

# Wagga Wagga Quarry

## ANNUAL REVIEW

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**July 2017 - June 2018**

## Document Control

<b>Document Title</b>	Environmental Management Annual Review – Wagga Wagga Quarry			
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<b>Resubmission</b>				

**Table 1: Annual Review title block**

<b>Name of operation</b>	Wagga Wagga Quarry
<b>Name of operator</b>	Hanson Construction Materials Pty Ltd
<b>Development consent / project approval #</b>	MP 07_0069
<b>Name of holder of development consent / project approval</b>	Hanson Construction Materials Pty Ltd
<b>Water licence #</b>	40BL190719 and 40BL190720 for groundwater extraction of 360 ML/year; and WAL37001 (and the associated Water Supply Works Approvals) entitled the quarry to pump 100 ML/year from the Murrumbidgee River.
<b>Name of holder of water licence</b>	Hanson Construction Materials Pty Ltd
<b>Annual Review start date</b>	1 July 2017
<b>Annual Review end date</b>	30 June 2018

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### List of Abbreviations

DPE	NSW Department of Planning and Environment.
DPI Water	Division of Water within the NSW Department of Primary Industries.
DRE	Division of Resources & Energy within the NSW Department of Industry.
EPA	Environment Protection Authority.
RMP	Rehabilitation Management Plan or equivalent plan required under the conditions of a relevant approval
WAL	Water Access Licence
DDG	Deposited Dust Gauge
Relevant approval	Includes the following approvals where they are material to the conduct of the operation: a development consent, project approval, mining lease or water access licence.
Reporting period	Financial year, unless specified otherwise in the relevant conditions of approval or agreed in writing with DPE and DRE.

# 1. STATEMENT OF COMPLIANCE

**Table 2: Statement of compliance**

Were all conditions of the relevant approval(s) complied with?	
DC MP 07_0069	YES/NO

**Table 3: Non-compliances**

Relevant approval	Condition #	Condition description (summary)	Compliance status	Comment	Where addressed in Annual Review
DC MP 07_0069	Sh.2, C.6 (b)	Not permit more than six heavy vehicle movements per hour between 3:00pm and 6:00pm on any weekday,	Non-compliant	There were 7 dispatches outside of Sat operating hours, and 13 of more than 3 trucks dispatched per hour between 3pm-6pm.	Section 6.3, 7
DC MP 07_0069	Sh.3, C.5	PM <sub>10</sub> particulate emissions	Non-compliant	1 day where PM <sub>10</sub> levels exceeded 24hr criterion	Section 6.2
DC MP 07_0069 & EPL 2433	Sh.3, C.14	measures to ensure that all discharges of water from the site to the Murrumbidgee River (excepting floodwater) contain less than 50mg/L TSS	Non-compliant	November 2017 River discharge over 50mg/L TSS.	Section 6.4

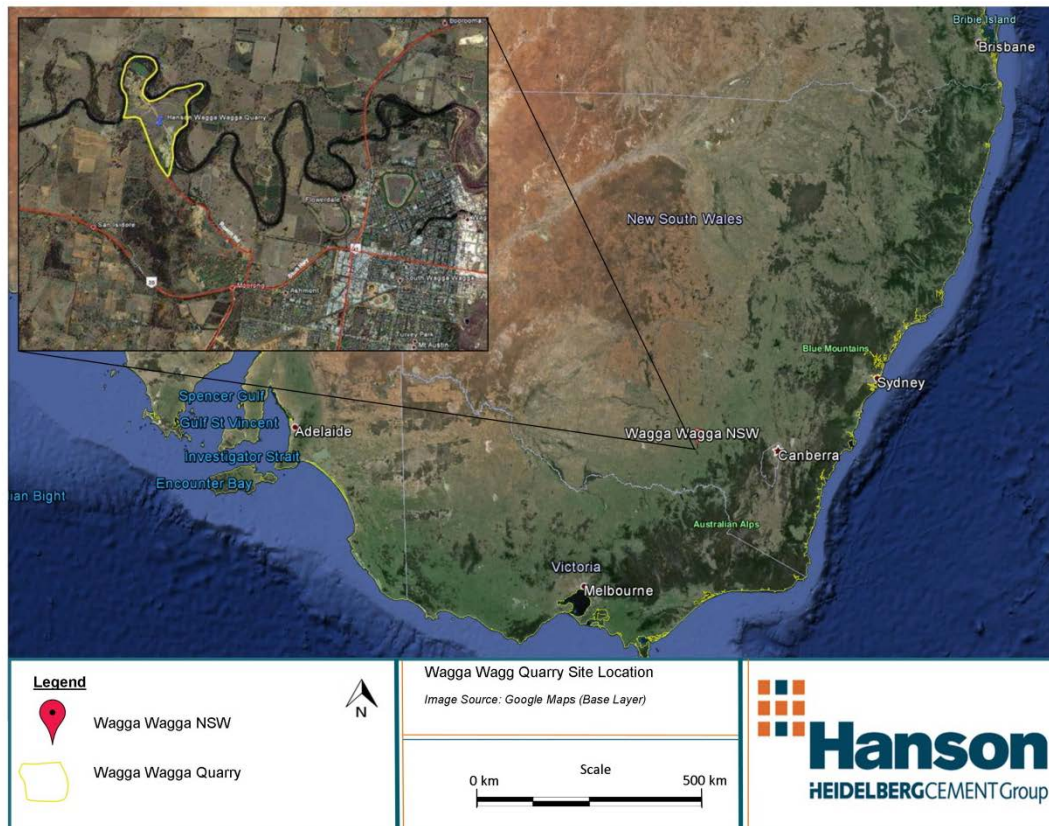
**Table 4: Compliance status key for Table 2**

Risk level	Colour code	Description
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence.
Medium	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>• potential for serious environmental consequences, but is unlikely to occur; or</li> <li>• potential for moderate environmental consequences, but is likely to occur</li> </ul>
Low	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>• potential for moderate environmental consequences, but is unlikely to occur; or</li> <li>• potential for low environmental consequences, but is likely to occur</li> </ul>
Administrative non-compliance	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)



## 2. INTRODUCTION

Hanson Construction Materials Pty Ltd (Hanson) own and operate a sand and river gravel quarry located on the floodplain of the Murrumbidgee River five kilometres (km) west of the city of Wagga Wagga, in the Riverina region of NSW, approximately 460km southwest of Sydney (refer to **Figure 1**).



**Figure 1: Site location**

The Wagga Wagga Quarry Extension Project involves the extraction of up to 150,000 tonnes per annum (tpa) of construction aggregates over a project life of 25 years. Aggregates extracted from the site would be processed at the site and transported by road to regional customers in Wagga Wagga, Griffith, Mildura, Leeton, Canberra, Temora, Shepparton and as far south as Melbourne. The quarry directly employs 6 people during the reporting period, these being 3 operators, one truck driver, one casual plant operator and a quarry manager.

The Department of Planning and Environment (DP&E), formally the Department of Planning and Infrastructure, granted Project Approval 07 0069 subject to approval conditions on 22 November 2011. Under condition 3 of Schedule 5 of the Project Approval, an Annual Review is



required to be submitted to the DP&E to review the environmental performance of the project. This Annual Review will detail the operational and environmental management activities of the project during the period July 2017 - June 2018.

## **2.1 PROJECT SETTING**

The quarry has been in operation since 1987. The project site is bounded by private land to the south and the Murrumbidgee River to the north (**Figure 2**). The site is part of the Murrumbidgee River's alluvial floodplain and is situated within a large meander of the River with an elevation between 174 and 177 metres AHD. The land uses surrounding the site comprise a mixture of agricultural and residential properties, and areas of public recreation. The quarry is close to a significant new residential development, Riverview Estate, which is approximately 1.5 km south of the project site. The nearest receivers are shown on **Figure 3**.



**Figure 2: General Project Layout**



**Figure 3: Site Map and Nearest Receivers**

**Table 5** provides the details of the key personnel who are responsible for the environmental management of the quarry.

**Table 5: Quarry Roles and Responsibilities**

Position	Name	Phone	Email
Operations Manager	John Hewitt	+61 412 213 775	john.hewitt@hanson.com.au
Area Manager	Maciej Mojsa	+61 417 611 663	maciej.mojsa@hanson.com.au
Quarry Manager	John Navybox	+61 437 359 212	john.navybox@hanson.com.au
Risk Manager	Ian Bradbury	+61 417 423 467	ian.bradbury@hanson.com.au
Development Manager	Andrew Driver	+61 417 234 774	andrew.driver@hanson.com.au
Graduate Environmental Planning and Compliance Coordinator	Belinda Pignone	+61 439 131 941	belinda.pignone@hanson.com.au

### 3. APPROVALS

Project MP 07\_0069 was approved under Section 75J of the *Environmental Planning and Assessment Act 1979* (EP&A Act), (22 November 2011). The major components of the project



are summarized in **Table 6**. Full project description can be reviewed in Hanson's Wagga Wagga Quarry Environmental Assessment (EA).

**Table 6: Major Project Approval Components**

Aspect	Description
Project summary	Continuation and expansion of the Wagga Wagga Quarry including: Extraction of up to 150,000 tpa of sand and gravel from four new staged quarry pits; Construction of haul roads, levee banks and sediment dams; Processing and washing of raw quarried material; Loading and dispatch by road of an average of 150,000 tpa of quarry products including concrete, aggregates, asphalt aggregates and road base; Stockpiling of topsoil for reuse in rehabilitation works; and Progressive rehabilitation of the site.
Total Site Area	200ha.
Extraction Areas	51.6 Ha (proposed new extraction area, including up to 22.5 ha of quarry pits); 29 ha (previous extraction area, including up to 16.8 ha of exhausted quarry pits).
Extraction Method	40-tonne excavator.
Extraction Rate	Up to 150,000 tpa.
Extraction Staging	Four separate quarry pits, operated as five successive extraction stages, starting from the north and extending southwards.
Resource	In excess of five million tonnes of sand and gravel.
Depth of Extraction	Approximately 22 m - 25 m below the existing land surface, to a maximum depth of 152 m AHD, approximately 15.5 m below the average height of the Murrumbidgee River.
Processing and Facilities	Operation of existing processing facilities including a primary feed crusher and screens, with connecting conveyor belts. The site contains an existing workshop and office amenities building. A weighbridge is located on the site access road.
Water Management	Water produced from licenced groundwater dewatering operations to be treated on-site (settled to <50 ppm suspended solids) then discharged to the Murrumbidgee under EPL.
Main Products	Concrete aggregates, asphalt aggregates, road base and sundry aggregates.
Product Transport	All products would be transported by road, via Roach Road and McNickle Road to the Sturt Highway and thence to market destinations. Maximum of 6 heavy vehicle movements per hour between 3 pm and 6 pm.
Project Life	Quarrying operations may take place at the site until 31 December 2036.
Rehabilitation	Rehabilitation is proposed to be a combination of wetlands, grassland and a revegetated riparian zone. Levee banks would be removed and the material returned to pits. Pit banks would be regraded and revegetated and all pits allowed to fill with water to a standing water level of 168m AHD (except Stage 1, which would be refilled to 1m above groundwater level). The final outcome would be a large grassed area, with five water-filled pits with vegetation around the perimeters.
Employment	The project would directly employ between 10 and 15 people during operation, and would support employment of an additional 10 subcontracted truck drivers.

Capital Value	\$0.5 million.
Construction	Construction of haul roads, levee banks and sediment dams, and surface water diversion banks (if required).
Hours of Operation	Quarrying operations Monday – Friday: 6 am – 6 pm Saturdays: 8 am – 1 pm Sundays and Public Holidays: No Activities Transportation off-site Monday – Friday 6 am – 6 pm Saturdays: 8 am – 1 pm Sundays and Public Holidays: No activities

### **Environmental Protection Licence (EPL) No. 2433**

EPL 2433 Applies to all scheduled activities undertaken by Hanson Construction Materials at Lot 2 DP 610795 and part Lot B DP 381991 (north of Roach Road). The license provides the following:

- Performance criteria for environmental management including pollutant concentration load limits, waste limits, noise limits, air quality (odour and dust) limits;
- Monitoring and record keeping requirements;
- Testing methods;
- Pollution complaints handling; and
- Reporting requirements.

## **4. OPERATIONS SUMMARY**

The operational production performance of the Wagga Wagga quarry is shown in **Table 7**. The quarry continues to operate well within its allowable limit under the development consent.

**Table 7: Production summary**

<b>Material (specify source)</b>	<b>Approved limit</b>	<b>Previous reporting period (actual)</b>	<b>This reporting period (actual)</b>	<b>Next reporting period (forecast)</b>
Sand & gravel	150,000 tonnes/year	87,201 tonnes	99,599 tonnes	110,000 tonnes

### **4.1 PIT EXTRACTION AREAS**

Wagga Wagga Quarry have continued extraction of sand and gravel from Cell 1/Stage 1 of the quarry by either a front end loader or excavator and hauled to the processing plant where it is sorted into sellable product.

## 4.2 INFRASTRUCTURE DEVELOPMENT UPGRADES

A new sand production plant has been installed at the Quarry site. The old sand production plant has been decommissioned.

## 4.3 FLEET UPGRADES

There have been no upgrades to the fleet over the 2017-2018 reporting period.

## 4.4 SITE REHABILITATION

Quarry management continue to plant approved native plants in and around Pit 1.

# 5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

**Table 8: Actions required and taken stemming from previous Annual Review**

Action required from previous Annual Review	Requested by	Action taken by the Operator	Where discussed in Annual Review
Groundwater monitoring results and analysis of results to be included in Annual Review.	Department of Planning and Environment	Groundwater monitoring results and analysis for the 2017-2018 period has been included in this Annual Review	Section 6.4

# 6. ENVIRONMENTAL PERFORMANCE

Hanson benchmarks environmental performance against the conditional requirements of MP 07\_0069 and EPL 2433 as well as the approved environmental management plans. Generally environmental performance complies with expectations.

The following environmental management/monitoring plans have been prepared in accordance with the requirements of the Project Approval:

- Air Quality Management and Monitoring Plan
- Noise Monitoring Plan
- Traffic Management Plan
- Comprehensive Water Audit
- Water Improvement Program
- Waste Management Plan
- Biodiversity Management Plan



- Rehabilitation Plan
- Water Monitoring Program
- Water Management Plan which includes;
  - Site Water Balance.
  - Erosion and Sediment Control Plan.
  - Surface Water Management Plan.
  - Flood Management Plan.
  - Contingency measures.

In addition, **Table 9** provides a summary of environmental monitoring at the Quarry.

**Table 9: Summary of Environmental Monitoring**

Plan	Monitoring Frequency	Monitoring
Surface Water Monitoring Plan	Monthly	TSS
Air Quality Management and Monitoring Plan	Monthly	Dust deposition monitored by 5 Dust Deposition Gauges
	Continuous	Particulate matter < 10 µm (PM <sub>10</sub> ) monitored by a DustTrak Monitor
	Continuous	Meteorological monitoring via AWS on site.
Noise Monitoring Program	Commencement of each stage of extraction/development.	Unattended noise monitoring at the nominated sensitive receivers (NMP) for 7 days (site must be operating normally during the monitoring period).
	Commencement of each stage of extraction/development.	Operator attended monitoring at the nominated sensitive receivers for a minimum of two 15 minute periods during hours of operation (site must be operating normally during the monitoring period).
	In response to complaints	Operator attended monitoring at the receiver where complaint was received for a minimum of two 15 minute periods during hours of operation (site must be operating normally during the monitoring period).
Traffic and Transport Management Plan	Quarterly	Product materials transported from the site, including the date, time and tare weight of each product haulage vehicle dispatched from the site
Various Biodiversity Management Plans	Reported annually, activities conducted as required.	Weeds & riverbank repair vegetation.

## 6.1 NOISE

### 6.1.1 Overview

The Proponent managed noise compliance through the project's Noise Management Plan and the Project Approval conditions of consent. The Project has not progressed to the next development stage and therefore has not triggered noise monitoring during the reporting period. The last noise monitoring was undertaken 2012.

There have been not noise complaints during the reporting period.

### 6.1.2 Relevant Statutory Requirements and Criteria

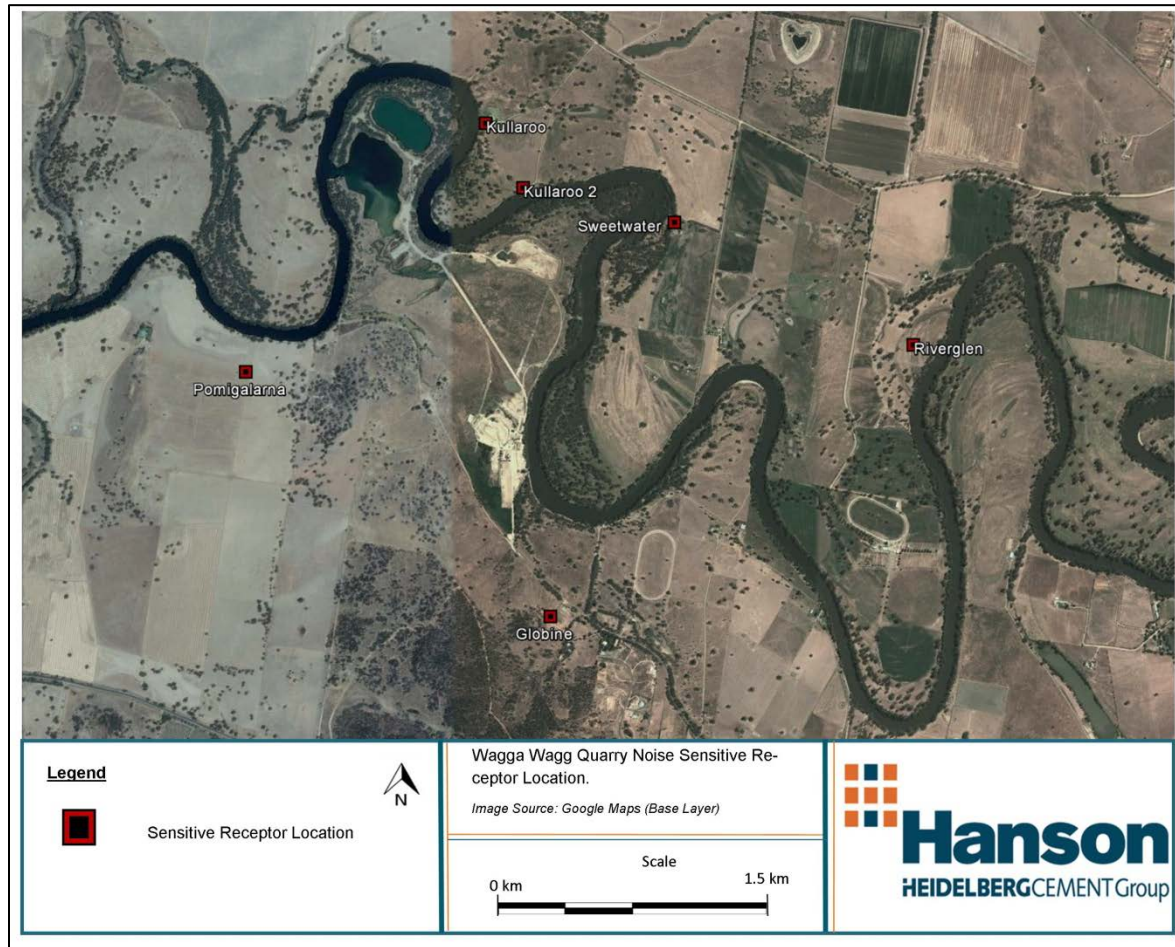
Condition 1 of Schedule 3 of the Project Approval stipulates environmental performance conditions for the monitoring and management of noise for the Quarry. The Project Approval specifies; operating hours (**Table 10**), noise limit criteria (**Table 11**), operating conditions and the preparation of a Noise Management Plan. The locations of the nearest sensitive receivers and the corresponding monitoring locations are shown in **Figure 4**.

**Table 10: Approved Operating Hours**

Activity	Day	Time
All quarrying operations	Monday – Friday (except Public Holidays)	6am – 6pm
	Saturdays	8am – 1pm
	Sundays and Public Holidays	No activities
Transportation off-site	Monday – Friday (except Public Holidays)	6am – 6pm
	Saturdays	8am – 1pm
	Sundays and Public Holidays	No activities

**Table 11: Noise Impact Assessment Criteria (dB(A) LAeq(15min))**

Location	Day
Kulleroo 2	39
Riverglen	40
All other privately owned land	36



**Figure 4: Noise and Air Sensitive Receptors**

### 6.1.3 Monitoring Results

No monitoring was required during the 2017-2018 period.

### 6.1.4 Monitoring Results of Previous Years

Monitoring results from previous years (2012) indicated that there was no breach in compliance at the commencement of works of Cell 1.

There were no noise complaints over the 2017-2018 period, no change from the previous year.

**Table 12: Noise related complaints**

Previous Reporting Period	Internal Complaints	External Complaints
2014-2015	Nil	Nil
2015-2016	Nil	Nil
2016-2017	Nil	Nil

### 6.1.5 Non Compliance and Corrective Actions

There was no noise related non-compliance during the 2017-2018 reporting period.

### 6.1.6 Measures Implemented Over 2017-2018

Hanson has continued to refine onsite noise mitigation measures and quarry operating procedures, where practical.

## 6.2 AIR QUALITY

### 6.2.1 Overview

Particulate matter emissions ( $PM_{10}$ ) are monitored at the Quarry through the DustTrak system located at the weigh station.  $PM_{10}$  emissions have remained compliant with the limits established in PA 07\_0069.

Total Suspended Particles (TSP) is not monitored in the vicinity of the Quarry. The Air Quality Impact Assessment for the Wagga Wagga Quarry Extension Project determined that  $PM_{10}$  comprised 50% of Total Suspended Particulates (TSP) for dust emitted from the Quarry and therefore the  $PM_{10}$  monitoring results are used as a surrogate for TSP data. Based on this review TSP emissions have remained compliant with the limits established in PA 07\_0069.

Five dust gauges are used to monitor deposited dust levels at the sensitive receptor locations. The results of monthly monitoring have generally demonstrated compliance with the annual average deposited dust limits established in PA 07\_0069.

The EIS concluded that dust deposition levels were predicted to be below the air quality criterion at all surrounding sensitive receivers. Cumulative annual TSP and  $PM_{10}$  concentrations are predicted to satisfy the air quality criterion at all surrounding sensitive receptor locations for all modelled scenarios. Annual average TSP and  $PM_{10}$  concentrations were predicted to satisfy the air quality criterion at all sensitive receivers. This has been the case at the Quarry, including this Annual Review.

### 6.2.2 Relevant Statutory Requirements and Criteria

Hanson has continued to operate against the conditional requirements provided in Schedule 3, Conditions 2, 5, 6 and 7 of MP 07\_0069 and EPL 2433 as well as the approved Air Quality Management Plan. All reasonable and feasible avoidance and mitigation measures must be employed so that particulate matter emissions and dust generated by the Quarry does not cause exceedances in conditions set out in MP 07\_0069 and EPL 2433 shown in **Table 13**, **Table 14** & **Table 15**.

**Table 13:  $PM_{10}$  - Annual Limits**

Pollutant	Averaging Period	Criteria
Total Solid Particulates (TSP)	Annual	90 $\mu\text{g}/\text{m}^3$
Particulate matter <10 $\mu\text{m}$ ( $PM_{10}$ )	Annual	30 $\mu\text{g}/\text{m}^3$

**Table 14: PM10 - 24 hour Limits**

Pollutant	Averaging Period	Criteria
Particulate matter <10 µm (PM <sub>10</sub> )	24hr	50 µg/m <sup>3</sup>

**Table 15: Deposited Dust - Annual and Monthly Limits**

Pollutant	Averaging Period	Maximum Project Contribution	Maximum Total Deposited Dust Level
Deposited Dust	Annual	2g/m <sup>2</sup> /month	4g/m <sup>2</sup> /month

### Air Quality Management Plan

The Air Quality Management Plan was prepared by PAE Holmes detailing the assessment criteria, the monitoring locations and procedures, and the compliance checking procedures for the subsequent reporting in accordance with the Department of Planning and Environment (DPE) and the Environmental Protection Authority (EPA) requirements. The locations of the closest sensitive receptors are shown in **Figure 4** and **Table 16**.

**Table 16: Closest sensitive receptors**

Residence ID	Distance to Site Boundary	Distance to processing Plant	East (m)	North (m)
Kullaroo	0.2	1.7	527572	6117801
Sweetwater	0.2	1.4	528569	6117275
Riverglenn	0.7	1.2	529831	6116625
Globine	0.5	1.0	527908	6115201
Pomigalama	0.4	1.5	526301	6116493

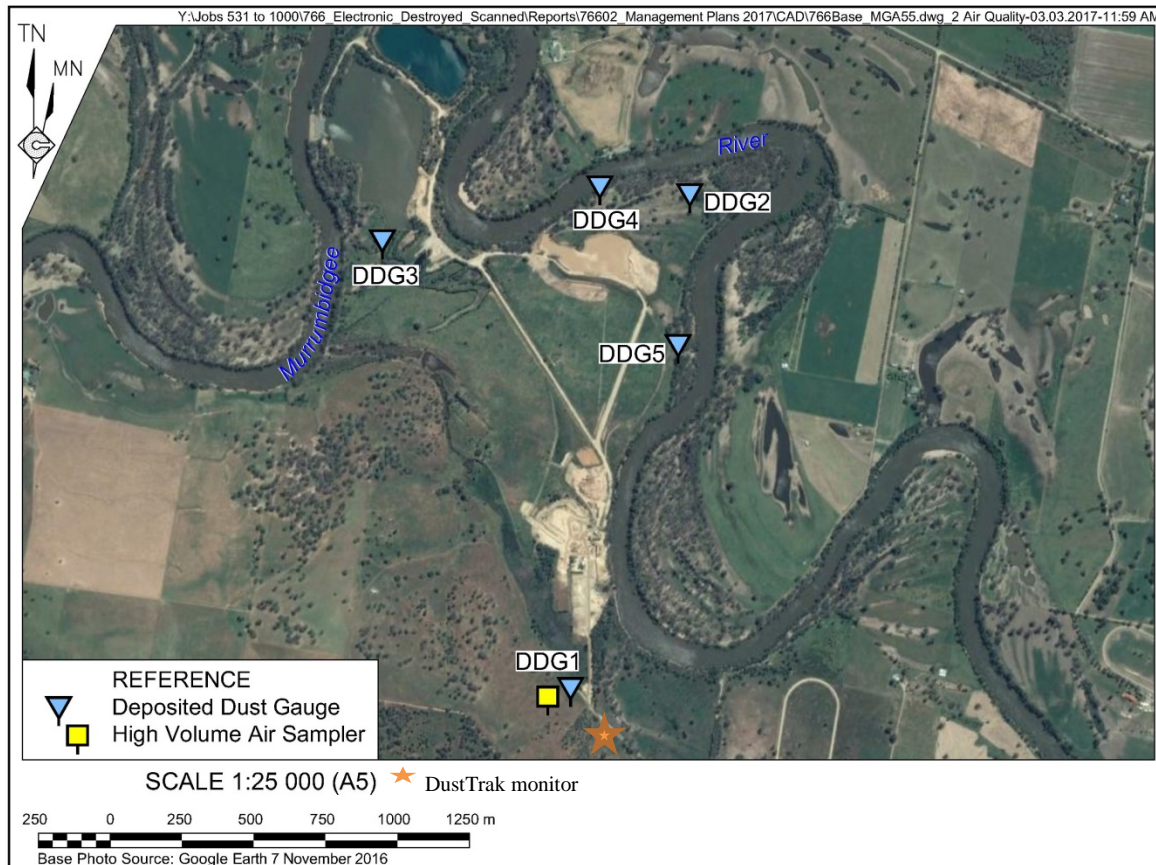
All monitoring locations conform to the requirements of AS 3580.1.1:2007, subject to local site constraints. Monitoring activities are outlined in **Table 17** and shown in **Figure 5**.

**Table 17: Monitoring activities and locations**

Site No.	Location	Parameter	Instrument	Frequency
DDG1	Dust deposition gauge located to the west of Roach Road just past the entrance to quarry.	Dust Deposition	DDG	30 Days (± 2 days)
DDG2	Dust deposition gauge located approximately 220m northeast of the quarry pit.	Dust Deposition	DDG	30 Days (± 2 days)
DDG3	Dust deposition gauge located 66m south of the primary sedimentation pond and 155m east of the main access road.	Dust Deposition	DDG	30 Days (± 2 days)
DDG4	Dust deposition gauge located approximately 115m north of the quarry pit.	Dust Deposition	DDG	30 Days (± 2 days)



DDG5	Dust deposition gauge located approximately 216m southeast of the quarry pit.	Dust Deposition	DDG	30 Days (± 2 days)
Met Station	Proximity to Site Offices	Meteorological Parameters	AWS	Continuous
DustTrak	Proximity to Weigh Bridge	PM <sub>10</sub>	DustTrak	Continuous
HVAS	Proximity to Site Offices	PM <sub>10</sub> (TSP)	HVAS	1-in-6 day monitoring for three months



**Figure 5: Location of Air Monitors**

### EPL Requirements

Under the EPL 2433, air quality emissions are to be monitored on a quarterly basis, as outlined in **Table 18**. Each monitoring point location is detailed in the EPL. All air monitoring results is required to be monitored and reported in the yearly annual return documents required by the EPL licencing conditions.

**Table 18: EPL air monitoring requirements**

Locations	Pollutant	Units of Measure	Frequency	Sampling method
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DDG 1 (2), DDG 2 (3), DDG 3 (4), DDG 4 (5), DDG 5 (6)	Total Solid Particles	Grams per square metre per month	Quarterly	Australian Standard 3580.10.1-2003
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### 6.2.3 Monitoring Results

#### Deposited Dust

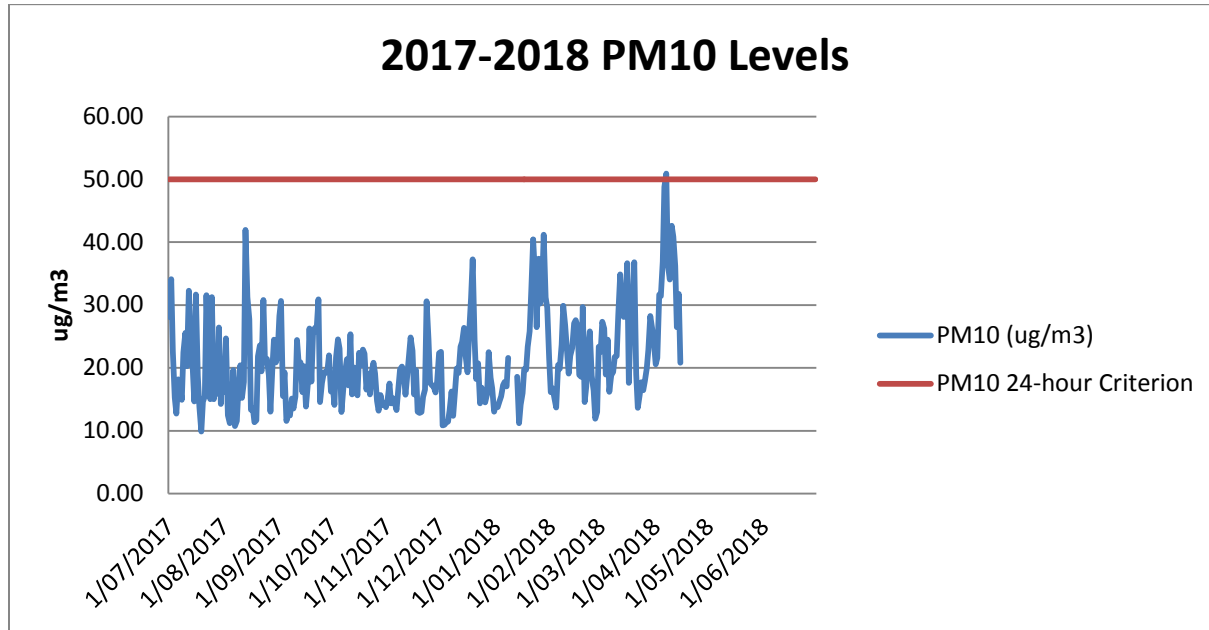
Charles Sturt University performs monthly monitoring on deposited dust at the Quarry. Monitoring over the twelve month period indicates that there were four (4) instances of monthly levels that were higher than  $4\text{g/m}^2/\text{month}$ . All Dust Deposition Gauges fell within the annual criterion of  $4\text{g/m}^2/\text{month}$ . The August 2017 result for DDG2 is considered anomalous due to the exceedingly high result obtained and therefore not a true representation of quarry emissions.

**Table 19: Dust Deposition Gauge results 2017-2018**

Month	Total Insoluble Matter ( $\text{g/m}^2/\text{month}$ )					Comment
	DDG1	DDG2	DDG3	DDG4	DDG5	
July	1.6	2.3	1.3	0.6	1.3	
August	2.4	<b>18.1</b>	0.6	0.4	0.8	DDG2 anomalous result
September	0.8	1.7	0.2	0.4	0.5	
October	1.6	1.2	1.3	0.8	1.4	
November	1.7	2.2	1.6	<b>4.5</b>	1.3	
December	2.0	1.4	2.7	0.5	2.3	
January	2.7	2.0	<b>4.1</b>	1.9	1.3	
February	2.5	2.0	<b>4.1</b>	1.9	1.3	
March	1.4	2.3	2.4	1.1	0.6	
April	1.5	1.4	1.7	1.4	1.0	
May						
June						
Yearly Average	1.8	3.4	1.8	1.3	1.2	Annual average compliant at all DDG locations.

#### Particulate Matter Emissions (PM<sub>10</sub>)

PM<sub>10</sub> results for the 2017-2018 calendar year are depicted in **Figure 6**.



**Figure 6: PM<sub>10</sub> monitoring over the 2017-2018 period.**

The average annual PM<sub>10</sub> reading for the 2017-2018 reporting period was obtained from the Quarry sites DustTrak monitoring system. The DustTrak monitor records PM<sub>10</sub> levels in 15 minute intervals during the reporting period. The annual average for PM<sub>10</sub> was 21.0µg/m<sup>3</sup> and complies with the 30µg/m<sup>3</sup> annual limit as outlined in the Project Approval and EPL. 24-hour averaging period for PM<sub>10</sub> readings generally fell below the applicable 50µg/m<sup>3</sup> criterion and the Project is hence compliant (see **Figure 6**). There was one (1) instance recorded PM<sub>10</sub> level for the 24 hour averaging period that exceeded the criteria of 50µg/m<sup>3</sup> (**Table 20**). Based on this review PM<sub>10</sub> emissions have remained compliant with the limits established in PA07\_0069 and EPL 2433.

**Table 20: PM<sub>10</sub> 24Hr Average Non-Compliances**

Date	24-hour Average µg/m <sup>3</sup>
7/4/2018	50.91µg/m <sup>3</sup>

In April the DustTrak system required a calibration and replacement of parts, requiring the monitor to be offline until the end of June 2018.

### Total Suspended Particles

TSP was not monitored in the vicinity of the Quarry. The Air Quality Impact Assessment determined that the PM<sub>10</sub> to TSP ratio was calculated to be 50%. This was applied to the 2017-2018 PM<sub>10</sub> data to obtain an indicative TSP value in the absence of the TSP readings. Annual PM<sub>10</sub> for 2017-2018 was recorded as 21.0µg/m<sup>3</sup>. Therefore the TSP reading for 2017-2018 period is approximately 42.0µg/m<sup>3</sup> (**Table 21**). This is less than half of the 90µg/m<sup>3</sup> TSP criteria and hence the Quarry is deemed compliant during the reporting period.

**Table 21: Total Suspended Particles annual compliance**

PM <sub>10</sub> annual average	PM <sub>10</sub> to TSP ratio	Calculated TSP	TSP criteria	Compliant
21.0 µg/m <sup>3</sup>	50%	42.0µg/m <sup>3</sup>	90 µg/m <sup>3</sup>	YES

## 6.2.4 Monitoring Results from Previous Years

In comparison of previous air monitoring results, PM<sub>10</sub> and TSP results have been consistent over the 2014-2015, 2015-2016 & 2016-2017 reporting periods (**Table 22**).

**Table 22: Air monitoring comparison 2015-2017**

Year	PM <sub>10</sub> (µg/m <sup>3</sup> )	TSP (µg/m <sup>3</sup> )	DDG (g/m <sup>2</sup> /month) annual average
2015-2016	25.8µg/m <sup>3</sup> (Compliant)	51.6µg/m <sup>3</sup> (Compliant)	DDG1: 1.6g/m <sup>2</sup> /month Compliant DDG2: 4.0g/m <sup>2</sup> /month Compliant DDG3: 2.7g/m <sup>2</sup> /month Compliant DDG4: 2.2g/m <sup>2</sup> /month Compliant DDG5: 2.1g/m <sup>2</sup> /month Compliant
2016-2017	17.7µg/m <sup>3</sup> (Compliant)	35.4µg/m <sup>3</sup> (Compliant)	DDG1: 1.2g/m <sup>2</sup> /month Compliant DDG2: 1.0g/m <sup>2</sup> /month Compliant DDG3: 0.9g/m <sup>2</sup> /month Compliant DDG4: 3.8g/m <sup>2</sup> /month Compliant DDG5: 3.3g/m <sup>2</sup> /month Compliant
2017-2018	21.0µg/m <sup>3</sup> (Compliant)	42.0µg/m <sup>3</sup> (Compliant)	DDG1: 1.8g/m <sup>2</sup> /month Compliant DDG2: 3.4g/m <sup>2</sup> /month Compliant DDG3: 1.8g/m <sup>2</sup> /month Compliant DDG4: 1.3g/m <sup>2</sup> /month Compliant DDG5: 1.2g/m <sup>2</sup> /month Compliant

## 6.2.5 Non Compliance and Corrective Actions

There was one (1) day where PM<sub>10</sub> 24-hour average was over 50µg/m<sup>3</sup> (50.91µg/m<sup>3</sup>).

## 6.2.6 Measures Implemented 2017-2018

Specific dust management practices and mitigation measures are practiced at Wagga Wagga Quarry as detailed in the Air Quality Management Plan and continued throughout the 2017-2018 reporting period.

## **6.3 TRANSPORT**

### **6.3.1 Overview**

Truck movements are monitored through a SAP Transportation Management System that registers the orders that leave the Quarry. This system ensures that the existing limits on hourly product truck despatch are not exceeded. However, in some cases customers request that a single truck order is despatched on two orders with the result that a single truck despatch is counted twice. This process has resulted in some non-compliance records, however does not represent an exceedance of truck limits.

The Environmental Impact Statement (EIS) states that no matters should arise from the Quarry expansion other than noise attenuation. This matter was further explored in the application to modify the shoulder morning period truck movements in 2017-2018.

### **6.3.2 Relevant Statutory Requirements and Criteria**

Schedule 3, Condition 17 of the Project Approval requires Hanson to keep accurate records of transported product material. Schedule 2, Condition 6 states:

*The Proponent shall not:*

*(a) transport more than 150,000 tonnes of product from the site per calendar year;*

*(b) permit more than six heavy vehicle movements per hour (total of all quarry haulage truck movements into and out of the site) between 3:00pm and 6:00pm on any weekday, unless in the case of emergency or under the direction of police or other relevant authority.*

#### **Traffic Management Plan**

Schedule 3, Condition 22 of Project Approval requires the implementation of a Transport Management Plan and Driver's Code of Conduct. The objectives of the Transport Management Plan are to:

- Ensure compliance with the conditions included under Schedules 2 & 3 of the Department of Planning and Infrastructure consent conditions with respect to traffic and transport matters;
- Encourage compliance and acceptance of the Truck Driver Code of Practice by all heavy vehicle drivers using the Quarry.
- Minimise traffic and transport impacts of the Quarry on the community,
- Foster an understanding and awareness within the company of community expectations and legislative requirements;
- Protect and enhance public safety through compliance with relevant road rules; and
- Increase occupational health and safety (OH&S) understanding in relation to fatigue, vehicle operation in public areas and obligation to general public.

Heavy vehicle drivers hauling from Wagga Wagga Quarry must;

- Have undertaken a site induction carried out by an approved member of the Quarry staff or suitably qualified person under the direction of the Quarry management;
- Hold a valid driver's licence for the class of vehicle that they operate;
- Operate the vehicle in a safe manner within and external to the Quarry site;
- Comply with the direction of authorised site personnel when within the site; and
- Comply with the Australian Road Rules external to the site.

### 6.3.3 Monitoring Results

The exceedance and corresponding reasoning for exceedances during the 2017-2018 period is reported in **Table 23**. The full list of movements of the 2017-2018 period is found in **Appendix A**.

**Table 23: Movement exceedance between 1/07/2017 to 30/06/2018**

Date	Time	Number allowed	Number dispatched	Reason	Compliant
01/07/2017	07:50	0	1	The truck was loaded before 08:00 but did not leave the quarry until after 08:00.	Yes
08/07/2017	07:47	0	1	Human error.	No - Reported to DPE
08/07/2017	13:26	0	1	Human error.	No - Reported to DPE
17/07/2017	15:20 15:20	3	4	Split load, 3 actual movements.	Yes
26/08/2017	07:32	0	1	Human error	No - Reported to DPE
12/09/2017	15:49 15:52	3	4	Split load, 3 actual movements.	Yes
22/09/2017	15:56 15:58	3	9	Split loads, 5 actual movements.	No – Reported to DPE
23/09/2017	07:43	0	1	Human error.	No - Reported to DPE
04/10/2017	15:46 15:52	3	4	Human error.	No - Reported to DPE
11/11/2017	08:00	0	1	No Breach (system counts 08:00 within the 7am to 8am time period).	Yes
25/11/2017	07:53	0	1	The truck was loaded before 08:00 but did not leave the quarry until after 08:00.	Yes
29/11/2017	15:58 16:00	3	4	Split load/ system counts 16:00 within the 3pm to 4pm time period.	Yes
1/12/2017	16:00	3	4	System counts 16:00 within the 3pm to 4pm time period.	Yes
10/02/2018	15:05	0	1	Preloaded for delivery on Monday (did not leave quarry until Monday).	Yes

14/03/2018	16:00	3	4	System counts 16:00 within the 3pm to 4pm time period.	Yes
18/04/2018	16:00	3	4	System counts 16:00 within the 3pm to 4pm time period.	Yes
16/06/2018	13:17	0	1	System entry error – truck was loaded and departed quarry before 13:00.	Yes
30/06/2018	08:00	0	1	System counts 08:00 within the 7am to 8am time period.	Yes

### 6.3.4 Monitoring Results of Previous Years

As seen in **Table 24**, there has been a decrease in the number of breaches over the last two years.

**Table 24: Truck dispatch yearly comparison**

Reporting Period	Number of truck dispatch exceedances
2016-2017	There were thirteen (13) instances where the transportation movements exceeded the stipulated 3 dispatches per hour between the hours of 3pm – 6pm and seven (7) instances where the Saturday dispatch hours were exceeded.
2017-2018	There were two (2) instances where the transportation movements exceeded the stipulated 3 dispatches per hour between the hours of 3pm-6pm and four (4) instances where the Saturday dispatch hours were exceeded.

### 6.3.5 Non Compliance and Corrective Actions

The number of events where the physical number of trucks possibly exceeded the applicable criterion is six during the reporting period. The exceedances of the transport movement criterion were reported to the DPE on the 2 November 2017.

There were no traffic incidents in the 2017 reporting period, as seen in **Table 25**.

**Table 25: Traffic incidents**

Reporting period	Number of incidents	Details of incident
2015-2016	0	n/a
2016-2017	0	n/a
2017-2018	0	n/a

### 6.3.6 Measures Implemented over 2017-2018

The Quarry continued to operate the SAP counting system to monitor and manage truck dispatch numbers. New rules incorporated into the SAP reporting software has reduced the number of false positives such as split loads.

An application to modify Project Approval 07-0069 for the Wagga Wagga Bass Point Quarry to increase the approved product dispatch traffic levels during the afternoon period (between 3:00pm to 5:00pm, weekdays) will be submitted to the DPE at the end of June 2018. The



modification will provide the Quarry flexibility to improve planning of product despatch activities during the afternoon period.

## 6.4 WATER MANAGEMENT

### 6.4.1 Overview

Water level monitoring is undertaken in five (5) groundwater monitoring bores, while surface water quality is tested during any discharge. The implementation of the *Water Improvement Program* (Evans & Peck, 2013) has resulted in the Quarry adopting the use of a recycled processing water system. The consequential environmental improvement is the cessation of the need to draw processing water directly from the Murrumbidgee River. Accordingly, Hanson has removed the two river pumps and installed these within the internal water recycling system.

### 6.4.2 Relevant Statutory Requirements and Criteria

Schedule 3, Condition 14 of Project Approval 07\_0069 states that the proponent is required to prepare and implement a Water Management Plan for the management of site water balance, erosion and sediment control plan, surface water management plan, flood management plan. Schedule 3, Condition 15 of the Project Approval states that the proponent shall prepare and implement a Water Monitoring Program for the Project to the satisfaction of the Secretary and is to include:

- Monitoring and recording of all key elements of the project Site Water Balance
- Groundwater Monitoring Program

The implementation of the Water Improvement Program (11 March 2013), Evans & Peck, in particular the Water management Option 1 identified in that report, has resulted in the quarry adopting the use of a recycled processing water system. The consequential environmental improvement is the cessation of the need to draw processing water directly from the Murrumbidgee River. Accordingly, Hanson has removed the two river pumps and installed these within the internal water recycling system. The results are demonstrated in **Table 26**.

**Table 26: Quarry water usage and licencing entitlements**

WAL #	Water sharing plan, source and management zone (as applicable)	Entitlement	Passive take / inflows	Active pumping	TOTAL
WAL37001	Murrumbidgee regulated river water source	100 Units	0	0	0
WAL3788	Murrumbidgee regulated river water source	50 Units	0	0	0
WAL33474	Wagga Wagga	360 Units	8.8 <sup>1</sup>	289 <sup>2</sup>	297.8

	alluvial groundwater source				
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Notes:

1. EIS evaporation for Stage 1.
2. Provided by Water NSW.

### **EPL Requirements**

The site is required to comply with Section 120 of the Protection of the Environment Operations Act 1997. The site has one (1) licenced discharge point to the Murrumbidgee River.

The site's EPL stipulates performance criteria for discharge of water from site. Water discharged from the discharge point waters is not to exceed a water quality of TSS concentration of 50 mg/L during discharges.

### **6.4.3 Flooding History at the Site**

Wagga Wagga Quarry is located on the banks of a large meander of the Murrumbidgee River. Due to the locality of the quarry, it has been subject to four major flooding events.

- December 2010 where the Murrumbidgee River reached 9.702m (15.5 years ARI); and
- March 2012 in which the Murrumbidgee River reached 10.602m (58years ARI). Data was taken from the Wagga Wagga gauge (410001).
- 13 September 2016 where the Murrumbidgee River reached 8.318m.
- 5 October 2016 where the Murrumbidgee River reached 8.952m.

In both flooding events of 2016 the repairs riverbank and fuse plug/spillway of Pit 2 performed as per its design.

Cell 1 levee suffered damage during the flood event on 13 September 2016. The damage area was under repair when the river flooded again three weeks later on 5 October 2016. This flood was higher than the 13 September flood and the flood waters caused further damage which resulted in a scoured breach from the Cell 1 pit to the river as well as the loss of bore 705.

It should be noted that the river levels only raised high enough to fill the low lying channels and gullies adjacent to the Cell 1 levees. The perched water caused the levees to become saturated and resulted in localised collapses. The breach has since been repaired and the Cell 1 pit is in the stages of completing repair works to the damaged areas.

### **6.4.4 Monitoring Results**

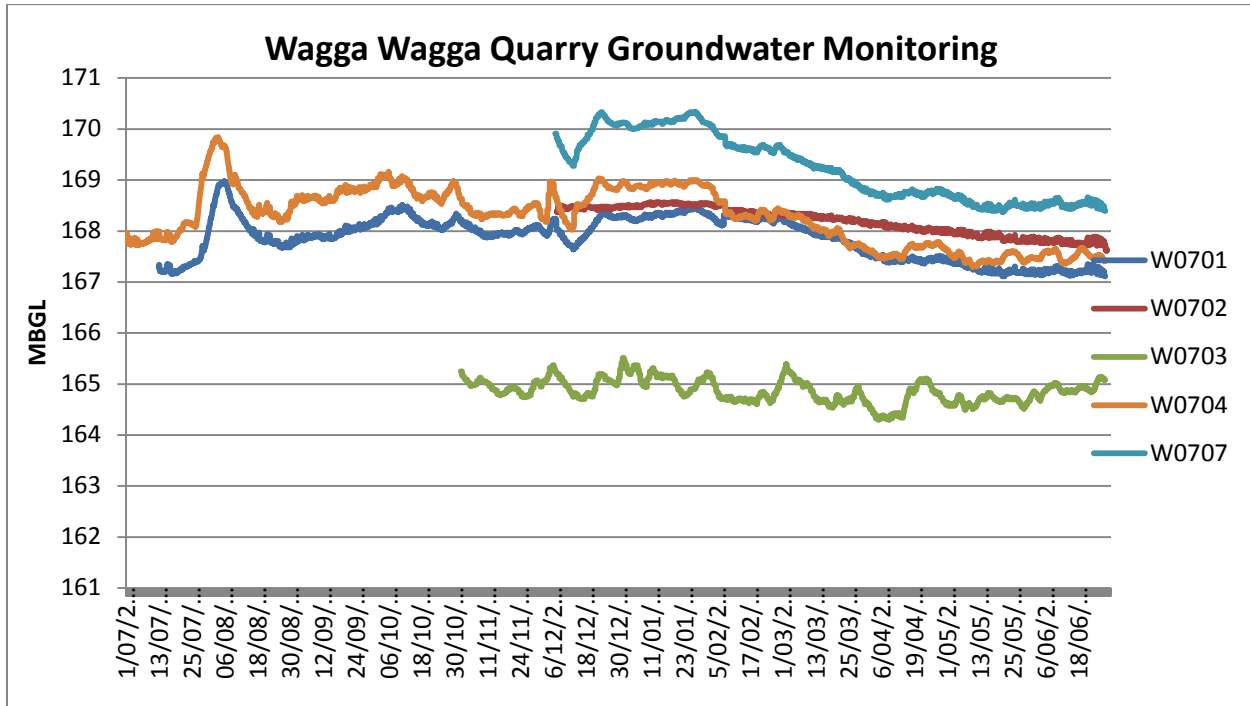
Continued water quality monitoring is completed in accordance with EPL, Project Approval Conditions and Water Management Plans.

Wagga Wagga Quarry has five (5) active borehole water depth loggers located on site collecting and recording continuous water depth and temperature readings. The locations of these monitoring boreholes are depicted in **Figure 7**.



**Figure 7: Location of Groundwater Monitoring Bores (no logger in 706)**

Groundwater data is recorded hourly using Dipper Logger Heron Software. This data is stored in the Dipper Logger and is collected periodically and uploaded digitally. The compensated water depth (MB GL) of groundwater from the six monitoring bores is depicted in **Figure 8**.



**Figure 8: Groundwater Monitoring Bore Results**

The groundwater level drawdown data is shown in **Table 27**. The groundwater level drawn down difference between the standing water levels (SWL) at the time of the borehole construction and the averages for 2017-2018 indicates that all bores are currently sitting on an increase in SWL and therefore a positive gain in groundwater levels as opposed to the EIS predicted drawdown losses shown in the last row of **Table 27**.

**Table 27: Comparison of groundwater drawn down levels**

	SWL (AHD)m				
	<b>W0701</b>	<b>W0702</b>	<b>W0704</b>	<b>W0705</b>	<b>W0707</b>
Average July 2016 – June 2017	167.87	168.19	168.29	N/A	169.24
Bore Construction	167.58	167.5	167.17	167.39	167.64
Predicted Oct 2015	166.59	164.98	165.78	157.6	167.32
Observed drawdown (-ve( loss), +ve(gain))	0.29	0.69	1.12	N/A	1.60
Predicted drawdown (-ve( loss), +ve(gain))	-0.99	-2.52	-1.39	-9.79	-0.32

A replacement bore for W0705 was installed at the quarry site in the second quarter of 2018 (**Figure 7**). New bores located between Pit 1 and Pit 2, labelled W0708 and W0709 were also installed in the second quarter of 2018 (**Figure 7**). W0708 and W0709 ground loggers were installed at the end of June 2018 with W0705 receiving a ground logger later in the year due to accessibility issues to the bore.

### Surface Water Results

Water is tested monthly from the “Settling Pond” and the “River”. The November “River” result exceeded the EPL TSS limit of 50mg/L with a result of 89mg/L. All other results during the reporting period comply with the 50 mg/L EPL limits with the highest recorded levels (minus the exceedance above) being 34 mg/L for the “River” and 5mg/L for the “Settling Pond”.

**Table 28: Surface Water Monitoring Results**

Month	Location	Conductivity	pH	TSS
July	Settling Pond	334	7.7	2
	River	138	7.5	8
August	Settling Pond	334	7.6	5
	River	194	7.5	20
September	Settling Pond	335	8	2
	River	78	7.9	14
October	Settling Pond	328	7.3	2
	River	95	7.4	10
November	Settling Pond	334	8	2
	River	131	6.5	89
December	Settling Pond	338	8.1	3
	River	89	7.9	34
January	Settling Pond	347	8.2	4
	River	78	7.9	15
February	Settling Pond	356	8.1	5
	River	157	8.2	11
March	Settling Pond	355	8.2	2
	River	172	8	5
April	Settling Pond	N/A	N/A	N/A
	River	N/A	N/A	N/A
May	Settling Pond	N/A	N/A	N/A
	River	N/A	N/A	N/A
June	Settling Pond	N/A	N/A	N/A
	River	N/A	N/A	N/A

### 6.4.5 Monitoring Results of Previous Years

Results are consistent with those of the 2016-2017 reporting period.

**Table 29: Comparison between previous reporting periods**

Reporting Year	Exceedances
2015 - 2016	Nil

2016 - 2017	Nil
2017 – 2018	1

#### 6.4.6 Non Compliance and Corrective Actions

There has been one non-compliance regarding TSS water discharge levels with re-education supplied to quarry staff regarding the importance of discharge water quality to the Murrumbidgee River.

#### 6.4.7 Measures Implemented over 2017-2018

New boreholes were installed between Pit 1 and Pit 2 as well as a replacement borehole for W705. Data loggers were installed in W0708 and W0709 on the 29<sup>th</sup> of June 2018. Locations of new bores are indicated in **Figure 7**.

### 6.5 REHABILITATION

#### 6.5.1 Overview

The site operates in accordance with the Wagga Wagga Quarry Flora and Fauna Management Plan. The site has not conducted any vegetation clearance during the reporting period.

Self-seeding has been the predominant rehabilitation strategy applied at Wagga Wagga quarry. Mature *Eucalyptus camaldulensis* dominate the banks of the Murrumbidgee River. Pollination by insects, birds and small mammals, enables the species to release numerous fertilised seeds per year. If the conditions are acceptable, these seeds will germinate into viable saplings. The succession of vegetation in these areas will develop soil structure integrity and promote associated ecological system benefits.

#### 6.5.2 Relevant Statutory Requirements and Criteria

Hanson has endeavoured to implement management measures in accordance with the Project Approval to minimise impact on threatened species, populations and EECs. Under Schedule 3, Condition 38 of MP 07\_0069, the Quarry is required to rehabilitate the site in accordance with objectives in **Table 31**.

The Project Approval requires a Rehabilitation Management Plan. The Statement of Commitments stipulates the following (see **Section 5.6.2.2 Statement of Commitments** for further details);

- Vegetation Clearance Management Plan
- Revegetation Plan
- Feral Animal Control Management Plan
- Weed Management Plan



The Project Approval includes a Statement of Commitments from the Proponent.

In order to minimise the impact of vegetation clearing the proponent will commission and commence a Vegetation Clearance Management Plan, Revegetation Plan, Feral Animal Control Management Plan, and Weed Management Plan prior to commencement of quarrying activities. These plans will be developed by a suitably qualified and experienced person and take into consideration the following:

- Implications of meta-population dynamics
- Implications of transitional zone dynamics
- Episodic high disturbance events
- Loss of functional role of species
- Clearing of native vegetation; and removal of dead wood and dead trees
- Bush rock removal
- Invasion of exotic perennial grasses
- Predation by European Red Fox , Feral Cats, and Rabbits

#### **Biodiversity/Rehabilitation Management Plan**

Flora and Fauna management plan for the Hanson Wagga Wagga Quarry Extension Project. The contents of this report will include a Vegetation Clearance Management Plan, Revegetation Plan, Feral Animal Control Management Plan and Weed Management Plan.

**Table 30: Performance against the Biodiversity/Rehabilitation Management Plans**

<b>Objective Outlined in Management Plan</b>	<b>Compliance over the reporting period</b>
<b>Clearing of native vegetation, hollow stumps and fallen timber</b>	
Any hollow logs currently present within Cell 1 of the proposal will be removed and stockpiled for use in restoration following the completion of extraction at each stage. Logging waste will be stockpiled on the outer of Cell 1 (to the North-East) away from the area which is to be excavated for the quarry pit.	<i>Logs were re-allocated on site.</i>
Vegetation to be retained outside of the extraction areas will be fenced off to protect it from machinery.	<i>Rehabilitation area has been fenced off. Vegetation is excluded by the strategic construction and use of haul roads on site and identified workings areas, preventing off road transit.</i>
Top soil will be stockpiled and used in rehabilitation work as each stage is exhausted. It is expected that Cell 1 and about 80m to the south will be filled back to the existing ground level and revegetated on completion of extraction in Cell 1. The remainder of Cells 2 and 3 will be flooded and used for water storage upon their completion of extraction.	<i>Top soil is stockpiled when it is not used for works on site directly. Cell 1 has not been exhausted and therefore the majority of this recommendation has not been triggered.</i>
Quarry sand and gravel material will be extracted using a 40T excavator and material will be transported to the crushing plant in the south of the property via 35T dump trucks.	<i>Noted.</i>
The banks of each stage will be revegetated with native plant	<i>Not yet triggered.</i>

species similar to the surrounding vegetation community (river red gum forest/woodland), ultimately resulting in a series of dams similar to the restored area in the north-west of the existing Pit 1.	
A fauna expert/trained wildlife rescue person will be called in the event that any wildlife is found during the removal of the hollow bearing tree within Cell 4. This person will be trained in handling and identification of a range of fauna, particularly birds and bats and be vaccinated for rabies as protection against the bat lyssavirus.	<i>Not triggered</i>
Revegetation and prevention of feral animals	
Baiting of rabbits, foxes and cats within the confines of the quarry as required.	<i>Not required during the reporting period</i>
Areas outside the quarry pit areas that are revegetated, including the riparian vegetation along the Murrumbidgee River, will be fenced to prevent cattle from entering. Fences will be maintained in good repair and will be regularly patrolled. The use of barbed wire will be avoided as squirrel gliders and other fauna are known to become tangled and could suffer a long and painful death.	<i>The fences around the property were replaced following the 2012 Floods. The fences are inspected by quarry staff approximately every quarter. In addition, the adjacent landholder inspects fencing regularly as part of his cattle farming operations.</i>
Revegetation will allow a natural regrowth of trees, shrubs and groundcovers. River Red Gums are likely to spread from local seed, however shrubs and groundcovers may need to be planted. Only species natural to the River Red Gum Forest/Woodland will be planted.	<i>Noted</i>
New hauls roads will be constructed to eliminate and impact on existing riparian habitats.	<i>The site uses designated haul roads</i>
Weed management control	
Systematic surveys and inspections of land within the control area.	<i>Quarry manager informally surveys the site for weeds on a regular basis.</i>
Plan strategic weed management programs for the control area and keep records of such programs	<i>During the 2014 – 2015 reporting period, Wagga Wagga Quarry was inspected for weeds by Wagga Wagga City Local Council. It was deemed that no significant weeds were identified on site and general hygiene practises on site were deemed satisfactory and actual excavation area free of weed material.</i>
Treat weeds with an herbicide registered for control in the manner according to the label or any permit for that herbicide.	<i>During the 2014 – 2015 reporting period, Wagga Wagga Quarry was inspected for weeds by Wagga Wagga City Local Council. It was deemed that no significant weeds were identified on site and general hygiene practises on site were deemed satisfactory and actual excavation area free of weed material.</i>
Coordinate the implementation of weed management plans.	<i>Noted.</i>
Control Re-growth annually.	<i>Noted.</i>

### **Vegetation Management Plan for the Riverbank Repair**

A Vegetation Management Plan for the Riverbank Repair was prepared June 2013 by Geoff Cunningham Natural Resource Consultants Pty Ltd.

**Table 31: Performance against the Vegetation Management Plan for the Riverbank Repair**

<b>VMP Requirement</b>	<b>Action</b>
The River Red Gums to be established should be grown from locally sourced seed to ensure that the establishing trees have the same genetic qualities as the River Red Gums that are already growing in the vicinity.	In progress.
The trees should be planted from the top of the bank [levee] to the point where the natural growth of the gallery trees ends closer to the river's normal channel. Figure 1 shows the area that is proposed to be planted on both the inside [quarry side] face of the repaired bank and on the river side.	In progress.
A suggested irregular spacing is between 5 and 10 metres.	Noted.
Around each planted seedling an area 3m x 3m square should be protected by rock armouring comprised of stones about 15cm in diameter.	Not implemented. This is considered to be a low risk threat. Fallen tree logs may be substituted where appropriate.
Each seedling should also be protected by a welded mesh tree guard to protect it from grazing by rabbits, kangaroos and wayward sheep or cattle.	In progress.
WITHOUT FAIL, the Quarry Manager should have the tree guards removed as soon as there is an indication that the site is about to experience a flood or high river level. The guards should be progressively removed as the river rises and then replaced at it falls.	Not yet triggered.
Any seedlings that die should be immediately replaced as should any that are washed out by floodwater.	In progress.
Any introduced shrubs and trees such as Blackberry, Briar Rose, fruit trees, exotic ornamentals or Willows should be treated with herbicide to remove them from the area being revegetated as soon as they appear.	Not yet triggered.
A maintenance period of four years should apply to the works proposed. This should allow the planted trees to establish sufficiently to allow the tree guards and star pickets to be removed and an adequate ground cover to establish.	Not yet triggered.

### **6.5.3 Monitoring Results**

The Project has engaged manual seedling over the river bank repaired area. Seed base of native grasses has been established with preliminary pleasing results. Planting of Red River Gums has been completed at the river bank repair works. Red River Gum is a species that is planted in accordance with the *Rehabilitation Management Plan*.

Wagga Wagga quarry will continue to operate as is current, which does not include active spraying or removal of weeds on site. Should weeds alter in terms of the species on site, or the spread of weeds, the quarry management will assess site applicable weed maintenance/removal measures.

#### **6.5.4 Monitoring Results of Previous Years**

Monitoring results are similar to previous years.

#### **6.5.5 Non Compliance and Corrective Actions**

There have been no non-compliance or corrective actions required in the 2017-2018 period.

#### **6.5.6 Measures Implemented over 2017-2018**

Hanson continues to implement plantings at the Pit 1 rehabilitation area.

### **6.6 COMMUNITY RELATIONS**

#### **6.6.1 Stakeholder and Community Consultation**

The Wagga Wagga Quarry Community Consultative Committee (WWQCC) was established in accordance with the NSW Government *Guidelines for Establishing and Operating a Community Consultative Committee for Mining Projects* (Guidelines), (Department of Planning 2007). The committee is made up of representatives of the following:

- Riverview Estate – 4 representatives
- Hanson – 2 representatives, plus a minute taker
- Chair – Independent Chair
- Wagga Wagga City Council – 1 representative

There have been one CCC meeting held during the reporting period (6<sup>th</sup> February 2018). The Minutes of the Community Consultative Committee Meetings are publicly available on the Hanson website.

## **7. INCIDENT REPORTING**

Hanson shall notify the relevant government authorities of any incident associated with the Quarry immediately after the Company becomes aware of the incident, as per the Wagga Wagga Quarry Pollution Incident Response Management Plan. Within 7 days of the date of the incident, Hanson will provide the relevant agencies with a detailed report on the incident.

Transport exceedances were reported to the DPE in October 2017.

## **8. CONCLUSION**

Hanson has incorporated environmental monitoring and management as an integral component in the operations at Wagga Wagga Quarry. This is shown in Project Approval compliance and lack of complaints pertaining to the project. Hanson's major concern since the 2016 flooding event has been the repair of the riverbank to ensure project compliance and facilitation of the return to standard quarry practices. This reporting period has documented structural completion of these works and the implementation of the *Water Management Improvement Program*.

The project will continue extraction in Cell 1 during the next reporting period utilising the same extraction and processing methods. Cell 2 stripping will continue with noise monitoring to be completed before the start of Cell 2 extraction.

Hanson's Wagga Wagga Quarry has been operating based on a collegial relationship between the surrounding amenity, community and environment and will endeavour to continue this over the project life.

# Appendix A

## TRANSPORT MOVEMENTS

Wagga Wagga Quarry Annual Review

Year	Month	Ticket Date	No of Dlvs	0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	15 to 16	16 to 17	17 to 18	18 to 19	19 to 20	20 to 21	21 to 22	22 to 23	23 to 24
2017	7	1/07/2017	3									1	1	1													
		3/07/2017	13									2	2	3	2		2		1								
		4/07/2017	18									2	1	2	3	4	4	1									
		5/07/2017	9										2		3		2	1	1								
		6/07/2017	14									3	2	4	1		1		2								
		7/07/2017	21									2	3	3	3	6	1	2									
		8/07/2017	4									1	1		1			1									
		10/07/2017	17									3	2	3	1	2	2	2	1								
		11/07/2017	27									3	2	6	3	5	1	2	1								
		12/07/2017	22									2	2	3	3	3	1	3	3								
		13/07/2017	14									4	2		1		1	5	1								
		14/07/2017	32									7	4	4	6	4	3		2								
		17/07/2017	11										2	1	2	1		1	4								
		18/07/2017	19									4	1	1	2	3	3	4									
		19/07/2017	4										2		1												
		20/07/2017	9											2	1	1		2	2								
		21/07/2017	14										2	1	1	1		5									
		22/07/2017	2											2													
		24/07/2017	21									3	2	2	1	3	4	2	2								
		25/07/2017	14									3	2	2	2	1		1	1								
		26/07/2017	22									2	7	1	2	2	4	4									
		27/07/2017	19									2	2	4	2	2	1	2	2	1							
		28/07/2017	5									1	1		1			1									
		29/07/2017	1											1													
		31/07/2017	3									2	1														
	8	1/08/2017	14									3		2	1	1	2	2									
		2/08/2017	19									2	4	4	3	2	1	2									
		3/08/2017	13									1	4	3	1		1	2									



		4/08/2017	7								1	2	2		2											
		7/08/2017	7									2	3	1	1											
		8/08/2017	8										5		2											
		9/08/2017	17								2	1	2	1	3	2	3	1								
		10/08/2017	20								5	2	3	3		1	3	2								
		11/08/2017	28								6	4	2	4	1	2	4	1								
		14/08/2017	25								4	4	1	3	3	3	2	3								
		15/08/2017	29								6	3	3	3	4		5									
		16/08/2017	4									1	1		2											
		17/08/2017	18								2	3	2	4	3	1	1									
		18/08/2017	21								2	2	2	6	1	3	2	1								
		19/08/2017	1																							
		21/08/2017	18								2	1	4	3	2	2	1	1								
		22/08/2017	21								4	2	2	2	3		3	2								
		23/08/2017	26								5	2	5	3	2	2	2	1								
		24/08/2017	37								5	4	3	3	4	4	7	3								
		25/08/2017	27							1	4	3	2	3	3	3	3	3								
		26/08/2017	2								1	1														
		28/08/2017	24								2	3	3	2	3	3	3	1								
		29/08/2017	30								3	6	4	6	7	2	2									
		30/08/2017	29								2	4	3	6	4	4	2	1								
		31/08/2017	19								3	1	4	2	2	2	3									
	9	1/09/2017	21								2		3	3	2	3	2	2								
		4/09/2017	20								2	2	2	4	2	3	1									
		5/09/2017	25								4	5	2	3	2	5	1									
		6/09/2017	11								3	1	2	2				2								
		7/09/2017	21								2	2	3	1	2	1	2	3	1							
		8/09/2017	17								4	3	1			4	1	3								
		9/09/2017	5									2	1	1	1											
		11/09/2017	24								2	2	1	4	3	2	2	2								

		12/09/2017	27								3	2	1	2	2	3	3	4								
		13/09/2017	14								3	1	1		1	1	1	3	2							
		14/09/2017	10											2		3	2									
		15/09/2017	20								3	5	1	3	1	2	3									
		16/09/2017	4									1	1	1		1										
		18/09/2017	15								2		1	3	4		2	2								
		19/09/2017	28								2	6	3	3	1	4	3	2								
		20/09/2017	17								3	1	1	2	1	3	2									
		21/09/2017	32								4	3	6	4	4	1	4	2								
		22/09/2017	27								2	2	3	2	1	1	2	9								
		23/09/2017	13								1	4	3	3	2											
		25/09/2017	13								1	3		2	2		4									
		26/09/2017	27								7	5	4	4	2	2	2									
		27/09/2017	14								2		1	1	3	2	2	2								
		28/09/2017	17								2	1	5	1	3	1	1	1								
		29/09/2017	23								6	4	3	1	2	2	5									
		30/09/2017	3											1	1	1										
	10	3/10/2017	22								3	2	1	3	3	3	3									
		4/10/2017	26								4	4	1	1	3	2	3	4								
		5/10/2017	20								5	2	2	2		1	2	2								
		6/10/2017	24								2	1	3	5		3	2	2	2							
		7/10/2017	3									1	1	1												
		9/10/2017	18								3	1			3	2	3	2								
		10/10/2017	40								7	6	5	9	3	2	2	2								
		11/10/2017	37								6	4	6	4	3	3	2	3	2							
		12/10/2017	21								2	2	4	1	3	1	4	1								
		13/10/2017	42								7	3	5	5	3	5	5	3								
		14/10/2017	7									1	2	1	2	1										
		16/10/2017	34								7	2	3	2	3	5	5	3								
		17/10/2017	30								3	1	5	4	3	4	3	3								

		18/10/2017	24								3	2	4	4	1	4	2									
		19/10/2017	24								4	2	5	1	2	3	3	1								
		20/10/2017	12								5	1	2			1	2	1								
		21/10/2017	2									1	1													
		23/10/2017	30								4	6	5	2	3	2	4	3								
		24/10/2017	29								8	1	3	2	4	4	3									
		25/10/2017	16								3	3	1	3	2	3										
		26/10/2017	25								4	4	3	4	2	4	2									
		27/10/2017	21								5	1	2	2	5	2	2									
		28/10/2017	2										1	1												
		30/10/2017	14								2	1	3			1	3	2								
		31/10/2017	12									2	1	2	2	3	2									
	11	1/11/2017	22								1	2	2	5	1	2	3	2								
		2/11/2017	11								1	2	2		1	1	1	1								
		3/11/2017	25								5	4	3	2	5	1	4									
		4/11/2017	3											2		1										
		6/11/2017	9								1		5	1	1	1										
		7/11/2017	14									1	2		2	1	5									
		8/11/2017	27								2	3	2	4	2	3	6	1								
		9/11/2017	23								4	2	4	2	3	1	1	3								
		10/11/2017	16								2	2	4	2	4	1	1									
		11/11/2017	2								1		1													
		13/11/2017	16								1	2	3		2	3	2	1								
		14/11/2017	20								2	3	4	3	3		2									
		15/11/2017	14								4	1	1	1	1	1	4									
		16/11/2017	19								4	1	2	4	2	1	1	2								
		17/11/2017	29								3	3		5	6	3	6	1								
		18/11/2017	2										1	1												
		20/11/2017	21								1	6	3		4	3	3	1								
		21/11/2017	14								4	3	1	3	1			1								

		22/11/2017	11								3	1	1			1	2	1								
		23/11/2017	31									3	4	3	4	6	4	3								
		24/11/2017	33								3	5	4	4	5	3	4	2								
		25/11/2017	5								1	1	1	1	1											
		27/11/2017	18								2	2	3	3	2	1		2	1	1						
		28/11/2017	16								4	2	1	2	1	1	2	1								
		29/11/2017	14								1	1	3				2	4	1							
		30/11/2017	34							1	2	2	2	3	5	5	5	2	2	1						
	12	1/12/2017	25								1		2	5	6	2	2	4								
		4/12/2017	7									1	2	1	1	1	1									
		5/12/2017	27							2	3	3	3	4	5		2	1								
		6/12/2017	8								1	1	1	2	1		1									
		7/12/2017	16									2	4		2	2	3	1								
		8/12/2017	18							2	1	2	2	2	3	3	1	1								
		11/12/2017	28							1	2	6	3	5	5	3	2									
		12/12/2017	16							2	1	2		3	3	1	1	1	1							
		13/12/2017	17							2	1	3	2	2		2	4									
		14/12/2017	23							2	1	1	3	3	1	4	4		3							
		15/12/2017	28							2	3	4	3	2	2	4	3	2		1						
		16/12/2017	1									1														
		18/12/2017	12							1	1	1	2	2		1	1	3								
		19/12/2017	19							1	2	2	1	2	2	2	2	1	1							
		20/12/2017	15									2	1	4	3		2	1								
		21/12/2017	15							2	3	2		1	3	3	1									
		22/12/2017	17							1	5	3	2	2	4											
	Result		2,526							20	336	302	319	305	282	240	281	155	17	3						
2018	1	8/01/2018	24								5	3	1	4	3	4	2	2								
		9/01/2018	9								2	2	1	1	1	1	1									
		10/01/2018	21							2	3	2	1	2	4		2	2								
		11/01/2018	20							1	2	2	1	2	3	1	3	1								

		12/01/2018	11												2	2	4	1								
		15/01/2018	22								6	1	2	3	1	5		2								
		16/01/2018	17							1	1	1	2	3	3		3	2								
		17/01/2018	12								1	1	2		1	2	2									
		18/01/2018	11								2	1		2	2	1	3									
		19/01/2018	12								1	1	1	2	3	3	1									
		22/01/2018	19							1	4	2	2	3	1	1	1									
		23/01/2018	21							1	3	3	2	2	2	1	1	3								
		24/01/2018	13							2	1		1		1	1	3	1	1							
		25/01/2018	18							2	2	2	1	3	3	2	1	1								
		29/01/2018	10							1	1	2	2	1	1	1		1								
		30/01/2018	12							1	1			2	2	1	3	1								
		31/01/2018	15								3	1	1	1	2	2		3								
	2	1/02/2018	26							1	2	3	2	4	6	3	1	1								
		2/02/2018	19							1	1	3	1	3	3	2	1	1								
		5/02/2018	16							1	4	2	3	2	1		2	1								
		6/02/2018	17							2	3	2	2	3	1	1	2									
		7/02/2018	22							1	3	2	3	1	2	2	3	2	1							
		8/02/2018	18							1	1		2	3	1		1	3	1							
		9/02/2018	22								1	1	1	4	4	1	4	2	1							
		10/02/2018	7									2	1	1	1	1		1								
		12/02/2018	20								1	4	3	4	1	1	2		1							
		13/02/2018	6							1	1			1		1	1	1								
		14/02/2018	14							1	2		1	3	2	1	3	1								
		15/02/2018	11							2		1	1	1	2	2	2									
		16/02/2018	15								3		1	2	2		5									
		19/02/2018	25							1	5	2	5	4	4	2	1	1								
		20/02/2018	19								1	2		3	3	3	3	2								
		21/02/2018	20							2	2	1	2	1	2	2	3	3								
		22/02/2018	18							1	2	2	1		3	3	3			1						



		23/02/2018	30							2	4	4	1	1	2	3	6	1								
		24/02/2018	2									1		1												
		26/02/2018	6							1	1		1			2	1									
		27/02/2018	7							1	2	1			1			1								
		28/02/2018	14							1	2	2	2	2	3		1									
	3	1/03/2018	17								1	2	1	1	3	2	2	1	1							
		2/03/2018	9									1	1	2	2		2		1							
		5/03/2018	25							2	1		2	5	2	1	2	3								
		6/03/2018	21								3	3	2	5	1	1	2		1							
		7/03/2018	16								2	1	1	5	3	2		1								
		8/03/2018	22							1	3	3	1	1	3	1	3	2	1							
		9/03/2018	12								2		2	3	2		2		1							
		12/03/2018	23								1		3	5	5	1	1	3	1							
		13/03/2018	15										2	4	1	1	2	3								
		14/03/2018	14							1		1		1	1	1	3	4								
		15/03/2018	5								1	1	2					1								
		16/03/2018	28							2	1	4	2	6	2	3	2	1	2							
		19/03/2018	15							1	2	1	1	1	2	1	2									
		20/03/2018	17							2	4	2	2	1		3	1	2								
		21/03/2018	30							1	5	3	3	2	5	2	5	1								
		22/03/2018	24							1	3	2	1	6	4	2	2	1								
		23/03/2018	18							1	2	2	3	2	1		3	2								
		26/03/2018	13							1	1	1	2	1	2	2	1	1								
		27/03/2018	4							1					1	1	1									
		28/03/2018	19							1	2	2	2	2	1		4	1	1							
		29/03/2018	17								1	3		4	1		4	3								
	4	3/04/2018	13							1					4	4	2									
		4/04/2018	16							1	3	1	1	2	1	1	4									
		5/04/2018	23							4	1	1	3	6	2	1	2	1								
		6/04/2018	29							1	2	2	3	2	2	4	4	2	1							

		7/04/2018	2											1	1											
		9/04/2018	19							1	1	2	3	1	4	3	2									
		10/04/2018	18							1	3	3	1	1	3	1	3									
		11/04/2018	17								2	2	3	2	1	2	1									
		12/04/2018	21								3	2	1	3	5	1	2	1	1							
		13/04/2018	18								4	5	1	2	2	1	1									
		14/04/2018	2									1	1													
		16/04/2018	18							1	2	4	1	1	1	1		3	1							
		17/04/2018	20							1	3	2	2	2	1		3		3							
		18/04/2018	18							1	2	1	2	2	1			4	2							
		19/04/2018	19							1	1	2	3	1	2	1	3		1							
		20/04/2018	25								3	1	1	3	3		2	2	2							
		23/04/2018	14							1	1		2	1	4	1	1	1								
		24/04/2018	15								2	1	4	4	1	1	1									
		26/04/2018	19							1	3	3	2	1	3	1	2	2								
		27/04/2018	8								1	1			2		1	1								
		30/04/2018	22							1	3	2	1	2	3	2	2									
	5	1/05/2018	23								3	3	2	4	4		2	2								
		2/05/2018	21								3	2	2	3		1	4	3								
		3/05/2018	23								3	2	2	4	2		3	3								
		4/05/2018	3														2	1								
		7/05/2018	23								5	1	3	5	3	1	1	2								
		8/05/2018	20								3	2	1	3	3	2	2	1								
		9/05/2018	19							2		1	4	3	1	2	2	2	1							
		10/05/2018	28							3	5	5	5	4	3	1	2									
		11/05/2018	7								1	1		1		1	2									
		14/05/2018	26								1	6	3	1	5	1	4	2								
		15/05/2018	12								1		1	3	1	1	3									
		16/05/2018	21								4	2	3	4	1	1	4									
		17/05/2018	18									1	1	3	4	1	3	2								

		18/05/2018	26								4	3	2	5		4	3	1	1								
		21/05/2018	12								2	2	1	3	2		1										
		22/05/2018	13								2	1	2	1	1		2	1									
		23/05/2018	12								1	1	3	1		2	1	1		1							
		24/05/2018	16								2			1	1	4	2	2									
		25/05/2018	25								1	1	3	3	3	1	3	4	2	1							
		26/05/2018	2											2													
		28/05/2018	12								3	2	1	3	1	1		1									
		29/05/2018	9								2	1	1	2	1			1									
		30/05/2018	5								1					2	1	1									
		31/05/2018	11								1	2	1	1		1	2		2								
	6	1/06/2018	21								3		5	2	2	1	3	2									
		4/06/2018	22								2	4	3	1	4		1	3	1								
		5/06/2018	17								3	4	2	3	1	2	2										
		6/06/2018	22								3	4	1	5	2	1	2	1									
		7/06/2018	17								2		3	4	2	4	1										
		8/06/2018	14								2		4			1	5										
		12/06/2018	9									2	1	1	2	1	2										
		13/06/2018	17								2	2	1	1	4	2	4										
		14/06/2018	13								2	1	1	2		2	2	2		1							
		15/06/2018	10								1	1	1	1	2		2										
		16/06/2018	3												1	1	1										
		18/06/2018	10								1		1	2	1		1	2									
		19/06/2018	25								3	2	2	4	2	3	2	2									
		20/06/2018	14								2	1		1	1	1	2	2	1								
		21/06/2018	19								2	2	4	2	2	1	2	1									
		22/06/2018	19									2	1	4	2	1	4	3	1								
		23/06/2018	4									2		1	1												
		25/06/2018	14								1	1	1	1	3		3	2									
		26/06/2018	16								2	4	1	3	3	1	1										

		27/06/2018	8									2		1	3	1		1									
		28/06/2018	13								3	1	1	1	3	1	2										
		29/06/2018	5									2		1	1												
		30/06/2018	3								1	1		1													
	Result		2,043							1	71	231	214	191	269	249	155	250	133	35	2						
Overall Result			4,569							1	91	567	516	510	574	531	395	531	288	52	5						

# Appendix B

## AIR AND WATER QUALITY MONITORING

Wagga Wagga Quarry Annual Review

Date	Monitoring Location	Test Type	Result
17 07 2017	Point 1	M2 Air - Ash (gms/sqm/mth)	1.3
17 07 2017	Point 1	M2 Air - Combustable Material	0.4
17 07 2017	Point 1	M2 Air - Insoluble Solids (gms/sqm/mth)	1.6
17 07 2017	Point 1	M2 Air - Soluble Matter (gms/sqm/mth)	0.3
17 07 2017	Point 1	M2 Air - Total Solid Particles (gms/sqm/mth)	2.0
17 07 2017	Point 2	M2 Air - Ash (gms/sqm/mth)	0.8
17 07 2017	Point 2	M2 Air - Combustable Material	1.5
17 07 2017	Point 2	M2 Air - Insoluble Solids (gms/sqm/mth)	2.3
17 07 2017	Point 2	M2 Air - Soluble Matter (gms/sqm/mth)	8.2
17 07 2017	Point 2	M2 Air - Total Solid Particles (gms/sqm/mth)	10.5
17 07 2017	Point 3	M2 Air - Ash (gms/sqm/mth)	0.8
17 07 2017	Point 3	M2 Air - Combustable Material	0.5
17 07 2017	Point 3	M2 Air - Insoluble Solids (gms/sqm/mth)	1.3
17 07 2017	Point 3	M2 Air - Soluble Matter (gms/sqm/mth)	0.4
17 07 2017	Point 3	M2 Air - Total Solid Particles (gms/sqm/mth)	1.6
17 07 2017	Point 4	M2 Air - Ash (gms/sqm/mth)	0.5
17 07 2017	Point 4	M2 Air - Combustable Material	<0.2
17 07 2017	Point 4	M2 Air - Insoluble Solids (gms/sqm/mth)	0.6
17 07 2017	Point 4	M2 Air - Soluble Matter (gms/sqm/mth)	0.2
17 07 2017	Point 4	M2 Air - Total Solid Particles (gms/sqm/mth)	0.8
17 07 2017	Point 5	M2 Air - Ash (gms/sqm/mth)	0.9
17 07 2017	Point 5	M2 Air - Combustable Material	0.4
17 07 2017	Point 5	M2 Air - Insoluble Solids (gms/sqm/mth)	1.3
17 07 2017	Point 5	M2 Air - Soluble Matter (gms/sqm/mth)	0.4
17 07 2017	Point 5	M2 Air - Total Solid Particles (gms/sqm/mth)	1.7
17 07 2017	Sed Dam	B2 Water - Electrical Conductivity (US/cm)	334.0
17 07 2017	Sed Dam	B2 Water - Ph (6.5-8.5)	7.7
17 07 2017	Sed Dam	B2 Water - TSS (<50mg/lt)	<2
17 07 2017	River	B2 Water - Electrical Conductivity (US/cm)	138.0
17 07 2017	River	B2 Water - Ph (6.5-8.5)	7.5
17 07 2017	River	B2 Water - TSS (<50mg/lt)	8.0
23 08 2017	Point 1	M2 Air - Ash (gms/sqm/mth)	1.4
23 08 2017	Point 1	M2 Air - Combustable Material	1.1
23 08 2017	Point 1	M2 Air - Insoluble Solids (gms/sqm/mth)	2.4
23 08 2017	Point 1	M2 Air - Soluble Matter (gms/sqm/mth)	0.4
23 08 2017	Point 1	M2 Air - Total Solid Particles (gms/sqm/mth)	2.8
23 08 2017	Point 2	M2 Air - Ash (gms/sqm/mth)	6.5
23 08 2017	Point 2	M2 Air - Combustable Material	11.6
23 08 2017	Point 2	M2 Air - Insoluble Solids (gms/sqm/mth)	18.1
23 08 2017	Point 2	M2 Air - Soluble Matter (gms/sqm/mth)	3.5
23 08 2017	Point 2	M2 Air - Total Solid Particles (gms/sqm/mth)	21.6
23 08 2017	Point 3	M2 Air - Ash (gms/sqm/mth)	0.4
23 08 2017	Point 3	M2 Air - Combustable Material	0.3
23 08 2017	Point 3	M2 Air - Insoluble Solids (gms/sqm/mth)	0.6
23 08 2017	Point 3	M2 Air - Soluble Matter (gms/sqm/mth)	0.2
23 08 2017	Point 3	M2 Air - Total Solid Particles (gms/sqm/mth)	0.9



23 08 2017	Point 4	M2 Air - Ash (gms/sqm/mth)	0.3
23 08 2017	Point 4	M2 Air - Combustable Material	<0.2
23 08 2017	Point 4	M2 Air - Insoluble Solids (gms/sqm/mth)	0.4
23 08 2017	Point 4	M2 Air - Soluble Matter (gms/sqm/mth)	0.4
23 08 2017	Point 4	M2 Air - Total Solid Particles (gms/sqm/mth)	0.8
23 08 2017	Point 5	M2 Air - Ash (gms/sqm/mth)	0.5
23 08 2017	Point 5	M2 Air - Combustable Material	0.2
23 08 2017	Point 5	M2 Air - Insoluble Solids (gms/sqm/mth)	0.8
23 08 2017	Point 5	M2 Air - Soluble Matter (gms/sqm/mth)	0.4
23 08 2017	Point 5	M2 Air - Total Solid Particles (gms/sqm/mth)	1.1
23 08 2017	Sed Dam	B2 Water - Electrical Conductivity (US/cm)	334.0
23 08 2017	Sed Dam	B2 Water - Ph (6.5-8.5)	7.6
23 08 2017	Sed Dam	B2 Water - TSS (<50mg/lt)	5.0
23 08 2017	River	B2 Water - Electrical Conductivity (US/cm)	194.0
23 08 2017	River	B2 Water - Ph (6.5-8.5)	7.5
23 08 2017	River	B2 Water - TSS (<50mg/lt)	20.0
17 09 2017	Point 1	M2 Air - Ash (gms/sqm/mth)	0.6
17 09 2017	Point 1	M2 Air - Combustable Material	<0.2
17 09 2017	Point 1	M2 Air - Insoluble Solids (gms/sqm/mth)	0.8
17 09 2017	Point 1	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
17 09 2017	Point 1	M2 Air - Total Solid Particles (gms/sqm/mth)	0.9
17 09 2017	Point 2	M2 Air - Ash (gms/sqm/mth)	0.8
17 09 2017	Point 2	M2 Air - Combustable Material	0.8
17 09 2017	Point 2	M2 Air - Insoluble Solids (gms/sqm/mth)	1.7
17 09 2017	Point 2	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
17 09 2017	Point 2	M2 Air - Total Solid Particles (gms/sqm/mth)	1.8
17 09 2017	Point 3	M2 Air - Ash (gms/sqm/mth)	<0.2
17 09 2017	Point 3	M2 Air - Combustable Material	<0.2
17 09 2017	Point 3	M2 Air - Insoluble Solids (gms/sqm/mth)	0.2
17 09 2017	Point 3	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
17 09 2017	Point 3	M2 Air - Total Solid Particles (gms/sqm/mth)	0.2
17 09 2017	Point 4	M2 Air - Ash (gms/sqm/mth)	0.3
17 09 2017	Point 4	M2 Air - Combustable Material	<0.2
17 09 2017	Point 4	M2 Air - Insoluble Solids (gms/sqm/mth)	0.4
17 09 2017	Point 4	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
17 09 2017	Point 4	M2 Air - Total Solid Particles (gms/sqm/mth)	0.5
17 09 2017	Point 5	M2 Air - Ash (gms/sqm/mth)	0.3
17 09 2017	Point 5	M2 Air - Combustable Material	<0.2
17 09 2017	Point 5	M2 Air - Insoluble Solids (gms/sqm/mth)	0.5
17 09 2017	Point 5	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
17 09 2017	Point 5	M2 Air - Total Solid Particles (gms/sqm/mth)	0.6
17 09 2017	Sed Dam	B2 Water - Electrical Conductivity (US/cm)	335.0
17 09 2017	Sed Dam	B2 Water - Ph (6.5-8.5)	8.0
17 09 2017	Sed Dam	B2 Water - TSS (<50mg/lt)	2.0
17 09 2017	River	B2 Water - Electrical Conductivity (US/cm)	78.0
17 09 2017	River	B2 Water - Ph (6.5-8.5)	7.9

17 09 2017	River	B2 Water - TSS (<50mg/l)	14.0
17 10 2017	Point 1	M2 Air - Ash (gms/sqm/mth)	1.3
17 10 2017	Point 1	M2 Air - Combustable Material	0.3
17 10 2017	Point 1	M2 Air - Insoluble Solids (gms/sqm/mth)	1.6
17 10 2017	Point 1	M2 Air - Soluble Matter (gms/sqm/mth)	0.3
17 10 2017	Point 1	M2 Air - Total Solid Particles (gms/sqm/mth)	1.9
17 10 2017	Point 2	M2 Air - Ash (gms/sqm/mth)	0.7
17 10 2017	Point 2	M2 Air - Combustable Material	0.5
17 10 2017	Point 2	M2 Air - Insoluble Solids (gms/sqm/mth)	1.2
17 10 2017	Point 2	M2 Air - Soluble Matter (gms/sqm/mth)	1.1
17 10 2017	Point 2	M2 Air - Total Solid Particles (gms/sqm/mth)	2.2
17 10 2017	Point 3	M2 Air - Ash (gms/sqm/mth)	0.7
17 10 2017	Point 3	M2 Air - Combustable Material	0.6
17 10 2017	Point 3	M2 Air - Insoluble Solids (gms/sqm/mth)	1.3
17 10 2017	Point 3	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
17 10 2017	Point 3	M2 Air - Soluble Matter (gms/sqm/mth)	1.4
17 10 2017	Point 4	M2 Air - Ash (gms/sqm/mth)	0.6
17 10 2017	Point 4	M2 Air - Combustable Material	0.2
17 10 2017	Point 4	M2 Air - Insoluble Solids (gms/sqm/mth)	0.8
17 10 2017	Point 4	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
17 10 2017	Point 4	M2 Air - Total Solid Particles (gms/sqm/mth)	0.9
17 10 2017	Point 5	M2 Air - Ash (gms/sqm/mth)	1.0
17 10 2017	Point 5	M2 Air - Combustable Material	0.4
17 10 2017	Point 5	M2 Air - Insoluble Solids (gms/sqm/mth)	1.4
17 10 2017	Point 5	M2 Air - Soluble Matter (gms/sqm/mth)	0.3
17 10 2017	Point 5	M2 Air - Total Solid Particles (gms/sqm/mth)	1.7
17 10 2017	Sed Dam	B2 Water - Electrical Conductivity (US/cm)	328.0
17 10 2017	Sed Dam	B2 Water - Ph (6.5-8.5)	7.3
17 10 2017	Sed Dam	B2 Water - TSS (<50mg/l)	2.0
17 10 2017	River	B2 Water - Electrical Conductivity (US/cm)	95.0
17 10 2017	River	B2 Water - Ph (6.5-8.5)	7.4
17 10 2017	River	B2 Water - TSS (<50mg/l)	10.0
17 11 2017	Point 1	M2 Air - Ash (gms/sqm/mth)	1.3
17 11 2017	Point 1	M2 Air - Combustable Material	0.4
17 11 2017	Point 1	M2 Air - Insoluble Solids (gms/sqm/mth)	1.7
17 11 2017	Point 1	M2 Air - Soluble Matter (gms/sqm/mth)	0.8
17 11 2017	Point 1	M2 Air - Total Solid Particles (gms/sqm/mth)	2.4
17 11 2017	Point 2	M2 Air - Ash (gms/sqm/mth)	1.2
17 11 2017	Point 2	M2 Air - Combustable Material	1.0
17 11 2017	Point 2	M2 Air - Insoluble Solids (gms/sqm/mth)	2.2
17 11 2017	Point 2	M2 Air - Soluble Matter (gms/sqm/mth)	1.4
17 11 2017	Point 2	M2 Air - Total Solid Particles (gms/sqm/mth)	3.6
17 11 2017	Point 3	M2 Air - Ash (gms/sqm/mth)	0.8
17 11 2017	Point 3	M2 Air - Combustable Material	0.8
17 11 2017	Point 3	M2 Air - Insoluble Solids (gms/sqm/mth)	1.6
17 11 2017	Point 3	M2 Air - Soluble Matter (gms/sqm/mth)	0.8

17 11 2017	Point 3	M2 Air - Total Solid Particles (gms/sqm/mth)	2.3
17 11 2017	Point 4	M2 Air - Ash (gms/sqm/mth)	3.8
17 11 2017	Point 4	M2 Air - Combustable Material	0.7
17 11 2017	Point 4	M2 Air - Insoluble Solids (gms/sqm/mth)	4.5
17 11 2017	Point 4	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
17 11 2017	Point 4	M2 Air - Total Solid Particles (gms/sqm/mth)	4.5
17 11 2017	Point 5	M2 Air - Ash (gms/sqm/mth)	0.7
17 11 2017	Point 5	M2 Air - Combustable Material	0.5
17 11 2017	Point 5	M2 Air - Insoluble Solids (gms/sqm/mth)	1.3
17 11 2017	Point 5	M2 Air - Soluble Matter (gms/sqm/mth)	0.5
17 11 2017	Point 5	M2 Air - Total Solid Particles (gms/sqm/mth)	1.8
17 11 2017	Sed Dam	B2 Water - Electrical Conductivity (US/cm)	334.0
17 11 2017	Sed Dam	B2 Water - Ph (6.5-8.5)	8.0
17 11 2017	Sed Dam	B2 Water - TSS (<50mg/lit)	<2
17 11 2017	River	B2 Water - Electrical Conductivity (US/cm)	131.0
17 11 2017	River	B2 Water - Ph (6.5-8.5)	6.5
17 11 2017	River	B2 Water - TSS (<50mg/lit)	89.0
17 12 2017	Point 1	M2 Air - Ash (gms/sqm/mth)	1.2
17 12 2017	Point 1	M2 Air - Combustable Material	0.8
17 12 2017	Point 1	M2 Air - Insoluble Solids (gms/sqm/mth)	2.0
17 12 2017	Point 1	M2 Air - Soluble Matter (gms/sqm/mth)	1.5
17 12 2017	Point 1	M2 Air - Total Solid Particles (gms/sqm/mth)	3.5
17 12 2017	Point 2	M2 Air - Ash (gms/sqm/mth)	0.8
17 12 2017	Point 2	M2 Air - Combustable Material	0.5
17 12 2017	Point 2	M2 Air - Insoluble Solids (gms/sqm/mth)	1.4
17 12 2017	Point 2	M2 Air - Soluble Matter (gms/sqm/mth)	0.8
17 12 2017	Point 2	M2 Air - Total Solid Particles (gms/sqm/mth)	2.2
17 12 2017	Point 3	M2 Air - Ash (gms/sqm/mth)	1.7
17 12 2017	Point 3	M2 Air - Combustable Material	1.0
17 12 2017	Point 3	M2 Air - Insoluble Solids (gms/sqm/mth)	2.7
17 12 2017	Point 3	M2 Air - Soluble Matter (gms/sqm/mth)	1.2
17 12 2017	Point 3	M2 Air - Total Solid Particles (gms/sqm/mth)	4.0
17 12 2017	Point 4	M2 Air - Ash (gms/sqm/mth)	0.4
17 12 2017	Point 4	M2 Air - Combustable Material	<0.2
17 12 2017	Point 4	M2 Air - Insoluble Solids (gms/sqm/mth)	0.5
17 12 2017	Point 4	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
17 12 2017	Point 4	M2 Air - Total Solid Particles (gms/sqm/mth)	0.6
17 12 2017	Point 5	M2 Air - Ash (gms/sqm/mth)	1.8
17 12 2017	Point 5	M2 Air - Combustable Material	0.5
17 12 2017	Point 5	M2 Air - Insoluble Solids (gms/sqm/mth)	2.3
17 12 2017	Point 5	M2 Air - Soluble Matter (gms/sqm/mth)	0.7
17 12 2017	Point 5	M2 Air - Total Solid Particles (gms/sqm/mth)	3.0
17 12 2017	Sed Dam	B2 Water - Electrical Conductivity (US/cm)	338
17 12 2017	Sed Dam	B2 Water - Ph (6.5-8.5)	8.1
17 12 2017	Sed Dam	B2 Water - TSS (<50mg/lit)	3
17 12 2017	River	B2 Water - Electrical Conductivity (US/cm)	89

17 12 2017	River	B2 Water - Ph (6.5-8.5)	7.9
17 12 2017	River	B2 Water - TSS (<50mg/l)	34
18 01 2018	Point 1	M2 Air - Ash (gms/sqm/mth)	1.7
18 01 2018	Point 1	M2 Air - Combustable Material	1.0
18 01 2018	Point 1	M2 Air - Insoluble Solids (gms/sqm/mth)	2.7
18 01 2018	Point 1	M2 Air - Soluble Matter (gms/sqm/mth)	0.9
18 01 2018	Point 1	M2 Air - Total Solid Particles (gms/sqm/mth)	3.6
18 01 2018	Point 2	M2 Air - Ash (gms/sqm/mth)	1.4
18 01 2018	Point 2	M2 Air - Combustable Material	0.6
18 01 2018	Point 2	M2 Air - Insoluble Solids (gms/sqm/mth)	2.0
18 01 2018	Point 2	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
18 01 2018	Point 2	M2 Air - Total Solid Particles (gms/sqm/mth)	2.0
18 01 2018	Point 3	M2 Air - Ash (gms/sqm/mth)	2.3
18 01 2018	Point 3	M2 Air - Combustable Material	1.8
18 01 2018	Point 3	M2 Air - Insoluble Solids (gms/sqm/mth)	4.1
18 01 2018	Point 3	M2 Air - Soluble Matter (gms/sqm/mth)	2.3
18 01 2018	Point 3	M2 Air - Total Solid Particles (gms/sqm/mth)	6.5
18 01 2018	Point 4	M2 Air - Ash (gms/sqm/mth)	1.2
18 01 2018	Point 4	M2 Air - Combustable Material	0.7
18 01 2018	Point 4	M2 Air - Insoluble Solids (gms/sqm/mth)	1.9
18 01 2018	Point 4	M2 Air - Soluble Matter (gms/sqm/mth)	1.1
18 01 2018	Point 4	M2 Air - Total Solid Particles (gms/sqm/mth)	2.9
18 01 2018	Point 5	M2 Air - Ash (gms/sqm/mth)	1.0
18 01 2018	Point 5	M2 Air - Combustable Material	0.4
18 01 2018	Point 5	M2 Air - Insoluble Solids (gms/sqm/mth)	1.3
18 01 2018	Point 5	M2 Air - Soluble Matter (gms/sqm/mth)	0.7
18 01 2018	Point 5	M2 Air - Total Solid Particles (gms/sqm/mth)	2.0
18 01 2018	Sed Dam	B2 Water - Electrical Conductivity (US/cm)	347.0
18 01 2018	Sed Dam	B2 Water - Ph (6.5-8.5)	8.2
18 01 2018	Sed Dam	B2 Water - TSS (<50mg/l)	4.0
18 01 2018	River	B2 Water - Electrical Conductivity (US/cm)	78.0
18 01 2018	River	B2 Water - Ph (6.5-8.5)	7.9
18 01 2018	River	B2 Water - TSS (<50mg/l)	15.0
18 02 2018	Point 1	M2 Air - Ash (gms/sqm/mth)	1.7
19 02 2018	Point 1	M2 Air - Combustable Material	0.7
20 02 2018	Point 1	M2 Air - Insoluble Solids (gms/sqm/mth)	2.5
21 02 2018	Point 1	M2 Air - Soluble Matter (gms/sqm/mth)	0.8
22 02 2018	Point 1	M2 Air - Total Solid Particles (gms/sqm/mth)	3.3
23 02 2018	Point 2	M2 Air - Ash (gms/sqm/mth)	1.4
24 02 2018	Point 2	M2 Air - Combustable Material	0.4
25 02 2018	Point 2	M2 Air - Insoluble Solids (gms/sqm/mth)	1.8
26 02 2018	Point 2	M2 Air - Soluble Matter (gms/sqm/mth)	0.4
27 02 2018	Point 2	M2 Air - Total Solid Particles (gms/sqm/mth)	2.3
28 02 2018	Point 3	M2 Air - Ash (gms/sqm/mth)	1.8
01 03 2018	Point 3	M2 Air - Combustable Material	0.7
02 03 2018	Point 3	M2 Air - Insoluble Solids (gms/sqm/mth)	2.5

03 03 2018	Point 3	M2 Air - Soluble Matter (gms/sqm/mth)	0.9
04 03 2018	Point 3	M2 Air - Total Solid Particles (gms/sqm/mth)	3.4
05 03 2018	Point 4	M2 Air - Ash (gms/sqm/mth)	1.4
06 03 2018	Point 4	M2 Air - Combustable Material	0.3
07 03 2018	Point 4	M2 Air - Insoluble Solids (gms/sqm/mth)	1.8
08 03 2018	Point 4	M2 Air - Soluble Matter (gms/sqm/mth)	0.8
09 03 2018	Point 4	M2 Air - Total Solid Particles (gms/sqm/mth)	2.6
10 03 2018	Point 5	M2 Air - Ash (gms/sqm/mth)	1.2
11 03 2018	Point 5	M2 Air - Combustable Material	0.3
12 03 2018	Point 5	M2 Air - Insoluble Solids (gms/sqm/mth)	1.5
13 03 2018	Point 5	M2 Air - Soluble Matter (gms/sqm/mth)	0.7
14 03 2018	Point 5	M2 Air - Total Solid Particles (gms/sqm/mth)	2.2
15 03 2018	Sed Dam	B2 Water - Electrical Conductivity (US/cm)	356.0
16 03 2018	Sed Dam	B2 Water - Ph (6.5-8.5)	8.1
17 03 2018	Sed Dam	B2 Water - TSS (<50mg/lt)	5.0
18 03 2018	River	B2 Water - Electrical Conductivity (US/cm)	157.0
19 03 2018	River	B2 Water - Ph (6.5-8.5)	8.2
20 03 2018	River	B2 Water - TSS (<50mg/lt)	11.0
18 03 2018	Point 1	M2 Air - Ash (gms/sqm/mth)	1.1
18 03 2018	Point 1	M2 Air - Combustable Material	0.3
18 03 2018	Point 1	M2 Air - Insoluble Solids (gms/sqm/mth)	1.4
18 03 2018	Point 1	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
18 03 2018	Point 1	M2 Air - Total Solid Particles (gms/sqm/mth)	1.4
18 03 2018	Point 2	M2 Air - Ash (gms/sqm/mth)	2.1
18 03 2018	Point 2	M2 Air - Combustable Material	0.2
18 03 2018	Point 2	M2 Air - Insoluble Solids (gms/sqm/mth)	2.3
18 03 2018	Point 2	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
18 03 2018	Point 2	M2 Air - Total Solid Particles (gms/sqm/mth)	2.3
18 03 2018	Point 3	M2 Air - Ash (gms/sqm/mth)	2.1
18 03 2018	Point 3	M2 Air - Combustable Material	0.3
18 03 2018	Point 3	M2 Air - Insoluble Solids (gms/sqm/mth)	2.4
18 03 2018	Point 3	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
18 03 2018	Point 3	M2 Air - Total Solid Particles (gms/sqm/mth)	2.5
18 03 2018	Point 4	M2 Air - Ash (gms/sqm/mth)	1.1
18 03 2018	Point 4	M2 Air - Combustable Material	<0.2
18 03 2018	Point 4	M2 Air - Insoluble Solids (gms/sqm/mth)	1.1
18 03 2018	Point 4	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
18 03 2018	Point 4	M2 Air - Total Solid Particles (gms/sqm/mth)	1.3
18 03 2018	Point 5	M2 Air - Ash (gms/sqm/mth)	0.6
18 03 2018	Point 5	M2 Air - Combustable Material	<0.2
18 03 2018	Point 5	M2 Air - Insoluble Solids (gms/sqm/mth)	0.6
18 03 2018	Point 5	M2 Air - Soluble Matter (gms/sqm/mth)	<0.2
18 03 2018	Point 5	M2 Air - Total Solid Particles (gms/sqm/mth)	0.7
18 03 2018	Sed Dam	B2 Water - Electrical Conductivity (US/cm)	355.0
18 03 2018	Sed Dam	B2 Water - Ph (6.5-8.5)	8.2
18 03 2018	Sed Dam	B2 Water - TSS (<50mg/lt)	<2

18 03 2018	River	B2 Water - Electrical Conductivity (US/cm)	172.0
18 03 2018	River	B2 Water - Ph (6.5-8.5)	8.0
18 03 2018	River	B2 Water - TSS (<50mg/lt)	5.0