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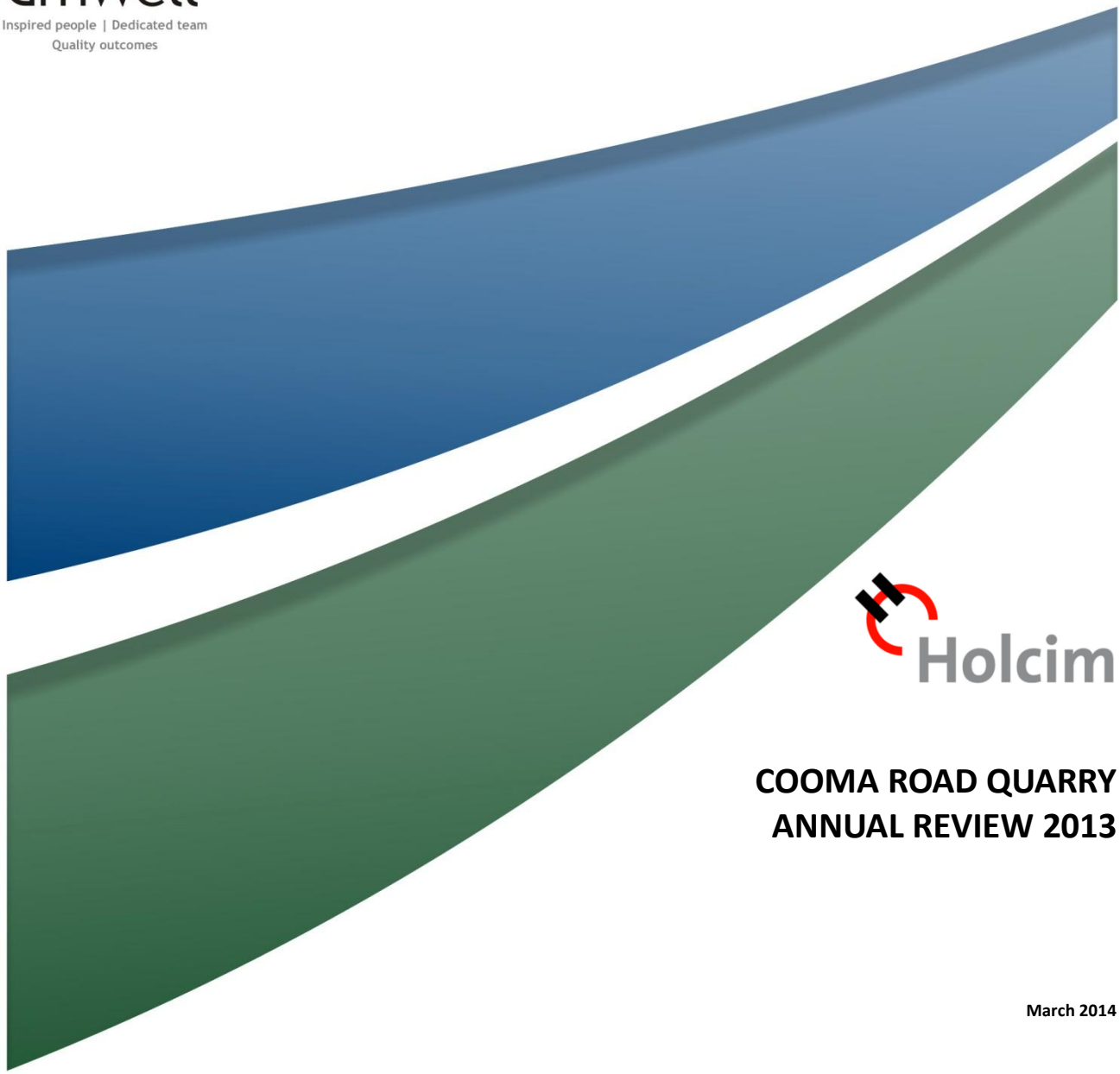

Holcim

COOMA ROAD QUARRY
ANNUAL REVIEW 2013

March 2014

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ANNUAL REVIEW 2013

March 2014

Prepared by
Umwelt (Australia) Pty Limited

on behalf of
Holcim Australia Pty Ltd

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Report No.	**3348/R01/FINAL**
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1.0 Introduction

Holcim (Australia) Pty Ltd (Holcim Australia) operates Cooma Road Quarry, a hard rock quarry located approximately 6 kilometres south of Queanbeyan, New South Wales (NSW) (refer to **Figure 1.1**).

Cooma Road Quarry has been operating at the site since 1959 and is considered a significant regional supplier of granite and dacite hard rock aggregates.

Holcim Australia was granted a Development Consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for an extension of the approved quarry life for an additional 20 years and an increased production limit from 1 million tonnes per annum (Mtpa) to 1.5 Mtpa. The Cooma Road Quarry Development Consent (SSD_5109) (Development Consent) was granted on 27 September 2013 by the NSW Minister for Planning and Infrastructure. The Project Area for the approved Project is shown on **Figure 1.1**. The key components of the approved Project are shown on **Figure 1.2**.

Prior to the granting of the 2013 Development Consent, the quarry was operated under DA371/94 granted in 1995 by Queanbeyan City Council. DA371/94 will be surrendered by Holcim Australia in accordance with the provisions of the 2013 Development Consent.

For ease of use, this Annual Review details the operational and environmental management activities of Cooma Road Quarry during the period 1 January 2013 and 31 December 2013 despite the new Development Consent only being granted on 27 September 2013. Holcim has reported the full twelve month period for ease of assessment and understanding of the site operations, and to provide a baseline for annual reporting in the future.

This report has been prepared in accordance with Condition 4 of Schedule 5 of the Development Consent.

1.1 Consents and Licences

The operation of Cooma Road Quarry is regulated by a range of licences and approvals from both state and local authorities. For environmental purposes, these include:

- Development Consent (SSD_5109);
- Environment Protection Licence (EPL) No. 1453; and
- Water licence 40SL27690.

1.1.1 Development Consent

Condition 4 of Schedule 5 of the Development Consent requires the preparation of an Annual Review. The details of this condition and where the requirements are addressed in the annual review is outlined below in **Table 1.1**.

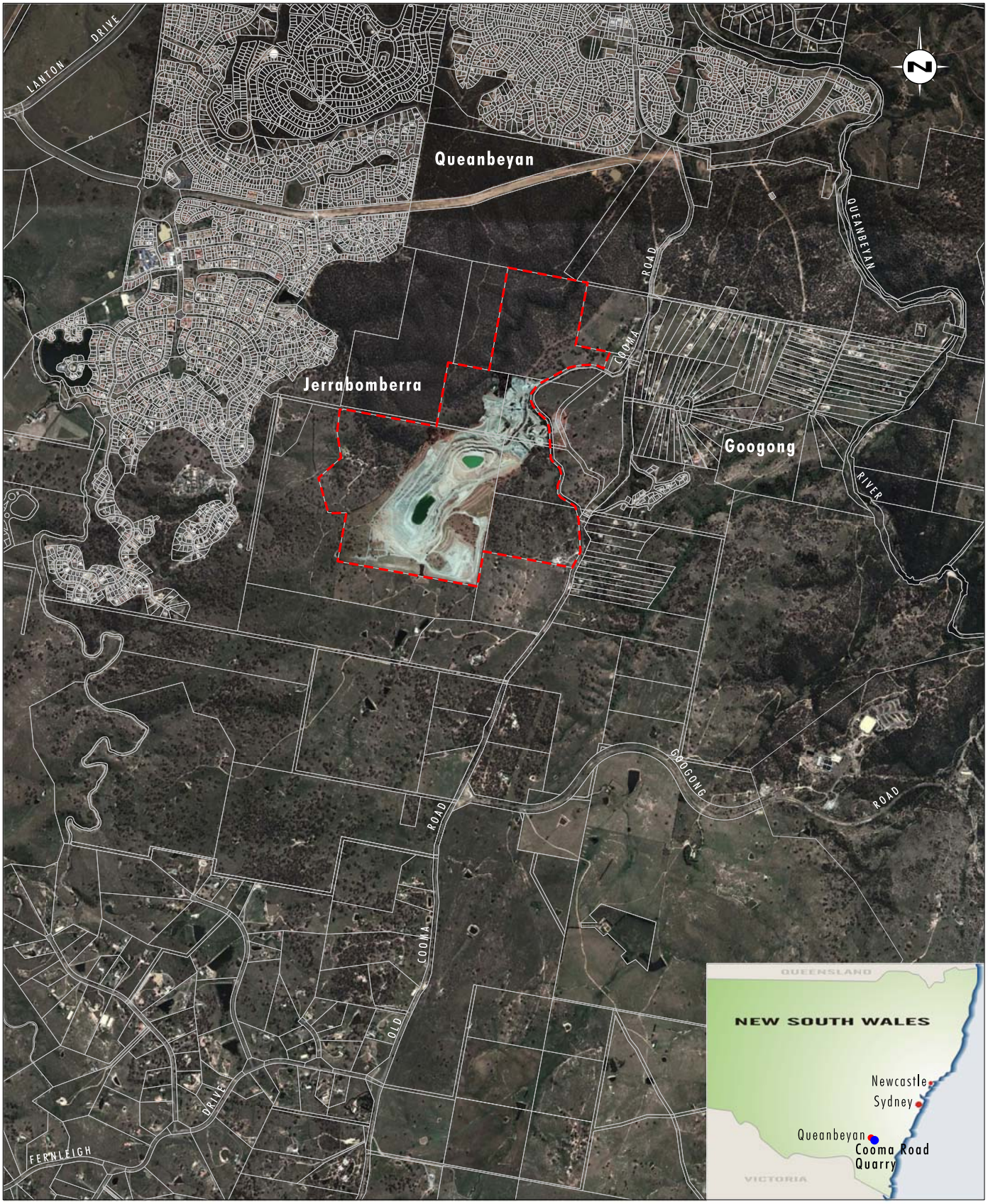


Image Source: Holcim (2012), Google Earth (2011)
Data Source: Holcim (2012), Queanbeyan City Council (2006)

0 0.5 1.0 1.5km
1:35 000

Legend

Approved Cooma Road Quarry

FIGURE 1.1

Locality Map

Image Source: Holcim (2012), Google Earth (2011)
Data Source: Holcim (2012)

0 0.25 0.5 0.75km
1:15 000

Legend

- Approved Cooma Road Quarry
- Approved Extraction Area
- Approved Additional Extraction Area
- Approved Disturbance Area - Workshop
- Approved Disturbance Area - Overburden Emplacement
- Approved Dam
- Clean Drain

FIGURE 1.2

Cooma Road Quarry
Continued Operations Project

File Name (A4): R01/3348_002.dgn
20131209 13.23

Table 1.1 – Annual Review Requirements of Cooma Road Quarry Development Consent

Consent Condition	Section Reference
By the end of March each year, the Applicant shall review the environmental performance of the development to the satisfaction of the Director –General. This review must:	
a) describe the development (including rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;	**Section 2.0**
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 • the monitoring results of pervious years; and • the relevant predictions in the EIS;	**Section 3.0**
c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;	**Section 3.0**
d) identify any trends in the monitoring data over the life of the development;	**Section 3.0**
e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and	**Section 3.0**
f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the development.	**Section 3.0**

1.1.2 Status of Licences

Details of the EPL held by Holcim for Cooma Road Quarry are as follows:

Licence Number: 1453
Licence Anniversary Date: 1 May

The EPL provides a range of conditions which regulate operational aspects and monitoring requirements for Cooma Road Quarry. The results of environmental monitoring undertaken are discussed in **Section 3.0**.

2.0 Summary of Operations during the Reporting Period

2.1 Land Preparation

No land preparation works were undertaken during 2013.

2.2 Construction

No construction activities were undertaken during 2013.

2.3 Quarrying Activities during 2013

Quarrying activities have been undertaken at the site since 1959. As discussed in **Section 1.0**, Cooma Road Quarry previously operated under a development consent (DA371/94) granted by Queanbeyan City Council on 26 October 1995, with a new development consent being granted in 2013. The Development Consent granted in 2013 provides for the following:

- extraction of the remaining resources within the existing approved quarry pit area to a maximum depth of 635 mAHD;
- extension of the approved extraction boundary to the north covering an area of approximately 3.5 hectares;
- increasing the maximum annual production limit from 1 million tonnes per annum (Mtpa) to 1.5 Mtpa;
- allowance to receive quarry materials from other sites for crushing and screening (as required) and then sale. Total product (including from both material quarried from the site and from materials imported to the site) will be maintained within the total production limit of 1.5 Mtpa;
- relocation of the existing workshop, truck parking and temporary stockpiles;
- addition of a mobile pug mill; and
- recycling of clean concrete on site for re-use as product.

Figure 1.2 shows the key project components of the Cooma Road Quarry Continued Operations Project.

Cooma Road Quarry operates Monday to Friday, 6.00 am to 10.00 pm and Saturdays from 6.00 am to 8.00 pm.

Operations at Cooma Road Quarry did not affect any public infrastructure during 2013.

Condition 23 of Schedule 2 of the Development Consent requires Holcim to undertake a survey of the boundaries of the approved limits of extraction within the development area. Holcim had previously surveyed the existing quarry extraction limit and the quarry did not extended beyond this limit in 2013 into the newly approved extraction area. The survey of the new extraction limit is currently planned to be undertaken in 2014.

2.3.1 Quarry Production

During 2013, quarrying activities were continued within the existing extraction area. The total quarry production during 2013 was 966,000 tonnes.

Condition 17(a) of Schedule 2 of the Development Consent requires the provision of annual quarry production data to the Department of Resources and Energy (DRE). Holcim will provide the relevant data to DRE to satisfy this condition.

No additional areas were disturbed as a result of quarry operations during 2013. The relocation of the workshop and the extension of the extraction boundary approved under the 2013 development consent were not commenced.

No recycled concrete was accepted by Cooma Road Quarry during 2013.

2.3.2 Quarrying Techniques and Equipment

The quarrying process currently used at Cooma Road Quarry consists of the following key components:

- topsoil stripping;
- overburden removal and placement;
- drilling, blasting, loading and haulage of primary raw feed material; and
- crushing, screening and stockpiling of product.

No topsoil stripping or overburden removal was required during 2013 as the quarrying operations remained within the existing extraction area.

2.3.2.1 Drilling and Blasting

The rock resource is drilled and blasted to break it into sizes which can be readily managed by front end loaders and transported to the primary crusher via haul trucks.

Throughout 2013, all drilling and blasting was carried out in accordance with the existing consent conditions and Environment Protection Licence (EPL) No. 1453. All blasting was undertaken between the hours of 9.00 am and 3.00 pm Monday to Friday. Drilling was undertaken between 6.00 am and 6.00 pm Monday to Saturday.

Drill and Blast Procedures are currently undertaken in accordance with the Cooma Road Quarry Environmental Management Plan (EMP) (R.W Corkery 2008). This will be replaced by a new Blasting Management Plan that will be prepared and submitted to the NSW Planning and Infrastructure (P&I) for approval in 2014 in accordance with the requirements of the 2013 development consent. The typical maximum instantaneous charge (MIC) used for blasting undertaken at the quarry varies depending on location and proximity to sensitive receivers. All drill and blasting procedures are carried out by qualified contractors. No explosives are stored on site, with all explosives brought onto the site as needed and loaded directly into the drill holes.

Detailed monitoring is undertaken of each blast (refer to **Section 3.4**).

After the rock is fragmented from blasting, the rock is loaded (typically by front-end loaders) into dump trucks which haul the material via internal quarry roads to the primary crusher. This material which is known as primary raw feed is then loaded into the primary crusher for crushing and screening to produce quarry product. Loading and haulage of primary raw feed from the quarry to the primary crusher occurs between 6.00 am and 6.00 pm Monday to Saturday.

2.3.2.2 Crushing, Screening and Stockpiling of Product

The crushing and screening process passes rock through a series of crushers to produce quarry products of various sizes and shapes to meet customer specifications. A series of screens and conveyors are used following each crusher to sort the crushed rock into various size categories. The location of the crushing and screening plant is shown on **Figure 1.2**.

Dust control systems are utilised on the crushing and screening plant to assist in the reduction of dust emissions and as part of site occupational health and safety management. Most conveyor transfer points are enclosed and water sprays are utilised to further minimise dust generation from material travelling along the conveyors. Dust control measures are currently undertaken in accordance with the Cooma Road Quarry EMP.

Product Stockpiling

Two main stockpiling areas are utilised at the quarry, storing primary raw feed, primary crushed rock awaiting secondary crushing and product in a range of size categories. Following the crushing and screening process, a series of conveyors load the processed material into separate stockpiles depending on size. The aggregate product is washed as part of the crushing and screening process and therefore has limited potential for dust emissions. These products are then loaded into trucks for sale and transported off site. Excess stock volumes are relocated via haul truck to the designated excess product stockpile area.

The current operation's requirements are for up to approximately 25 stockpiles with an average capacity of 6000 tonnes and ranging sizes up to 25,000 tonnes for some products.

2.3.3 Transport

The development consent includes a number of conditions which relate to the transport of product and the primary transportation routes. These conditions are discussed in the following sections.

2.3.3.1 Product Transportation

Condition 1 of Schedule 3 of the development consent requires Holcim to monitor product transport. The monitoring includes:

- the keeping of records that identify the amount of products transported from the site (monthly and annually) and the publication of these records on the quarry website on a quarterly basis; and

- the quantity, destination and source of all laden truck movements to and from the site (hourly, daily, weekly, monthly and annually).

Holcim will discuss this data with P&I directly due to concerns relating to commercial sensitivity of some of this information. It is also noted that Holcim did not previously collect data about the destination of all movements to and from the site and is currently implementing systems to collect this data.

2.3.3.2 Transportation Limits

Cooma Road Quarry complied with Conditions 8 and 9 of Schedule 2 which limit the product transportation for the quarry to 1 Mtpa and 1.5 Mtpa respectively. Cooma Road Quarry did not produce more than 1 Mtpa of product during 2013.

Conditions 10 to 13 of Schedule 2 require particular transportation routes and limits to be applied to the product transportation at Cooma Road Quarry.

The Ellerton Drive Extension has not been completed and as a result, Holcim is required to limit heavy vehicle movements to 50 movements per day on the section of Cooma Street north of Edwin Land Parkway. This is a new requirement for Holcim introduced in the 2013 Development Consent. As noted above, Holcim did not previously collect data about the destination of all movements to and from the site and is currently implementing systems to collect this data and manage ongoing compliance with this condition.

Condition 13 of Schedule 2 limits the number of truck movements from Cooma Road Quarry to no more than 30 laden trucks per hour; and no more than an average of 24 trucks per hour on any day. Holcim does not wish to publish data identifying the number of trucks dispatched by Cooma Road Quarry and will discuss the recording and publication of this data further with P&I. However, Holcim advised that it complied with this condition in 2013.

2.3.3.3 Stage 1 of Old Cooma Road Re-alignment

During 2013, the construction of Stage 1 of the realignment and upgrade of Old Cooma Road was completed by Queanbeyan City Council.

As part of Stage 1 works, a new intersection was provided for the quarry access approximately 200 metres south of the existing Tempe Crescent/Old Cooma Road intersection.

2.3.3.4 Transport Management Plan

Condition 2 of Schedule 3 of the development consent requires Holcim to prepare a Transport Management Plan in consultation with Roads and Maritime Services and Queanbeyan City Council. Holcim is currently preparing the Transport Management Plan which will be submitted to P&I during 2014.

2.4 Rehabilitation

The program of rehabilitation for 2013 included a small area of overburden emplacement in the northern part of the quarry. The area of land rehabilitation included approximately 2.12 hectares of land. The area of land rehabilitated is shown on **Figure 2.1**.

The slopes of the overburden dump were battered to an average of 10 degrees to minimise erosion risk and constructed to provide variability in local relief to prevent ponding of surface water.

The overburden area was covered with topsoil and planted with native tree species relevant to the rehabilitation plan for the site. Holcim also developed native fauna habitat as part of rehabilitation program.

Image Source: Holcim (2012), Google Earth (2011)
Data Source: Holcim (2012)

0 0.25 0.5 0.75km
1:15 000

Legend

- Approved Cooma Road Quarry
- Rehabilitation Area During 2013

FIGURE 2.1

Rehabilitation During 2013

Holcim is currently preparing a Rehabilitation Management Plan in accordance with Condition 24 of Schedule 3 of the development consent. The Rehabilitation Management Plan will be submitted to P&I for approval during 2014.

2.4.1 Rehabilitation Monitoring

Rehabilitation monitoring was not undertaken during 2013. Holcim is currently preparing a Rehabilitation Management Plan which will include a program for long term monitoring of rehabilitation at Cooma Road Quarry.

3.0 Environmental Management, Monitoring and Performance

3.1 Meteorological Monitoring

Meteorological monitoring was not required by the previous development consent DA371/94 or the existing EPL. As a result, Holcim has not previously undertaken meteorological monitoring at Cooma Road Quarry. In accordance with Condition 17 of Schedule 3, Holcim will establish a meteorological monitoring station during 2014.

3.2 Air Quality

Conditions 14 to 16 of Schedule 3 of the development consent detail the requirements for the management of air quality at Cooma Road Quarry. In accordance with the consent conditions, Holcim is required to meet air quality criteria for deposited dust, total suspended particulates (TSP) and particulate matter <10µm (PM_{10}) and prepare an Air Quality Management Plan (AQMP) to detail the operational management measures to be implemented.

Holcim is currently preparing an AQMP in accordance with Condition 16 of Schedule 3 of the development consent. The AQMP will be prepared in consultation with Queanbeyan City Council and the Environment Protection Authority (EPA). The AQMP will include a regular air quality monitoring program and detail management measures that would be implemented to ensure compliance with the air quality criteria and operating conditions detailed by the development consent. The new monitoring regime will be implemented in 2014 once the AQMP is approved for implementation.

Holcim does not currently undertake monitoring of dust concentration (TSP and PM_{10}) as it has not previously been required by the EPL or the previous development consent. Holcim has undertaken monitoring of dust deposition on a monthly basis since 2001. Details of the dust deposition are provided below.

3.2.1 Dust Deposition

Dust deposition monitoring is undertaken on a monthly basis at five locations within the Project Area (refer to **Figure 3.1**). Holcim continued to monitor dust deposition during 2013.

3.2.1.1 Dust Deposition Criteria

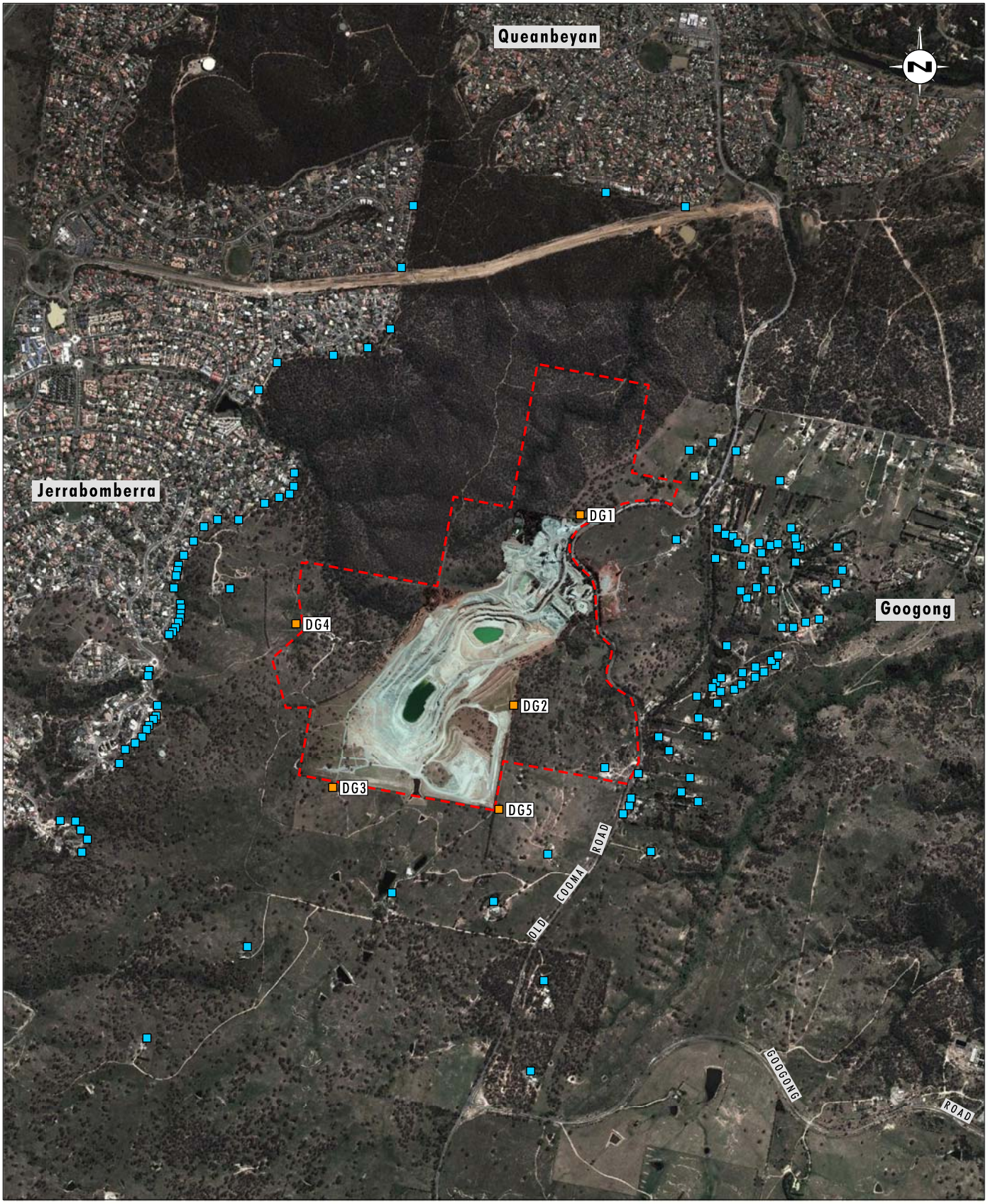
The Development Consent SSD_5109 granted in September 2013 details criteria for dust concentration which have not previously been part of Cooma Road Quarry. The air quality criteria for dust deposition detailed in Condition 14 of Schedule 3 of the Development Consent are outlined in **Table 3.1**.

Table 3.1 – Development Consent Air Quality Criteria for Dust Deposition

Pollutant	Averaging Period	Maximum Increase in Deposited Dust Level	Maximum Total Deposited Dust Level
[c]Deposited dust	Annual	[b]2 g/m^2/month	[a]4 g/m^2/month

Notes to **Table 3.1**:

- [a] Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources);
- [b] Incremental impact (i.e. incremental increases in concentrations due to the development on its own);



Source: Holcim (2012), Google Earth (2011) and Queanbeyan City Council (2006)

0 0.5 1 1.25km
1:25 000

Legend

- Approved Cooma Road Quarry
- Indicative Dwelling Location
- Existing Dust Deposition Gauges

FIGURE 3.1

Air Quality Monitoring Locations

- [c] Deposited dust is to be assessed as insoluble solids as defined by AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method; and
- [d] Excluded extraordinary events such as bush fires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Director-General in consultation with the EPA.

3.2.1.2 Dust Deposition Monitoring Results

Dust Deposition monitoring was undertaken throughout 2013 at five sites. The monitoring sites are shown on **Figure 3.1**. Results of the dust deposition gauges are analysed on a monthly basis for insoluble solids. The results from each monitor are provided below in **Table 3.2**.

Table 3.2 – Dust Deposition Monitoring Results in g/m^2/month for 2013

Date	Monitoring Site				
	DG1	***DG 2***	***DG 3***	***DG 4***	***DG 5***
11/01/2013	3.6	1.5	1.5	9.4	1.7
4/02/2013	34.6	2.2	1.9	2.4	4
1/03/2013	2	1.4	1	1.6	1.1
4/04/2013	1.9	2.7	0.6	0.4	0.9
1/05/2013	3.6	2.5	0.9	0.8	0.9
3/06/2013	2.3	1.6	0.6	0.3	0.9
1/07/2013	2.8	1.5	0.4	0.1	0.8
2/08/2013	2.1	1.3	0.9	0.3	1.8
6/09/2013	2.6	1.1	0.5	0.4	0.8
4/10/2013	3.7	1.6	0.8	4	1.1
1/11/2013	2.5	1.3	1.1	2.7	1.1
5/12/2013	4.2	1.7	1	1	1.4
Average	**2.8***	**1.7**	**0.93**	**1.95**	**1.375**

*Average excludes the contaminated result recorded on 4/2/2013.

The dust deposition results show a high result of 34.6 g/m^2/month was recorded at DG1 on 4 February 2013. It is likely that this result is due to a contaminated sample. The source of contamination may have been bird droppings or insects. As the result is clearly contaminated, the result has been excluded from the annual average result for DG1 shown in **Table 3.2**.

The annual average result for each dust deposition gauge complied with the criterion of 4 g/m^2/month, refer to **Table 3.2**.

3.2.1.3 Air Quality Monitoring Trends

Holcim has monitored dust deposition at Cooma Road Quarry since 2001. The EIS prepared for the project examined this data to establish the existing air quality environment for the project.

The average dust deposition for all dust gauges for the most recent twelve months prior to the air quality impact assessment being conducted were below the OEH 4 g/m^2/month criterion (Umwelt 2012). Dust deposition results since 2001 also demonstrate that the background air quality was consistently below the OEH 4 g/m^2/month criterion.

The dust deposition results for 2013 are consistent with the historical average dust deposition results identified by the Air Quality Impact Assessment prepared as part of the Cooma Road Quarry Environmental Impact Statement (EIS) (Umwelt 2012).

The dust deposition results for 2013 are below the predicted concentrations at residential receivers detailed in the air quality impact assessment in the EIS. The predicted concentration for dust deposition in the EIS at DG1 and DG2 was 3.3 g/m^2/month and DG3, DG4, DG5 was 3.4 g/m^2/month.

3.2.2 Air Quality Management Plan

Holcim is currently preparing an AQMP in accordance with Condition 16 of Schedule 3 of the development consent. The AQMP is due to be submitted to P&I during 2014. The AQMP will include monitoring for dust concentration in accordance with the criteria detailed in the development consent.

3.3 Water Management

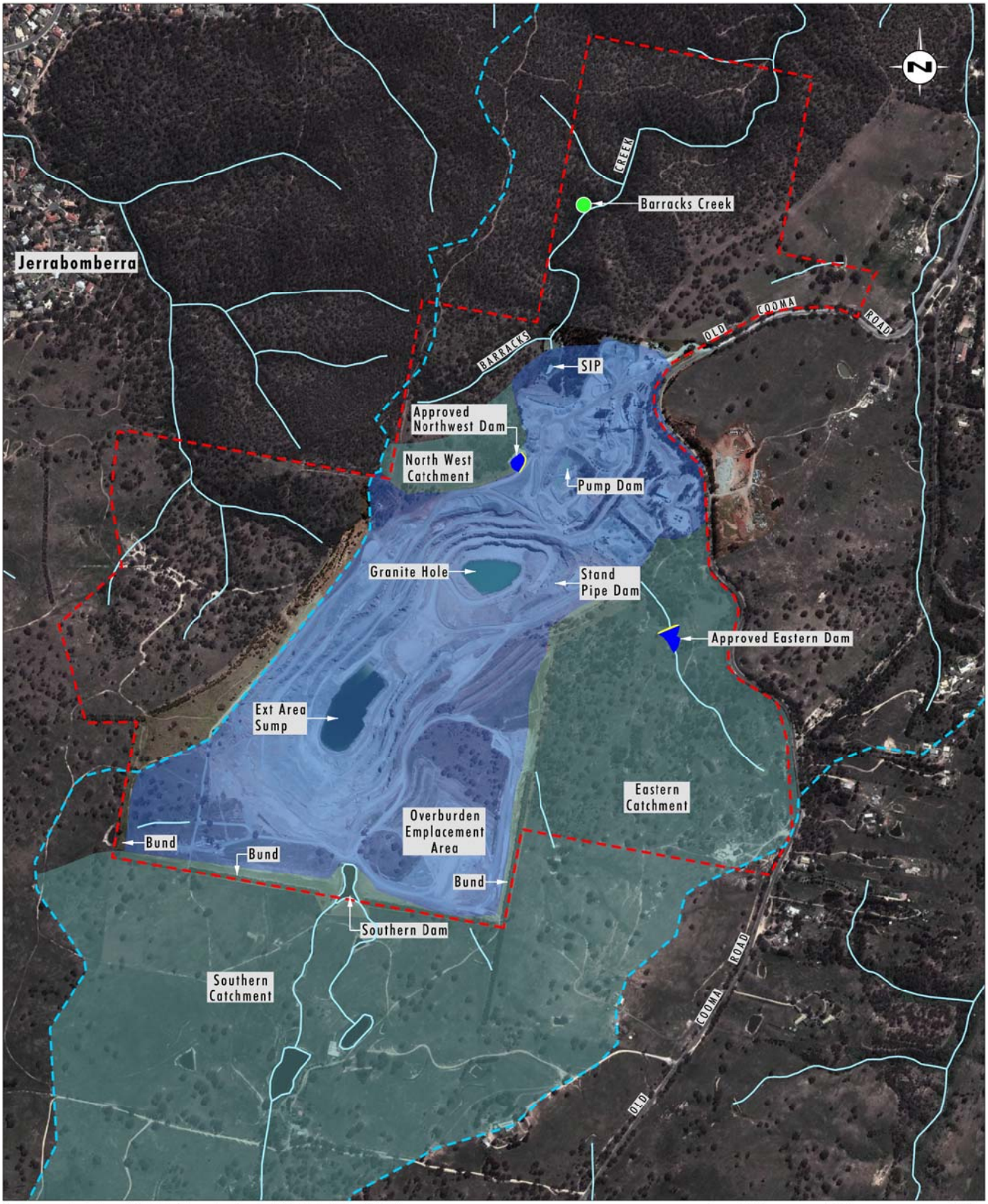
Holcim currently operates the Cooma Road Quarry Water Management System (WMS) in accordance with the Cooma Road Quarry EMP. Key components of the WMS are shown on **Figure 3.2**. The overall strategic approach to water management is captured within three focus areas, supply, storage and water conservation. The principal objectives of the water management strategy at Cooma Road Quarry are to:

- minimise the quantity of stormwater runoff from undisturbed areas entering the quarry site;
- ensure that all surface waters discharged from the quarry site meets the water quality criteria set out in EPL No. 1453; and
- provide an adequate and reliable water supply for quarry operations.

Presently, runoff from the upslope catchment of Barracks Creek flows into the WMS. Runoff from the south of the quarry pit drains to the Southern Dam which seeps through the rock face, or when full, overflows into the pit for management within the WMS. Runoff from the east of the quarry pit drains to the Stand Pipe Dam. This water is then transferred from the Stand Pipe Dam to the Pump Dam (refer to **Figure 3.2**) for release via the Sediment Interception Pond (SIP) or use within the WMS.

All dirty water runoff from the overburden emplacement areas and the workshop is directed into the quarry pit. Water is collected in either the extraction area sump or granite hole and used for dust suppression on site, in the processing plant, or transferred to the Pump Dam (refer to **Figure 3.2**).

Dirty water runoff from the processing plant, and stockpile areas drains directly to the Pump Dam. Stormwater runoff from the upslope portion of the north-west catchment of the quarry also drains to the Pump Dam (refer to **Figure 3.2**). Water is sourced from the Pump Dam for use in the processing plant and other dust suppression activities on site.



Source: Holcim (2012), Google Earth (2011), LPI (2010)

0 100 300 600m

1:12 500

Legend

- Approved Cooma Road Quarry
- Catchment Boundary
- Upslope Catchment Areas
- Water Management System Catchment Area
- Surface Water Monitoring Location

FIGURE 3.2

Cooma Road Quarry
Water Management System

Holcim is currently preparing a revised Water Management Plan (WMP) in accordance with Condition 20 of Schedule 3 of the development consent. The revised WMP will be generally consistent with the current EMP. As part of the continued operations project, the following improvements to the WMS are proposed:

- an additional detention dam (Eastern Dam) to partly control clean water runoff from the areas to the east, upslope of the quarry;
- additional clean water drains and a detention dam (North-West Dam) to intercept runoff from the upslope north-west catchment;
- monitoring of water transfers, usage and dam levels to account for water; and
- additional WMS infrastructure, including catch drains for the proposed workshop area.

3.3.1.1 Water Demand and Losses

Water use at Cooma Road Quarry is estimated at approximately 94 ML per year, and is used for process water and dust suppression activities.

3.3.1.2 Water Sources

The main water supply for the Cooma Road Quarry are sourced from the capture of rainfall runoff within the WMS, upslope catchment areas and water imported to the site to meet potable water demands and process water deficits. Holcim currently manages any water deficit with water sourced under harvestable rights provisions and surface water licence (40SL27690) from upslope catchment areas and from off-site supplies as required. Potable water will be imported from external sources.

3.3.1.3 Water Transfers and Discharge

Holcim transfers/disposes of water from site via the following methods:

- transfer of captured/excess water to Pumping Dam and SIP;
- water collection in the Extraction Area Sump or Granite Hole; and
- water discharge to Barracks Creek via a manually operated discharge pipe.

All excess water is transferred to the SIP which is in turn discharged to Barracks Creek via a manually operated discharge pipe. There is no limit in the EPL on discharge volumes from the site.

Holcim monitors the quality of water discharged to Barracks Creek in accordance with EPL No. 1453. Monitoring is undertaken through a combination of monitoring water prior to release, and monitoring of the water following release through monitoring at the Barracks Creek monitoring point (refer to **Figure 3.2**).

No water discharges were undertaken during 2013.

3.3.1.4 Potable Water

Potable water demand for the quarry operation is estimated to be approximately 1.5 ML per year. All potable water for the Cooma Road Quarry is sourced from off-site supplies and delivered to site via tanker.

3.3.1.5 Wastewater

Wastewater from the ablutions and staff facilities is disposed of within one of two septic tanks with absorption trenches and one Envirocycle system. Sludge from the septic tanks is removed from site as required by a suitably licensed contractor and disposed of at the Queanbeyan Sewerage Treatment Works. Water from the Envirocycle system is pumped onto the gardens around the weighbridge.

3.3.2 Surface Water Monitoring

Holcim monitors surface water quality in Barracks Creek on a monthly basis. The location of the Barracks Creek monitoring point is shown on **Figure 3.2**.

Holcim monitors pH, oil and grease and total suspended solids. The results of surface water monitoring undertaken at Barracks Creek during 2013 are provided in **Table 3.3**. As no discharges took place during 2013, these results are background and have not been compared to the limits for discharge water quality in the EPL.

Table 3.3 – Surface Water Monitoring Results for Barracks Creek Monitoring Point – 2013

Sample Date	pH	Total Oil and Grease	Suspended Solids
	6.5 to 8.5	10mg/L	<50mg/L
11/01/2013	7.4	1	7
3/2/2013	7.6	1	3
1/3/2013	6.7	1	2
4/4/2013	7.4	1	14
1/5/2013	7.4	1	2
3/6/2013	7.5	1	2
1/7/2013	7.2	1	2
2/8/2013	7.6	1	3
6/9/2013	7.6	1	2
4/10/2013	7.7	1	2
1/11/2013	7.8	1	5
5/12/2013	7.4	1	2
Average	7.44	1	3.83

3.3.2.1 Comparison of Surface Water Monitoring Results with EIS Predictions

Historical water quality monitoring results for the monitoring point in Barracks Creek utilised for the water impact assessment for the EIS are summarised in **Table 3.4**. Historical results for oil and grease were not available for the Barracks Creek monitoring point.

Table 3.4 – Barracks Creek Historical Water Quality Downstream of Cooma Road Quarry (April 2002 to October 2011)

Parameter	Unit	Limits	Max	Min	Ave	Number of Exceedances Above EPL Criteria
pH	-	6.5 to 8[1,2]	8.2	6.3	7.4	2
Electrical Conductivity	µS/cm	125-2200[2]	1600	140	1236	Nil
Total Suspended Solids[3]	mg/L	<50[1]	57	<2	7.9	1

1. Based on limits in EPL No. 1453
2. Based on ANZECC guidelines
3. TSS monitoring commenced in June 2007

The historical results of the water quality monitoring indicate that pH and EC are typically within ANZECC guidelines (ANZECC 2000). In addition the results of the historical water quality monitoring program indicate that TSS in Barracks Creek downstream of the quarry is typically low, i.e. < 10 mg/L. The EIS predicted that downstream water quality should not experience any adverse impacts with the appropriate implementation and management of appropriate erosion and sediment controls.

The surface water monitoring results for 2013 (shown in **Table 3.3**) are consistent with the historical surface water monitoring results shown in **Table 3.4** and indicate that Cooma Road Quarry did not have any adverse impact on the surface water quality in Barracks Creek during 2013.

3.3.3 Groundwater

Groundwater monitoring was not required by the previous development consent DA371/94 or by the EPL. Limited groundwater monitoring was undertaken as part of collecting baseline data for the EIS, with the collected data presented in the EIS. Holcim is currently preparing a Water Management Plan in accordance with Condition 20 of Schedule 3 of the development consent. The Water Management Plan will include a groundwater monitoring program.

3.4 Blasting

Blast criteria are prescribed by Condition 9 of Schedule 3 of the development consent and the EPL 1453. The criteria prescribed by these two documents are outlined below in **Table 3.5**.

Table 3.5 – Blasting Criteria

Location	Airblast overpressure (dB(Lin Peak))	Ground Vibration (mm/s)	Allowable Exceedance
Any residence of privately-owned land	120	10	0%
	115	5	5% of the total number of blasts over a period of 12 months

3.4.1 Blast Monitoring

Every blast is monitored at the monitoring location N67 shown on **Figure 3.3**. Blast monitoring results for 2013 are provided in **Table 3.6**.

Table 3.6 – Blast Monitoring Results for Monitoring Location N67 in 2013

Date	Overpressure	Vibration
19/02/2013	94.3	3.05
21/02/2013	100.6	0.35
22/02/2013	111.5	2.09
7/03/2013	109	0.1
18/03/2013	110.5	0.83
18/03/2013	98.4	2.07
8/04/2013	110	2.47
17/04/2013	108.5	1.04
24/04/2013	112.2	1.19
9/05/2013	100.5	2.22
20/05/2013	114.7	0.68
23/05/2013	89.6	0.56
2/07/2013	105.2	1.18
12/07/2013	93.2	1.44
19/07/2013	93.2	0.6
31/07/2013	103.8	1.01
8/08/2013	74.2	1.81
16/08/2013	103.8	1.01
19/08/2013	77.6	1.25
30/08/2013	101.8	0.2
9/09/2013	Did Not Trigger	Did Not Trigger
20/09/2013	108	0.58
30/09/2013	111.6	4.5
4/10/2013	113.8	0.71
23/10/2013	110.4	1.42
22/11/2013	102.7	0.88
27/11/2013	115.8	0.96
2/12/2013	103.6	1.31

A blast conducted on 9 September 2013 did not trigger the blast monitor. The overpressure and vibration resulting from the blast were not sufficient to trigger the monitor. As a result, no monitoring results were recorded on this occasion. No complaints were received by nearby residences at the time of the blast.

One blast conducted on 27 November 2013 (115.8 dB(Lin Peak)) exceeded 115 dB(Lin Peak)) but was less than the maximum allowable of 120 dB(Lin Peak)). The blasting criteria allow for up to 5% of blasts to exceed 115 dB(Lin Peak)) over a period of 12 months. The one blast exceedance equates to an exceedance rate of 3.57% which is below the 5% exceedance rate.

All blasts recorded a ground vibration level of less than the 5mm/s criteria.

Image Source: Holcim (2012), Google Earth (2011)
Data Source: Holcim (2012)

0 0.25 0.5 0.75km
1:15 000

Legend

- Approved Cooma Road Quarry
- Blast Monitoring Location
- Indicative Dwelling Location

FIGURE 3.3

Blast Monitoring Location

All blasts were undertaken between 9am and 3pm on weekdays. The requirement to conduct blasting within these hours on weekdays is a requirement of the development consent, but also the previous development consent (DA371/94).

Blast monitoring was not undertaken at the Moses Morley's Lime Kiln Site during 2013 (refer to **Section 3.7.2**); however a blast monitoring site will be established at this location during 2014.

An additional blast monitor will also be included in the monitoring program at a location in Jerrabomberra.

The EIS predicted that Cooma Road Quarry would comply with relevant vibration and airblast criteria at all sensitive receivers through ongoing management of blast design and size. Holcim achieved compliance with the relevant vibration and airblast criteria during 2013.

3.5 Noise

Noise monitoring was not required by the previous development consent (DA371/94). As a result, Holcim has not previously undertaken noise monitoring and did not undertake noise monitoring during 2013.

A Noise Management Plan for the site is currently in preparation in accordance with Condition 7 of Schedule 3 of the development consent. The Noise Management Plan will be submitted to the P&I for approval during 2014.

Holcim proposes to undertake noise monitoring in accordance with the Noise Management Plan following the approval of the plan by P&I.

3.6 Visual

Holcim is required to establish a vegetation screen to minimise visibility of the site infrastructure from outside of the site within 12 months of the development consent being granted. Establishment of the visual screen did not commence during 2013, but it is due to be completed by September 2014. This work has been programmed by Holcim.

Progressive rehabilitation was undertaken during 2013 to minimise the impact of the development on visual amenity. Refer to **Section 2.4** for details of rehabilitation undertaken.

No night time works were undertaken during 2013 as a result, night lighting was not required.

3.7 Heritage

3.7.1 Aboriginal Archaeology and Cultural Heritage

A number of Aboriginal archaeological sites surround Cooma Road Quarry however no known sites are located within the disturbance areas for the existing and future quarry operations. **Figure 3.4** shows the known Aboriginal archaeology sites identified by the EIS.

No additional Aboriginal archaeology sites were identified during 2013.

Image Source: Google Earth (2011)

0 200 400 800m

1:16 000

Legend

- Approved Cooma Road Quarry
- Artefact Scatter

FIGURE 3.4

Aboriginal Archaeological Sites

Holcim is currently preparing a Heritage Management Plan in accordance with Condition 21 of Schedule 3 of the development consent. The Heritage Management Plan is due to be submitted to P&I during 2014.

3.7.2 Historic Heritage

The locally listed Moses Morley's Lime Kiln site is located within the Project Area but outside of the approved quarry extension area and will not be directly impacted by the continued operation of Cooma Road Quarry. **Figure 3.5** shows the location of the Moses Morley's Lime Kiln site.

No additional historic heritage sites were identified during 2013.

Holcim is currently preparing a Heritage Management Plan which includes a specific management strategy for the Moses Morley's Lime Kiln site. It is expected that the management plan will be approved by P&I during 2014.

3.8 Bushfire

No bushfires occurred at Cooma Road Quarry or the surrounding vicinity during 2013.

Holcim will continue to manage bushfire risk at Cooma Road Quarry in accordance with the commitments in the EIS.

3.9 Waste Management

Holcim is committed to the waste hierarchy where emphasis is placed upon reduce, re-use, recycle prior to disposal of its wastes. In order to minimise the generation of waste and maximise re-use of waste products, the following practices have been adopted:

- steel, paper and cardboard collected from the general waste is recycled;
- all waste oil is collected and stored in containers within a covered and bunded area, and is be removed from the site by an appropriately licensed contractor with all relevant waste tracking documentation completed;
- all oil filters are separately stored and returned to the manufacturer for re-use;
- diesel fuel is stored within a self bunded above ground tank and all refuelling is undertaken on a hardstand area which drains to an oil/water separator;
- silt is periodically removed from the various silt control structures and placed/stored in the product stockpiles or overburden materials for use in progressive rehabilitation;
- waste water from the ablutions and staff facilities are disposed of within one of two septic tanks with absorption trenches and one Envirocycle system. Sludge from the septic tanks is removed from site when required by a suitably licensed contractor and disposed of at the Queanbeyan Sewerage Treatment Works. Water from the Envirocycle system is pumped out onto gardens around the weighbridge; and
- all waste tyres are removed by the supplier of replacement tyres.

Image Source: Google Earth (2011)
Data Source: Holcim (2012), Queanbeyan City Council (2011)

0 0.5 1.0 1.5km
1:30 000

Legend

- Approved Cooma Road Quarry
- Moses Morley's Lime Kiln Site

FIGURE 3.5

Moses Morley's Kiln Site

4.0 Environmental Incidents and Community Relations

4.1 Environmental Incidents

There were no environmental incidents at Cooma Road Quarry during 2013.

4.2 Community Relations

4.2.1.1 Community Participation

During 2013, Holcim participated in a flag raising ceremony with the Ngambri people. The flag raising celebrated the continuation of the relationship between the Ngambri people and Holcim in employment, sponsorship, land management and cultural understanding.

4.2.1.2 Community Consultative Committee

Cooma Road Quarry is currently establishing a community consultative committee. It is expected that the committee will be functioning during 2014.

4.2.1.3 Community Complaints

No community complaints were received during 2013.

4.2.1.4 Access to Information

Access to the information detailed in Condition 11 of Schedule 5 of the development consent will be provided by Holcim during 2014 on the Holcim Australia website.

5.0 Activities Proposed for 2014

Quarrying activities will continue to be conducted in accordance with the development consent during 2014.

The following activities are proposed for 2014:

- continuation of quarrying activities within the existing extraction area;
- establishment of a meteorological station;
- submission of management plans required by the development consent to P&I including:
  - Air Quality Management Plan;
  - Noise Management Plan;
  - Blast Management Plan;
  - Water Management Plan;
  - Transport Management Plan;
  - Heritage Management Plan;
  - Rehabilitation Management Plan; and
  - Environmental Management Strategy;
- establishment of a blast monitoring location at the Moses Morley's Lime Kiln site;
- establishment of particulate matter monitoring locations;
- establishment of a visual screen in accordance with the EIS;
- commencement the Community Consultative Committee; and
- establishment of access to information on the Holcim Australia website.

6.0 References

ANZECC 2000. *Guidelines for Fresh and Marine Water Quality Guidelines*.

R.W. Corkery 2008. *Cooma Road Quarry Environmental Management Plan*.

Umwelt (Australia) Pty Limited 2012. *Cooma Road Quarry Continued Operations Project – Environmental Impact Statement*.

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