed water management system that includes dredge ponds to prevent runoff from disturbed areas draining off-site.

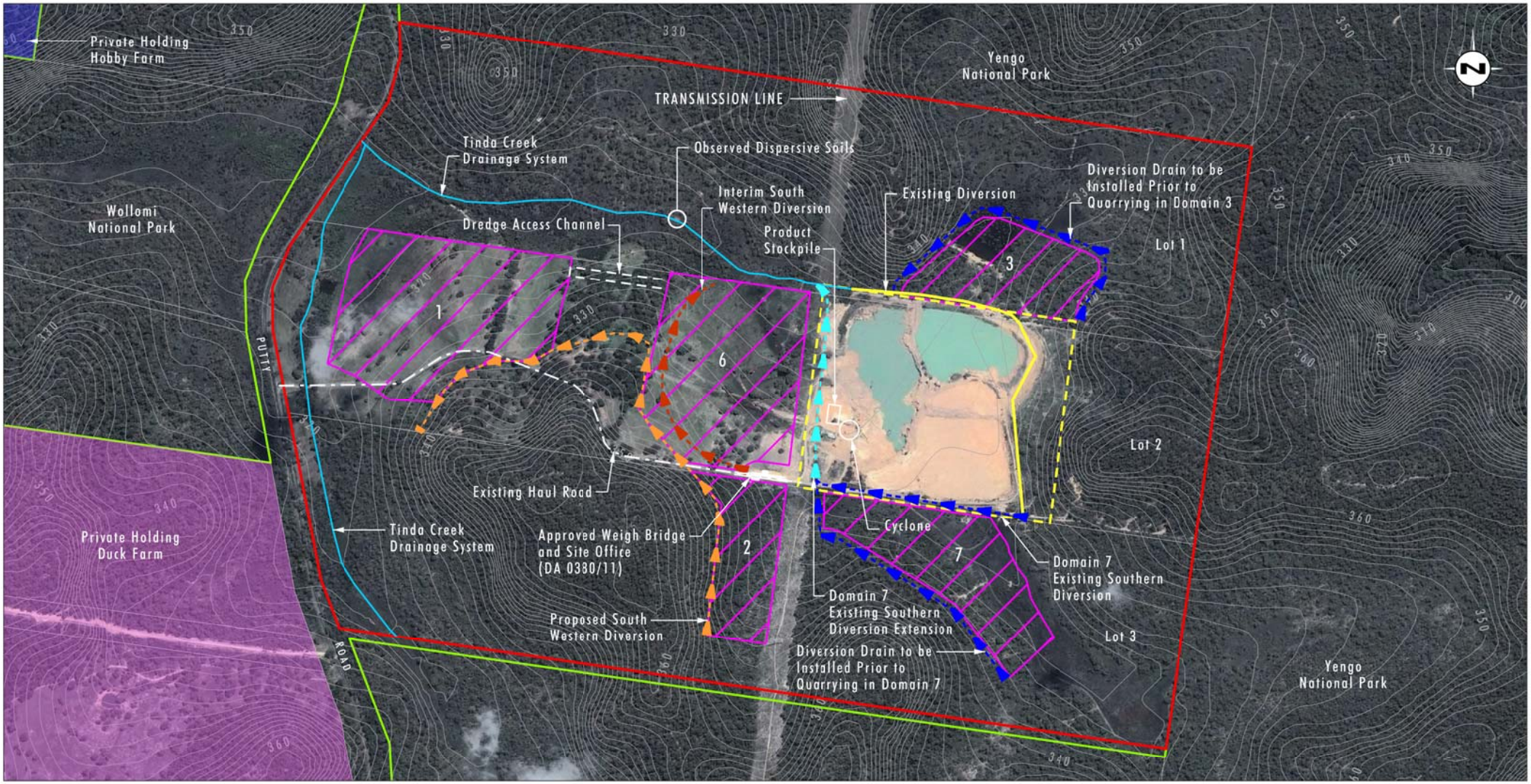
The dredge ponds have and will maintain sufficient surcharge capacity to contain the runoff from within the closed quarry water management system greater than would be generated from back to back (i.e. on consecutive days) 1 in 100 year Average Recurrence Interval (ARI) rainfall events and hence have negligible capacity to discharge off site. This surcharge capacity will increase over the life of the quarry. The closed water management system is shown on **Figure 6.2**

7.2.2 Clean Water Diversion Drains

As shown on **Figure 7.2** a series of clean water diversions have been constructed around the perimeter of the quarry area. These include:

- Southern Diversion
- Southern Diversion Extension
- Existing Diversion.

These drains have been designed to convey runoff from a 1 in 100 year Average Recurrence Interval (ARI) 18 hour storm event and typically have a trapezoidal cross-section with a base width of 2 to 3 m and 3 Horizontal : 1 Vertical side batters. The drains are typically 1 to 1.5 m deep.



Source: Google Earth (2012), LPI NSW (2007)
Note: Contour Interval 2mAHD

0 200 400 600m
1:12 000

Legend

- Project Area
- Proposed Extraction Area Domain
- Limit of Approved Extraction (DA 134/95)
- National Park Boundary
- Private Holding Duck Farm
- Private Holding Hobby Farm

FIGURE 7.2

Surface Water Management System

8.0 Rehabilitation

8.1 Rehabilitation of Disturbed Land

Rehabilitation works have currently commenced on the former dredge pond as shown on **Figure 6.2**. As shown on **Figure 6.2** vegetation is starting to be established.

Also as shown on **Figure 6.2,** the area immediate to the west of the former dredge pond being backfilled with overburden and silt and clay material. Once this material has dried sufficiently to be trafficked, vegetation will be established on this area.

It is envisaged that rehabilitation works will continue to be undertaken progressively as areas become available to reduce the disturbance footprint of the operation, and to ensure that rehabilitation objectives are being met for the site.

8.2 Annual Rehabilitation Inspection

Visual inspections of rehabilitation areas are undertaken on a monthly basis by the Quarry Manager. The rehabilitation areas are located adjacent to the processing area and are readily visible on a daily basis. Rehabilitation inspections will be undertaken in accordance with the Tinda Creek Landscape Management Plan (LMP) to assess the progression of rehabilitated areas towards rehabilitation objectives for the site.

8.3 Rehabilitation Trials and Research

No rehabilitation trials were undertaken during the report period.

8.4 Actions for the 2017 Report Period

During the 2017 report period, Tinda Creek Sand Quarry will seek to progressively rehabilitate any disturbed areas as soon as practicable following completion of disturbance activities. An annual rehabilitation inspection will be undertaken during the 2017 report period in accordance with the LMP.

9.0 Complaints Record

9.1 Community Complaints

One complaint was received in regard to operations of Tinda Creek Sand Quarry Sand Quarry in 2016. The complaint was in regard to a truck travelling too slowly on Putty Road. The Quarry Manager explained to the complainant that the truck would have been driving to the conditions and no further action was taken.

9.2 Community Liaison

Tinda Creek Sand Quarry Community Consultative Committee (CCC) meets twice per year. Meetings were held on 9 May 2016 and 10 October 2016 during the report period.

Table 9.1 Tinda Creek Sand Quarry CCC Members for the 2016 Report Period

Name	Organisation
Lisa Andrews	Community representative/Independent Chairperson
John Pine (JP)	Community Representative
Ray Campbell	Community Representative
Brigitte Lewis	Community Representative
Bruce Mansell	Community Representative
David Cilento	Hy-Tec
Darryl Thiedeke	Hy-Tec
Lee Attard	Hy-Tec
Ray Bygraves	Hy-Tec

10.0 Independent Audits

There were no independent audits undertaken at Tinda Creek Sand Quarry during the report period up to December 2016. An independent environmental audit is scheduled for January 2017 in accordance with Condition 9 of Schedule 5 of Development Consent SSD_4978 with subsequent findings to be provided in the final audit report. Any actions and recommendations from the independent audit will be detailed in the 2017 Annual Review.

11.0 Incidents and Non Compliances during the 2016 Report Period

No incidents or non-compliances were recorded for the period up to December 2016.

12.0 Discrepancies between predicted and actual results

No discrepancies between actual and predicted results were recorded for the period to December 2016.

13.0 Activities proposed in the 2017 Annual Review period

Anticipated activities for Tinda Creek Sand Quarry during the 2017 report period include:

- progression of extraction operations in approved domains
- ongoing monitoring and maintenance of erosion and sediment controls and diversion drains
- continuation of progressive rehabilitation activities where practical
- reducing the size of the existing silt dam
- commencement of LiDAR Survey and imagery capture over the Quarry lease area
- installation of additional groundwater monitoring bores
- commissioning of new dredge allowing for increased production
- continued implementation of conditions as prescribed under the Development Consent (SSD_4978).

14.0 Non-compliances

No non-compliances were recorded for the period up to December 2016.

15.0 References

Landcom (2004). *The Blue Book: Managing Urban Stormwater- Soils and Construction.*

NSW Environmental Protection Agency (NSW EPA) (2014). Protection of the Environment Operations (Waste) Regulation 2014

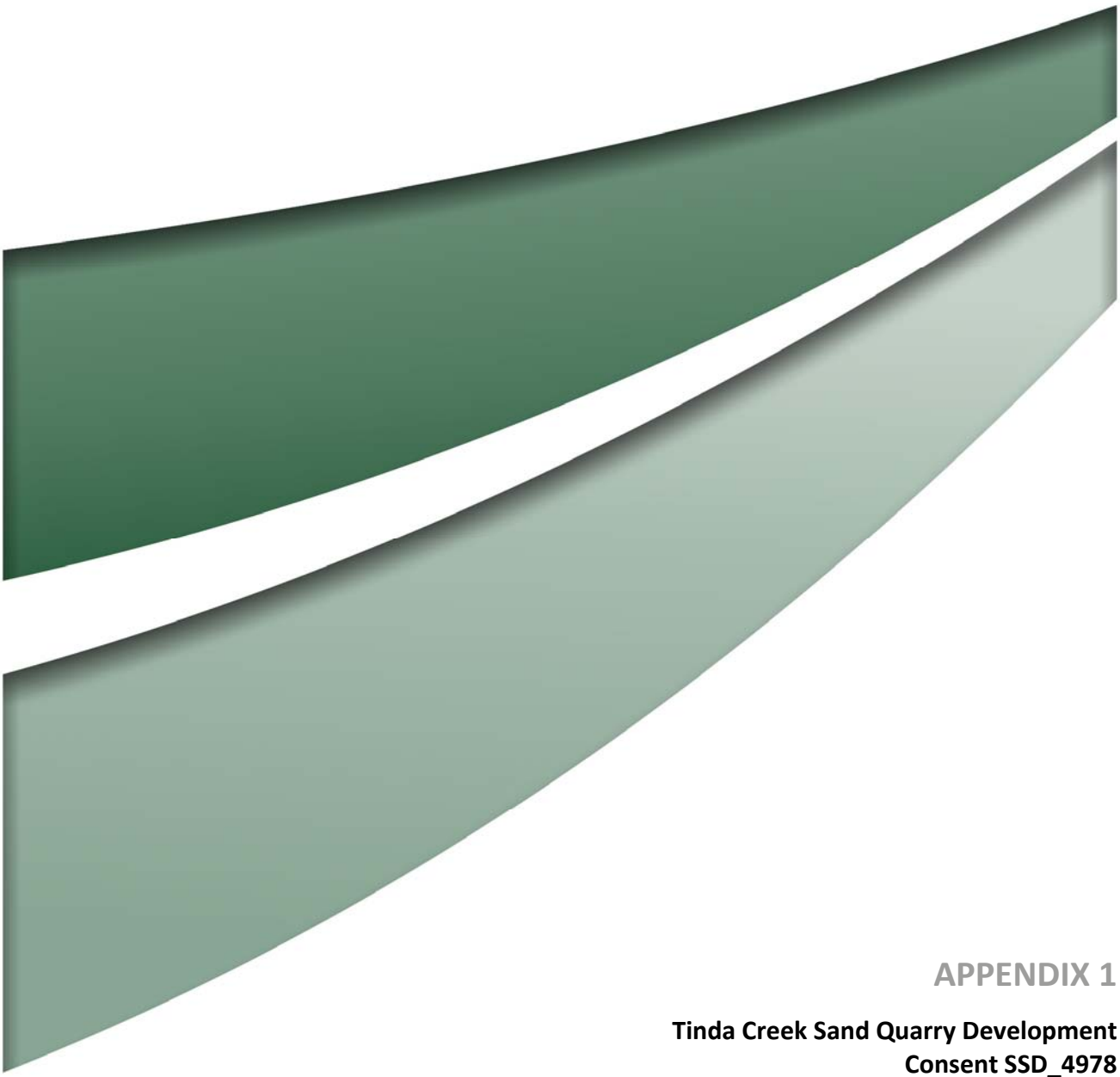
Umwelt (Australia) Pty Limited, 2015. *2015 Aquatic Sampling and Condition Assessment.* Prepared on behalf of Aus-10 Rhyolite Pty Ltd.

Umwelt (Australia) Pty Limited, 2016. *Tinda Creek Quarry Cultural Heritage Management Plan.* Prepared on behalf of Aus-10 Rhyolite Pty Ltd.

Umwelt (Australia) Pty Limited, 2016. *Tinda Creek Quarry Landscape Management Plan.* Prepared on behalf of Aus-10 Rhyolite Pty Ltd.

Umwelt (Australia) Pty Limited, 2016. *Tinda Creek Quarry Water Management Plan.* Prepared on behalf of Aus-10 Rhyolite Pty Ltd.

Umwelt (Australia) Pty Limited, 2016. *Tinda Creek Quarry Environmental Management Strategy (EMS).* Prepared on behalf of Aus-10 Rhyolite Pty Ltd.



APPENDIX 1

Tinda Creek Sand Quarry Development
Consent SSD_4978

Development Consent

Section 89E of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, I approve the development application referred to in schedule 1, subject to the conditions in schedules 2 to 5.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

David Kitto
Executive Director
Resource Assessments and Business Systems

Sydney 10 APRIL 2015

SCHEDULE 1

Application Number:	SSD_4978
Applicant:	Aus-10 Rhyolite Pty Ltd
Consent Authority:	Minister for Planning
Land:	Lots 1, 2 and 3 of DP 628806
Development:	Tinda Creek Sand Project

TABLE OF CONTENTS

DEFINITIONS

Annual Review	The review required by condition 4 of schedule 5
Applicant	Aus-10 Rhyolite Pty Ltd, or any other person or persons who rely on this consent to carry out the development that is subject to this consent
ARI	Average Recurrence Interval
BCA	Building Code of Australia
Biodiversity Offset Strategy	The biodiversity offset strategy described in the EIS, and shown conceptually in Appendix 5
CCC	Community Consultative Committee
Conditions of consent	Conditions contained in schedules 1 to 5 inclusive
Construction	The demolition of buildings or works, carrying out of works and erection of buildings covered by this consent
Council	Hawkesbury City Council
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	Department of Planning and Environment
Development	The development described in the EIS
DRE	Division of Resources and Energy within NSW Trade and Investment
EIS	Environmental Impact Statement titled *Proposed Expansion of the Tinda Creek Sand Quarry* (3 volumes), dated July 2014, as modified by the Response to Submissions titled, *Response to Submissions for Proposed Expansion of Tinda Creek Sand Quarry* dated 7 November 2014 and the letter titled *Response to OEH, Department of Environment and Greater Blue Mountains World Heritage Advisory Committee on the Tinda Creek Sand Extraction Stated Significant Development Proposal*, dated 11 December 2014
ENM	Excavated Natural Material, as defined by *Protection of the Environment Operations (Waste) Regulation 2014*
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence under the POEO Act
Evening	The period from 6pm to 10pm
Extension area	The area outside of the existing quarry footprint (i.e. Domains, 1,2,3,4,6 and 7, as shown conceptually in Appendices 1 and 2)
Extraction operations	Includes the removal of overburden and extraction, dredging, processing, handling, storage and transportation of extractive materials on site
Feasible	Feasible relates to engineering considerations and what is practical to build
GPS	Global Positioning System
Ha	Hectare
Incident	A set of circumstances that: • causes or threatens to cause material harm to the environment; and/or • breaches or exceeds the limits or performance measures/criteria in this consent
Land	As defined in the EP&A Act, except for where the term is used in the noise and air quality conditions in schedules 3 and 4 of this consent where it is defined to mean the whole of a lot, or contiguous lots, owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this consent
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial
m	Metres
Minister	Minister for Planning, or delegate
Mitigation	Activities associated with reducing the impacts of the development
Negligible	Small and unimportant, such as to be not worth considering
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to

	8am on Sundays and Public Holidays
NOW	NSW Office of Water
NSW Trade and Investment	NSW Department of Trade and Investment, Regional Infrastructure and Services
OEH	NSW Office of Environment and Heritage
POEO Act	*Protection of the Environment Operations Act 1997*
Privately-owned land	Land that is not owned by a public agency or the Applicant (or its subsidiary)
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Rehabilitation	The restoration of land disturbed by the development to a good condition, ensuring that it is safe, stable and non-polluting and appropriately revegetated
RMS	Roads and Maritime Services
Secretary	Secretary of the Department, or nominee
Site	All land to which the development application applies, as listed under "Land" in schedule 1 and shown in Appendices 1 and 2
Shoulder	The period between 6am to 7am on Monday to Friday and 7am to 8am on Saturday
Statement of commitments	The Applicant's commitments in Appendix 3
VENM	Virgin Excavated Natural Material, as defined by the POEO Act

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance criteria established under this consent, the Applicant shall implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, or rehabilitation of the development.

TERMS OF CONSENT

2. The Applicant shall carry out the development generally in accordance with the:
   (a) EIS;
   (b) Statement of Commitments; and
   (c) conditions of this consent.

   Note: The general layout of the development is shown in Appendix 2.

3. If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.

4. The Applicant shall comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of:
   (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this consent;
   (b) any reports, reviews or audits commissioned by the Department regarding compliance with this consent; or
   (c) the implementation of any actions or measures contained in these documents.

LIMITS ON CONSENT

Extraction Operations

5. The Applicant may undertake extraction operations on the site until 31 December 2045.

   Note: Under this consent, the Applicant is required to rehabilitate the site and carry out additional undertakings to the satisfaction of the Secretary. Consequently, this consent will continue to apply in all other respects other than the right to conduct extraction operations until the rehabilitation of the site and those undertakings have been carried out to a satisfactory standard.

Production Limits

6. The Applicant shall not:
   (a) extract or process more than 300,000 tonnes of sand in any calendar year; or
   (b) undertake extraction operations beyond 15 m below the natural ground surface.

Transportation Limits

7. The Applicant shall not:
   (a) transport more than 300,000 tonnes of sand from the site in a calendar year; and
   (b) dispatch more than 34 trucks per day or receive more than 34 trucks per day, averaged over a calendar month.

SURRENDER OF EXISTING DEVELOPMENT CONSENT

8. Within 6 months of the date of this consent, unless the Secretary agrees otherwise, the Applicant shall surrender the development consent (DA 0134/95) for the existing operations on the site in accordance with Section 104A of the EP&A Act.

   Prior to the surrender of development consent DA 0134/95, the conditions of this consent shall prevail to the extent of any inconsistency with the conditions of that consent.

Note: This requirement does not extend to the surrender of construction and occupation certificates for existing and proposed building works under Part 4A of the EP&A Act. Surrendering of consent should not be understood as implying that works legally constructed under a valid consent can no longer be legally maintained or used.

STRUCTURAL ADEQUACY

9. The Applicant shall ensure that any new buildings and structures, and any alterations, or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

Notes:
- *Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.*

DEMOLITION

10. The Applicant shall ensure that all demolition work on site is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

PROTECTION OF PUBLIC INFRASTRUCTURE

11. The Applicant shall:
    (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and
    (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

Note: This condition does not apply to any damage to roads caused as a result of general road usage.

OPERATION OF PLANT AND EQUIPMENT

12. The Applicant shall ensure that all plant and equipment used on site is:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

UPDATING & STAGING STRATEGIES, PLANS OR PROGRAMS

13. With the approval of the Secretary, the Applicant may submit any strategies, plans or programs required by this consent on a progressive basis.

    To ensure the strategies, plans or programs under the conditions of this consent are updated on a regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Secretary for approval.

    With the agreement of the Secretary, the Applicant may prepare any revised strategy, plan or program without undertaking consultation with all parties under the applicable condition of this consent.

    Notes:
    - *While any strategy, plan or program may be submitted on a progressive basis, the Applicant must ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times.*
    - *If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.*

14. Until they are replaced by an equivalent strategy, plan or program approved under this consent, the Applicant shall implement the existing strategies, plans or programs for the site that have been approved under DA 0134/95.

PRODUCTION DATA

15. The Applicant shall:
    (a) provide annual quarry production data to DRE using the standard form for that purpose; and
    (b) include a copy of this data in the Annual Review (see condition 4 of schedule 5).

DEVELOPER CONTRIBUTIONS

16. The Applicant shall pay Council road maintenance contributions consistent with Council's *Section 94 Contributions Plan*, or its latest version.

    Note: If the parties are not able to agree on any aspect of the maintenance contributions, either party may refer the matter to the Secretary for resolution.

SCHEDULE 3
ENVIRONMENTAL PERFORMANCE CONDITIONS

IDENTIFICATION OF APPROVED LIMITS OF EXTRACTION

1. Prior to undertaking extraction operations under this consent, the Applicant shall:
   (a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction within the site; and
   (b) submit a survey plan of these boundaries with applicable GPS coordinates to the Secretary.

2. While extraction operations are being carried out, the Applicant shall ensure that these boundaries are clearly marked at all times.

HOURS OF OPERATION

3. The Applicant shall comply with the operating hours set out in Table 1.

Table 1: Operating Hours

Activity	***Operating Hours***
Extraction operations and deliveries	7 am to 6 pm, Monday to Friday 7 am to 3 pm, Saturday No activities on Sundays or Public Holidays
Dispatch	5 am to 10 pm, Monday to Friday 6 am to 3 pm, Saturday
Construction activities	7 am to 6 pm, Monday to Friday 8 am to 1 pm, Saturday No construction to be undertaken on Sundays or Public Holidays
Maintenance activities	24 hours a day, 7 days per week, providing maintenance activities are inaudible at any privately-owned residence

NOISE

Noise Criteria

4. The Applicant shall ensure that the noise generated by the development does not exceed the criteria in Table 2 at any residence on privately-owned land.

Table 2: Noise criteria dB(A)

Receiver	***Day / Evening***	***Night***	
	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{A1(max)}$
All receivers	35	35	45

Note: After the first review on any EPL granted for this development under Section 78 of the POEO Act, nothing in this consent prevents the EPA from imposing stricter noise limits on the extraction operations on site under the EPL.

Noise generated by the development is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy*. Appendix 6 sets out the metrological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

However, these criteria do not apply if the Applicant has a written agreement with the relevant landowner/s to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement.

Operating Conditions

5. The Applicant shall:
   (a) implement all reasonable and feasible mitigation measures to minimise the construction, operational and road noise of the development;
   (b) regularly assess noise monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the noise criteria in this consent;

(c) minimise the noise impacts of the development during meteorological conditions under which the noise criteria in this consent do not apply (see Appendix 6); and
(d) carry out regular noise monitoring to determine whether the development is complying with the relevant conditions of this consent,

to the satisfaction of the Secretary.

Noise Management Plan

6. The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:
   (a) be prepared in consultation with the EPA, and be submitted to the Secretary within 6 months of the date of this consent, unless the Secretary agrees otherwise;
   (b) describe the reasonable and feasible mitigation measures that would be implemented to ensure:
      - construction noise is minimised;
      - compliance with the relevant noise criteria and operating conditions in this consent;
      - best management practice is being employed; and
      - the noise impacts of the development are minimised during meteorological conditions under which the noise criteria in this consent do not apply;
   (c) describe the proposed noise management system on site; and
   (d) include a monitoring program that:
      - uses attended monitoring to evaluate the compliance of the development against the noise criteria in this consent;
      - evaluates and reports on the effectiveness of the noise management system and the best practice noise management measures; and
      - defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

AIR QUALITY

Air Quality Criteria

7. The Applicant shall implement all reasonable and feasible avoidance and mitigation measures so that particulate matter emissions generated by the development do not exceed the criteria in Tables 3 to 5 at any residence on privately-owned land.

Table 3: Long-Term Criteria for Particulate Matter

Pollutant	***Averaging period***	***[d] Criterion***
Total suspended particulates (TSP)	Annual	[a] 90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	[a] 30 µg/m^3

Table 4: Short-Term Criteria for Particulate Matter

Pollutant	***Averaging period***	***[d] Criterion***
Particulate matter < 10 µm (PM_{10})	24 hour	[a] 50 µg/m^3

Table 5: Long-Term Criteria for Deposited Dust

Pollutant	***Averaging Period***	***Maximum increase in deposited dust level***	***Maximum total deposited dust level***
[c] Deposited dust	Annual	[b] 2 g/m^2/month	[a] 4 g/m^2/month

Notes to Tables 3-6:
[a] Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).
[b] Incremental impact (i.e. incremental increase in concentrations due to the development on its own).
[c] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient 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 Secretary in consultation with EPA.

Operating Conditions

8. The Applicant shall:
   (a) implement all reasonable and feasible measures to minimise the dust emissions of the development;
   (b) minimise surface disturbance of the site; and
   (c) monitor and report on compliance with the relevant air quality criteria in this consent;
   to the satisfaction of the Secretary.

Air Quality Management Plan

9. The Applicant shall prepare and implement an Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must:
   (a) be prepared in consultation with the EPA, and be submitted to the Secretary for approval within 6 months of the date of this consent, unless the Secretary agrees otherwise;
   (b) describe the measures that would be implemented to ensure:
      - compliance with the air quality criteria and operating conditions under this consent; and
      - best practice management is being employed
   (c) include an air quality monitoring program that:
      - evaluates and reports on:
        - the effectiveness of the air quality management measures; and
        - compliance with the air quality criteria and operating conditions; and
      - defines what constitutes an air quality incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any air quality incidents.

METEOROLOGICAL MONITORING

10. For the life of the development, the Applicant shall ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South* Wales guideline.

SOIL AND WATER

Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain the necessary water licences for the development, including in respect of the extraction and/or interception of groundwater.

Water Supply

11. The Applicant shall ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of operations under the consent to match its available water supply to the satisfaction of the Secretary.

Operating Conditions

12. The Applicant shall:
   (a) comply with Section 120 of the POEO Act, unless an EPL authorises otherwise;
   (b) ensure that the catchment of the water management system is not larger than 40 ha, unless the Secretary agrees otherwise;
   (c) maintain the dredge and silt ponds to capture a 1 in 100 ARI storm event plus adequate freeboard to ensure no offsite discharge; and
   (d) ensure that the loss of groundwater and surface water to Tinda Creek is no greater than predicted in the EIS.

Water Management Plan

13. The Applicant shall prepare and implement a Water Management Plan for the development to the satisfaction of the Secretary. This plan must:
   (a) be prepared by suitably qualified person/s approved by the Secretary;
   (b) be prepared in consultation with the EPA and NOW, and be submitted to the Secretary for approval within 6 months of the date of this consent, unless the Secretary agrees otherwise;

(c) include a Site Water Balance that:
- includes details of the:
  - quantity of water required to support operations;
  - sources and security of water supply, clearly differentiating between surface water and groundwater, and taking into account rainfall variability;
  - water use and management on site;
  - reporting procedures; and
  - measures to minimise clean water use on site;

(d) include a Surface Water Management Plan, that includes:
- detailed baseline data on surface water flows and quality in the watercourses that could be affected by the development;
- a detailed description of the surface water management system on site, including:
  - clean water diversions;
  - erosion and sediment controls;
  - the dirty water management system; and
  - water storages;
- performance criteria, including trigger levels for investigating any potentially adverse surface water quality impacts;
- the measures that would be implemented to ensure compliance with the surface water performance criteria and relevant operating conditions of this consent;
- a program to monitor and report on:
  - any surface water discharges;
  - the effectiveness of the water management system; and
  - surface water flows and quality in local watercourses;
- a comparison of monitoring results with modelled predictions;

(e) include a Groundwater Monitoring Program, that includes:
- detailed baseline data on groundwater levels, yield and quality in local aquifers and privately-owned groundwater bores;
- performance criteria for surrounding aquifers, privately-owned groundwater bores, including trigger levels for investigating any potentially adverse groundwater impacts;
- the measures that would be implemented to ensure compliance with the groundwater performance criteria and relevant operating conditions of this consent;
- a program to monitor and report on:
  - groundwater inflows to the quarry pit (quarterly monitoring is required, unless otherwise agreed with the Secretary);
  - the impacts of the development on surrounding aquifers, privately-owned groundwater bores and Tinda Creek; and
- a program to validate the groundwater model for the development, and compare monitoring results with modelled predictions; and

(f) include a Surface and Groundwater Contingency Strategy, that includes:
- a protocol for the investigation, notification and mitigation of identified exceedances of the surface water and groundwater impact assessment criteria;
- measures to mitigate and/or compensate potentially affected landowners of privately-owned land, including provision of alternative long-term supply of water to the affected landowner that is equivalent to the loss attributed to the development; and
- the procedures that would be followed if any unforeseen impacts are detected during the development.

HERITAGE

Heritage Management Plan

14. The Applicant shall prepare and implement a Heritage Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with OEH, and Aboriginal stakeholders for matters relating to Aboriginal heritage values;
    (b) be submitted to the Secretary for approval within 6 months of the date of this consent, unless the Secretary agrees otherwise;

(c) describe the measures that would be implemented for:
- managing identified heritage objects, previously unidentified heritage objects or the discovery of any human remains on site; and
- ensuring ongoing consultation with Aboriginal stakeholders in the conservation and management of any Aboriginal cultural heritage values on site.

LANDSCAPE AND REHABILITATION

Biodiversity Offset Strategy

15. The Applicant shall implement the biodiversity offset strategy described in the EIS, as summarised and revised in Table 6, and shown conceptually in Appendix 5, to the satisfaction of the Secretary.

Table 6: Biodiversity Offset Strategy (ha)

Area	***Offset Type***	***Minimum Size (ha)***
On-site Offset Area	Existing vegetation to be enhanced	106.6

Security of Offsets

16. Within 2 years of this consent, unless otherwise agreed with the Secretary, the Applicant shall make suitable arrangements to provide appropriate long-term security for the offset area, to the satisfaction of the Secretary.

Note: Mechanisms to provide appropriate long-term security to the land within the biodiversity offset strategy include a Biobanking Agreement, Voluntary Conservation Agreement or an alternative mechanism that provides for a similar conservation outcome. Any mechanism must remain in force in perpetuity.

Rehabilitation Objectives

17. The Applicant shall rehabilitate the site to the satisfaction of the Secretary. The final landform must:
(a) be generally consistent with the proposed rehabilitation strategy in the EIS, and the final landform shown conceptually in Appendices 4 and 5. and
(b) comply with the objectives in Table 7.

Table 7: Rehabilitation Objectives

Feature	***Objective***
Site (as a whole)	• Safe, stable and non-polluting • Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native species and habitat, including at least 0.35 ha of Mellong Sandmass Sedgeland
Surface Infrastructure	• To be decommissioned and removed (unless the Secretary agrees otherwise)
Final Voids	• Minimise the size, depth, batter slope and the drainage catchment of the final void • Ensure that the volume of VENM and ENM detailed in the EIS is imported for rehabilitation of the site • Ensure that the surface area of the final voids is no greater than 16 ha in total • Separated from the surface water drainage system, unless the Secretary agrees otherwise
Watercourses	• Restore alignment and hydraulic function, as far as practical
Community	• Ensure public safety

Progressive Rehabilitation

18. The Applicant shall rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. Interim stabilisation measures must be implemented where reasonable and feasible to control erosion (both wind and water) in disturbed areas that are not active and which are not ready for final rehabilitation.

Landscape Management Plan

19. The Applicant shall prepare and implement a Landscape Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with OEH, and be submitted to the Secretary for approval within 6 months of the date of this consent, unless the Secretary agrees otherwise;
    (b) provide details of the conceptual final landform and associated land uses for the site;
    (c) describe how the implementation of the biodiversity offset strategy would be integrated with the overall rehabilitation of the site;
    (d) include detailed performance and completion criteria for evaluating the performance of the biodiversity offset strategy and rehabilitation of the site, including triggers for any necessary remedial action;
    (e) describe the short, medium and long term measures that would be implemented to:
        - manage remnant vegetation and habitat on site and in the offset area; and
        - ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this consent;
    (f) include a detailed description of the measures that would be implemented over the next 3 years (to be updated for each 3 year period following initial preparation of the plan) including the procedures to be implemented for:
        - maximising the salvage of environmental resources within the approved disturbance area, including tree hollows, vegetative and soil resources, for beneficial reuse in the enhancement of the offset area or site rehabilitation;
        - restoring and enhancing the quality of native vegetation and fauna habitat in the biodiversity and rehabilitation areas through assisted natural regeneration, targeted vegetation establishment and the introduction of fauna habitat features;
        - protecting vegetation and fauna habitat outside the approved disturbance area on-site;
        - minimising the impacts on native fauna, including undertaking pre-clearance surveys;
        - ensure only appropriate activities occur within a 40 m buffer of the recorded small-flower grevillea (*Grevillea parviflora* subsp. *parviflora*), (refer Figure 2 in Appendix 5);
        - establishing vegetation screening to minimise the visual impacts of the site on surrounding receivers;
        - ensuring minimal environmental consequences for threatened species, populations and habitats;
        - collecting and propagating seed;
        - controlling weeds and feral pests;
        - controlling erosion;
        - controlling access; and
        - managing bushfire risk;
    (g) include a Koala Management Plan prepared generally in accordance with SEPP 44, the accompanying guidelines provided in *Circular B35 - State Environmental Planning Policy 44 - Koala Habitat Protection, the NPWS Policy and Procedure Statement No. 9 – Policy for the Translocation of Threatened Fauna in NSW* and the draft koala plan of management in the EIS;
    (h) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;
    (i) identify the potential risks to the successful implementation of the biodiversity offset, and include a description of the contingency measures that would be implemented to mitigate these risks; and
    (j) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

Conservation and Rehabilitation Bond

20. Within 6 months of the approval of the Landscape Management Plan, the Applicant shall lodge a Conservation and Rehabilitation Bond with the Department to ensure that the biodiversity offset strategy and rehabilitation of the site are implemented in accordance with the performance and completion criteria set out in the plan and relevant conditions of this consent. The sum of the bond shall be determined by:
    (a) calculating the cost of implementing the biodiversity offset strategy over the next 3 years;
    (b) calculating the cost of rehabilitating the site, taking into account the likely surface disturbance over the next 3 years of extraction operations; and
    (c) employing a suitably qualified quantity surveyor or other expert to verify the calculated costs,

    to the satisfaction of the Secretary.

    Notes:
    - *Alternative funding arrangements for long term management of the biodiversity offset strategy, such as provision of capital and management funding as agreed by OEH as part of a Biobanking Agreement or transfer to conservation reserve estate can be used to reduce the liability of the conservation and biodiversity bond.*
    - *If capital and other expenditure required by the Landscape Management Plan is largely complete, the Secretary may waive the requirement for lodgement of a bond in respect of the remaining expenditure.*
    - *If the biodiversity offset strategy and rehabilitation of the site area are completed to the satisfaction of the Secretary, then the Secretary will release the bond. If the biodiversity offset strategy and rehabilitation of the site are not completed to the satisfaction of the Secretary, then the Secretary will call in all or part of the bond, and arrange for the completion of the relevant works.*

21. Within 3 months of each Independent Environmental Audit (see condition 9 of schedule 5), the Applicant shall review, and if necessary revise, the sum of the Conservation and Rehabilitation Bond to the satisfaction of the Secretary. This review must consider the:
    (a) effects of inflation;
    (b) likely cost of implementing the biodiversity offset strategy and rehabilitating the site (taking into account the likely surface disturbance over the next 3 years of the development); and
    (c) performance of the implementation of the biodiversity offset strategy and rehabilitation of the site to date.

TRANSPORT

Monitoring of Product Transport

22. The Applicant shall keep accurate records of all laden truck movements to and from the site (hourly, daily, weekly, monthly and annually) and publish these records on its website every 6 months.

Operating Conditions

23. The Applicant shall ensure that:
    (a) all laden vehicles have appropriate signage, including a contact phone number, so they be easily identified by road users;
    (b) all laden vehicles entering or exiting the site have their loads covered;
    (c) all laden vehicles exiting the site are cleaned of sand and other material that may fall on the road, before leaving the site; and
    (d) no trucks queue at the entrance to the site before 6am.

Access Road and Intersection Construction

24. Within 12 months from the date of this consent, unless the Secretary agrees otherwise, the Applicant shall upgrade the site access road and its intersection with Putty Road in accordance with applicable AUSTROADS standards, and to the satisfaction of RMS.

Transport Management Plan

25. The Applicant shall prepare and implement a Transport Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with RMS and Council, and be submitted to the Secretary for approval within 6 months of the date of this consent, unless the Secretary agrees otherwise;
    (b) include a drivers Code of Conduct for heavy vehicle drivers; and
    (c) describe the measures that would be put in place to ensure compliance with the drivers' code of conduct and include a program to monitor the effectiveness of the implementation of these measures.

VISUAL

26. The Applicant shall:
    (a) implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development on local residences and road users; and
    (b) ensure that all external lighting associated with the development complies with the relevant Australian Standards, including *Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting* or its latest version,

    to the satisfaction of the Secretary.

BUSHFIRE MANAGEMENT

27. The Applicant shall ensure that the development is suitably equipped to respond to any fires on site; and assist the Rural Fire Service, emergency services and National Parks and Wildlife Service as much as practicable if there is a fire in the surrounding area.

WASTE

28. The Applicant shall ensure that only certified VENM and ENM is imported to the site to aid in the minimisation of final voids.

29. The Applicant shall manage on-site sewage treatment and disposal in accordance with the requirements of its EPL, and to the satisfaction of the EPA and Council.

30. The Applicant shall:
    (a) minimise the waste generated by the development;
    (b) ensure that the waste generated by the development is appropriately stored, handled, and disposed of; and
    (c) report on waste management and minimisation in the Annual Review,

    to the satisfaction of the Secretary.

SCHEDULE 4
ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. As soon as practicable after obtaining monitoring results showing an exceedance of any relevant criteria in schedule 3, the Applicant shall notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the development is again complying with the relevant criteria.

INDEPENDENT REVIEW

2. If an owner of privately-owned land considers the development to be exceeding the relevant criteria in schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land.

   If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision the Applicant shall:

   (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
   - consult with the landowner to determine his/her concerns;
   - conduct monitoring to determine whether the development is complying with the relevant criteria in schedule 3; and
   - if the development is not complying with these criteria then identify the measures that could be implemented to ensure compliance with the relevant criteria; and

   (b) give the Secretary and landowner a copy of the independent review.

SCHEDULE 5
ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. The Applicant shall prepare and implement an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:
   (a) be submitted to the Secretary for approval within 6 months of the date of this consent;
   (b) provide the strategic framework for environmental management of the development;
   (c) identify the statutory approvals that apply to the development;
   (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
   (e) describe the procedures that would be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the development;
      - receive, handle, respond to, and record complaints;
      - resolve any disputes that may arise during the course of the development;
      - respond to any non-compliance;
      - respond to emergencies; and
   (f) include:
      - copies of any strategies, plans and programs approved under the conditions of this consent; and
      - a clear plan depicting all the monitoring required to be carried out under the conditions of this consent.

Adaptive Management

2. The Applicant shall assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

   Where any exceedance of these criteria and/or performance measures has occurred, the Applicant shall, at the earliest opportunity:
   (a) take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur;
   (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
   (c) implement remediation measures as directed by the Secretary;
   to the satisfaction of the Secretary.

Management Plan Requirements

3. The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:
   (a) detailed baseline data;
   (b) a description of:
      - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
      - any relevant limits or performance measures/criteria; and
      - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
   (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
   (d) a program to monitor and report on the:
      - impacts and environmental performance of the development; and
      - effectiveness of any management measures (see (c) above);
   (e) a contingency plan to manage any unpredicted impacts and their consequences;

(f) a program to investigate and implement ways to improve the environmental performance of the development over time;
(g) a protocol for managing and reporting any:
- incidents;
- complaints;
- non-compliances with statutory requirements; and
- exceedances of the impact assessment criteria and/or performance criteria; and

(h) a protocol for periodic review of the plan.

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

Annual Review

4. By the end of December each year, or other timing as may be agreed by the Secretary, the Applicant shall review the environmental performance of the development to the satisfaction of the Secretary. This review must:
(a) describe the development (including rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;
(b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against:
- the relevant statutory requirements, limits or performance measures/criteria;
- the monitoring results of previous years; and
- the relevant predictions in the EIS;

(c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
(d) identify any trends in the monitoring data over the life of the development;
(e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
(f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the development.

Revision of Strategies, Plans and Programs

5. Within 3 months of a modification to this consent or following the submission of an:
(a) annual review under condition 4 above:
(b) incident report under condition 7 below; or
(c) audit report under condition 9 below,
the Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this consent to the satisfaction of the Secretary.

Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.

Community Consultative Committee

6. The Applicant shall establish and operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. This CCC must be operated in general accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Developments* (Department of Planning, 2007, or its latest version), and be operating within 6 months of the date of this consent.

Notes:
- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.*
- *In accordance with the guideline, the Committee should comprise an independent chair and appropriate representation from the Applicant, Council and the local community.*

REPORTING

Incident Reporting

7. The Applicant shall immediately notify the Secretary and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with the Development, the Applicant shall notify the Secretary. Within 7 days of the date of the incident, the Applicant shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

Regular Reporting

8. The Applicant shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

INDEPENDENT ENVIRONMENTAL AUDIT

9. Within a year of the date of this consent, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
   (a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
   (b) include consultation with the relevant agencies, Council and the CCC;
   (c) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent and any relevant EPL and/or Water Licence (including any assessment, plan or program required under these approvals);
   (d) review the adequacy of any approved strategy, plan or program required under these approvals; and
   (e) recommend measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under these approvals.

   Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.

10. Within 6 weeks of the completion of this audit, unless the Secretary agrees otherwise, the Applicant shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report, including a timetable for the implementation of any measures proposed to address the recommendations in the audit report. If the Applicant intends to defer the implementation of a recommendation, reasons must be documented.

ACCESS TO INFORMATION

11. Within 6 months of the date of this consent, the Applicant shall:
   (a) make copies of the following publicly available on its website:
      - the EIS;
      - current statutory approvals for the development;
      - approved strategies, plans and programs required under the conditions of this consent;
      - a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
      - a complaints register, which is to be updated monthly;
      - minutes of CCC meetings;
      - the annual reviews of the development (for the last 5 years);
      - any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit;
      - any other matter required by the Secretary; and
   (b) keep this information up-to-date,

   to the satisfaction of the Secretary.

APPENDIX 1
DEVELOPMENT AREA

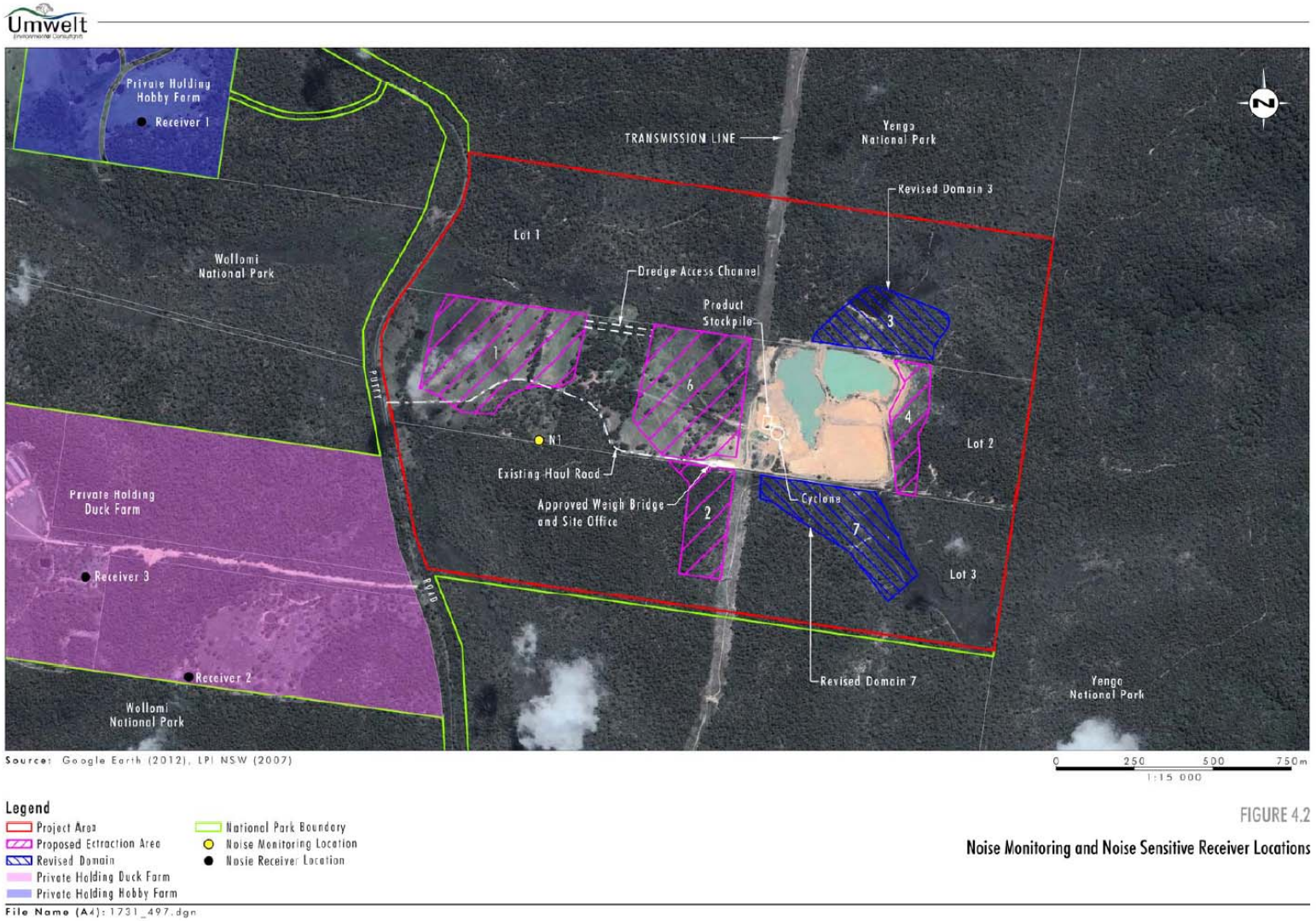


Figure 1: *Development Area*

APPENDIX 2
DEVELOPMENT LAYOUT

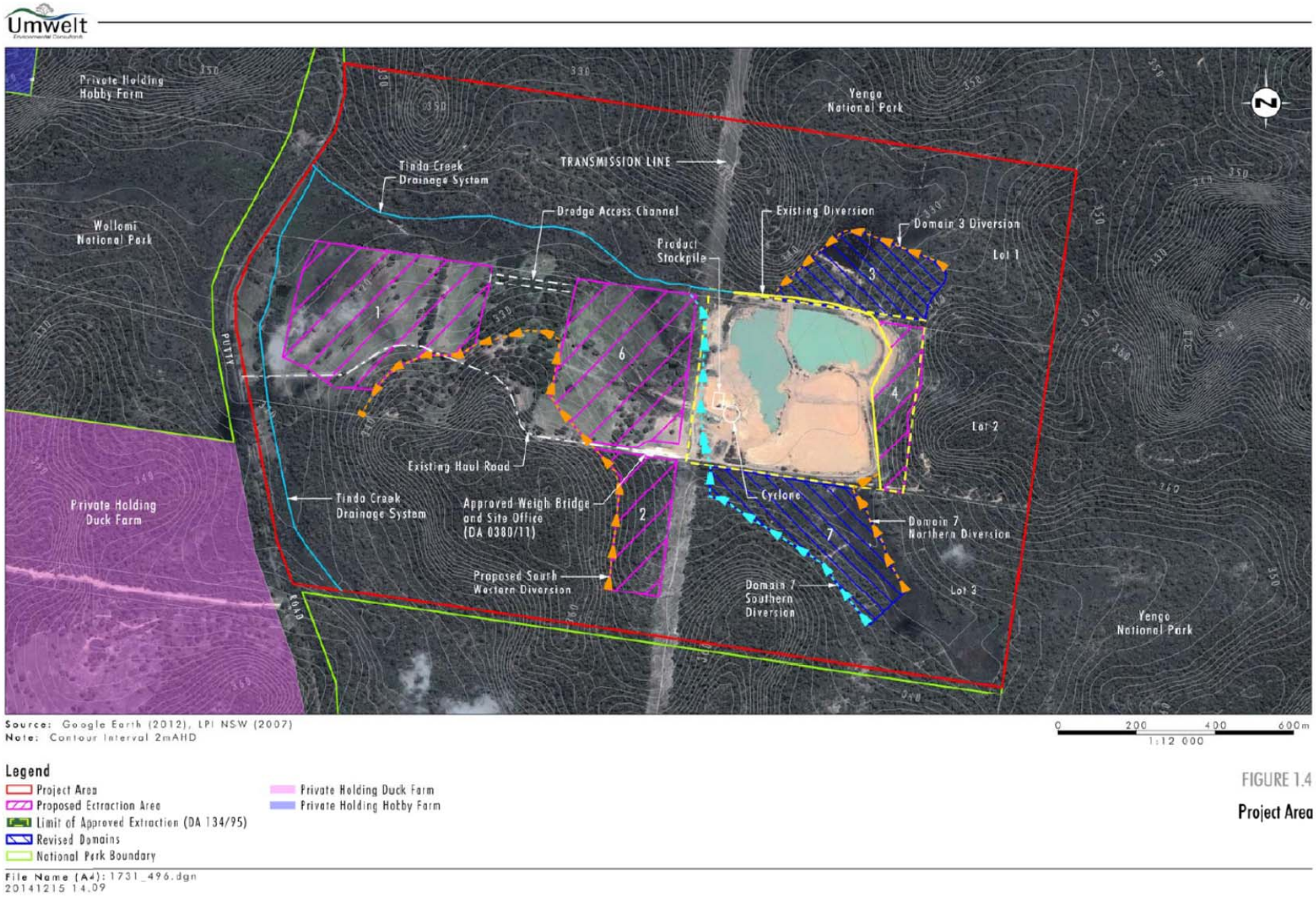


Figure 1: *Development Layout*

APPENDIX 3
STATEMENT OF COMMITMENTS

5.0 Draft Statement of Commitments

The DGRs for the proposal (**Appendix 1**) require that the EIS include a Draft Statement of Commitments which details the measures proposed by Hy-Tec for environmental mitigation, management and monitoring.

If approval is granted under the EP&A Act for the proposal, Hy-Tec will commit to the controls detailed below.

5.1 Compliance with the EIS

5.1.1 To carry out the development for the Project generally in accordance with the Development Application and this EIS.

5.2 Life of Operation, Production and Hours of Operations

Project Life

5.2.1 The Project approval life will be for an additional 30 years from the date of commencement of operations under the Project Approval. Closure and rehabilitation activities will be undertaken in accordance with a detailed Quarry Closure Plan, at the time of closure. These works may extend beyond the 30 year operational approval period.

Production Limits

5.2.2 A maximum of 300,000 tonnes per year of sand products will be transported from the quarry.

Hours of Operation

5.2.3 Quarry operations will be undertaken between the hours of 5.00 am and 10.00 pm Monday to Friday and 5.00 am and 3.00 pm on Saturdays.

5.2.4 The following activities may occur on Sundays and public holidays:

- maintenance of fixed plant and mobile plant;
- product stockpile management;
- water cart operations for stockpile area and plant area; and
- pumping for dewatering activities.

5.3 Environmental Management, Monitoring and Reporting

Environmental Management Plan

5.3.1 Within six months of development consent, Hy-Tec will revise its existing Environmental Management Plan (EMP) as part of the implementation of the Project. The EMP will include details of all of the management and monitoring

commitments outlined in the EIS (specifically those outlined in this Statement of Commitments).

Annual Review

5.3.2 Hy-Tec will prepare an Annual Review of the environmental performance of the Project and will make this available to the public, Hawkesbury City Council and relevant government agencies as required.

5.4 Ecology

A range of mitigation measures are proposed to ameliorate potential adverse ecological impacts associated with the Project. These include:

5.4.1 Implement a robust weed management program to be documented in the revised EMP.

5.4.2 Conduct rehabilitation progressively over the life of the quarry. All rehabilitation works will be scheduled to commence as soon as practicable after disturbance and reformation of the landscape.

5.4.3 A robust tree felling procedure will be implemented at Tinda Creek Quarry to minimise the potential for impacts on native fauna species (including threatened species) as a result of the clearing of hollow-bearing trees.

5.4.4 Nest boxes will be established in retained vegetation in proximity to area impacted as a result of the Project to mitigate the loss of hollow-bearing trees. An assessment of the number of tree hollows lost during clearing will be made as part of the tree felling activities and nest boxes will be established to compensate for this loss, where appropriate. Suitably designed nest boxes will be established for the range of hollow-dependent species that are known to occur in the Project area.

5.4.5 A pre-clearance survey of the proposed disturbance areas will be undertaken prior to ground disturbance (within seven days of the planned disturbance) to ensure that no Rosenberg's Goanna burrows are present. The assessment should be undertaken by a suitably qualified and licensed ecologist. If burrows are present, the ecologist will provide advice on how to ensure that no goannas remain within the burrows during the clearing process.

5.4.6 A pre-clearance survey of all areas to be cleared will be undertaken (within seven days of the planned clearing time) to ensure that no termite mounds used by Rosenberg's Goannas are present. The assessment should be undertaken by a suitably qualified and licensed ecologist. If termite mounds are present, the ecologist will provide advice on how to ensure that no goanna eggs or juveniles remain within the mounds during the clearing process.

5.4.7 A comprehensive biodiversity offset strategy is to be implemented for the Project as described in **Appendix 7** to ensure the development maintains or improves the terrestrial and aquatic biodiversity values of the region in the medium to long-term.

5.5 Aboriginal Heritage

It is noted that archaeological subsurface investigation is not necessary within the proposed extraction domains, prior to the quarry expansion proceeding. However, a range of mitigation measures are proposed to ameliorate potential adverse archaeological impacts associate with the Project. These include:

5.5.1 In consultation with the registered Aboriginal parties, prepare an Aboriginal Cultural Heritage Management Plan (ACHMP) for the proposed Project. The ACHMP will allow for management (collection) of the artefacts located in the Tinda Creek Artefact Scatter 1 site in Domain 3 (if Domain 3 is to be quarried) and to provide for future management of Aboriginal cultural heritage issues should they arise across the broader Project area. The ACHMP will form part of the revised EMP for the project.

5.5.2 If Domain 3 is to be quarried, the artefacts located within the Tinda Creek Artefact Scatter 1 site are collected using the methodology set out in the protocols and procedures of the approved ACHMP.

5.5.3 The EMP is to be updated to contain provisions to address management of the following issues, as detailed in the Aboriginal Cultural Heritage and Archaeological Assessment (**Appendix 9**):

- exposure of previously unrecorded artefactual material during ground disturbance works within the Project area;
- exposure of human/possible human skeletal material during ground disturbance works within the Project area;
- exposure of sandstone with evidence of Aboriginal engravings or grinding grooves; and
- development of an Aboriginal Cultural Heritage Training Package for all Hy-Tec employees/contractors working on the Project to be provided as part of the quarry induction process.

5.6 Historic Heritage

5.6.1 In the unlikely event that unexpected archaeological remains or potential heritage items not identified as part of this assessment are discovered during the Project and are likely to be disturbed by the Project, all works in the immediate area should cease, the remains and potential impacts should be assessed by a qualified archaeologist or heritage consultant and, if necessary, the Heritage Branch, Department of Planning notified.

5.7 Traffic and Access

5.7.1 The site access will be upgraded to comply with the minor road standard access as detailed in AS2890.2.

5.8 Noise

5.8.1 Hy-Tec will undertake an attended noise monitoring program (as detailed in **Section 4.7.6.1**) in order to assess ongoing compliance with relevant noise impact assessment criteria over the life of the Project. Details of the Noise Management Plan will be provided in the revised EMP.

5.8.2 The monitoring results will be reviewed by the Hy-Tec environmental representative to assess compliance with the Noise Impact Assessment (NIA) predictions and with the relevant NIA criteria. The results will be reported in accordance with the requirements of the Project approval and EPL.

5.9 Air Quality

5.9.1 The existing dust control measures will continue to be implemented on site, including:

- minimisation of the total disturbed/working areas at any one time; and
- watering of unsealed roads, working areas and stockpiles as required.

5.10 Surface Water and Groundwater

5.10.1 Hy-Tec will continue to undertake monitoring of groundwater bores in accordance with existing licence conditions.

5.10.2 All diversion drains will continue to be maintained in good condition.

5.10.3 The water management system will remain as a closed system.

5.11 Greenhouse Gas and Energy

5.11.1 Hy-Tec will continue to participate in the Energy Efficiency Opportunities (EEO) Program and undertake the following activities to improve energy use efficiency:

- develop an EEO project and communication plan;
- evaluate energy use for the Project;
- identify and investigate potential EEO; and
- implement, track, communicate and report on EEO.

5.11.2 Hy-Tec will continue to improve on-site diesel use efficiency based on the range of measures outlined in **Section 4.11.8.1**

5.11.3 Hy-Tec will explore the use of lower GHG emission energy sources as soon as practical based on the range of measures outlined in **Section 4.11.8.2.**

5.12 Hazards

5.12.1 Hy-Tec will store all dangerous goods in accordance with dangerous goods storage requirements and relevant Australian Standards.

5.12.2 Hy-Tec will continue to implement the appropriate measures to reduce the risk of fire ignition and the spread of bushfire across the site in consultation with the Rural Fire Services (RFS).

5.13 Rehabilitation and Closure

5.13.1 The revised EMP will detail the approach to rehabilitation of the Project, including the species to be used in revegetation works.

5.13.2 Wherever possible, rehabilitation will be completed progressively as part of the ongoing development of the quarry.

5.13.3 A detailed Quarry Closure Plan will be developed approximately three years prior to cessation of quarrying activities.

APPENDIX 4
CONCEPTUAL FINAL LANDFORM

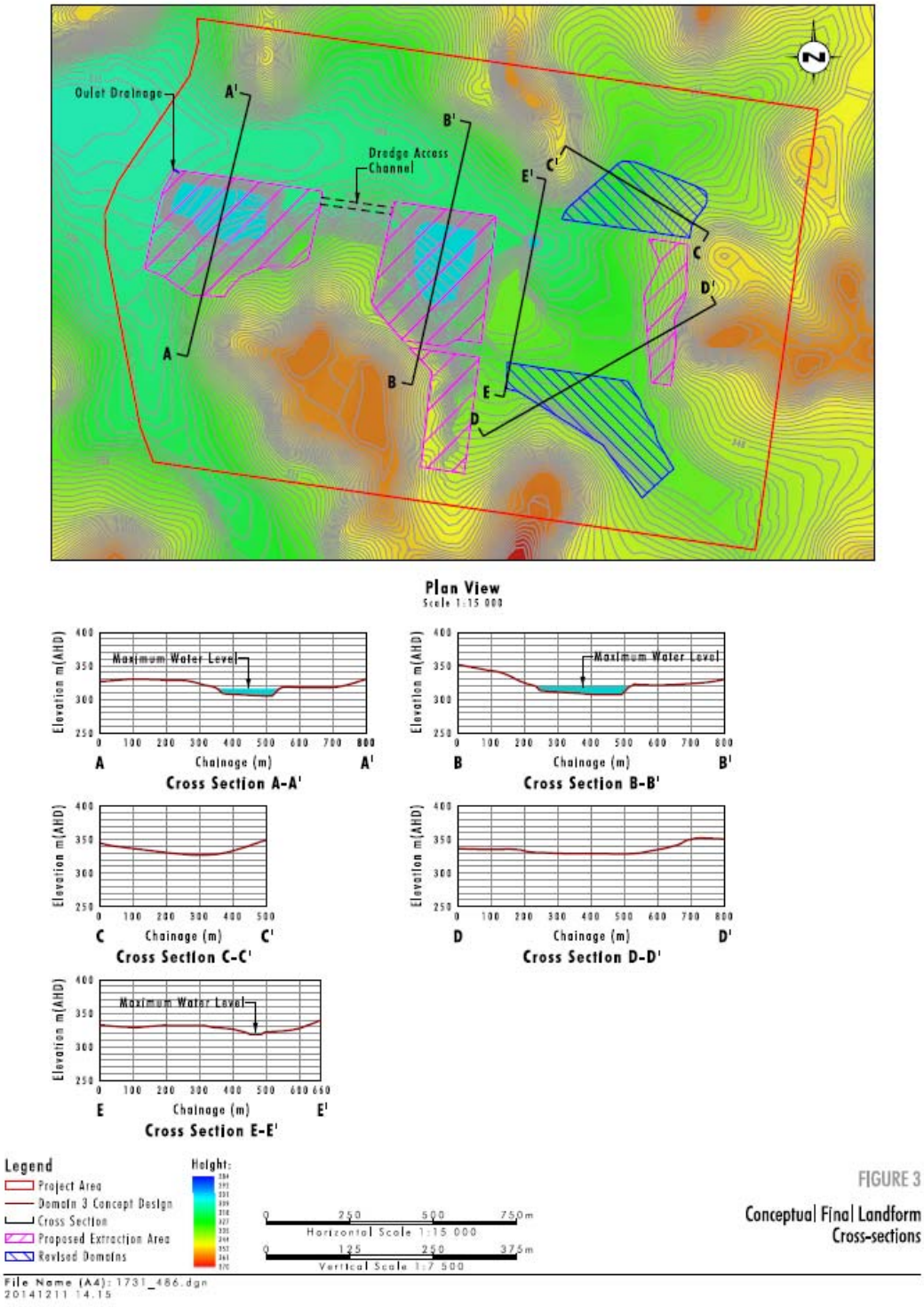


***Figure 1**: Conceptual Final Landform*

***Figure 1**: Biodiversity Offsets*

***Figure 2**: Location of Grevillea parviflora subsp. Parviflora*

APPENDIX 6
NOISE COMPLIANCE ASSESSMENT

Applicable Meteorological Conditions

1. The noise criteria in Table 2 of Schedule 3 are to apply under all meteorological conditions except wind speeds greater than 3 m/s at 10 m above ground level.

Determination of Meteorological Conditions

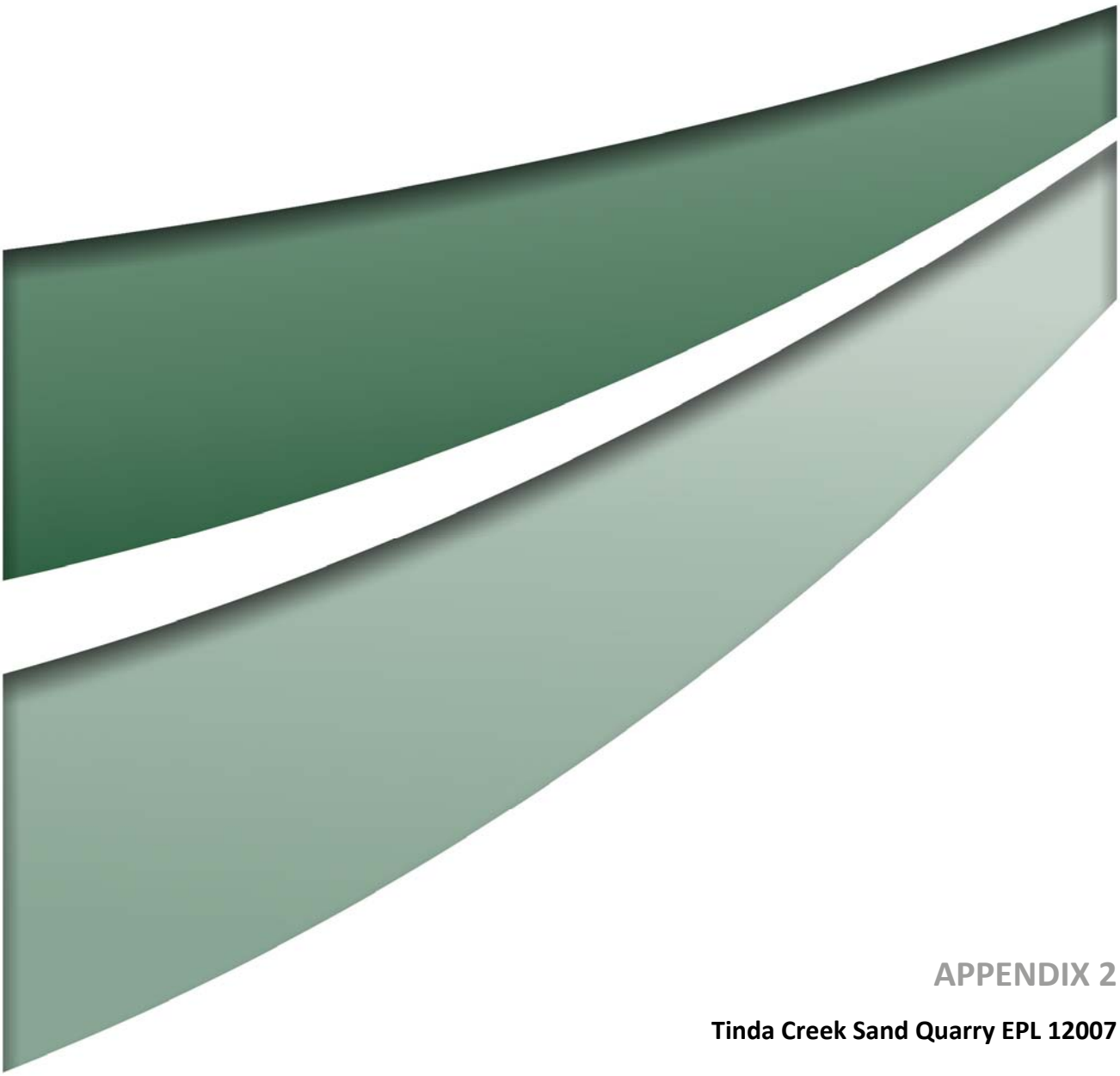
2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station on or in the vicinity of the site.

Compliance Monitoring

3. Unless directed otherwise by the Secretary, annual attended monitoring is to be used to evaluate compliance with the relevant conditions of consent.

   Note: The Secretary may direct that the frequency of attended monitoring increase or decrease at any time during the life of the development.

4. Unless otherwise agreed with the Secretary, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (as amended from time to time), in particular the requirements relating to:
   (a) monitoring locations for the collection of representative noise data;
   (b) meteorological conditions during which collection of noise data is not appropriate;
   (c) equipment used to collect noise date, and conformity with Australian Standards relevant to such equipment; and
   (d) modifications to noise data collected including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.



APPENDIX 2

Tinda Creek Sand Quarry EPL 12007

Section 58(5) Protection of the Environment Operations Act 1997

Licence Variation

Licence - 12007

AUS - 10 RHYOLITE PTY LIMITED
ABN 79 002 325 144 ACN 002 325 144
PO BOX 6770
SILVERWATER NSW 1811

Attention: David Cilento

Notice Number	1533429
File Number	EF13/4048
Date	18-Dec-2015

NOTICE OF VARIATION OF LICENCE NO. 12007

BACKGROUND

A. AUS - 10 RHYOLITE PTY LIMITED ("the licensee") is the holder of Environment Protection Licence No. 12007 ("the licence") issued under the *Protection of the Environment Operations Act 1997* ("the Act"). The licence authorises the carrying out of activities at 6102 Putty Road, MELLONG, NSW, 2756 ("the premises").

B. On 10 April 2015 the NSW Department of Planning and Environment issued development consent SSD 4978 for expansion of the Tinda Creek Quarry.

C. Under section 89K of the *Environmental Planning and Assessment Act 1979* an environment protection licence issued by the EPA must be substantially consistent with the development consent.

D. This Notice amends the licence to maintain consistency with the conditions in development consent SSD 4978.

VARIATION OF LICENCE NO. 12007

1. By this notice the EPA varies licence No. 12007. The attached licence document contains all variations that are made to the licence by this notice.
2. The following variations have been made to the licence:
   - Condition A2.1 - Address changed from 6102 Singleton Road, Colo Heights to 6102 Putty Road, Mellong
   - Condition A3.2 - Addition of requirement to abide by Development Application and Environmental Impact Statement.
   - Condition P1 - Addition of monitoring point for noise emissions.
   - Condition L3 - Addition of noise limits.

Licence Variation

- Condition L4 - Addition of limits to hours of operation.
- Condition O3.2 - Addition of requirement for trucks to cover loads.
- Condition M2 - Addition of surface water system monitoring requirements.
- Condition M5 - Addition of noise monitoring requirements.
- Condition R4.1 - Addition of noise monitoring reporting requirements.
- Condition R4.2 - Addition of surface water system reporting requirements.

.....

David Gathercole

Acting Manager

Metropolitan - Sydney Industry

(by Delegation)

INFORMATION ABOUT THIS NOTICE

- This notice is issued under section 58(5) of the Act.
- Details provided in this notice, along with an updated version of the licence, will be available on the EPA's Public Register (http://www.epa.nsw.gov.au/prpoeo/index.htm) in accordance with section 308 of the Act.

Appeals against this decision

- You can appeal to the Land and Environment Court against this decision. The deadline for lodging the appeal is 21 days after you were given notice of this decision.

When this notice begins to operate

- The variations to the licence specified in this notice begin to operate immediately from the date of this notice, unless another date is specified in this notice.
- If an appeal is made against this decision to vary the licence and the Land and Environment Court directs that the decision is stayed the decision does not operate until the stay ceases to have effect or the Land and Environment Court confirms the decision or the appeal is withdrawn (whichever occurs first).

Environment Protection Licence

Licence - 12007

Licence Details	
Number:	12007
Anniversary Date:	12-May

Licensee

AUS - 10 RHYOLITE PTY LIMITED

PO BOX 6770

SILVERWATER NSW 1811

Premises

TINDA CREEK

6102 PUTTY ROAD

MELLONG NSW 2756

Scheduled Activity

Extractive Activities

Fee Based Activity	Scale
Water-based extractive activity	> 100000-500000 m3 extracted

Region

Metropolitan - Sydney Industry

Level 13, 10 Valentine Ave
PARRAMATTA NSW 2150

Phone: (02) 9995 5000

Fax: (02) 9995 6900

PO Box 668 PARRAMATTA

NSW 2124

Environment Protection Licence

Licence - 12007

Environment Protection Licence

Licence - 12007

Environment Protection Licence

Licence - 12007

Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 12007

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

AUS - 10 RHYOLITE PTY LIMITED
PO BOX 6770
SILVERWATER NSW 1811

subject to the conditions which follow.

Environment Protection Licence

Licence - 12007

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Extractive Activities	Water-based extractive activity	> 100000 - 500000 m3 extracted

Note: *The activity scale above refers to the amount extracted per annum.*

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
TINDA CREEK
6102 PUTTY ROAD
MELLONG
NSW 2756
LOT 2 DP 628806

A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

A3.2 Works and activities must be carried out in accordance with the proposal contained in:

a) development application SSD 4978 submitted to the NSW Department of Planning and Environment on 21 October 2011; and
b) the Environmental Impact Statement - Proposed Expansion of Tinda Creek Sand Quarry, July 2014 relating to development application SSD 4978 above.

Environment Protection Licence

Licence - 12007

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or setting of limits for the emission of noise from the point.

Noise

EPA identification no.	Type of monitoring point	Location description
1	Noise monitoring	The boundary of "Receiver 1" as detailed in Figure 6.1 of the document titled "Tinda Creek Sand Quarry Noise Management Plan Final October 2015", submitted to the EPA on 18 November 2015

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Waste

L2.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L2.2 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.

L3 Noise limits

L3.1 Noise generated at the premises that is measured at each noise monitoring point established under this licence must not exceed the noise levels specified in Column 4 of the table below for that point during the corresponding time periods specified in Column 1 when measured using the corresponding measurement parameters listed in Column 2.

POINT 1

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
All hours	LAeq (15 minute)	-	35
Night	Lmax OR LA1,1min	-	45

L3.2 For the purposes of the table under Condition L3.1 "Night" has the same meaning as in the NSW Industrial Noise Policy (EPA, 2000).

L4 Hours of operation

L4.1 Unless permitted by another condition of this licence, activities at the premises must:
a) only be undertaken between 7:00 am and 6:00 pm Monday to Friday;
b) only be undertaken between 7:00 am and 3:00 pm Saturday; and
c) not be undertaken on Sundays or public holidays.

L4.2 In addition to the limitations imposed by Condition L4.1, construction activities must not be undertaken:
a) between 7:00 am and 8:00 am Saturdays; and
b) between 1:00 pm and 3:00 pm Saturdays.

L4.3 In addition to the hours of operation specified in Condition L4.1, dispatch activities may be undertaken:
a) between 5:00 am and 10:00 pm Monday to Friday; and
b) between 6:00 am and 3:00 pm Saturdays.

L4.4 Maintenance activities may be undertaken at any time if those activities are inaudible at all residential premises.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

O3.2 The licensee must ensure that all laden vehicles exiting the site have their loads covered.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

M2 Environmental monitoring

M2.1 a) The licensee must undertake monthly inspections of the surface water system at the premises.

b) The monthly inspections must:
(i) be undertaken immediately upstream and downstream of the quarry disturbance area;
(ii) include visual inspection of litter, oil and grease and sediment levels within the surface water system, including diversion channels;
(iii) include visual inspection of the physical integrity of the surface water system, including any signs of erosion; and
(iv) include visual inspection of the water level/ flow in Tinda Creek.

M3 Recording of pollution complaints

M3.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M3.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M3.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M3.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M4 Telephone complaints line

M4.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M4.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M4.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

M5 Noise monitoring

M5.1 To assess compliance with the noise limits specified within this licence, the licensee must undertake operator attended noise monitoring at each specified noise monitoring point in accordance with the table below.

POINT 1

Assessment period	Minimum frequency in a reporting period	Minimum duration within assessment period	Minimum number of assessment period
All hours when in use	Yearly	1 hour	1 operation day

M5.2 The licensee must undertake noise monitoring as directed by an authorised officer of the EPA.

M5.3 All noise monitoring required by this licence must be undertaken in accordance with Australian Standard AS 2659.1 - 1998: Guide to the use of sound measuring equipment - Portable sound level meters, or any revisions of that standard that may be made by Standards Australia, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
a) a Statement of Compliance; and
b) a Monitoring and Complaints Summary.
At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

R4 Other reporting conditions

Noise monitoring results

R4.1 a) The licensee must submit the results of any noise monitoring undertaken in accordance with the requirements of Condition M5.1 or Condition M5.2 to the EPA within three weeks of the noise monitoring being undertaken.

b) The noise monitoring results submitted to the EPA must include:

(i) a map of each noise monitoring location in relation to the noise source, including relevant distances;
(ii) an analysis of the noise monitoring results;
(iii) any detected exceedance of the noise limits specified in Condition L4.1;
(iv) details of any remedial action taken or proposed to be taken in relation to any exceedance of the noise limits specified in Condition L4.1;
(v) details of the prevailing meteorological conditions during the period when the noise monitoring was undertaken; and
(vi) confirmation that noise monitoring was/was not undertaken in accordance with Condition M5.3.

Surface Water System reporting

R4.2 a) The licensee must submit a report to the EPA detailing the results of the surface water system inspection required under Condition M2.1.

b) The report must:
(i) include written details and photographic records of the results of the visual inspections required under Condition M2.1 b);
(ii) include details of any actions undertaken or proposed to be undertaken by the licensee in response to the findings of the visual inspections, including no action;
(iii) be submitted to the EPA within three weeks of the inspection being undertaken; and
(iv) be submitted to:

Manager Sydney Industry
NSW Environment Protection Authority
PO Box 668
Parramatta NSW 2124

7 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

Environment Protection Licence

Licence - 12007

Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 12007

flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder describe d at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

Environment Protection Licence

Licence - 12007

TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Mr Ross Carter

Environment Protection Authority

(By Delegation)

Date of this edition: 11-May-2005

End Notes

1 Licence varied by notice 1048725, issued on 14-Jun-2005, which came into effect on 09-Jul-2005.

2 Licence varied by notice 1068195, issued on 05-Jul-2007, which came into effect on 05-Jul-2007.

3 Licence varied by notice 1075699, issued on 16-Jul-2007, which came into effect on 16-Jul-2007.

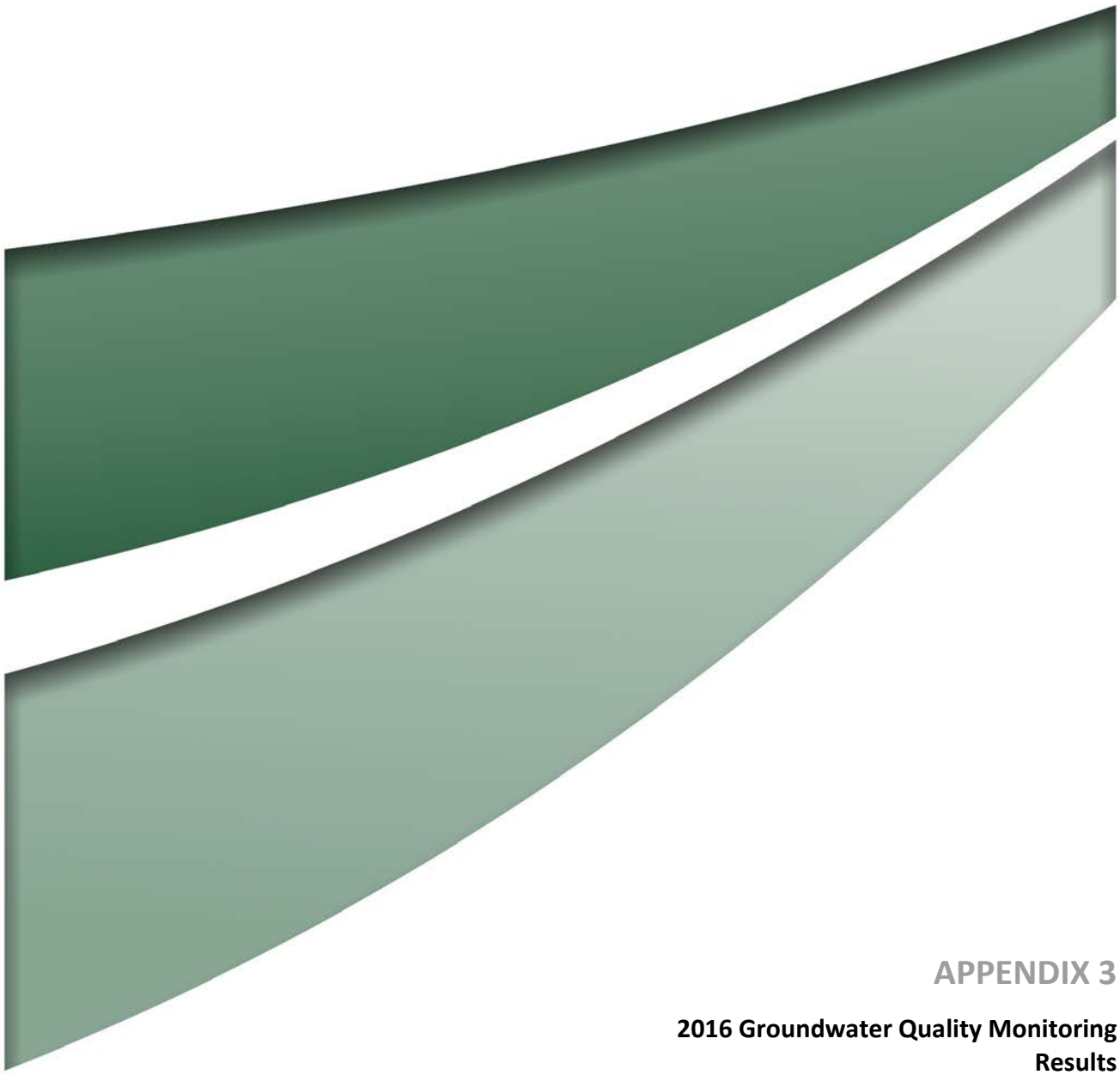
4 Licence varied by repair to Annual Return Archive, issued on 18-Jul-2007, which came into effect on 18-Jul-2007.

5 Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>

6 Licence transferred through application 146114, approved on 26-Jul-2010, which came into effect on 26-Jul-2010.

7 Licence varied by notice 1122474, issued on 07-Dec-2010, which came into effect on 07-Dec-2010.

8 Licence varied by notice 1530546 issued on 12-May-2015

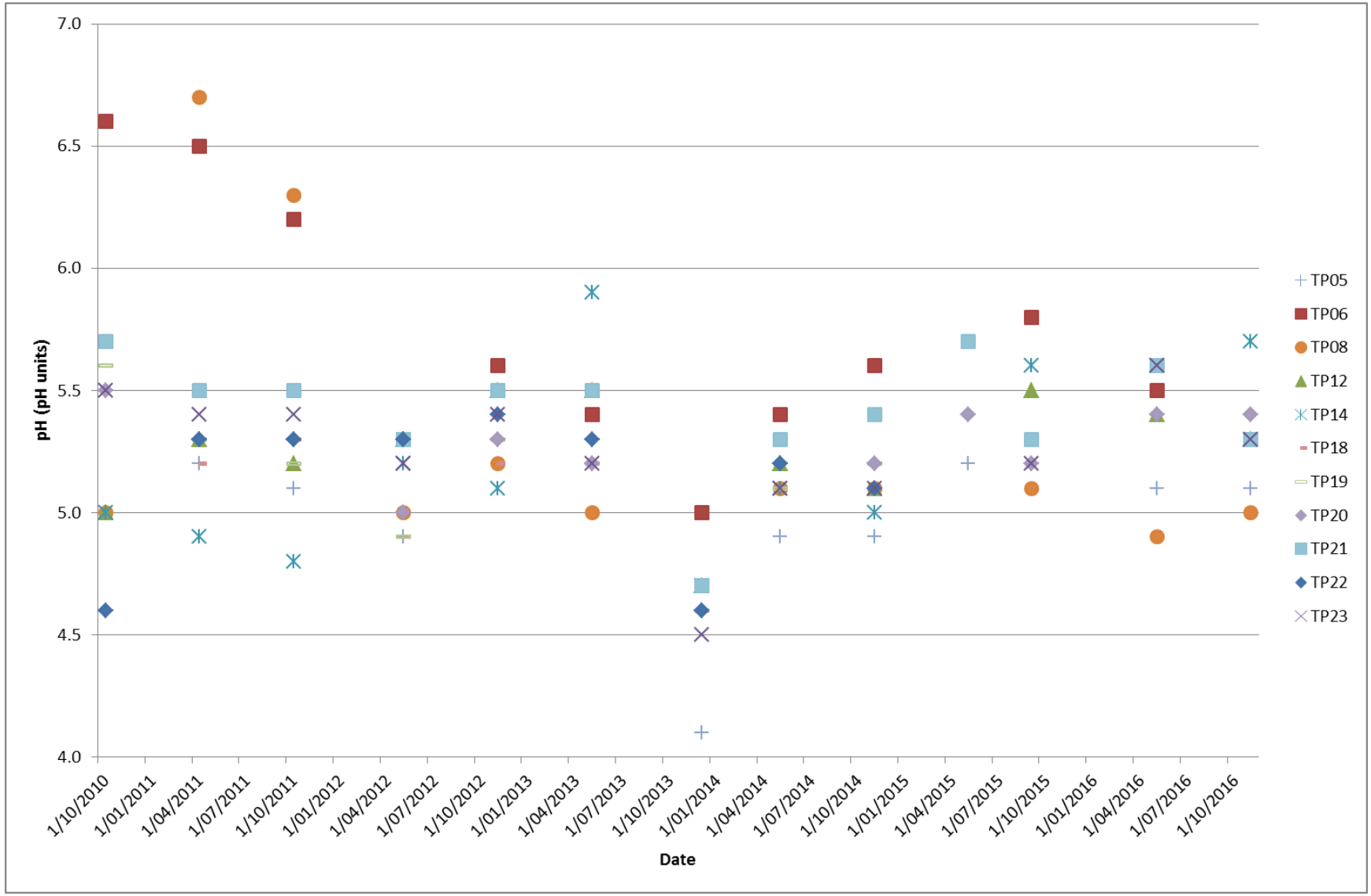


APPENDIX 3

2016 Groundwater Quality Monitoring Results

Table A3.1 pH (pH Value)

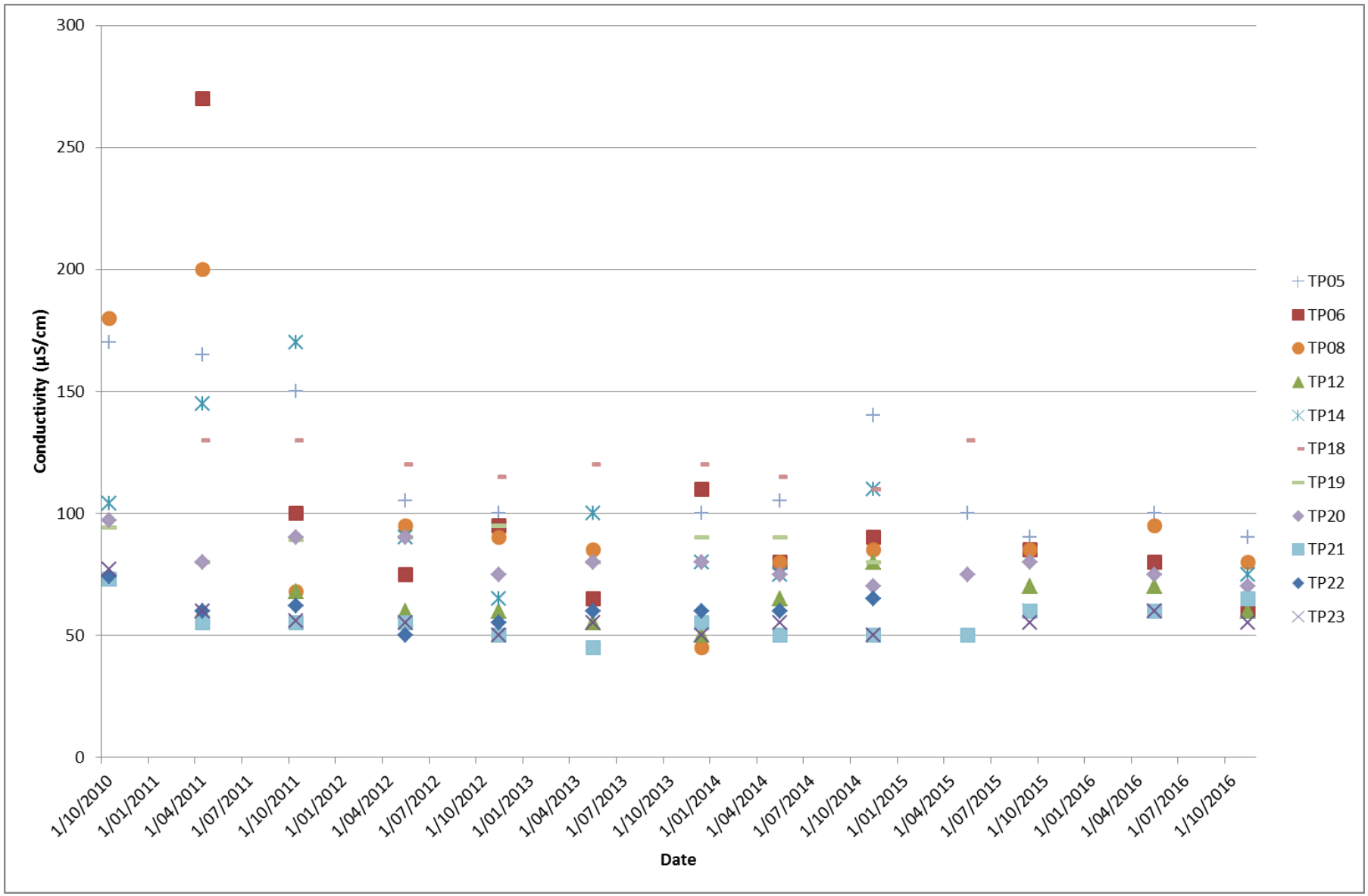
Bore	1/10/2010	29/04/2011	31/10/2011	30/05/2012	27/11/2012	29/05/2013	3/12/2013	28/05/2014	25/11/2014	27/05/2015	24/09/2015	26/05/2016	29/11/2016
TP22	4.6	5.3	5.3	5.3	5.4	5.3	4.6	5.2	5.1	-	-	-	-
TP06	6.6	6.5	6.2	5.3	5.6	5.4	5	5.4	5.6	-	5.8	5.5	5.3
TP12	5.0	5.3	5.2	5.3	5.5	5.5	4.7	5.2	5.1	-	5.5	5.4	5.3
TP23	5.5	5.4	5.4	5.2	5.4	5.2	4.5	5.1	5.1	-	5.2	5.6	5.3
TP14	5.0	4.9	4.8	5.2	5.1	5.9	4.7	5.1	5	-	5.6	5.6	5.7
TP08	5.0	6.7	6.3	5.0	5.2	5	4.7	5.1	5.1	-	5.1	4.9	5
TP05	5.5	5.2	5.1	4.9	5.2	5.2	4.1	4.9	4.9	5.2	5.2	5.1	5.1
TP19	5.6	5.3	5.2	4.9	5.3	5.2	4.6	5.1	5.2	-	-	-	-
TP20	5.5	5.3	5.3	5	5.3	5.2	4.6	5.1	5.2	5.4	5.2	5.4	5.4
TP21	5.7	5.5	5.5	5.3	5.5	5.2	4.6	5.2	5.2	5.7	5.3	5.6	5.3
TP18		5.2	5.3	4.9	5.2	5.5	4.7	5.3	5.4	5.7	-	-	-



Graph A3.1 pH water quality results 2010 – 2016

Table A3.2 Conductivity (µs/cm)

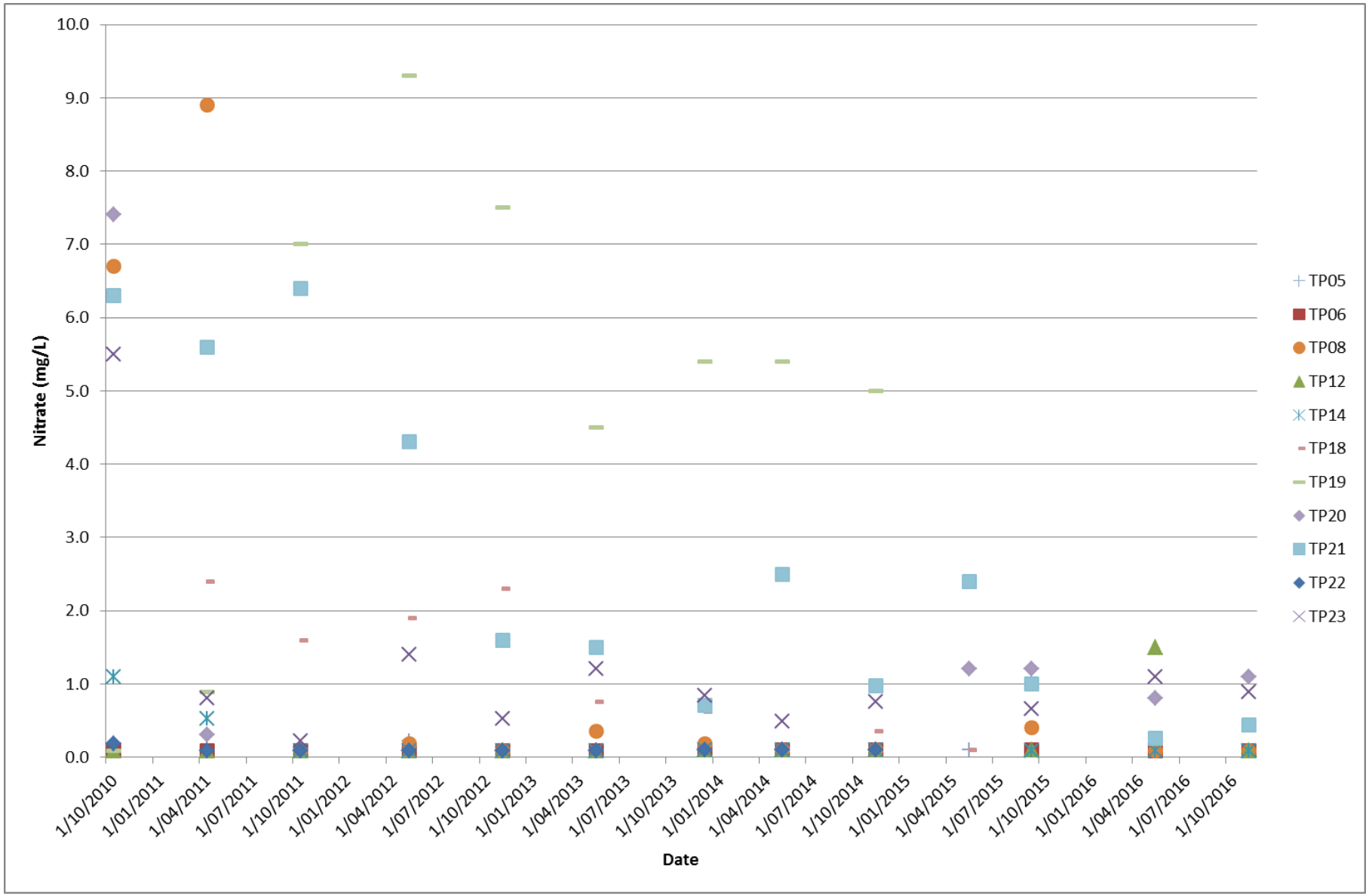
Bore	1/10/2010	29/04/2011	31/10/2011	30/05/2012	27/11/2012	29/05/2013	3/12/2013	28/05/2014	25/11/2014	27/05/2015	24/09/2015	26/05/2016	29/11/2016
TP22	74	60	62	50	55	60	60	60	65	-	-	-	-
TP06	1320	270	100	75	95	65	110	80	90	-	85	80	60
TP12	73	60	68	60	60	55	50	65	80	-	70	70	60
TP23	77	60	56	55	50	55	50	55	50	-	55	60	55
TP14	104	145	170	90	65	100	80	75	110	-	60	60	75
TP08	180	200	68	95	90	85	45	80	85	-	85	95	80
TP05	170	165	150	105	100	80	100	105	140	100	90	100	90
TP19	94	80	89	90	95	120	120	115	110	-	-	-	-
TP20	97	80	90	90	75	80	90	90	80	75	80	75	70
TP21	73	55	55	55	50	80	80	75	70	50	60	60	65
TP18		130	130	120	115	45	55	50	50	130	-	-	-



Graph A3.2 Conductivity water quality results 2010 - 2016

Table A3.3 Nitrate (mg/L)

Bore	1/10/2010	29/04/2011	31/10/2011	30/05/2012	27/11/2012	29/05/2013	3/12/2013	28/05/2014	25/11/2014	27/05/2015	24/09/2015	26/05/2016	29/11/2016
TP22	0.18	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-
TP06	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1
TP12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	1.5	<0.1
TP23	5.5	0.8	0.22	1.4	0.53	1.2	0.84	0.49	0.75	-	0.66	1.1	0.9
TP14	1.1	0.53	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1
TP08	6.7	8.9	<0.1	0.18	<0.1	0.4	0.2	<0.1	<0.1	-	0.4	<0.1	<0.1
TP05	<0.1	<0.1	<0.1	0.22	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP19	<0.1	0.89	7	9.3	7.5	0.75	0.62	<0.1	0.35	-	-	-	-
TP20	7.4	0.31	<0.1	<0.1	<0.1	4.5	5.4	5.4	5	1.2	1.2	0.8	1.1
TP21	6.3	5.6	6.4	4.3	1.6	<0.1	<0.1	<0.1	<0.1	2.4	1	0.3	0.4
TP18		2.4	1.6	1.9	2.3	1.5	0.71	2.5	0.97	<0.1	-	-	-



Graph A3.3 Nitrate water quality results 2010 - 2016

Table A3.4 Ammonia (mg/L)

Bore	1/10/2010	29/04/2011	31/10/2011	30/05/2012	27/11/2012	29/05/2013	3/12/2013	28/05/2014	25/11/2014	27/05/2015	24/09/2015
TP22	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
TP06	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	-	<0.1
TP12	0.3	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
TP23	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
TP14	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
TP08	0.4	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
TP05	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP19	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
TP20	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP21	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP18		<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	-

Table A3.5 TPH C6 – C9 (µg/L)

Bore	1/10/2010	29/04/2011	31/10/2011	30/05/2012	27/11/2012	29/05/2013	3/12/2013	28/05/2014	25/11/2014	27/05/2015	24/09/2015
TP22	<50	<10	<10	<10	<10	<10	<10	<10	<10	-	-
TP06	<50	<10	<10	<10	<10	<10	<10	<10	<10	-	<20
TP12	<50	<10	<10	<10	<10	<10	<10	<10	<10	-	<20
TP23	<50	<10	<10	<10	<10	<10	<10	<10	<10	-	<20
TP14	<50	<10	<10	<10	<10	<10	<10	<10	<10	-	<20
TP08	<50	<10	<10	<10	<10	<10	<10	<10	<10	-	<20
TP05	<50	<10	<10	<10	<10	<10	<10	<10	50	<10	<20
TP19	<50	<10	<10	<10	<10	<10	<10	<10	<10	-	-
TP20	<50	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20
TP21	<50	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20
TP18	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	-

Table A3.6 TPH C10 – C14 (µg/L)

Bore	1/10/2010	29/04/2011	1/11/2011	30/05/2012	27/11/2012	29/05/2013	3/12/2013	28/05/2014	25/11/2014	27/05/2015	24/09/2015
TP22	<50	<50	<50	<50	<50	<50	<50	<100	<100	-	-
TP06	<50	<50	<50	<50	<50	<50	<50	<100	<100	-	<100
TP12	<50	<50	<50	<50	<50	<50	<50	<100	<100	-	<100
TP23	<50	<50	<50	<50	<50	<50	<50	<100	<100	-	<100
TP14	<50	<50	<50	<50	<50	<50	<50	<100	<100	-	<100
TP08	<50	<50	<50	<50	<50	<50	<50	<100	<100	-	<100
TP05	<50	<50	<50	<50	<50	<50	<50	<100	<100	<100	<100
TP19	<50	<50	<50	<50	<50	<50	<50	<100	<**100**	-	-
TP20	<50	<50	<50	<50	<50	<50	<50	<100	<100	<100	<100
TP21	<50	<50	<50	<50	<50	<50	<50	<100	<100	<100	<100
TP18	-	<50	<50	<50	<50	-	-	<100	<100	150	-

Table A3.7 TPH C15 – C28 (µg/L)

Bore	1/10/2010	29/04/2011	31/10/2011	30/05/2012	27/11/2012	29/05/2013	3/12/2013	28/05/2014	25/11/2014	27/05/2015	24/09/2015
TP22	<200	<100	<100	<100	<100	<100	<100	<200	<200	-	-
TP06	650	<100	<100	<100	<100	<100	<100	<200	<200	-	<200
TP12	<200	<100	<100	<100	<100	<100	<100	<200	<200	-	<200
TP23	<200	<100	<100	280	<100	<100	<100	<200	<200	-	<200
TP14	<200	<100	<100	<100	<100	<100	<100	<200	<200	-	220
TP08	<200	<100	<100	<100	<100	<100	<100	<200	<200	-	<200
TP05	<200	<100	<100	<100	<100	<100	<100	<200	<200	<200	<200
TP19	<200	<100	<100	<100	<100	<100	<100	<200	<200	-	-
TP20	<200	<100	<100	280	<100	<100	<100	<200	<200	740	<200
TP21	<200	<100	<100	<100	<100	<100	<100	<200	<200	510	<200
TP18	-	<100	<100	<100	<100	<100	<100	<200	<200	760	-

Table A3.8 TPH C29 – C36 (µg/L)

Bore	1/10/2010	29/04/2011	31/10/2011	30/05/2012	27/11/2012	29/05/2013	3/12/2013	28/05/2014	25/11/2014	27/05/2015	24/09/2015
TP22	<50	<100	<100	<100	<100	<100	<100	<100	<100	-	-
TP06	320	<100	<100	<100	<100	<100	<100	<100	<100	-	<200
TP12	<50	<100	<100	<100	<100	<100	<100	<100	<100	-	200
TP23	<50	<100	<100	210	<100	<100	<100	<100	<100	-	<200
TP14	<50	<100	<100	<100	<100	<100	<100	<100	<100	-	280
TP08	<50	<100	<100	<100	<100	<100	<100	<100	<100	-	<200
TP05	<50	<100	<100	<100	<100	<100	<100	<100	<100	120	<200
TP19	<50	<100	<100	<100	<100	<100	<100	<100	<100	-	-
TP20	<50	<100	<100	190	<100	<100	<100	<100	<100	870	<200
TP21	<50	<100	<100	<100	<100	<100	<100	<100	<100	670	<200
TP18	-	<100	<100	<100	<100	<100	<100	<100	<100	840	-

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