

A large, abstract graphic consisting of two parallel, slanted bands. The upper band is a medium blue color, and the lower band is a dark green color. They are separated by a white space and extend diagonally from the left side towards the right side of the page.

OBERON QUARRIES

Modification to Extend the Life of
Quarry Operations –
Environmental Assessment

August 2013

OBERON QUARRIES

Modification to Extend the Life of
Quarry Operations –
Environmental Assessment

August 2013

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Oberon Quarries Pty Limited

Project Director: **Peter Jamieson**
Report No. **1296/R28/V1**
Date: **August 2013**



Newcastle

75 York Street
Teralba NSW 2284

Ph. 02 4950 5322

www.umwelt.com.au

TABLE OF CONTENTS

1.0	Introduction	1
2.0	Development History.....	2
3.0	Environmental Management and Rehabilitation Plans	3
4.0	Consultation.....	5
5.0	Key Environmental Issues.....	6
5.1	Noise.....	7
5.2	Blasting	8
5.3	Air Quality	9
5.4	Visual	10
5.5	Surface Water	10
5.6	Groundwater	10
5.7	Traffic and Transport	11
5.8	Ecology.....	11
5.9	Aboriginal Archaeology	11
5.10	Rehabilitation and Closure	11
5.11	Greenhouse Gas and Energy	12
5.12	Transport Management.....	12
5.13	Socio Economic.....	12
6.0	Review of Compliance	12
7.0	Justification for the Modification	15
8.0	Conclusion	15
9.0	References and Technical Terms	16
9.1	References	16
9.2	Acronyms and Abbreviations	17

FIGURES

1.1	Locality Map	1
1.2	Approved Extraction Areas	1
5.1	Environmental Monitoring Locations at Oberon Quarry	7

APPENDICES

1	Statement of Authorship
---	-------------------------

1.0 Introduction

Oberon Quarries Pty Limited (OQ) operates a high quality hard rock quarry at 'Langley Heights', approximately 4 km south of Oberon (see **Figure 1.1**). An Environmental Impact Statement (EIS) was prepared in 1992 by Resource Planning Pty Limited to support the development application (DA 92/164) for the operation of the quarry. The Minister for Planning, following a Commission of Inquiry, granted development consent for the quarry subject to a range of conditions on 1 October 1993.

Establishment of the quarry including construction of the crushing and processing area, administration and parking areas, water management system, haul roads and upgrades to the public road system including the total reconstruction of Titania Road at a cost of approximately \$1.3 million commenced in June 1994 and took approximately 2 years to complete.

The quarry commenced commercial operations on 13 May 1996. Since that time the quarry has purchased three adjoining properties and operated with negligible environmental impact on the surrounding area. The location of nearest residence to the quarry is shown on **Figure 1.1**. There have been limited community complaints since the quarry commenced construction in 1994 and no community complaints since 2010.

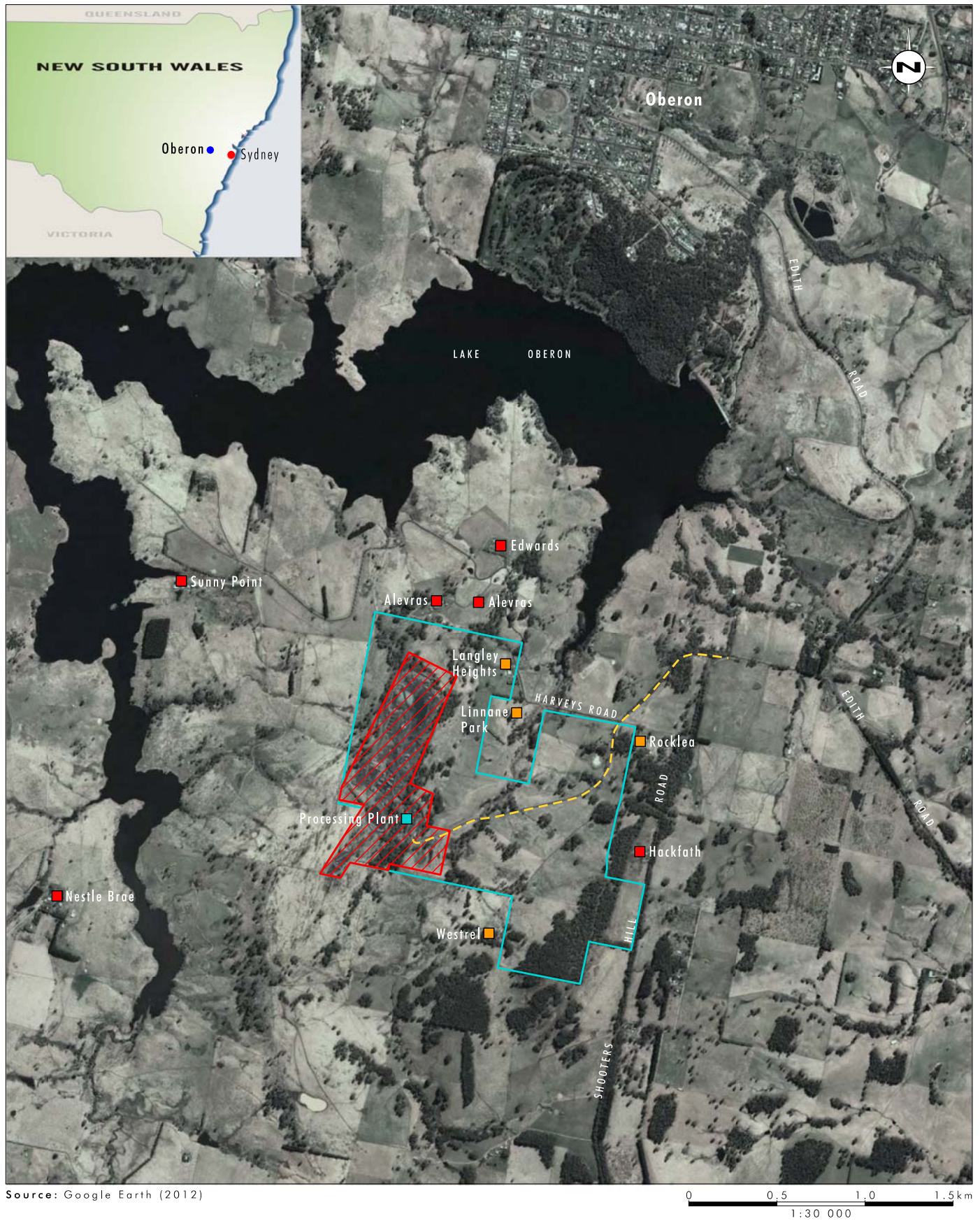
OQ seeks to modify DA 92/164 under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to extend the development consent period to 13 May 2016, 20 years from when commercial haulage commenced. No modifications other than to extend the duration of consent are sought.

The 1992 EIS assessed extraction of approximately 10 million tonnes (Mt) of high quality basalt resource from approximately a 17.5 ha area. In 2004 a 3.5 ha extension to the southern end of the extraction area was granted increasing the total approved resource to approximately 12.7 Mt. The locations of the Project Area and currently approved extraction areas are shown on **Figure 1.2**.

The 1993 development consent limited the duration of consent to 20 years and annual production to an average of 200,000 tonnes per year effectively limiting the amount of 12.7 Mt of resource that could be extracted to 4 Mt or approximately 30% of the total resource. Commercial operations at the quarry commenced in May 1996 with approximately 2.7 Mt of the 12.7 Mt of resource being extracted and transported to markets by the end of 2012. As a result, by the end of 2012 only approximately 21% of the resource from the approved extraction area had been extracted and sold with approximately 10 Mt of resource still remaining on-site.

Extraction occurs from below the skyline of Racecourse Hill, which visually and acoustically screens the ongoing extraction operations from the surrounding area. Runoff from the extraction and processing areas is diverted to a series of sedimentation and storage dams. The existing water management system has been designed to accommodate runoff from a Probable Maximum Precipitation (PMP) rainfall event of approximately 300 mm in an hour from an area of 21 ha.

A survey of the extraction area undertaken during April 2013 identified that extraction operations had extended outside the fence line that was used to identify the extraction area in some locations. All operations however are located within the Project Area as defined in the 1992 EIS. In July and August 2013, OQ undertook rectification works in these locations, to address this issue.

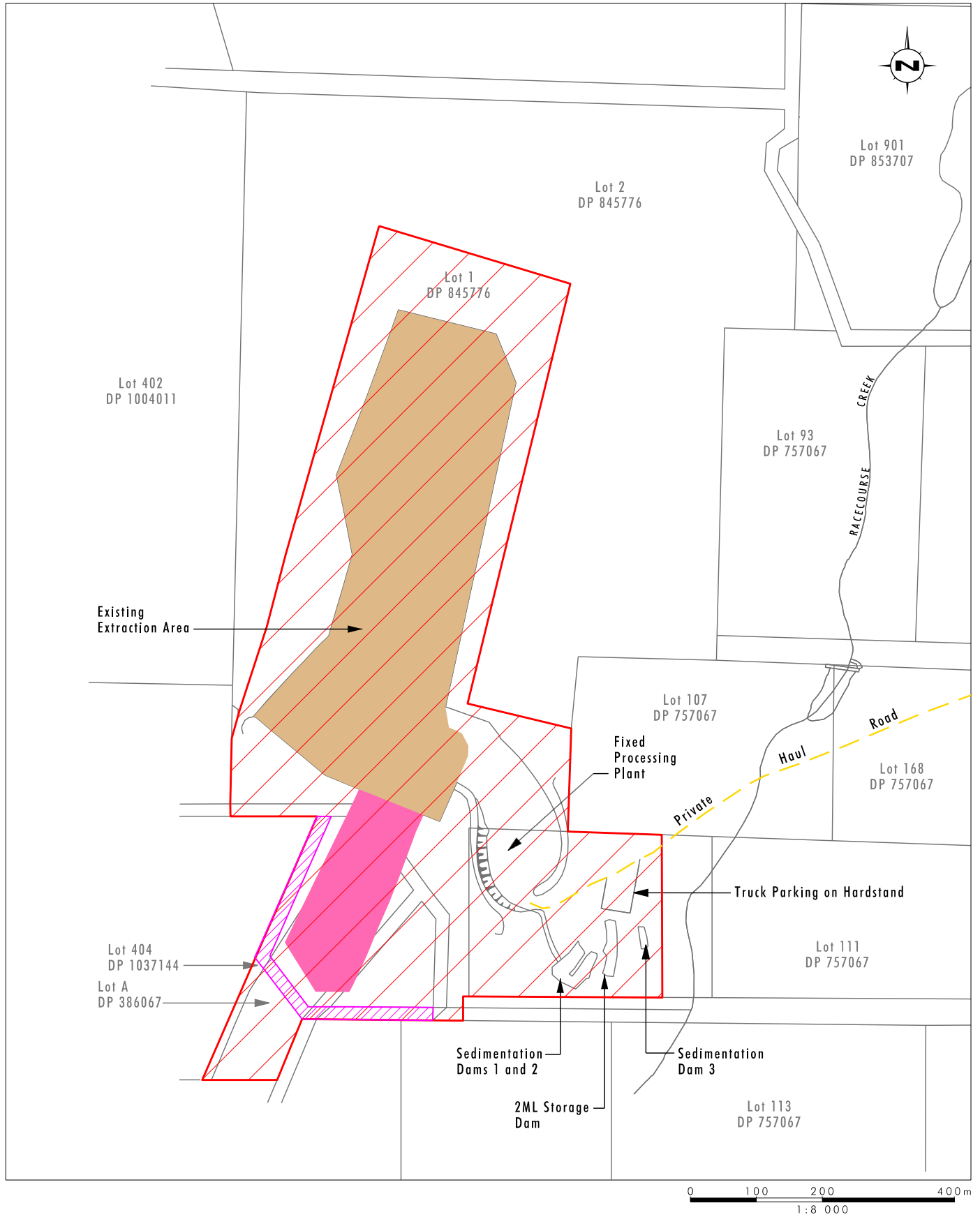


Source: Google Earth (2012)

Legend

- Project Area
- Langley Heights Property
- Right of Carriageway 12m Wide
- Private Residence
- Residence Owned by Oberon Quarries or Associated with Quarry
- Processing Plant

FIGURE 1.1
Locality Map



Legend

- ▨ Project Area
- ▨ Approved Extension Area (1993)
- ▨ Southern Extension to Extraction Area
- ▨ Crown Road Reserve
- Right of Carriageway 12m Wide

FIGURE 1.2

Approved Extraction Areas

An additional 27.0 Mt of basalt reserves has been identified within the Racecourse Hill deposit outside of the currently approved extraction area.

Resource analysis indicates that at a sustained average production level of 200,000 tonnes per year as is permitted by the current consent the remaining life of the quarry would be approximately 50 years. OQ is currently preparing documentation for the continued operation of the quarry to enable the currently approved resource to be extracted, upgrading and replacement of crusher and screens with quieter and more efficient equipment and an increase in annual production from the quarry.

This short term modification to extend consent until May 2016 is sought to enable OQ to complete preparation of this documentation and submit it to the Department of Planning & Infrastructure (DP&I) for consideration and assessment. This EA has been prepared in accordance with the requirements of the EP&A Act and the Environmental Planning and Assessment Regulation 2000 (refer to the EA Statement of Authorship in **Appendix 1**).

2.0 Development History

Oberon Quarries Pty Limited was granted conditional consent on 1 October 1993 by the 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.

Development activities commenced on the site on 15 June 1994. Extensive site development and construction of environmental management infrastructure took place in 1994 and 1995. In June 1995, small-scale production from the quarry began using a mobile crushing plant to produce road base material for the upgrade of Titania Road. Throughout 1995 and 1996 site development including construction and maintenance of on-site environmental control measures continued, as did production from a mobile crushing plant. Construction of the fixed crushing plant commenced in May 1996 and was completed in February 1999. The mobile crushing plant was decommissioned and removed from the site in February 1997, following partial commissioning of the fixed crushing plant, which began production in January 1997.

Commercial haulage of quarry products was deemed to have commenced on 13 May 1996 by Oberon Council.

In November 1999, OQ applied to the then Department of Urban Affairs and Planning (DUAP) for modification to its development consent, under Section 96(2) of the EP&A Act. The Application was accompanied by a Statement of Environmental Effects (SEE) prepared by Umwelt (Australia) Pty Limited (Umwelt) (1999). As the quarry has developed, additional space for crushing, processing and stockpiling product material has been required, in excess of that provided in the original EIS (Resource Planning Pty Limited 1992). These factors, along with the desire to improve the operating efficiency of the quarry, all contributed to the need to modify the original conditions of consent.

On 13 April 2000, the Minister for Urban Affairs and Planning approved modification of the development consent to allow temporary stockpiling of 5 mm minus product on the top of Racecourse Hill (new Condition 34). This approval also included modifications to Conditions 18 (iii) and 27(iii).

A further application for modification of consent was submitted in May 2004, accompanied by a SEE compiled by Umwelt (2004). On 17 November 2004, the Minister assisting the

Minister for Infrastructure and Planning (Planning Administration) approved modification of development consent to allow quarrying in the Southern Extraction area after changes to the Crown Road had been registered (Condition 6A); to allow continuation of temporary stockpiling of 5 mm minus product on the top of Racecourse Hill (Condition 34); to extend operating hours (Condition 16); to remove the requirement to enclose the crushers (Condition 13(ii)); to require construction of a noise bund at the northern end of the quarry (Condition 23(vi)); to modify noise limits (Condition 23(i)); and to require preparation of a Noise Report (Condition 26(ii)). This modification also required submission of a report on compliance with conditions of consent within six months of the date of this consent and annually thereafter with the Annual Report (Condition 27A).

In February 2007, another modification of consent was submitted requesting modification of Consent Condition 29 – Roads Levy to reduce the Roads Contribution Levy to \$0.39/tonne. This modification was supported by Oberon Council and granted by the delegate of the Minister for Planning in May 2007. At the time of this modification, Condition 27A became Condition 27(iii); Condition 30A – Haul Route was inserted; and Condition 34 was changed to define the date when material temporarily stockpiled on top of Racecourse Hill must be removed to the floor of the quarry – i.e. by 9 April 2009.

In July 2012 a site investigation was undertaken by Umwelt for the review of environmental controls as part of the Annual Environmental Management and Rehabilitation Report (AEMR) 2010-2011 reporting process and discussion regarding future quarry planning. A subsequent site investigation was undertaken on 25 to 26 March 2013 to again review environmental controls.

3.0 Environmental Management and Rehabilitation Plans

Site management plans documented in a report titled 'Documentation and Plans Required by Conditions of Consent' (Umwelt, 1993a) were tabled with Oberon Council in December 1993. These plans set the framework for environmental management and rehabilitation of disturbed areas. They include:

- Environmental Protection Plan (Condition 7);
- Water Management Plan (Condition 21);
- Erosion Control Plan (Condition 18);
- Haul Road Design and Sediment and Erosion Control (Condition 24);
- Landscape Plan (Condition 14); and
- Bushfire Control Plan (Condition 32).

The **Environmental Protection Plan** requires that all pipes, culverts and gabion weirs be routinely checked and maintained on a regular basis and after each major storm event. The quarry operators undertake regular maintenance and any scouring or erosion resulting from abnormal conditions is identified and remedial work is undertaken. During 2012 the Quarry Manager followed a monthly inspection checklist for water management, which requires regular inspection of all runoff and sedimentation controls.

The **Water Management Plan** covers sedimentation dams; human effluent; fuel, oil and chemical storage; water treatment facilities; fuel and oil spills; water monitoring and proposed dosing system.

The sedimentation dams have performed to design specifications and, in conjunction with the grassed natural filtration slope below the dams, have prevented turbid water from entering Racecourse Creek. To date, there has been no need to install a dosing system to reduce turbidity. The Department of Environment, Climate Change and Water (DECCW, now Environmental Protection Authority – EPA) was aware of the sediment control systems operating at the quarry in 2011 and considered them to be operating satisfactorily.

Approval to install a pump-out sewage tank was granted by Oberon Council on 17 April 2000. The installation has been completed. Sewage is removed as required by a licensed contractor and disposed of at Oberon Sewage Treatment Works.

Fuel and oil storage is on a bunded concrete platform designed to contain 33,600 L which is 120% of the capacity of the 28,000 L above-ground fuel storage tank. The bunded area has been roofed. Approval to construct a roof over the fuel storage tank was granted by Oberon Council on 9 May 2000. The pre-coating agent is stored in a separate earth-bunded area. In September 1997, an efficient pre-coating plant was installed. This plant monitors the feed and pre-coating agent and produces no excess residue.

A floating geotextile boom to contain fuel and oil spills is permanently installed on the top sedimentation dams.

Water monitoring is undertaken on a monthly basis.

The **Erosion Control Plan** details erosion and sediment control practices that have been incorporated in the development. Routine inspection and maintenance of all erosion control measures is undertaken regularly by the Quarry Manager or environmental officer.

The **Haul Road Design and Sediment and Erosion Control** specifies the revegetation of table drains with improved pasture species and installation of hay bales or silt fences until stable vegetative cover is achieved after construction. All the table drains have a stable cover of improved pasture and have been fitted with rock weirs on areas exhibiting steeper grades.

The **Landscape Plan** details site screening measures designed to screen views of the quarry from the four adjoining residences at 'Linnane Park', 'Langley Heights', 'Rocklea' and 'Westrel'. Following discussions in 1994 between the late Mr Ray Hargraves, then Manager of Oberon Quarries, and adjacent property owners, the three proposed tree screens were modified and repositioned such that trees were planted and fenced on 'Westrel', 'Linnane Park' and 'Rocklea' to shield specific views of the quarry site and/or haul road. Screen One trees originally proposed for the northern side of the haul road near the quarry entrance were planted on the southern boundary of 'Linnane Park' after discussions between the late Mr Hargraves and the then owner, Mrs Mawhood. Similarly, Screen Two trees, originally proposed for a section of the haul road near Culverts 1 and 2, were planted on 'Rocklea' following discussions with the then owner Mrs Harkham who preferred to retain her view of Oberon Dam which would have been blocked by trees planted along the haul road. Screen Three trees, originally proposed adjacent to Sedimentation Dam 3, were planted on a north-south ridge on 'Westrel', at the request of the then owner, Mrs Clarke. Oberon Quarries fenced these tree lots and the ongoing maintenance of the plants was undertaken by the landholders. These three screens were in lieu of those originally proposed.

In 1998, Oberon Quarries purchased 'Linnane Park' and 'Rocklea' at the request of their owners. Oberon Quarries finalised the purchase of 'Westrel' in 2002.

Additional planting of trees has been done on the southern side of the quarry entrance to assist in screening the quarry.

The **Bushfire Control Plan** provides measures for avoidance and control of bushfires. These measures have been implemented at the quarry.

Following modification of the original development consent by the Minister for Urban Affairs and Planning on 13 April 2000, two additional plans were required (Condition 34). These comprise a **Plan of Management** for stockpile removal from Racecourse Hill and a **Landscape Plan** detailing tree-screening to protect the visual amenity of 'Westrel' and 'Sunny Point'. Material in the temporary stockpile on top of Racecourse Hill was loaded into rear-dump trucks by front-end loader and transported to the quarry floor, where sufficient space had been created on the first bench to allow stockpiling of this material. The stockpile on the quarry floor is gradually being combined with other material for use as road base. A remnant of the temporary stockpile still remained at the time of the July 2012 site inspection; however it was reported to not be visible from 'Westrel' or 'Sunny Point'. The remainder of the stockpile had been removed and residual material incorporated into the land surface by March 2013.

Following modification of the development consent on 17 November 2004, an **Erosion and Soil Control Management Plan for the Southern Extraction Area** was required to be prepared in consultation with Oberon Council, and be submitted to the Director-General for approval prior to the commencement of site works (Condition 6A).

The **Erosion and Soil Control Management Plan for the Southern Extraction Area** is an extension of the existing Erosion and Sediment Control Plan for the quarry. Prior to quarrying, topsoil will be pushed aside into bunds around the margin of the extraction area. The bunds will be vegetated with pasture species. Silt fences will be installed around the outside of the bunds to prevent sediment being transported onto undisturbed land. The bunds will contain runoff within the quarry area and direct it to the existing water management system, which has adequate capacity to accommodate runoff from the proposed Southern Extraction area.

4.0 Consultation

Community and agency consultation are a fundamental element of the preparation of an environmental assessment (EA) and necessary to assist in the determination of the relevant issues to be addressed. The consultation program approach has been to identify and then consult with the key agencies, stakeholders and community regarding the proposed modification to assist in appropriately defining the scope of the EA and to enable the ongoing operations to be responsive to community concerns. Issues raised during the consultation process have been considered during the preparation of the EA.

The consultation program consisted of briefings with key government agencies to discuss key issues and proposed management measures. These agencies included DP&I, Oberon Council, Environmental Protection Authority (EPA) and NSW Office of Water. Key stakeholders and the community (i.e. the surrounding landholders within the vicinity of the quarry) were engaged via individual meetings. During the meetings the proposed ongoing operations and the potential impact on the community and environment were outlined and feedback sought on the proposed ongoing operations for incorporation in the EA as appropriate.

A summary of the consultation undertaken for the ongoing operations is contained in **Table 4.1**.

Table 4.1 – Summary of Agency and Community Stakeholder Consultation

Agency/ stakeholder	Date	Form of Consultation	Outcomes/Comments
Department of Planning and Infrastructure	15 January 2013	Email	DP&I confirmed that the modification will be assessed under Section 75W of the EP&A Act.
Department of Planning and Infrastructure	July through August 2013	Phone conversations and emails	Discussion with DP&I related to the continued operation of the quarry and associated modifications to the operation to improve the overall environmental and economic performance of the quarry.
Office of Environment and Heritage	21 June 2013	Phone conversation	The EPA raised a number of concerns relating to the on-site diesel fuel storage facility it identified as part of a site inspection undertaken a number of years ago (i.e. the location of the filling point outside of the bund wall and the absence of a concrete apron). Since the EPA's inspection OQ has undertaken rectification works to address both of the above issues. No other issues of concern were raised.
NSW Office of Water	27 June 2013 and 1 August 2013	Phone conversation and email	Attention drawn to NSW Murray Darling Basin Fractured Rock Groundwater Sources 2011 Water Sharing Plan. No specific requirements identified.
Oberon Council	21 June 2013	Meeting	Council overall supported the ongoing operation of the quarry. Council however was concerned about the refuelling of trucks in Oberon. OQ will in the future seek approval to construct a second 28,000 L diesel tank to minimise the risk of running out of fuel and therefore the need to undertake refuelling in Oberon. No other issues of concern were raised.
Key stakeholders and Community (Tony Alevras, John Hackfath, Graham Bell and Stan Edwards)	21 June 2013	Meetings and phone conversations	Individual meetings and discussions with surrounding landholders within the vicinity of the quarry. All of the community stakeholders that the project was discussed with on 21 June 2013 supported the ongoing operation of the quarry and raised no objections.
Warrick, Mark and Ian Mawhood	31 July and 1 August 2013	Phone conversations	Identified no issues with quarry operation of past 18 years.

5.0 Key Environmental Issues

This EA has identified potential impacts associated with the ongoing operations, as well as the mitigation measures proposed to ensure that any impacts associated with the proposed ongoing operations are reduced as far as is feasibly practical. An overview of the key findings of the detailed assessments is provided in **Sections 5.1 to 5.13**.

5.1 Noise

A validated noise model was developed for Oberon Quarry using Environmental Noise Model (ENM). This model was used to predict noise levels experienced at receivers NM1 to NM3 (see **Figure 5.1**) under meteorological conditions consistent with those presented in the 2004 NIA (Umwelt, 2004). The predicted noise levels at receivers NM1 to NM3 under calm meteorological conditions are compared with the relevant noise assessment criteria in **Table 5.1**.

Table 5.1 – Predicted Day Time Industrial Noise Levels for Prevailing (Calm) Meteorological Conditions versus Noise Criteria, dB(A)

Location	Predicted LAeq, Calm	EPL 4442 Noise limit, LAeq (15 minute)	DA 92/164 Noise Limit, LAeq (15 minute)
NM1	38	36	36
NM2	32	36	35
NM3	31	36	35

The results from the validated noise model, summarised in **Table 5.1**, indicate that under prevailing (calm) meteorological conditions Oberon Quarry operations exceeded the LAeq industrial noise assessment criteria outlined in the development approval DA 92/164 and EPL 4442 at NM1 by 2 dB(A) and are compliant at receiver locations NM2 and NM3.

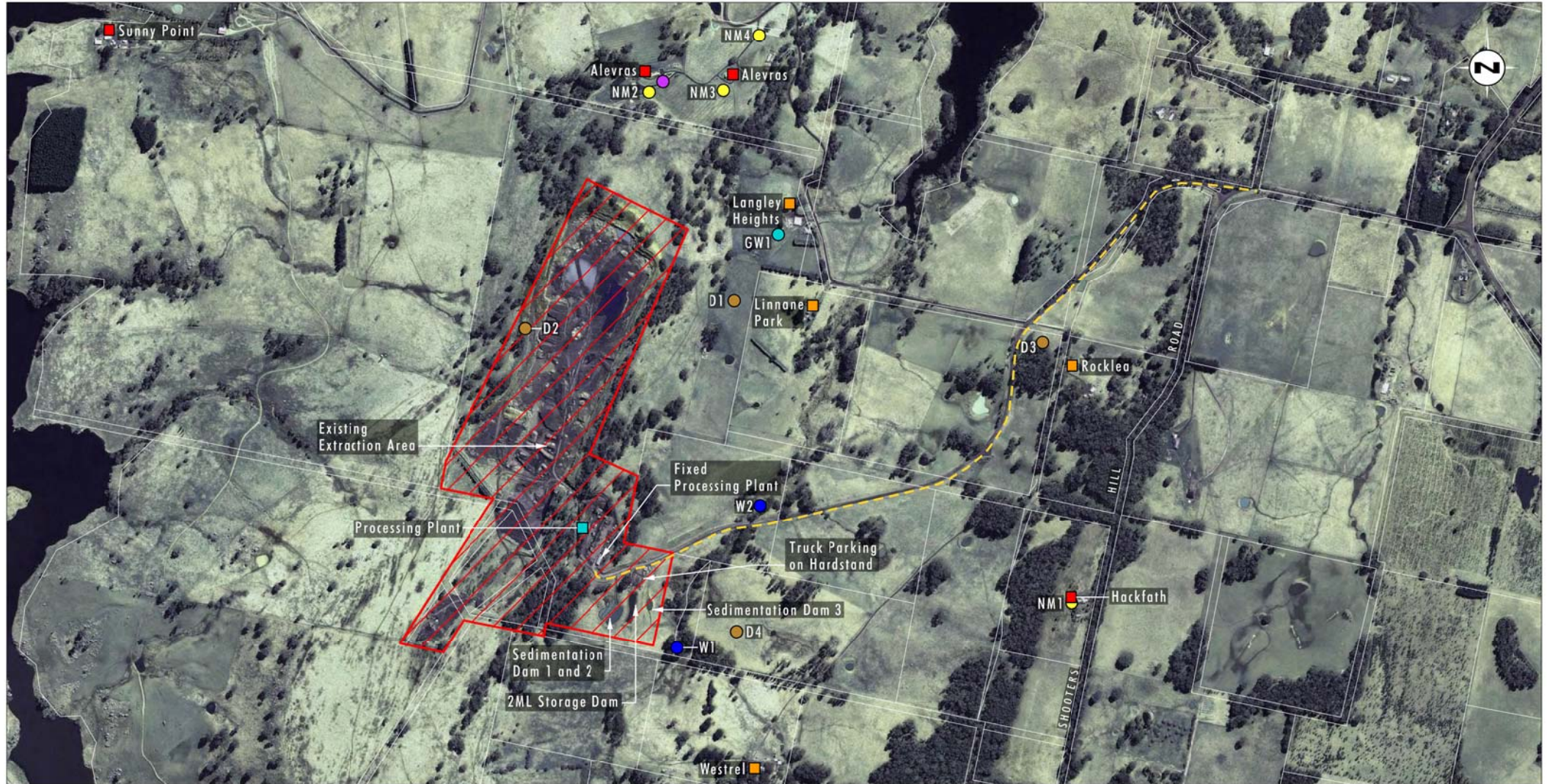
The worst case industrial noise levels from Oberon Quarry as predicted for prevailing meteorological conditions, and the relevant noise assessment criteria, are presented in **Table 5.2**.

Table 5.2– Predicted Industrial Noise Levels for Prevailing Meteorological Conditions versus Noise Criteria, dB(A)

Location	Meteorological Conditions	LAeq, 15 minute	
		Predicted LAeq for Meteorological Conditions	DA 92/164 Noise Limit, LAeq (15 minute)
NM1	Summer Evening	34	35
	Inversion	42	35 ¹
NM2	Summer Evening	29	35
	Inversion	34	35 ¹
NM3	Summer Evening	28	35
	Inversion	34	35 ¹

Note 1: Inversion need only be considered for night time noise assessment period. Therefore the relevant noise criteria are the night time noise criteria.

The results of the prevailing meteorological conditions noise model, summarised in **Table 5.2**, indicate that under prevailing meteorological conditions Langley Quarry exceeded LAeq industrial noise assessment criteria outlined in the development approval DA 92/164 and EPL 4442 at NM1 during temperature inversion conditions and is compliant at receiver locations NM2 and NM3.



Source: Google Earth (2012)

0 250 500 750 m
1:15 000

Legend

- ▨ Project Area
- Right of Carriageway 12m Wide
- Dust Gauge Location
- Water Monitoring Location
- Ground Water Monitoring Location
- Noise Monitoring Location
- Blast Monitoring Location
- Private Residence
- Residence Owned by Oberon Quarries or Associated with Quarry
- Processing Plant

FIGURE 5.1
Environmental Monitoring Locations
at Oberon Quarry

OQ is committed to minimising the noise impacts from its operations and will implement the following mitigation measures:

- undertaking prescribed works within the approved hours of operation;
- where practical aural reversing alarms on mobile plant will be muffled;
- monthly inspections of all site plant and equipment to ensure equipment is maintained in a fully operational condition;
- provision of noise awareness training to site workers;
- positioning (i.e. location, orientation and shielding) mobile plant and equipment to minimise any potential noise impact on the surrounding residential receivers;
- implementing noise attenuation controls, where feasible, on mobile and stationary equipment that is potentially generating noise levels above that predicted and/or are generating noise complaints;
- limiting truck speeds on the internal haul roads to 40 km/h;
- the use of compression brakes on internal haul roads and Oberon Quarry Road is not permitted; and
- undertaking tri-annual noise compliance monitoring (i.e. attended noise monitoring to assess compliance and assist with minimising impacts).

Oberon Quarries is committed to upgrading current processing equipment and to implementing further control strategies including upgrading of crushers and screens with quieter, more efficient equipment. These upgrades will be the subject of a separate development application.

5.2 Blasting

Blasting operations (i.e. overpressure and vibration limits) at OQ are undertaken generally in accordance with DA 92/164.

The blast monitoring results for the 2010 and 2011 calendar years show that none of the blasts monitored were above the overpressure and vibration limits. The blast monitoring results for the 2012 calendar year show that there had been two exceedances of 120 dB and no exceedances of the 5 mm/s vibration limit of the blasts that were monitored. OQ has advised that overpressure exceedances were due to irregularities along the blasting face, which when combined with the drill hole angle reduced the distance to face for some holes which has resulted in overpressure levels being recorded above 120 dB.

These exceedances occurred when blasting was being undertaken on the upper level at the very northern end of the extraction area approximately 360 m from NM2 (Alevras cottage) where the blasts were monitored. In the future, blasting at the northern end of the extraction area will be at least 400 m from Alveras cottage and will be undertaken on the lower bench which is approximately 10 metres below ground level.

Blast monitoring has been a requirement of the blasting contract for many years. There have been some problems with the implementation of component of the contract in the past and as a result of the November and December 2012 blast exceedances, OQ has purchased its

own blast monitoring equipment and has been undertaking blast monitoring in parallel with the blasting contractor to ensure that all blasts are accurately monitored.

In addition the Quarry Manager has undertaken blasting training so that all blasts configurations and delays used can be thoroughly checked before the blasts are detonated. In conjunction with this OQ has reduced the maximum number of holes to be detonated in a blast from 300 to 150.

OQ has committed to ensuring that sufficient distance is maintained between the blast hole and the quarry face, that appropriate delays are used and that all blasts are monitored and recorded to avoid any further exceedances in the future.

OQ has and will continue to manage its blasting impacts through ongoing monitoring and review of the blast design, so that the overpressure and vibration criteria are not exceeded at private residences unless agreed with the resident. No adverse impacts from blasting are predicted to occur as a result of the proposed ongoing operations.

5.3 Air Quality

Dust Deposition monitoring results as set out in the 2012 AEMR (Umwelt, 2013) indicate that OQ is not having a significant adverse impact on the air quality of the surrounding area.

The following mitigation measures will continue to be implemented to ensure Oberon Quarry has minimal air quality impacts on the surrounding area:

- regular watering of unsealed haul roads within the extraction and processing areas;
- mist sprays on conveyors discharging to product stockpiles;
- limiting vehicles speeds on unsealed surfaces to 40 km/h;
- progressive stabilisation/rehabilitation of exposed areas no longer needed for operational purposes;
- rehabilitating the final landform surface as soon as practicable;
- minimisation of the total disturbed/working areas at any one time;
- implementing temporary stabilisation measures (e.g. cover crops) on disturbed areas soon as practicable, if rehabilitation is not to be undertaken within the coming three months;
- where practical/possible conduct drilling and blasting during suitable meteorological conditions (i.e. not during high winds);
- drill holes capped with stemming to restrict the upward emission of dust;
- undertaking preventative maintenance on all dust suppression plant and equipment;
- use of the truck wheel wash facility;
- covering of all laden trucks leaving the site; and
- monitoring of depositional dust levels and analysis of the data for trends.

5.4 Visual

A visual assessment was undertaken of the ongoing operations to identify the potential visual amenity impacts. The assessment concluded that the natural topography, existing bunds, existing vegetation and distance of the quarry from surrounding residences and vantage points, heavily restrict the visibility of the quarry. The ongoing operations will not result in visual impacts above those considered as part of the 1993 development consent.

5.5 Surface Water

The ongoing quarrying operations are located within the quarry's existing dirty water management system which was established in 1994 and has functioned well since establishment. The water management system is maintained in a good condition.

Runoff from the quarry is captured within a series of onsite dams that provide four levels of control. Water from the dams is utilised onsite. The existing water management system includes diversion drains, catch drains, sedimentation dams and a 2 ML Storage Dam. Diversion drains have been constructed around the disturbance area and are vegetated. Catch drains have been constructed with rock weirs and convey sediment-laden water to a series of sedimentation ponds. These ponds are located within the southern extent of the site and are designed to manage runoff from a PMP rainfall event from the 21 ha water management system.

In addition to the diversion drains and sedimentation dams, OQ implements additional localised sediment and erosion controls in accordance with *Managing Urban Stormwater – Soils and Construction* (Landcom, 2001), to reduce the impacts on the water quality in the quarry's dirty water management system, as required. No additional surface water impacts are therefore anticipated due to the ongoing operations.

Monitoring of Racecourse Creek downstream of the quarry over the last 18 years has shown that the quarry is not having any adverse impact on water quality in the creek.

5.6 Groundwater

Several small springs are located towards the base of Racecourse Hill. The springs which are to the north and west of the quarry are located approximately 40 m below the top of Racecourse Hill at 1100 m AHD and are thought to be fed by water infiltrating to the underlying alluvial Tertiary gravels that occur between the basalt and granite. The Tertiary gravel groundwater aquifer is elevated above the surrounding valley landforms and is confined to Racecourse Hill. Ongoing operations at the quarry will not disturb the gravel layer that underlies the basalt resource but will remove the basalt from within the approved extraction area.

Blast hole drilling undertaken to date on the upper bench has not encountered groundwater. Blast holes are typically drilled to a depth of 11 m indicating that the groundwater table is below the upper quarry bench that is currently being extracted.

Groundwater springs that are located around the northern perimeter of Racecourse Hill which are fed by groundwater flows from gravel layer will not be directly impacted by quarry operations.

OQ is currently working through relevant groundwater approvals with NSW Office of Water prior to commencing extraction of the lower bench.

5.7 Traffic and Transport

The distribution of product will continue to be via the approved haul roads and the public road network. It is noted that sections of these roads and a number of intersections were upgraded by OQ in accordance with the 1993 development consent. It is also noted that Titania Road was upgraded, at Council's request, to a higher standard than the consent required. The cost of this upgrade was \$1.3 million rather than the estimated \$790,000.

No issues in regard to traffic congestion, flow capacity or site distance have been identified at any of the intersections that were upgraded by OQ. Traffic volumes on these roads have not increased significantly since consent for the quarry was granted in 1993.

OQ pays and will continue to pay Oberon Council a tonnage based road maintenance contribution to help maintain the public roads used by the quarry.

5.8 Ecology

There are no changes to the extraction area from that approved as part of DA 92/164 and the subsequent 2004 modification to include the Southern Extension area as part of the proposed continued operations.

5.9 Aboriginal Archaeology

The extraction area is located within the Project Area as defined in the 1992 EIS and no additional Aboriginal archaeological impacts are anticipated as a result of the proposed continued operations.

5.10 Rehabilitation and Closure

Progressive construction of the final landform will be undertaken once the extraction of the first and second benches has been completed within sections of the quarry pit and as space within the pit floor allows. The final landform will be created by pushing the overburden bund located around the rim of the extraction area, as well as placing the interburden material against the wall of the quarry and on the quarry floor. Benches will also be covered with overburden material. The rehabilitated quarry floor will then be seeded with improved pasture and woodlots of native trees established to provide shelter for stock and habitat for native fauna. Benches will be planted with native trees.

As the lower bench still needs to be extracted to a sufficient extent to enable rehabilitation of the benches and quarry floor to be undertaken, it is envisaged that it will some years before any significant rehabilitation works can be undertaken without interfering with quarrying operations and without quarrying operations interfering with rehabilitation activities.

The ongoing operation of the quarry will not alter the timing of when the rehabilitation works can be completed. Similarly the ongoing operations will not result in any changes to the final landform from that approved by the 1993 development consent.

5.11 Greenhouse Gas and Energy

A greenhouse gas and energy assessment was undertaken to consider emissions from the Project. The operation of the quarry is estimated to contribute approximately 0.000008% to the global emissions per annum (based on its projected Scope 1 emissions).

OQ recognises the future will be a carbon constrained world and is committed to reducing the greenhouse gas emissions from its operations and has identified a number of mitigation measures it proposes to implement as part of the Project to minimise its greenhouse gas emissions and energy usage.

5.12 Transport Management

Fuel and explosives are transported to the quarry in accordance with the Transport Management Plan (Umwelt, 1993b) submitted to Oberon Council. Fuel is delivered to the quarry by Simpsons Fuel, generally between 8.00 am and 4.00 pm on weekdays. The driver has a mobile phone in case of accident or delay.

Bulk explosives are brought to the quarry by blasting contractors on the day of blasting and any unused explosives are taken off site the same day.

5.13 Socio Economic

OQ supports the local economy through the supply of rock products for road, building and other construction activities in the region. OQ is also a valuable source of employment through the provision of 15 jobs at the quarry and 10 jobs for truck drivers, as well as associated indirect jobs and regular engagement of local service contractors.

The proposed ongoing operations will not result in any significant changes to the potential socio-economic impacts of the quarry and will provide ongoing opportunities for contractors and others servicing the quarry. In addition the ongoing operations will ensure a continued supply of high quality construction materials to the region and will continue to contribute to employment opportunities in the Oberon area.

6.0 Review of Compliance

The 2012 Compliance Review states:

the site was generally operating with appropriate environmental management controls in place and OQ personnel were found to have a high level of understanding of key environmental management issues associated with site operations. The understanding and management of localised work areas (e.g. erosions and sediment control issues) however was lacking. This results in a heavy reliance on the primary controls that were implemented when the quarry was established. OQ personnel were however found to have a good understanding of high level dust, noise, and water management issues and overall indicated a genuine belief that minimising off-site environmental impacts is critical to the success and community acceptance of its operations in the area.

OQ management has demonstrated that it is aware of and committed to ensuring the operation of the quarry is within its environmental performance requirements (e.g. water quality, dust etc.). However the sequence of quarrying and rehabilitation is not being undertaken as outlined in the 1992 EIS. The administrative functions of the operations

could be improved (record keeping, reporting and pre work clearance procedures). The environmental management of the site could also be improved (e.g. the implementation of secondary erosion and sedimentation controls).

The Compliance Review also states:

It is unlikely that this will however result in a measureable improvement in environmental performance given the position of the quarry in the landscape and the extensive buffer zones which separate the quarry from the surrounding sensitive receivers and the extent and functionality of the primary controls.

The compliance review made a number of recommendations which along with proposed actions are summarised in **Table 6.1**.

Table 6.1 – Compliance Review Recommendations

Area to be Addressed	Recommendation	Comments
General Operations	Develop a staged quarry plan that will facilitate the progressive rehabilitation of the previously quarried areas as part of the S75W modification;	Quarry is currently progressing into the upper bench of the Southern Extraction area. It is proposed that future extraction will be from the upper and lower benches in the quarry to enable hard rock resource to be blended to minimise the amount of interburden material that needs to be stockpile around the rim of the quarry and double handled.
	Develop a new works/activities approval process to ensure that new works/activities are consistent with that approved and site specific environmental control measures (e.g. sediment fences) are in place prior to any new works/activities being undertaken;	An environmental check list has been previously developed for the site. It is proposed that this will be revised and extended to cover environmental controls required for new works/activities.
	Rehabilitate the former 5 millimetres stockpile area located on Racecourse Hill.	OQ has indicated it will be undertaking such works in spring 2013 period.
Landscaping	It is recommended that OQ actively promote temporary and permanent vegetative cover on the bunds.	OQ has indicated it will be undertaking such works in spring 2013 period.
Water Management	OQ does not hold any groundwater licences, under the <i>Water Act 1912</i> or the <i>Water Management Act 2000</i> .	OQ is currently working through relevant groundwater approvals with NSW Office of Water prior to commencing extraction of the lower bench.
	It is recommended that OQ include oil and grease analysis of the water samples as required or seek a variation to the EPL such that only TPH monitoring is required	Monitoring of TPH rather than Oil and Grease has been formerly agreed with EPA. OQ will seek a variation to its EPL to reflect this.
Noise	Ensure reporting requirements are completed within the required timeframe and reporting requirements are proactively managed and communicated with DP&I	Noise monitoring and modelling required for reporting has been recently contemporised and will facilitate compliance with noise reporting requirements in the future.

Table 6.1 – Compliance Review Recommendations (cont)

Area to be Addressed	Recommendation	Comments
Annual Contributions, levies and Reporting	Ensure the tonnages used to calculate the road maintenance contributions are consistent with the monthly tonnages stated in the Annual Environmental Monitoring Report (AEMR).	OQ will ensure consistency in the future
	It is recommended that OQ develop a summary schedule which identifies the annual environmental monitoring and reporting requirements.	OQ has developed a check list for monitoring requirements and in 2012 appointed an environmental officer to ensure that monitoring is undertaken as and when required.
Bank Guarantee	It is recommended that subject to DP&I approval of the S75W currently in preparation that a closure cost be developed to estimate the cost of completing rehabilitation of the site and the bank guarantee be adjusted to reflect this estimate.	A term deposit for \$50,000 is currently in place as formerly agreed. Revised closure costs will be included as part of any subsequent development application.
Hydrocarbon Storage	It is recommended that OQ review their hydrocarbon storage practices, using the Technical Considerations in Appendix 2 of the 'Storage and Handling Liquids: Environmental Protection, Participant's Manual' (DECC, 2007) as a guide. Routine inspection of the refuelling area needs to be undertaken and maintenance activities undertaken as required.	OQ will undertake a review of hydrocarbon storage practices including routine inspections.
	It is recommended that OQ undertake spill response training with key operational staff.	OQ will ensure relevant staff have spill response training.
Air Quality	It is recommended that OQ operates all dust sprays when processing operations are being undertaken.	Dust sprays are fitted to all conveyor discharge points and will be in use when processing operations are being undertaken.
Waste Management	It is recommended that OQ remove the brick, tile and workshop wastes from the quarry area and dispose of the correctly via a licensed landfill or recycling facility, as appropriate.	OQ has advised that bricks, tiles and workshop wastes have been removed from the quarry area.
Consultation with Council and EPA	It is recommended that Oberon Quarry actively manage the requirements of their consent via consultation with Council and the EPA, rather than the passive approach which is currently adopted (i.e. the submission of the AEMR to satisfy consultation requirements). Alternatively OQ can confirm with DP&I that annual inspections by Council and the EPA and/or submission of the AEMR are considered adequate to achieve full compliance with these conditions.	OQ has consulted with Oberon Council and EPA on an ongoing basis but has not kept a record of all consultation that has occurred. Historically EPA and Council have both inspected the site although this has been less frequent in the last few years as both agencies appear to be generally satisfied with the environmental performance of the quarry.
Environmental Management Plans	It is recommended that OQ review and update the management plans to ensure they are reflective of current operations.	OQ has committed to review and contemporise environmental management plans as part of any subsequent development approval for the site.

7.0 Justification for the Modification

The ongoing operation of the quarry will allow for the continued supply of high quality hard rock materials to the surrounding region from this regionally significant resource. The products OQ are suitable for use in nearly all quarry product applications.

OQ is a regionally significant resource with reserves of 10 Mt within the currently approved extraction area and is well positioned to supply high quality hard rock materials to the surrounding region and Sydney markets. This high quality hard rock quarry product is suitable for use in nearly all quarry product applications.

OQ has already invested significant capital, energy and resources in establishing the existing quarrying operations (e.g. road upgrades, buildings, quarry infrastructure and water management infrastructure). The ongoing operation of the quarry will maximise the return from environmental and financial investment in these assets when compared to a greenfield project.

If modification to extend the life of the quarry operation is not granted, the opportunity to extract and supply in excess of 10 Mt of high quality basalt resource from this site to markets in Central Tablelands, Bathurst, Blue Mountains and Sydney areas will be lost as will the ability to use a fully established and environmentally sustainable quarry operation. In addition OQ is an important contributor to local employment through the provision of direct employment for 25 people and indirect employment for numerous trades and service providers.

The ongoing operations will not result in any change to the approved disturbance footprint and will have limited if any additional environmental impacts.

8.0 Conclusion

The ongoing operations are likely to result in environmental impacts which are consistent with the current Development Consent (DA 92/164) as:

- the proposed extension to the extraction area will have a similar low impact on the environment as that described and approved by the 1993 development consent;
- the ongoing operations will address a number of administrative matters which do not result in any additional environmental or socio-economic impacts;
- the proposed ongoing quarry operations are consistent with the operations approved under development consent DA 92/164;
- no exceedences of any air quality criteria at any residential receiver location are expected to occur;
- any visual or lighting impacts are expected to be consistent with that approved under development consent DA 92/164;
- significant quarry reserves remain in the ground. Approximately 10 Mt of resource remains within the 1993 approved extraction area, with an additional 27.0 Mt of basalt reserves remaining within the remainder of the Racecourse Hill deposit;
- the predicted low level of ecological impact is consistent with that described and approved by the 1993 development consent;

- no additional archaeological impacts are envisaged;
- no surface water or regional groundwater impacts are anticipated as the ongoing operations do not require any alteration to the depth of excavation and/or the existing water management system; and
- no additional traffic flow or intersection capacity impacts are anticipated due to the ongoing operations. No change to the approved traffic route and no increase to the annual maximum production limits are proposed.

Given that the ongoing operation involves limited environmental impacts beyond the current development consent DA 92/164, OQ seeks to modify DA 92/164 under Section 75W of the EP&A Act to enable the quarry operations to continue to extract and process high quality basalt from the remaining 10 Mt of resource in an efficient manner that has relatively low environmental impact and continue to provide the associated social and economic benefits of the quarry.

9.0 References and Technical Terms

9.1 References

DECC, 2007. *EPA's Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*.

DECCW, 2010. *EPA Noise Guide for Local Government*.

Department of the Environment and Heritage Australian Greenhouse Office. *Factors and Methods Workbook, 2006*.

Landcom, 2001. *Managing Urban Stormwater – Soils and Construction*.

Resource Planning Pty Limited, 1992. Environmental Impacts Statement for Hard Rock Quarry 'Langley Heights' Oberon NSW.

Umwelt (Australia) Pty Limited, 1993a. Documentation and Plans Required by Conditions of Consent *prepared for* Oberon Quarries Pty Limited Hard Rock Quarry 'Langley Heights', NSW.

Umwelt (Australia) Pty Limited, 1993b. Transport Management Plan *prepared for* Oberon Quarries Pty Limited Hard Rock Quarry 'Langley Heights'.

Umwelt (Australia) Pty Limited, 1999. Statement of Environmental Effects for Section 96(2) Modification Application Langley Heights Hard Rock Quarry *prepared for* Oberon Quarries Pty Limited.

Umwelt (Australia) Pty Limited, 2004. *Statement of Environmental Effects for Modification Application Langley Heights Hard Rock Quarry*. Prepared for Oberon Quarries Pty Limited, May 2004.

Umwelt (Australia) Pty Limited, 2012. Conditions Compliance Report for 2010 and 2011. Prepared for Oberon Quarries Pty Limited.

Umwelt (Australia) Pty Limited, 2012. Annual Environmental Management and Rehabilitation Report 2010-2011. Prepared for Oberon Quarries Pty Limited.

9.2 Acronyms and Abbreviations

AEMR	Annual Environmental Monitoring Report
DA	Development Application
dB	Decibel
dB(A)	dB(A) Decibels A-weighting
DECCW	Department of Environment, Climate Change & Water
DP	Deposited Plan
DP&I	Department of Planning and Infrastructure
DUAP	Department of Urban Affairs and Planning
EA	environmental assessment
EIS	Environmental Impact Statement
ENM	Environmental Noise Model
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act
EPL	Environmental Protection Licence
ha	hectares
km	kilometre
km/h	kilometres per hour
L	litre(s)
m	metre(s)
m AHD	metres Australian Height Datum
mm	millimetre(s)
mm/s	millimetres per second
ML	megalitres
Mt	million tonnes
NSW	New South Wales

OQ	Oberon Quarries Pty Limited
PMP	Probable Maximum Precipitation
SEE	Statement of Environmental Effects
t	tonnes
TPH	total petroleum hydrocarbons
Umwelt	Umwelt (Australia) Pty Ltd



APPENDIX 1

Statement of Authorship

**Submission of
environmental assessment (EA)**

under Section 75H of the Environmental Planning and Assessment Act 1979

EA prepared by

Name:

Qualifications:

Address:

Peter Jamieson

B E (Civil)

Umwelt (Australia) Pty Limited

75 York Street

TERALBA NSW- 2284

in respect of

Applicant Name

Applicant Address

Oberon Quarry Pty Ltd

315 Commercial Road

VINEYARD NSW 2765

Land to be developed:

lot no, DP/MPS, vol/fol etc

Proposed Development

Modification to Extend Life the of the Quarry

Operations – Environmental Assessment

Environmental assessment

An environmental assessment (EA) is attached

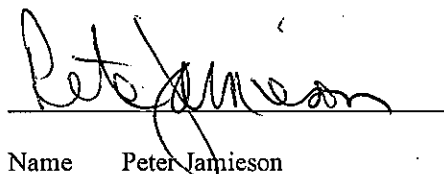
Certification

I certify that I have prepared the contents of this environmental assessment and to the best of my knowledge. It is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

Signature:

Name:

Date:



Name Peter Jamieson

Date 14 August 2013



Newcastle

75 York Street
Teralba NSW 2284

Ph. 02 4950 5322

www.umwelt.com.au