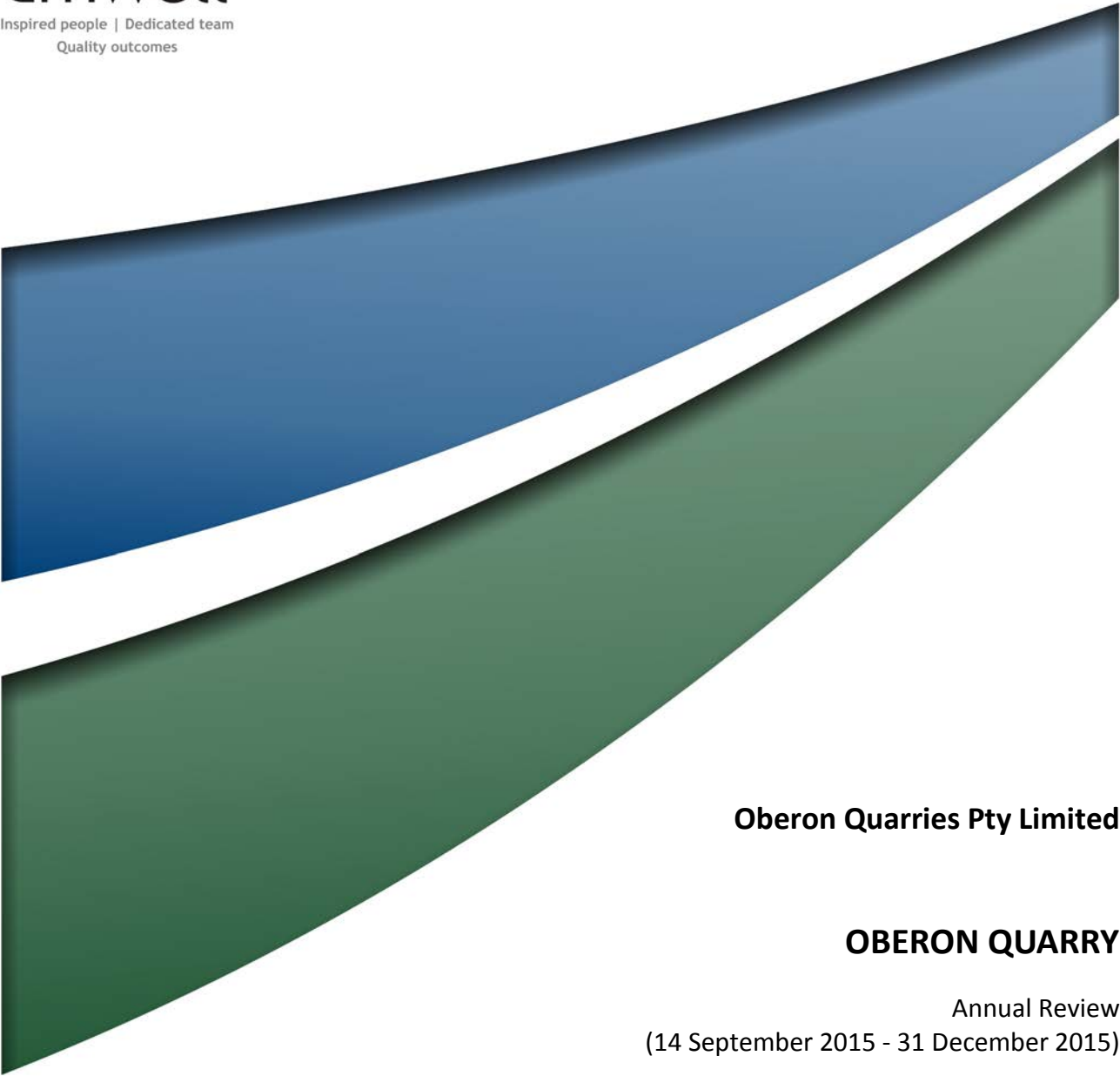




Oberon Quarries Pty Limited

OBERON QUARRY

Annual Review
(14 September 2015 - 31 December 2015)

OBERON

Annual Review

(14 September 2015 - 31 December 2015)

OBERON QUARRY

Prepared by

Umwelt (Australia) Pty Limited

on behalf of

Oberon Quarries Pty Limited

Project Director: Peter Jamieson

Project Manager: Emma Mudford

Report No. 1296/R53/V2

Date: March 2016



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Table of Contents

1.0	Statement of Compliance	7
2.0	Introduction	9
2.1	Background	9
2.2	Quarry Contacts	11
3.0	Approvals	12
4.0	Operations Summary	15
4.1	Quarrying Operations	15
4.1.1	Hours of Operations	15
4.1.2	Transport Management	16
4.1.3	Transport Rates	16
4.2	Next Reporting Period	16
4.2.1	2016 Extraction	16
4.2.2	2016 Infrastructure Upgrade	17
5.0	Actions Required from Previous Annual Review	19
6.0	Environmental Performance	20
6.1	Noise Monitoring	20
6.2	Dust Monitoring	21
6.3	Blast Monitoring	22
7.0	Water Management	24
7.1	Surface Water Monitoring	24
7.1.1	Water Take	26
7.2	Groundwater Monitoring	26
8.0	Rehabilitation	28
8.1	Final Landform	29
9.0	Community	30
10.0	Independent Audit	31
10.1	DPE Site Inspection	31
11.0	Incidents and Non-compliances during the Report Period	32
12.0	Activities to be Completed in the Next Period	33
13.0	References	34

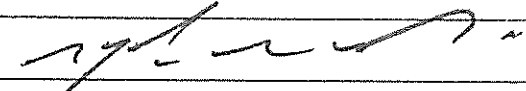
Figures

Figure 2.1	Locality Map	10
Figure 6.1	Environmental Monitoring Locations	21

Tables

Table 1.1	Statement of compliance	7
Table 1.2	Compliance Status Key for Table 1.3	7
Table 1.3	Non-compliances recorded during the report period	8
Table 2.1	Key personnel responsible for environmental management of Oberon Quarry	11
Table 3.1	Development Consent History for Oberon Quarry	12
Table 3.2	Development Consent (SSD_6333) Conditions for the Annual Review	13
Table 4.1	Production Summary 2015	15
Table 4.2	Operating Hours Summary 2015	15
Table 4.3	Transport Summary 2015	16
Table 6.1	Noise Monitoring Locations at Oberon Quarry	20
Table 6.2	Total Particulates – Deposited Matter at Oberon Quarry during the 2015 reporting period	22
Table 6.3	Blast Monitoring Results for Oberon Quarry during 2015 AR report period	23
Table 7.1	Summary of Water Quality Monitoring in Racecourse Creek 1996 - 2015	25
Table 7.2	Summary of Oberon Quarry Groundwater Monitoring 1996 - 2015	26
Table 8.1	Summary of Rehabilitation Status at Oberon Quarries	28
Table 8.2	Maintenance Activities on Rehabilitated Land at Oberon Quarry	29
Table 11.1	Summary of 2015 Environmental Incidents and Non-compliances at Oberon Quarry	32

Annual Review Title Block

Name of operation:	Oberon Quarry
Name of operator:	Oberon Quarries Pty Limited
Development consent:	Oberon Quarry Continuation Project Development Consent (SSD_6333)
Name of holder of development consent:	Oberon Quarries Pty Limited
Mining Lease:	N/A
Water licence:	Water Access Licence (WAL 34279)
Name of holder of water licence:	Oberon Quarries
MOP or RMP start/end date:	N/A
Annual Review start date:	14 September 2015
Annual Review end date:	31 December 2015
I, Neil Hargraves, certify that this audit report is a true and accurate record of the compliance status of Oberon Quarry for the period 14 September 2015 to 31 December 2015, and that I am authorised to make this statement on behalf of Oberon Quarries Pty Limited. Note. <i>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.</i> <i>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).</i>	
Name of authorised reporting officer:	Neil Hargraves
Title of authorised reporting officer:	Quarry Manager
Signature of authorised reporting officer:	
Date:	31.03.16

1.0 Statement of Compliance

Oberon Quarries Pty Limited (Oberon Quarries) operates Oberon Quarry, an existing hard rock quarry located approximately 4 kilometres south of Oberon, New South Wales (NSW) (refer to **Section 2.1**). Oberon Quarries was granted the original Oberon Quarries Development Consent (DA92/164) on 1 October 1993 by the NSW Minister for Planning to establish and operate a hard rock quarry at 'Langley Heights', Oberon, New South Wales. The Oberon Quarry Continuation Project Development Consent (SSD 6333) was granted to Oberon Quarries on 14 September 2015 and provides for the continued operations of Oberon Quarry. It is noted that this Annual Review has been developed to detail the operations undertaken at Oberon Quarry during the report period (14 September 2015 to 31 December 2015) in accordance with Development Consent (SSD_6333). As detailed above, operations at Oberon Quarries were also undertaken in accordance with the original Oberon Quarries Development Consent (DA92/164) during the report period, however this consent was relinquished on 2 December 2015 and therefore compliance with the requirements of the original Development Consent (DA 92/164) are not included within this Annual Review.

An overview of the environmental approvals held by Oberon Quarries is included within **Section 3.0**. **Table 1.1** below provides a statement of compliance for Oberon Quarry for the period 14 September 2015 to 31 December 2015 (report period). During the report period, there was one non-compliance recorded by Oberon Quarry with statutory approvals listed in **Section 3.0**. Further detail regarding the non-compliance is included in **Table 1.3**, with a detailed description of the non-compliance provided in **Table 11.1**.

This Annual Review has been prepared in accordance with the NSW Government Post-approval requirements for state significant mining developments Annual Review Guideline (NSW Government, 2015) (Annual Review Guideline). The compliance status in **Table 1.1** and **Table 1.3** below has been developed based on the Annual Review Guidelines summarised below:

Table 1.1 Statement of compliance

Were all conditions of the relevant approvals(s) complied with?	
Development Consent SSD_6333	NO*
Environment Protection Licence 4442	YES

* Minor Administrative non-compliance.

Table 1.2 Compliance Status Key for Table 1.3

Risk Level	Colour Code	Description
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence

Risk Level	Colour Code	Description
Medium	Non-compliant	Non-compliance with: • Potential for serious environmental consequences, but is unlikely to occur; or • 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; or • 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)

Table 1.3 Non-compliances recorded during the report period

Relevant Approval	Condition No.	Condition Description (Summary)	Compliance Status/Risk Level	Comment	Where addressed in Annual Review
SSD 6333	Monitoring of Product Transport Schedule 3, Condition 17	The applicant shall keep accurate records of all truck movements to and from the site (hourly, daily, weekly, monthly and annually) and publish a summary of records on its website every 6 months.	Non - Compliant	Oberon Quarries to develop a means of recording truck movements into the quarry.	Section 10.1

2.0 Introduction

Condition 9 of Schedule 5 of the Oberon Quarry Continuation Project Development Consent (SSD_6333) (Development Consent) requires an Annual Review (AR) to be prepared and submitted to the Department of Planning and Environment (DP&E) by 31 March each year. This AR is submitted for the period 14 September 2015 to 31 December 2015 and addresses all the conditions listed under Condition 9 of Schedule 5 of the Development Consent. In addition to being prepared in accordance with the Development Consent, this AR has also been prepared in accordance with the NSW Government Annual Review Guideline (NSW Government, 2015).

2.1 Background

Oberon Quarries Pty Limited (Oberon Quarries) operates Oberon Quarry, an existing hard rock quarry located approximately 4 kilometres south of Oberon, New South Wales (NSW) (refer to **Figure 2.1**). Oberon Quarries was granted the original Oberon Quarries Development Consent (DA92/164) on 1 October 1993 by the NSW Minister for Planning to establish and operate a hard rock quarry at 'Langley Heights', Oberon, New South Wales. The approved development includes Portions 92, 94, 102, 107-111 inclusive, 211 and 213; Crown Road Reserve and Lot A DP 386067 Parish of Norway, Oberon Local Government Area.

On 14 September 2015, Oberon Quarries was granted approval of the Oberon Quarry Continuation Project Development Consent (SSD_6333) by the NSW Minister for Planning to extend the life of the quarry for an additional 30 years. The Development Consent (SSD_6333) allows for continued operations of the Oberon Quarry across a broader area which will enable the extraction of additional basalt resources. The Development Consent (SSD_6333) retains the current maximum production level of 400,000 tonnes per annum (tpa) and removed the requirement for production to not to exceed an annual average of 200,000 tpa over a 10 year period. The original Oberon Quarries Development Consent (DA92/164) was surrendered on 2 December 2015. The statutory approvals held by Oberon Quarries are detailed in **Section 3.0**.

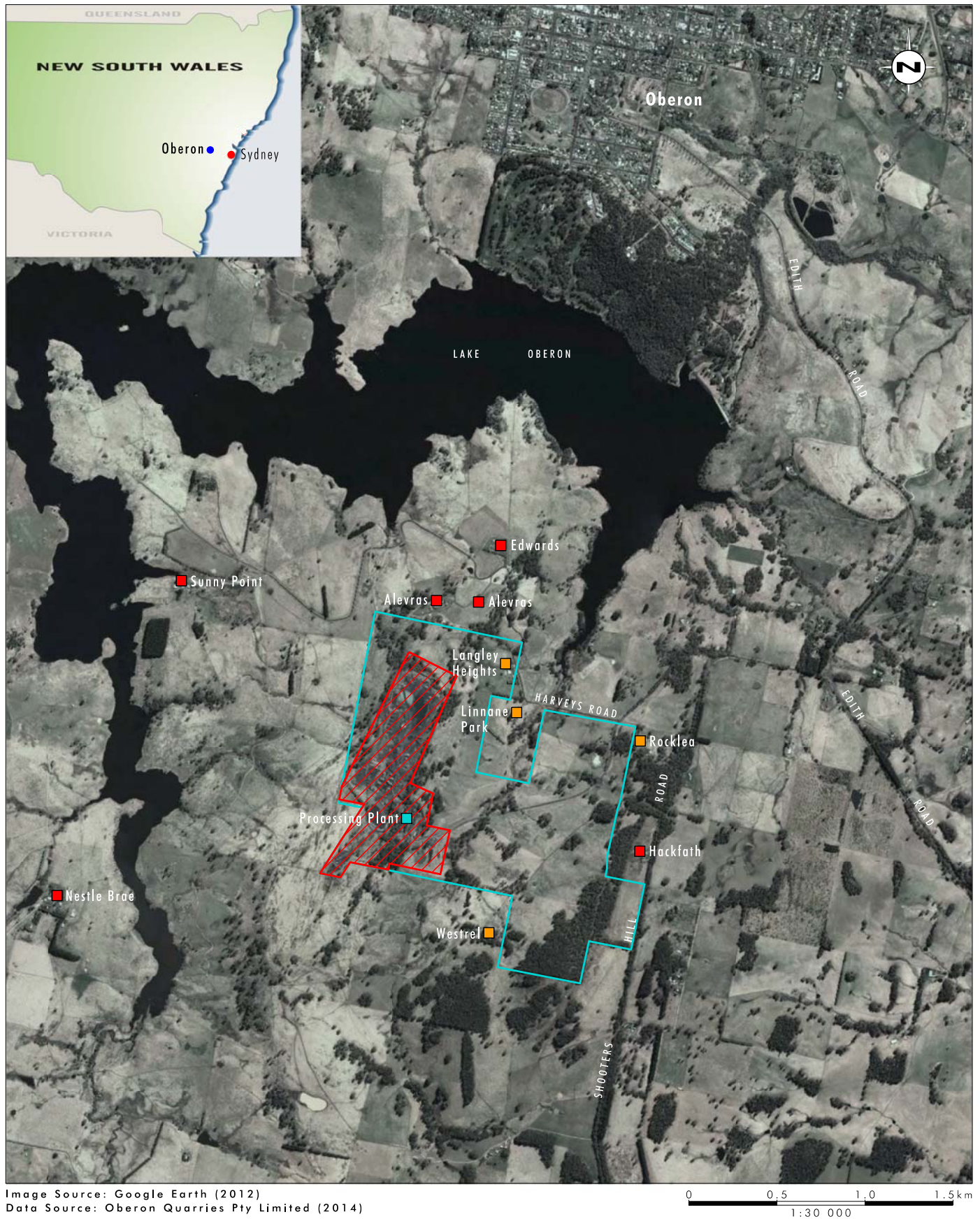


Image Source: Google Earth (2012)
Data Source: Oberon Quarries Pty Limited (2014)

Legend

- Project Area
- Langley Heights Property
- Private Residence
- Residence Owned by Oberon Quarries or Associated with Quarry
- Processing Plant

FIGURE 2.1
Locality Map

2.2 Quarry Contacts

The Quarry Manager is responsible to the regulatory authorities for all aspects of environmental compliance at the site and supervises the day-to-day site environmental management and reporting, including monitoring and supervision of environmental works. The Quarry Manager’s contact details are summarised in **Table 2.1**.

Table 2.1 Key personnel responsible for environmental management of Oberon Quarry

Name	Title	Company	Contact No.
Neil Hargraves	Quarry Manager	Oberon Quarries Pty Limited	(02) 6336 0259

3.0 Approvals

The operations at Oberon Quarry are subject to a range of standards and performance measures. All approvals currently held by Oberon Quarry are listed in **Table 3.1**. The original Oberon Quarries Development Consent (DA92/164) was surrendered on 2 December 2015 with operations undertaken in accordance with the Development Consent (SSD_6333) during the period 14 September 2015 to 31 December 2015.

Oberon Quarry also operates under Environment Protection Licence (EPL) No. 4442, which was first issued by the Environment Protection Authority (EPA) in January 1994. The monitoring and recording conditions of the EPL require:

- monthly monitoring of dust deposition at four locations (dust deposition gauges)
- monthly monitoring of surface water quality at two locations upstream and downstream of Oberon Quarry on Racecourse Creek
- monitoring of all blasts conducted by the quarry
- noise monitoring
- implementation of a Pollution Incident Response Management Plan
- maintenance of a complaints register and publishing of environmental results on Oberon Quarries website: <http://oberonquarries.com.au/>.

Oberon Quarries currently holds a Part 2 surface water licence under the *Water Act 1912* (80SL051088, WAL 34279) for the extraction of water from Racecourse Creek which forms part of the Fish River Water Source. Water is pumped when needed from Racecourse Creek to the quarry at a rate of 2 litres / second.

Table 3.1 Development Consent History for Oberon Quarry

Approval No.	Development	Granted	Expiry	Status
Development Consent (DA92/164)	Original Consent	01.10.1993	01.10.2013	Surrendered during 2015.
Development Consent (SSD_6333)	Oberon Quarry Continuation Project	14.09.2015	14.09.2045	Current
Environment Protection Licence 4442	Oberon Quarries	January 1994	NA	Current

Approval No.	Development	Granted	Expiry	Status
Water Access Licence 34279 (80SL051088)	Part 2 surface water licence under the Water Act 1912 for the extraction of water from Racecourse Creek	03.10.2012	Perpetuity	Current

The requirements for this AR are detailed within Condition 9 of Schedule 5 of the Development Consent. These requirements along with an explanation of where each requirement is addressed within this document are provided in **Table 3.2**.

Table 3.2 Development Consent (SSD_6333) Conditions for the Annual Review

Conditions		Addressed in Section
Schedule 5 – Environmental Management, Reporting and Auditing Annual Review		
9.	By the end of March 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:	This document
	(a) describe the development (including any 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	Section 4.0 and 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 • requirements of any plan or program required under this consent • monitoring results of previous years • relevant predictions in the EIS	Section 6.0
	(c) identify any non-compliance over the past calendar 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

Conditions		Addressed in Section
	(e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies	Section 6.0
	(f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the development.	Section 6.0 and 12.0

4.0 Operations Summary

During the period 01 September 2015 to 31 December 2015, Oberon Quarries extracted approximately 80,820 tonnes of saleable product from the operation. An overview of the operations undertaken during the report period is contained within the following sections.

4.1 Quarrying Operations

The approved extraction area is approximately 21 hectares. During the report period, basalt was extracted from the operation. In accordance with the Development Consent, Oberon Quarries has approval to extract 400,000 tonnes of material from the site during any calendar year, with total production for the report period being 80,200 tonnes. A production summary is included in **Table 4.1**. Detail of quarry operating hours and truck movements during the report period is detailed in **Table 4.2**.

Table 4.1 Production Summary 2015

Material	Approved limit (SSD_6333)	This reporting period (1 September 2015 – 31 December 2015)
Waste Rock / Overburden	400,000 tonnes from the site in any calendar year (total quarry product).	15,480 tonnes
Saleable Product	400,000 tonnes from the site in any calendar year (total quarry product).	80,820 tonnes

4.1.1 Hours of Operations

The hours of operations at Oberon Quarry during the report period are detailed in **Table 4.2**.

Table 4.2 Operating Hours Summary 2015

Activity	Operating Hours	This reporting period
Extraction operations	7am to 6pm Monday to Friday 7am to 5pm Saturday	Oberon Quarry undertook extraction operations within the specified operating hours.
Loading and dispatch	6am to 10pm Monday to Friday 6am to 5pm Saturday	Oberon Quarry completed all loading and dispatch activities within the specified operating hours.
Construction and maintenance activities	7am to 6pm Monday to Friday 7am to 4pm Saturday	Oberon Quarry completed all construction and maintenance activities within the specified operating hours.

Activity	Operating Hours	This reporting period
Blasting	9am to 5pm Monday to Saturday	Oberon Quarry undertook all blasting activities within the specified operating hours.

4.1.2 Transport Management

During the reporting period, Oberon Quarries implemented a Transport Management Plan and Driver Code of Conduct for all quarry related heavy vehicles using public roads. This was developed in consultation with Oberon Council and submitted to the DPE. The code of conduct is currently being implemented on site and also forms part of the site induction process. This Transport Management Plan will be updated in the 2016 report period to address the requirements of Development Consent (SSD_6333).

4.1.3 Transport Rates

Table 4.3 Transport Summary 2015

Activity	Operating Condition	This reporting period
Laden Vehicles leaving the site	6am to 7am – maximum of 4 6pm to 10pm – maximum of 4	Oberon Quarry complied with all transport operating conditions during the report period.

4.2 Next Reporting Period

The activities to be undertaken during the 2016 report period are detailed in the following sections.

4.2.1 2016 Extraction

On 14 September 2015, Oberon Quarries was granted Development Consent (SSD_6333) for Oberon Quarry Continuation Project by the NSW Minister for Planning to extend the life of the quarry for an additional 30 years. The Development Consent (SSD_6333) allows for continued operations of the Oberon Quarry including increasing the extraction area by approximately 1 hectare to avoid sterilisation of a small section of additional high quality basalt resources (refer to **Figure 4.1**).

Extraction is confined to the basalt plateau on top of Racecourse Hill. The quarry floor is located below the skyline and is bounded on all sides by natural topography, except for a narrow cutting on the eastern hillside above the processing area, which provides haul road access to the quarry floor. Extraction of the second bench is planned to commence in 2016. The quarry floor at present is approximately 8 to 10 metres below the top of Racecourse Hill. The final quarry floor will be approximately 20 metres below the top surface of the hill, when the two benches have been extracted.



Image Source: Google Earth (2012)
Data Source: Oberon Quarries Pty Limited (2014)

0 100 200 400m
1:8 000

Legend

- Project Area
- Crown Road Reserve
- Approved Extraction Area
- Right of Carriageway (12m wide)
- Proposed Duplication of Internal Haul Road

FIGURE 4.1

Approved Extraction Area

4.2.2 2016 Infrastructure Upgrade

Modification of the crushing and screening plant is planned to occur in 2016 and will consist of replacing the 3 inch JTY crusher with a Giro crusher and modifications to the conveyor and screen layouts. This will be reviewed and may be revised as planning and equipment specifications are finalised. The equipment to be installed will be more energy efficient than the existing plant and result in reduced environmental impacts such as air quality due to production of less fines (a by-product of the crushing process). Upgrading the plant as proposed is expected to reduce noise impacts by 3 dB(A) to 6 dB(A).

5.0 Actions Required from Previous Annual Review

This is the first Annual Review for Oberon Quarry as required under the current Development Consent (SSD_6333).

A compliance audit was completed in December 2015 by DP&E which identified one action which must be met in order to maintain compliance with the Development Consent (SSD_6333), refer to **Section 10.1** for further discussion of the DPE compliance audit.

6.0 Environmental Performance

The following section provides a summary of environmental monitoring and management undertaken during the 2015 reporting period (14 September 2015 to 31 December 2015). In accordance with the Annual Review Guideline (NSW Government, 2015), this AR contains a summary of environmental monitoring data where it is required to explain trends or environmental performance during the report period. It is noted that environmental monitoring data has also been published on the Oberon Quarries website (<http://oberonquarries.com.au/>) in accordance with Condition 12 of Schedule 5 of the Development Consent.

It is noted that this Annual Review has been developed in accordance with the requirements of Development Consent (SSD_6333) and therefore, environmental monitoring data detailed within this report for the remainder of the 2015 calendar year (1 January 2015 to 13 September 2015) is presented within this report for context only.

Please refer to **Figure 6.1** for the location of all monitoring points for Oberon Quarry.

6.1 Noise Monitoring

Noise monitoring is required to be undertaken quarterly as per Condition 4 of Schedule 3 of the Development Consent (SSD_6333). Noise criteria for the quarry's operational noise are outlined in Development Consent (SSD_6333) and EPL 4442.

Noise monitoring is undertaken at four private residences located within 1 kilometre and 1.3 kilometres of the processing area (refer to **Figure 6.1**). A description of the monitoring locations is provided in **Table 6.1**.

Table 6.1 Noise Monitoring Locations at Oberon Quarry

Monitoring Location	Description
NM1	Private residence – 174 Shooters Hill Road, Oberon
NM2	Private residence – 167 Harveys Road, Oberon
NM3	Private residence – 167 Harveys Road (Tourist Cabin), Oberon
NM4	Near access gate to 167 Harveys Road, Oberon

During the 2015 Report Period (14 September 2015 – 31 December 2015), attended noise monitoring was not undertaken with monitoring to be undertaken during Qtr 1 2016 following the installation of a new crusher at Oberon Quarry (refer to **Section 4.2.2**). These results will be reported in the 2016 Annual Review. Noise monitoring reports can be found on Oberon Quarries website at <http://oberonquarries.com.au/environmental-monitoring-results/>.

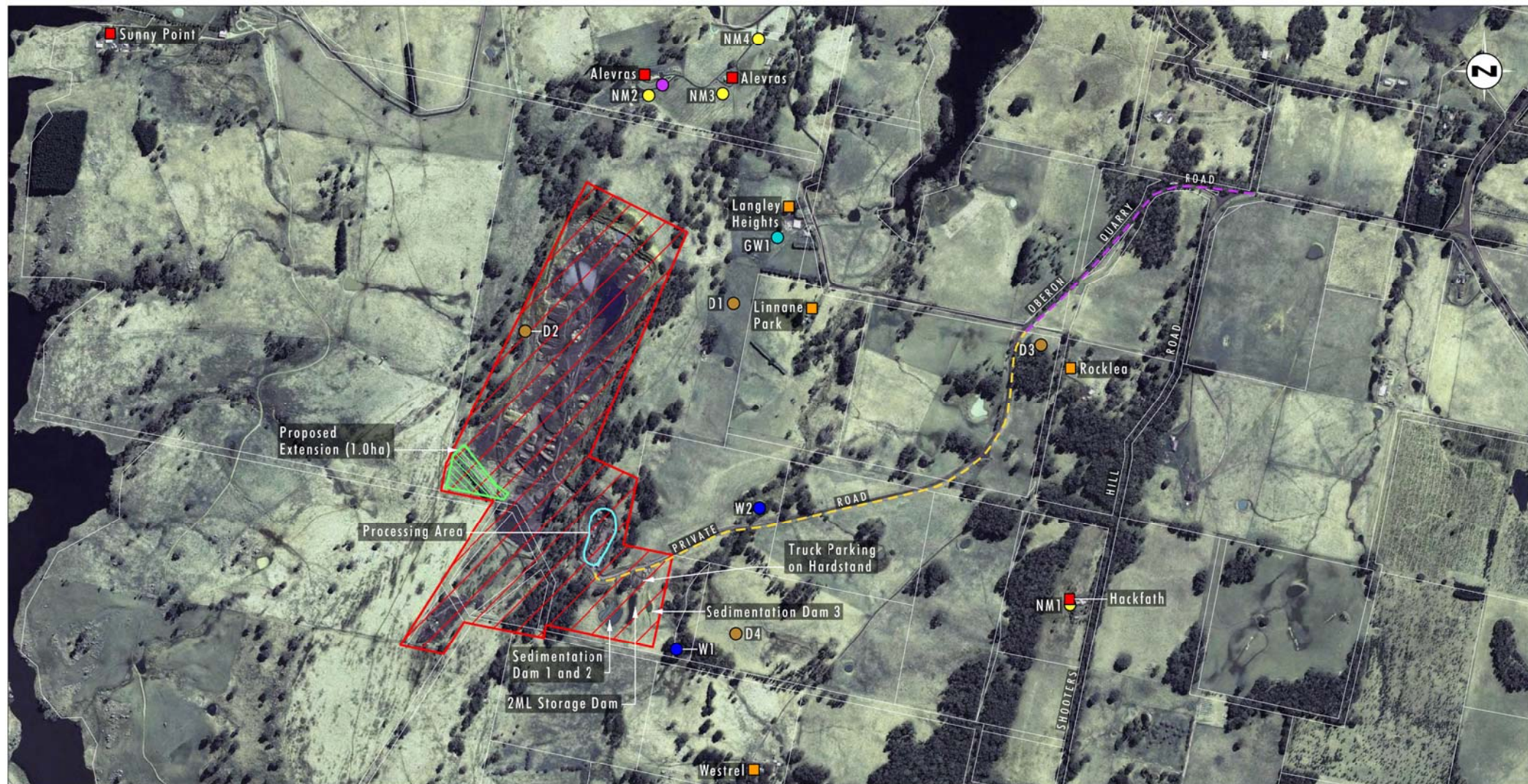


Image Source: Google Earth (2012)
Data Source: Oberon Quarries Pty Limited (2014)

0 250 500 750m
1:15 000

Legend

- | | | |
|-----------------------------------|--|----------------------------|
| Project Area | Noise Monitoring Location | Proposed Extension (1.0ha) |
| Right of Carriageway (12m Wide) | Blast Monitoring Location | |
| Depositional Dust Gauge Location | Private Residence | |
| Surface Water Monitoring Location | Residence Owned by Oberon Quarries/Associated with Oberon Quarry | |
| Groundwater Monitoring Location | Processing Plant | |

FIGURE 6.1
Environmental Monitoring Locations

6.2 Dust Monitoring

Four dust deposition gauges were established in the vicinity of the quarry in 1996, as illustrated on **Figure 6.1**. Monitoring of dust deposition rates has been conducted by Oberon Quarries since March 1996. Results for dust monitoring during the reporting period (14 September 2015 to 31 December 2015) are presented in **Table 6.2**.

Table 6.2 Total Particulates – Deposited Matter at Oberon Quarry during the 2015 reporting period

Sample Date	D1	D2	D3	D4
	g/m ² /mth	g/m ² /mth	g/m ² /mth	g/m ² /mth
30/09/2015	26.3*	0.85	1.11	2.02
29/10/2015	2.14	1.82	1.92	1.83
27/11/2015	3.54	1.15	0.60	2.11
18/12/2015	2.57	4.71	3.75	4.64
2015 Average	2.75*	2.13	1.85	2.65

*Note – the elevated reading in September 2015 is believed to be attributed to activities not undertaken by Oberon Quarries adjacent to the dust gauge and therefore this reading has been excluded from the calculation of the 2015 average.

The annual average for dust deposition was below the specified limit of 4 g/m²/month for rural residential areas during 2015 for dust deposition gauge D2, D3 and D4. D1 is surrounded by farmland and it is believed that adjacent activities may have contributed to the elevated reading at D1 during September 2015. There was no change in operations at the Oberon Quarry operations during September.

Oberon Quarries will continue dust deposition monitoring. Dust control measures also continue to be implemented which include dust suppression sprays on the receival hopper, jaw crusher, cone crusher, conveyors and screens. A water cart is also available on site for haul roads and other unsealed areas.

6.3 Blast Monitoring

The November 2002 variation to EPL 4442 requires monitoring of all blasts conducted at Oberon Quarry from December 2002. Blast monitoring is required to verify that the limits for air blast overpressure levels and ground vibration peak particle velocity are not exceeded at any point within 1 metre of any affected residential boundary or other noise sensitive area.

The air blast overpressure level from blasting operations must not exceed:

- 115 dB (Lin Peak) for more than 5% of the total number of blasts during each reporting period
- 120 dB (Lin Peak) at any time.

The ground vibration peak particle velocity from blasting operations must not exceed:

- 5 mm/s for more than 5% of the total number of blasts carried out on the premises during each reporting period
- 10 mm/s at any time.

Blast monitoring is conducted at the nearest residence to the quarry, which is a house located due north of the quarry on Lot 401 DP 1004011 (refer to **Figure 6.1**). Blast monitoring results for blasts conducted during the 2015 reporting period (14 September 2015 to 31 December 2015) are presented in **Table 6.3**.

Table 6.3 Blast Monitoring Results for Oberon Quarry during 2015 AR report period

Date	Monitoring Point	Air Blast Overpressure (dB (Linear Peak))	Ground Vibration (mm/s)
1/10/2015	Residence	108.4	0.933
7/12/2015	Residence	106.0	0.635

Blasts recorded during October 2015 and December 2015 were below the air blast limit of 115 dB (Linear Peak) and ground vibration of 5 mm/s.

No blast results recorded during the report period were in excess of the air blast overpressure level or the ground vibration peak particle velocity limits applicable for the quarry. Oberon Quarry is therefore considered compliant with all specified blasting limits.

7.0 Water Management

7.1 Surface Water Monitoring

Surface water monitoring is required to be undertaken monthly as per Condition M2.3 of EPL 4442. In accordance with EPL Condition M2.3 and Development Consent (SSD_6333), water quality in Racecourse Creek was monitored both upstream and downstream of the quarry during 2015. It is noted that no waters were discharged from the site in 2015. Sampling was conducted at two sites (refer to **Figure 6.1**):

- W1 – upstream of the quarry
- W2 – downstream of the quarry.

The samples collected were analysed for pH, conductivity, turbidity, non-filterable residue (NFR), total nitrogen (TKN), total phosphorus (TP) and total petroleum hydrocarbons (TPH). A summary of monitoring results since monitoring began in 1996 is presented in **Table 7.1**. It has been assumed that TPH is a suitable measurement for Oil and Grease.

Table 7.1 Summary of Water Quality Monitoring in Racecourse Creek 1996 - 2015

Analyte		1996 – 2009		2010		2011		2012		2013		2014		2015*	
		W1	W2	W1	W2	W1	W2	W1	W2	W1	W2	W1	W2	W1	W2
pH	Min	5.2	6.2	6.5	6.5	6.7	6.8	6.6	6.6	6.1	6.2	6.8	6.9	6.8	6.8
	Max	8.4	8.3	7.7	7.6	8.2	8.2	8.2	8.2	7.3	7.3	7.2	7.2	6.9	6.9
Conductivity (µS/cm)	Min	54	60	75	70	70	70	73	71	13	80	90	90	70	70
	Max	280	280	230	240	100	100	120	120	125	130	180	180	105	105
Turbidity (NTU)	Min	2	1.1	3.9	4	3.4	3.2	3.4	3.2	5	5.1	2.2	4.4	6.9	7
	Max	45	50	15 (310)	24 (170)	60 (450)	60 (450)	30 (110)	26 (120)	110	55	55	60	10	30
NFR (mg/L)	Min	<2	<2	<2	<2	<2	<2	<2	<2	3	4	2	2	2	2
	Max	44	25	14 (470)	25 (230)	25 (230)	28 (270)	34 (93)	31 (96)	420	40	35	29	10	110
TKN (mg/L)	Min	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.4	0.4
	Max	2.7	2.1	0.8 (4.5)	1.5	1.5	1.7	1.3	1.3	2.8	<0.1	1.3	1	3.8	0.9
Total P (mg/L)	Min	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Max	0.26	0.42	0.71	0.59	0.56	0.48	0.22	0.27	0.53	0.3	0.4	0.2	<0.1	0.13
TPH (mg/L)	Min	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Max	<0.1	1	<0.5 (2.8)	<0.5 (1.5)	<0.5 (4.8)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Note: Turbidity and NFR results for January and March 2010, March and May 2011, as well as September and November 2013 were well outside the normal range of results. It was confirmed with the monitoring contractor that the increase in Turbidity and NFR were due to storms, the creek being stirred by livestock, or other non-quarry related occurrences. Recorded TPH was confirmed with monitoring contractor to not be caused by quarrying operations.

** 2015 results are for the reporting period (14 September 2015 to 31 December 2015).*

Water quality in Racecourse Creek remained within the normal range of values since monitoring began in 1996. Water quality at W2, downstream from the quarry, shows no deterioration compared with water quality at W1, upstream of the quarry. These results indicate that the quarry operations are not having a measurable impact on the quality of water in Racecourse Creek.

7.1.1 Water Take

The quarry is located within the Fish River Water Source and is within the catchment of Lake Oberon. Oberon Quarries currently holds a Part 2 surface water licence under the *Water Act 1912* (80SL051088, WAL 34279) for the extraction of water from Racecourse Creek. Water, if required, is pumped from Racecourse Creek at a flow rate of approximately 2 L/s.

Due to volume of runoff from the quarry area being in excess of quarry usage and the low pumping rate when water is required, ongoing quarry operations are not likely to significantly impact on flows in Racecourse Creek.

7.2 Groundwater Monitoring

Groundwater is sampled from a spring-fed dam (GW1) at 'Langley Heights', downslope of the quarry on Racecourse Hill (refer to **Figure 6.1**). Groundwater is analysed for pH and conductivity. Groundwater monitoring has been undertaken since 1996. A summary of results for the 2015 reporting period (14 September 2015 to 31 December 2015) is provided in **Table 7.2**.

Table 7.2 Summary of Oberon Quarry Groundwater Monitoring 1996 - 2015

Year	pH Range	Conductivity Range (µS/cm)
1996	6.8 – 7.5	130 – 270
1997	6.8 – 7.2	180 – 290
1998	6.8 – 9.1	72 – 280
1999	6.6 – 8.9	210 – 450
2000	6.9 – 8.0	110 – 270
2001	6.7 – 8.1	140 – 260
2003	6.4 – 7.2	140 – 300
2004	6.8 – 8.9	150 – 200
2005	6.7 – 7.2	130 – 205
2006	6.9 – 7.5	140 – 300
2007	6.1 – 7.1	105 – 250
2008	6.8 – 7.3	225 – 270
2009	6.3 – 7.4	100 – 270
2010	6.4 – 7.3	88 – 270

Year	pH Range	Conductivity Range (µS/cm)
2011	6.8 – 8.2	80 – 270
2012	6.6 – 8.2	90 – 310
2013	6.1 – 9.0	95 – 345
2014	6.8 - 8.7	170 - 315
2015*	6.9 – 8.2	220 - 290

** 2015 results are for the reporting period (14 September 2015 to 31 December 2015).*

Monitoring results show that the range of values for pH and conductivity has been consistent over the period 1996 to 2015, indicating that operation of the quarry is not adversely impacting on groundwater quality at the monitoring point. Groundwater quantity has been monitored via observations of the presence of water in the quarry and the water level in the dam (i.e. the quantity of groundwater has not been directly monitored).

8.0 Rehabilitation

Whilst every opportunity will be taken to rehabilitate areas not required for future operational use, rehabilitation opportunities were limited for the report period. As the works undertaken during the report period focussed on continued quarrying activities, no active rehabilitation was undertaken.

Ongoing opportunities for rehabilitation are likely to be limited to the rehabilitation of interburden /overburden stockpiles following their emplacement. Where appropriate, temporary land shaping, seeding and other revegetation works may be undertaken in disturbed areas to minimise the potential for offsite impacts associated with the migration of windblown dust, particularly in regard to stockpiles and stripped soil surfaces not required for operational use. Topsoil stockpiles are seeded to minimise the potential for loss of soil through wind or rainfall erosion. All rehabilitation activities undertaken at the quarry is to be undertaken in accordance with the Landscape and Rehabilitation Management Plan.

The status of rehabilitation at Oberon Quarries during the report period is detailed in **Table 8.1**.

Table 8.1 Summary of Rehabilitation Status at Oberon Quarries

Mine Area Type	Next Reporting Period (Forecast)
	2016
Total mine Footprint	Approximately 21 ha
Total active disturbance	Approximately 20 ha
Land being prepared for rehabilitation	N/A
Land under active rehabilitation	N/A
Completed Rehabilitation	N/A

As there is limited area available for rehabilitation due to the configuration of the quarry, it is estimated that it will be approximately 10 years before any significant rehabilitation will be undertaken at the quarry. Therefore, as planned, Oberon Quarry did not undertake any maintenance of rehabilitated lands during the 2015 report period, refer to **Table 8.2**.

Table 8.2 Maintenance Activities on Rehabilitated Land at Oberon Quarry

Nature of Treatment	Area (hectares) 2016 Period	Comment/Control Strategies/Treatment Detail
Additional erosion control works (drains re-contouring, rock protection)	0	Oberon Quarries will implement erosion control works on an as needed basis.
Re-covering (further topsoil, subsoil sealing etc.)	0	N/A
Soil treatment (fertiliser, lime, gypsum etc.)	0	N/A
Treatment/management (grazing, cropping, slashing etc.)	0	N/A
Re-seeding/replanting (species density, season etc.)	0	N/A
Adversely affected by weeds (type and treatment)	0	Oberon Quarries will implement weed control works on an as needed basis.
Feral animal control (additional fencing, trapping, baiting etc.)	0	Oberon Quarries will implement feral animal control works on an as needed basis.

8.1 Final Landform

The Environmental Impact Statement (EIS) for the Oberon Quarry (Umwelt, 2015) states the rehabilitation for the final landform will be undertaken once the first and second benches have been completed within the sections of the quarry pit and also as space in the pit floor allows. The final landform will be created by placing the interburden material from the extraction area against the wall of the quarry and on the quarry floor and then by pushing the overburden bund located around the edge of the extraction area on to the quarry floor. Benches will also be covered with overburden material. The rehabilitated quarry floor will be then seeded with improved pasture. Benches will be planted with native trees, and additional woodlots of native trees will be established to provide shelter for stock and habitat for native fauna. The final landform will be refined and discussed annually within the AR.

9.0 Community

Oberon Quarries has been operating for the last 20 years with negligible environmental impact and no community complaints have been received by Oberon Quarries since 2010. No complaints were received in 2015. Management plans, strategies, monitoring results and reports are published on Oberon Quarries website (<http://oberonquarries.com.au/>).

In accordance with Condition M5 of EPL 4442, a community complaints line is operated by Oberon Quarry during the hours of operation. The complaints line is (02) 6336 0259 which is also displayed on the Oberon Quarries website. This contact point provides the community with a mechanism by which to raise any concerns that they have with operations at Oberon Quarry. The Oberon Quarry Manager is responsible for the implementation of the complaints management process and will ensure a timely initial response to any complaints received and then, as appropriate, will provide a more detailed response outlining any complaint investigation findings and corrective actions implemented.

Records of complaints will be kept for a minimum of four years in a register maintained by the Oberon Quarry Manager. The complaints register is available on Oberon Quarries website (<http://oberonquarries.com.au/>).

10.0 Independent Audit

An Independent Environmental Audit was not undertaken in 2015. The first independent audit to assess compliance with SSD_6333 will be undertaken in accordance with Condition 10 of Schedule 5 of SSD 6333 by 14 September 2016.

Independent environmental audits are to be undertaken to verify compliance with legislation, licences, approvals and the EMS. Audit results will be communicated to the local community where relevant. The recommendations from independent environmental audits will be consolidated into action plans. Condition 10 of Schedule 5 of SSD_6333 requires an Independent Environmental Audit to be undertaken within a year of the date of the consent and every three years thereafter, unless the Secretary directs otherwise. The Applicant must commission and pay the full cost of these Audits. It is noted a compliance audit was undertaken by the DPE on 4 December 2015. The audit is discussed further in **Section 10.1**.

10.1 DPE Site Inspection

The DPE completed a site inspection of Oberon Quarry on 3 December 2015 as part of their strategic audit program. The site inspection was completed to assess compliance with the Development Consent (SSD_6333). The objectives of the compliance audit were to:

- review compliance with the conditions of the Development Consent and identify areas where data gaps were present or non-compliances were likely
- assess the environmental performance of the operation and the ability of the quarry's environmental management systems and controls specifically relating to any areas identified through the desktop review or subsequent site inspection.

The level of compliance was then assessed utilising the Risk Analysis Matrix outlined in the *Guidelines - Independent Environmental Audits of Mining Projects* (DPE, 2014). This risk matrix allows non-compliances to be assessed through levels of impact, ranging from 'high' to 'low', combined with the likelihood of the impact occurring, ranging from 'almost certain' to 'unlikely'. There are also a number of conditions of a consent that can relate to administration and reporting requirements. These conditions are termed 'administrative' non-compliances and do not have direct community or environmental significance however must still be assessed in terms of non-compliance.

The quarry was found to be operating generally in compliance with the conditions of the Development Consent (SSD 6333). There was one minor administrative non-compliance relating to record keeping of truck movements to and from site, refer to **Table 11.1**.

11.0 Incidents and Non-compliances during the Report Period

A summary of the reportable environmental incidents and non-compliances which occurred at Oberon Quarries during the report period is included in **Table 11.1** below.

Table 11.1 Summary of 2015 Environmental Incidents and Non-compliances at Oberon Quarry

Date of Incident / Non-compliance notification	Description of Incident or Non-compliance	Corrective Action Taken/Status
4 December 2015	Administrative non-compliance as identified in DPE audit. The applicant must keep record of all truck movements to and from site.	Oberon Quarries has implemented a system whereby truck departure times will be recorded directly from the weighbridge as trucks leave the site. In regard to arrival times, access to the quarry is controlled by gates over the access road being locked until 5.30 am. After this time it is assumed that trucks have entered the Quarry within 10 minutes prior to being weighed on the weighbridge unless specifically reported otherwise. A summary of record of truck movements associated with transport of quarry product will be published on the Oberon Quarries website every 6 months (http://www.oberonquarries.com.au). This condition was addressed as part of the approved Transport Management Plan.

12.0 Activities to be completed in the Next Period

All activities within the 2016 report period will be undertaken in accordance with the Development Consent (SSD_6333).

Oberon Quarry proposes to undertake the following activities during the next report period:

- Develop and implement the site environmental management plans required under Development Consent (SSD_6333); and
- Undertake quarrying operations as detailed in **Section 4**.

13.0 References

DPE (Department of Planning and Environment) (2014). Guidelines - Independent Environmental Audits of Mining Projects

NSW Government Annual Review Guideline (NSW Government, 2015).

Umwelt (Australia) Pty Limited (2015). Environmental Impact Statement (EIS) – Proposed Extended Life of Operations. Prepared for Oberon Quarries Pty Limited, 2015



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