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ADDENDUM

Additional Information

Development Application 28/2013

Increase in Annual Production at Runnymede Quarry

SMK CONSULTANTS
May 2014

SMK Consultants

Document Control

Proponent: Johnstone Concrete and Quarries		
Development Application for the Increase in Annual Production.		
Report No. 14/09 Addendum 1		
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Revision History		
Revision No.	Date Issued	Reason/Comment
0	28 May 2014	Initial Issue

1. Summary

This addendum is to provide additional information to the Gwydir Shire Council and the referral bodies to allow them to make a sound decision in relation to the proposed development. The main requirements from the agencies were Noise and Dust assessments. These assessments have been undertaken and the results from modelling in both cases indicate that the proposed operation can meet the NSW EPA Guidelines.

2. General Amendments and Clarifications

2.1. Annual Production

The most recent consent from Gwydir Shire Council (attached in Section 7 of this Addendum) issued on the 29th November 2012 states the annual production from the quarry must not exceed 90,220 tonnes per annum.

The total product to be extracted over the lifetime of the quarry is up to 5 million Tonnes.

2.2. Operating Hours

It is proposed that the operating hours remain as is under the current consent. However the operation of loaders in the process of maintenance works would need to be extended to 10:00 pm Monday to Friday, 5:00pm Saturday, Sunday and Public Holidays. The proposal would allow additional production time on the site. Truck hours would remain the same as existing hours of operation. Truck efficiencies are improved as a result of permission to access the site with road trains which was issued by Council under the recommendation of NSW RMS.

2.3. Sensitive Receptors

The sensitive receptors have been mapped and a copy of this plan is included in Section 10 of this report. The nearest receptors are Kirkton and Sheba Downs. The dwelling on Kirkton was destroyed by fire in the last 12 months. Other receivers mapped include those dwellings along the Haul route from the quarry to Pallamallawa. The property 'Billandrie' was purchased by the proponent as an additional manager's residence. This purchase was also an agreed mitigation strategy with a concerned resident who the proponent had been undertaking ongoing discussions in relation to operation of the quarry facility and related transport operations.

2.4. Water

The proponent is in the process of applying for a zero share groundwater access licence to allow for ground water to be available for use for Industrial purposes if this is ever required during extended dry periods on the site. The aim of this is to purchase an allocation of groundwater in the Shallow Aquifer of the Eastern Recharge Zone of the Great Artesian Basin from which stock and domestic water is currently being drawn. No other suitable aquifers are present beneath the site.

2.5. Access

The legal access to Runnymede is via a Crown Road that runs along the northern boundary of the property. There is a track that deviates from the road corridor and through the neighbouring property (74/751093). The road would need to traverse the creek to provide access to Runnymede which is not a practical route. The current haul route from Gil Gil Creek road was approved by State Forests (now Forestry Corporation) when the quarry site was established in the mid 90's. Bullala forest reserve has now become the Bullala National Park. However, the act of creating the National Park did not include the gazettal of Gil Gil creek road from the crown reserve (7001/1028831) to north of Runnymede where the road crosses Bullala creek. Initial discussions between Council and the NSW Government, mainly OEH are ongoing. It would appear that by-law, Gil Gil Creek road is a public road but at present is not gazetted as a Council road to be maintained by Gwydir Shire and therefore remains under the management of NPWS Management. However the road is maintained by Council as it has been done since the road was constructed. It would appear that the matter of Gil Gil Creek road will be ongoing indefinitely due to the potential cost of the survey and gazettal of the road for which Council will be required to pay. Council has an ongoing agreement under the existing development approvals issued to the Runnymede quarry which includes provisions for funding of part of the maintenance of this road on the basis that Council continues to maintain the road.

The resolution of the legal status of this road is potentially beyond the capabilities of the Proponent and is a matter to be dealt with between NPWS and Council. If the Gil Gil creek road is not gazetted as a Council road, the Proponent should therefore take the recommendation of OEH and obtain a Licence agreement over the road. The legalities of the Gil Gil creek road issue as a whole are at

present difficult to interpret as the Minister for NPWS should have resolved the matter by the 1st of December 2011 as required under the BNCCA. This was not done and therefore Gil Gil Creek road and the current access to Runnymede remains unresolved due to these unresolved legal issues that have not been addressed under several Acts.

2.6. Sand Quarries

The sand quarries referred to on Page 17 of the EIA are included in the annual extraction limit. The sand from these quarries does not leave the site as raw sand, but is included in the manufacture of DGB material for Roads and Maritime Services for use on the Highways. These sand quarries are depicted on the Development Area Plan attached in Section 10 of this report.

2.7. Offsets

The area where the extraction occurs within the site has a long history of disturbance with the site being historically cleared for cultivation and grazing. Approximately 570 Ha of the property consists of undisturbed native vegetation which the proponent intends to retain. This land would remain as such throughout the life of the quarry proposal. The quarry would not be legally able to extend its operations into this area and therefore this 570 Ha of the 630 Ha total property area would be retained in an undisturbed state. This is considered as an appropriate offset area which could potentially be set aside for this purpose under an agreement with the Proponent. At present, such an agreement is not considered necessary given that operation of the quarry would disturb a maximum of 10 percent of the land and retain approximately 90 percent of the land in its present form.

3. Noise

Hushpak was engaged to undertake a Noise Impact Assessment for the proposed increase in production at the quarry. The Noise Impact assessment prepared by Hushpak is attached to this addendum. The acoustic impact of the Runnymede Quarry operations is predicted to range from 31 to 33 dBLAeq at the nearest noise sensitive receiver during worst case conditions as a result of site operations.

The results of this noise impact assessment show compliance with an adopted noise criteria of 35 dBLAeq. Therefore, it is Hushpak's professional opinion that the proposed operation of the Runnymede Quarry is acceptable from an acoustic point of view.

The project specific noise level adopted for the assessment was 35 dBA. This is based on guideline minimum back ground levels. In relation to site operation and management of operations on the site, the proponent has adopted a policy where the operation will include noise mitigation management or a shutdown procedure if emissions exceed accepted criteria. The noise trigger to instigate mitigation measures will occur when noise levels from the quarry exceed 35 dBA at the nearest sensitive receiver. The shutdown procedures are detailed in the revised Environmental Management Plan (EMP) in Section 9 of this report.



Report No. N 601

Runnymede Quarry

Environmental Noise Impact
Assessment

SMK Consulting

21st March 2014

Rev 0 (Final)

Report Details

Runnymede Quarry - Environmental Noise Impact Assessment

Filename: N 601 Runnymede Quarry

Job #: SO 940 Report #: SMK Consulting - Runnymede Quarry

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Prepared For

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EXECUTIVE SUMMARY

Hushpak Engineering Pty Limited (Hushpak) was engaged by SMK Consulting on behalf of Johnstone Concrete and Quarries Pty Ltd to prepare an Environmental Noise Impact Assessment (ENIA) to accompany a development application to the Gwydir Shire Council for project approval to amend the two existing development approvals to permit an increase in annual production from Runnymede Quarry. The ENIA forms part of the Environmental Impact Statement (EIS) to be submitted to the local Council and the NSW Environmental Protection Authority (EPA).

The proposed increase in production at Runnymede Quarry aims to process 300,000 tonnes of gravel product per annum. The increase will enable the quarry operations to fulfil major contracts such as highway reconstruction works in addition to local continuous work in the region.

The acoustic impact of the Runnymede Quarry operations is predicted to range from 31 to 33 dBL_{Aeq} at the nearest noise sensitive receiver during all periods of operations.

The results of this noise impact assessment show compliance with an adopted noise criteria of 35dBL_{Aeq}. Therefore, it is Hushpak's professional opinion that the operations of the Runnymede Quarry is acceptable from an acoustic point of view.

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APPENDIX I

Noise Impact Contours

1. INTRODUCTION

1.1 Background

Hushpak Engineering Pty Limited (Hushpak) was engaged by SMK Consulting on behalf of Johnstone Concrete and Quarries Pty Ltd (Johnstone Quarry) to prepare an Environmental Noise Impact Assessment (ENIA) to accompany a development application to the Gwydir Shire Council for project approval to amend the two existing development approvals to permit an increase in annual production from Runnymede Quarry. The ENIA forms part of the Environmental Impact Statement (EIS) to be submitted to the local Council and the NSW Environmental Protection Authority (EPA).

The proposed increase in production at Runnymede Quarry aims to process 300,000 tonnes of gravel product per annum. The increase will enable the quarry operations to fulfil major contracts such as highway reconstruction works in addition to local continuous work in the region.

It should be noted that this report was prepared by Hushpak for SMK Consulting ("the customer") in accordance with the scope of work and specific requirements agreed between Hushpak and the customer. This report was prepared with background information, terms of reference and assumptions agreed with the customer. The report is not intended for industry use by any other individual or organisation and as such, Hushpak will not accept liability for use of the information contained in this report, other than that which was intended at the time of writing.

1.2 Site Location and Surrounding Land Uses

The Johnstone Quarry currently operates a hard rock quarry on the farming property "Runnymede" a 650 hectare grazing property situated approximately 17 kilometres northeast of the village of Pallamallawa. The quarry produces high grade aggregates and road base for rail, road and civil construction in the northwest plains of New South Wales. **Figure 1** shows the location of the Runnymede Quarry on the map of the local area.



Figure 1: Locality Map

1.3 Proposed Development

The Johnstone Quarry proposes to increase the extraction and processing rate from 120,220 tonnes per year to 300,000 tonnes per year to satisfy the demands of State and Local Governments as well as private infrastructure projects.

Vehicular access to the site would remain via a private road from Gil Gil Creek road. Transport vehicles associated with the quarry are to change from current use of semi-trailers, B-doubles and small trucks to the use of road trains for the majority of product hauled from the quarry. As a result of the increase in load capacity of the trucks, daily truck traffic would remain similar to current levels.

The plan of the current and proposed Runnymede Quarry operations is provided in **Figure 2**.



Figure 2: Runnymede Quarry Operations

1.4 Sensitive Noise Receivers

The closest noise sensitive receptors to Runnymede Quarry consist of rural homesteads. "Kirkton" homestead is located approximately 3,100 metres west-north-west and "Sheba Downs" is located approximately 3,800 metres north-north-east from the Quarry processing plant.

2. REFERENCES

The following information was used in the preparation of this report:

1. NSW Environment Protection Agency (2000). *NSW Industrial Noise Policy*, NSW Environment Protection Agency, Sydney;
2. NSW Department of Environment, Climate Change and Water (2010). *Noise Guide for Local Government*, Department of Environment, Climate Change and Water, Sydney;

3. NSW Department of Environment and Climate Change (2009). *Interim Construction Noise Guideline*, Department of Environment and Climate Change, Sydney;
4. NSW Department of Environment, Climate Change and Water (2011). *NSW Road Noise Policy*, NSW Department of Environment, Climate Change and Water, Sydney;

3. NOISE ASSESSMENT CRITERIA

3.1 Assessing Industrial Noise Sources

3.1.1 Project Specific Noise Levels

The NSW Industrial Noise Policy (INP) presents a methodology for determining Project Specific Noise Levels (PSNL) for industrial development. On 27th March 2014 during a telephone conversation the NSW Environment Protection Authority (EPA) provided direction to the assessment of the existing noise environment adjacent to the development site, and determined the PSNL relevant to the proposed development. It was considered and agreed that the noise criteria be set at 35dBA_{L_{eq}} for the assessment of impacts associated with the proposed development.

3.1.2 Predicting Noise Levels

The INP presents the following procedure to accurately predict the noise impact from an industrial noise source:

- Identify all possible source, site and receiver parameters so that noise can be adequately predicted;
- Predict noise levels from the source at receiver locations, taking into account all important parameters including the source noise levels and locations, operating times, receiver locations, weather conditions applicable to the site, site features and topography, as well as the project-specific noise levels; and
- Compare the predicted noise level with the project-specific noise levels to determine the noise impact.

The INP requires noise impacts to be quantified at all potentially affected receivers. Specifically, the noise levels predicted should correspond to the noise descriptor of the project-specific noise levels applicable to the project. Any assumptions made when determining descriptors should be clearly validated and reported in the noise assessment.

The noise impact of the development can then be determined by comparing the predicted noise level at the receiver with the project-specific noise levels that have been derived for that particular location. The extent of noise impact from the development is defined by the extent to which the predicted noise levels exceed the project-specific noise levels and the number of receivers affected.

4. OPERATIONAL NOISE IMPACTS

4.1 Project-Specific Noise Levels

As stated in Section 3.2.1 the PSNL adopted was 35dBA_{L_{eq}} for the assessment of impacts associated with the proposed development over all three (3) assessment periods.

4.2 Modelling Methodology

Prediction of the cumulative $L_{Aeq,15\text{-minute}}$ noise level resulting from the proposed development was undertaken by modelling noise sources using the Predictor (Type7810) software. The Predictor software package calculates the noise level at specified receiver locations (Single Point Calculation) and generates noise level contours over a defined area (Contour Calculation).

The predicted noise levels are then compared against the project-specific noise levels. If the project-specific noise levels are exceeded, feasible and reasonable noise mitigation strategies will need to be assessed for the proposed development, to ensure compatibility with the existing noise environment. If the proposed development can achieve the project-specific noise levels during the night time period it will also achieve the less stringent day and evening criteria.

4.3 Noise Sources

The modelled impact of the proposed operation was based on the Sound Power Level (SWL) and location of noise sources within the project, consistent with the site arrangement provided in **Figure 2**. The purpose of this assessment is to provide detailed analysis of potential noise impacts and identify conflicts with the existing noise environments. The mechanical plant octave band SWLs applied to the model were calculated from field measurements of the current fixed plant infrastructure and of the mobile plant, including transportation vehicles, utilised at the current Runnymede Quarry operations.

The noise sources used in the model are presented in **Table 1**.

Table 1: Representative source noise levels

Description	SWL, dB(A)
Pre-coating Plant	97
Caterpillar 966H Loader, lower stockpile area	105
Pug Mill Plant, adjacent to Processing plant	114
Caterpillar 962H Loader	102
Processing plant	110
Gabion Plant, in quarry	122
Caterpillar 980H Loader, in quarry	108
Finlay Crusher & Excavator, in quarry	115
Articulated Haul Truck, in quarry	112
Road trains/B-Double trucks	107

The model presents a worst case noise impact for proposed operations, comprising:

- Pre-coating plant and loading operations situated adjacent to lower stockpile area;
- Pug Mill operating with associated loader operations, adjacent to processing plant;
- Processing plant running at maximum production levels;
- Gabion plant operating with typical loader operations;
- Excavator and rock crusher processing material at face of quarry operations;
- Trucks hauling rock product to within the quarry and to the processing plant;
- Road trains transporting product on private haul road.

It should be noted that impact predictions are made on the basis of the $L_{Aeq, 15\text{minute}}$ criteria, and that all sources are active within any single 15-minute period.

4.4 Assumptions of the Model

The following assumptions are implicit in the noise model:

- Noise emissions were modelled as a worst case noise level from the proposed Runnymede Quarry site. The model assumes noise is emitted as a point source from each of the specified fixed plant noise sources and as line sources for mobile plant and transportation vehicles;
- The plant layout was based on the Runnymede Quarry site arrangement provided in **Figure 2** and from Hushpak Engineers observation during the quarry site inspection.
- Sound Power Level (SWL) and location of noise sources within the project, consistent with the site arrangement and representative source noise levels provided in **Table 1**.
- Worst case meteorological propagation scenario was applied to the model in accordance with Section 5.1 of the INP. Propagation was assessed under the following meteorological scenarios:
 - Neutral (calm) conditions;
 - Worst case gradient wind (source to receiver wind at 3m/s); and
 - Night period temperature inversion (F-class stability, source to receiver wind at 0.5m/s).

4.5 Results

Table 2 presents the results of noise modelling focused on the "Kirkton" homestead being the closest sensitive noise receiver to the Runnymede Quarry operations.

Table 2: Predicted noise level, dB(A)

Noise Receiver	Neutral	Worst Case
Kirkton	31	33
All other locations	<30	<30

4.5.1 Assessment of Industrial Noise Impacts

Results of this assessment indicate that $L_{Aeq, 15\text{minute}}$ impacts associated with the proposed operations would comply with the PSNL for all receiving environments adjacent to the Runnymede Quarry, under worst case meteorological conditions.

5. DISCUSSION & CONCLUSIONS

The acoustic impact of the proposed expansion of Runnymede Quarry operations is predicted to range from 31 to 33 dBL_{Aeq} at the nearest noise sensitive receiver during all periods of operations.

The results of this noise impact assessment show compliance with an adopted noise criteria of 35dBL_{Aeq}. Therefore, it is Hushpak's professional opinion that the proposed operations at Runnymede Quarry is acceptable from an acoustic point of view.

Hushpak has provided this environmental noise impact assessment however, should you require assistance with further investigations and/or engineering services this is available either through Hushpak Engineering or the Advitech Group.
Regards,

PREPARED BY:

Ian Guy
Senior Acoustic Engineer

HUSHPAK ENGINEERING PTY LTD

REVIEWED BY:

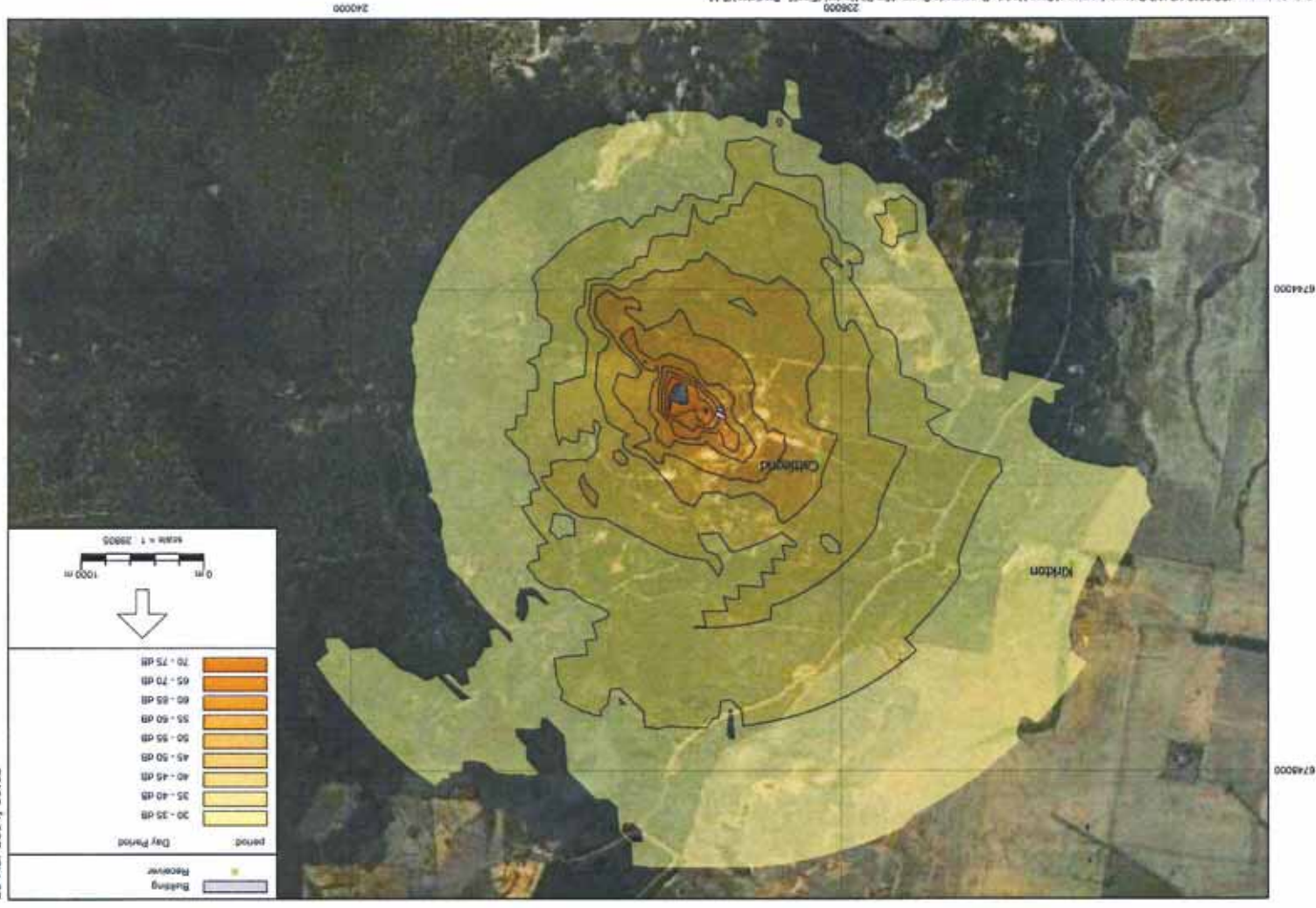
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Noise Impact Contours

Appendix I

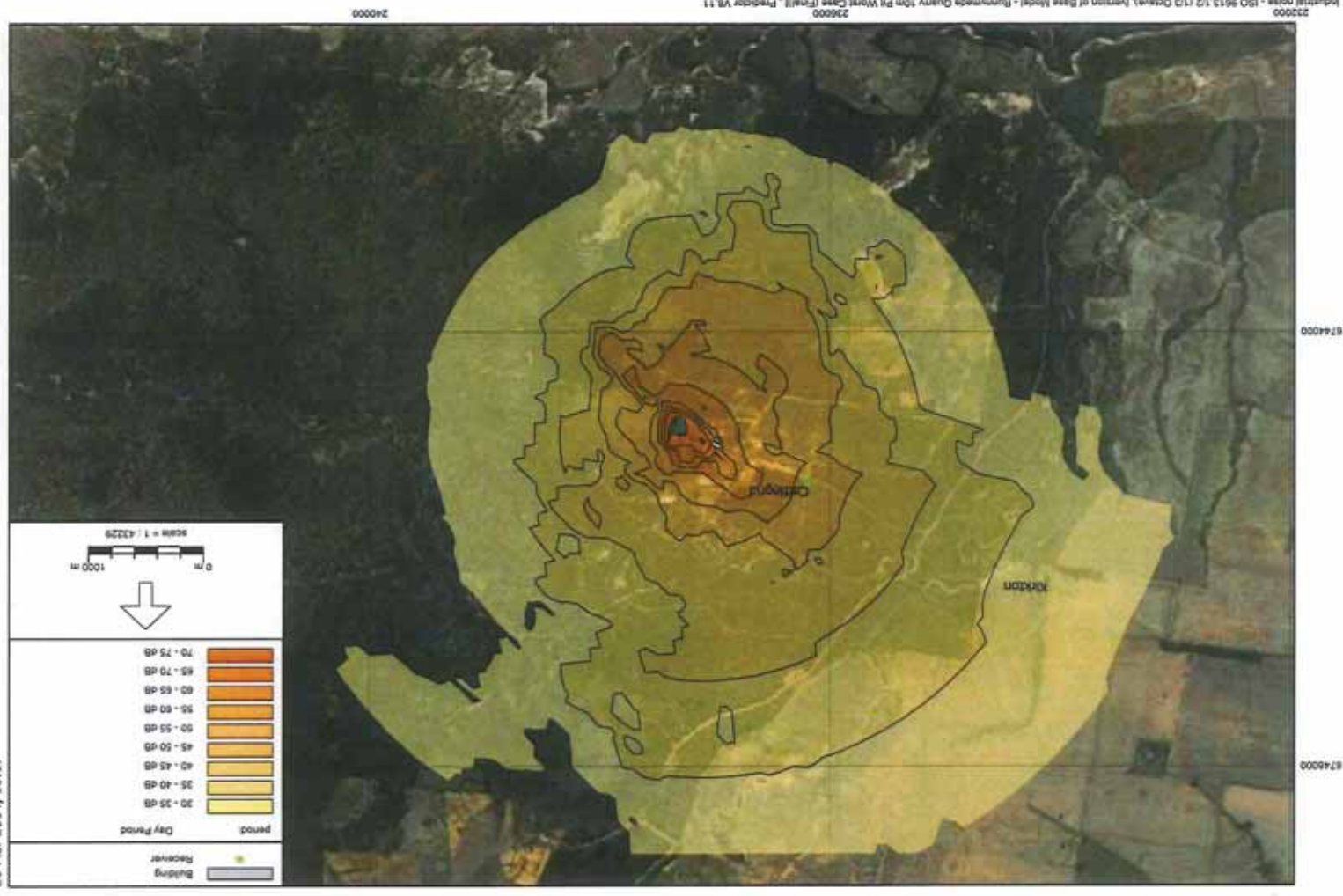
Advitech Pty Ltd

Runnymede Quarry 10m Pit Neutral (Final)
26 Mar 2014, 16:12



Advitech Pty Ltd

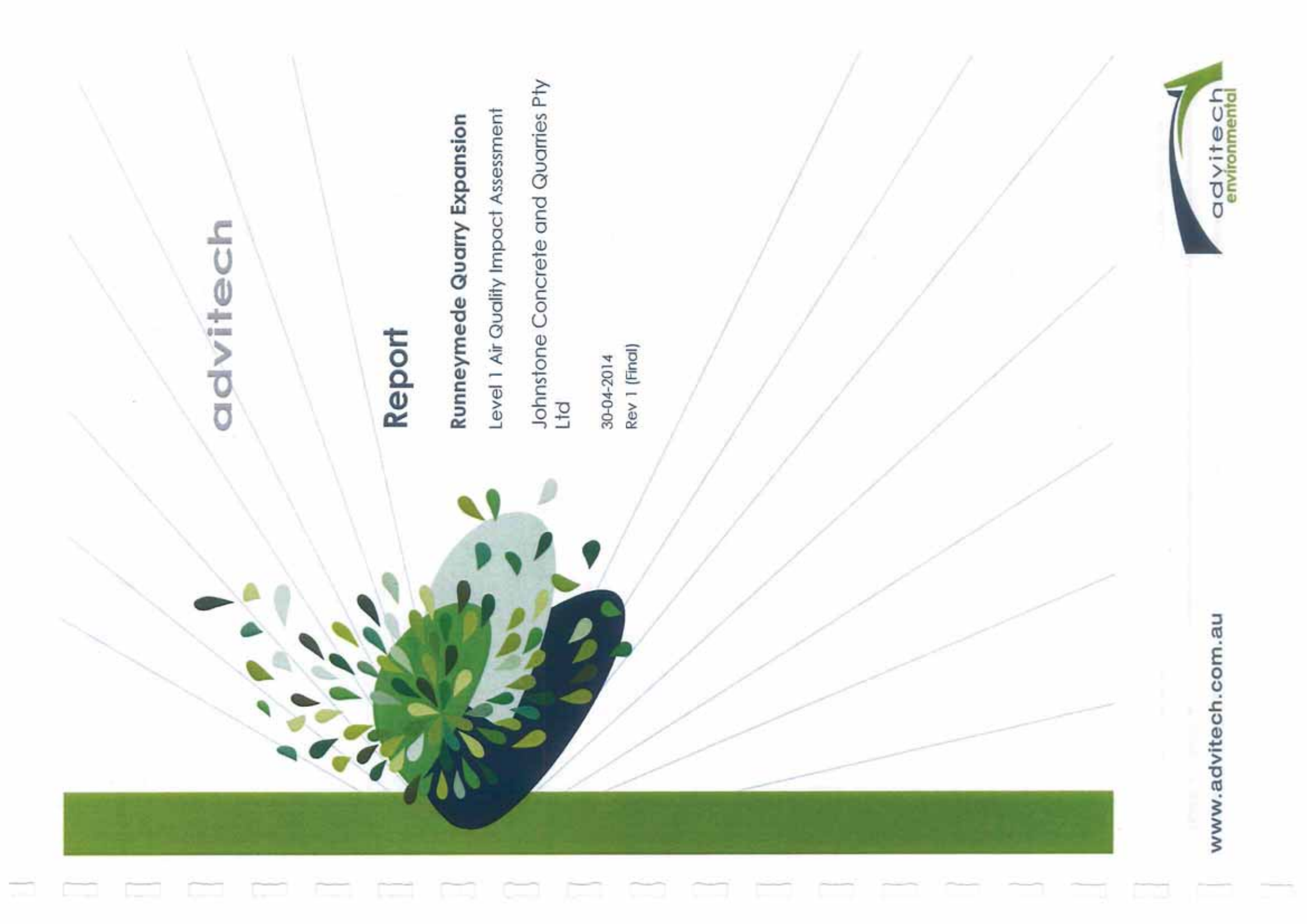
Runnymede Quarry 10m Pit Worst Case (Final)
26 Mar 2014, 16:17



4. Air Quality/Dust

Advitech Pty Limited was engaged to undertake a Level 1 Air Quality Impact Assessment for the proposed development. A copy of this report is attached to this addendum report. The results of the modelling show compliance with NSW EPA air quality criteria for both 24 hour, annual and dust deposition averaging periods and therefore no further assessment is required.

Dust emissions that would trigger the shutdown procedure would be those that exceed $30 \mu\text{g}/\text{m}^3$ within a 24 hour period at the nearest sensitive receiver.



advitech

Report

Runneymede Quarry Expansion

Level 1 Air Quality Impact Assessment

Johnstone Concrete and Quarries Pty
Ltd

30-04-2014

Rev 1 (Final)

Report Details

Runnymede Quarry Expansion - Level 1 Air Quality Impact Assessment

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Job #: J0140055-01 Folder #: F13174

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Endorsements

Function	Signature	Name and Title	Date
Prepared By		Carl Fung Lead Consultant - Environmental Engineering and Sustainability	30-04-2014
Checked By		Micah Bell Senior Environmental Engineer	30-04-2014
Authorised for Release By		Carl Fung Lead Consultant - Environmental Engineering and Sustainability	30-04-2014

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APPENDICES

APPENDIX I

Sample of Synthetic Meteorological Data file

APPENDIX II

Model Input Data

APPENDIX III

Sample Modelling Contour Plot Output

1. INTRODUCTION

Advitech Pty Limited (Advitech) was engaged by SMK Consultants (SMK) to prepare a Level 1 Air Quality Impact Assessment (AQIA) for Total Particulates (TP) deposition and Particulate Material (PM₁₀) emissions on behalf of Johnstone Concrete and Quarries Pty Ltd (Johnstone) proposed quarry expansion located in Gwydir Shire NSW.

It should be noted that this report was prepared by Advitech for SMK ("the customer") in accordance with the scope of work and specific requirements agreed between Advitech and the customer. This report was prepared with background information, terms of reference and assumptions agreed with the customer. The report is not intended for use by any other individual or organisation and as such, Advitech will not accept liability for use of the information contained in this report, other than that which was intended at the time of writing.

2. METHODOLOGY

The Level 1 AQIA was prepared in accordance with NSW EPA requirements as outlined in *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales August 2005*.

The modelling has been undertaken using a synthetic meteorological dataset incorporating combinations of wind speed, atmospheric stability class and mixing height combinations to account for worst-case conditions at the nearest identified sensitive receptors - Kirkton and Sheba Downs.

Air dispersion modelling was undertaken using air dispersion model AUSPLUME Version 6.0. Dust emissions from quarry operations have been based upon processing production equivalent to 300,000 tonnes per annum.

AUSPLUME is a predictive model and is dependent upon the accuracy of emission locations and inventories, local meteorology and the representativeness of background concentrations. As such there is always some level of uncertainty in predicted air quality impacts.

3. REFERENCES

The following information was used in the preparation of this report:

1. Supplied information and email correspondence from SMK (responsible for preparation of Runnymede Environmental Impact Statement);
2. SMK Consultants (July 2013) Environmental Impact Assessment for a Proposed Increase in Annual Production from Runnymede Quarry Lot 52 & 53 DP 751093 Parish of Bullala County of Burnett.
3. Supplied information, email and telephone correspondence from Hushpak Engineering;
4. NSW Environment and Heritage Air Quality Monitoring Network - Tamworth 24hr PM₁₀ measurements for 2013;
5. National Pollutant Inventory (January 2012) emission estimation technique manual for mining - Version 3.1; and
6. National Pollutant Inventory (June 2008) emission estimation technique manual for combustion engines - Version 3.0.

4. ASSESSMENT CRITERIA

4.1 Air Quality Assessment Criteria

The impact assessment criteria used to assess the air quality impact of quarry operations on the adjacent rural community (nearest sensitive receptors) is provided in Table 1. Figure 1 shows the locality surrounding the quarry and nearest sensitive receptors. There are two sensitive receptors; "Kirkton" homestead located approximately 3.1 kilometres west-north-west, and "Sheba Downs" located approximately 3.8 kilometres north-north-east from the secondary crushers on Runnymede quarry. The closest urban area (Pallamallawa) is located approximately 17 kilometres from the quarry.

Table 1: Impact Assessment Criterion

Pollutant	Averaging Period	Concentration	Units	Source	Reason for Classification
Deposited Dust ^a - (maximum total)	Annual	4 ^b	g/m ² /month	NERDDC ^c (1988)	NEPM ^d
Deposited Dust ^a - (maximum increase)	Annual	2 ^d	g/m ² /month	NERDDC ^c (1988)	NEPM ^d
PM ₁₀ ^e	24 Hours	50	µg/m ³	NEPC ^f (1998)	NEPM ^d
	Annual	30		EPA (1998)	

^a - dust is assessed as insoluble solids as defined by AS 3580.10.1-1991

^b - maximum total deposited dust level

^c - National Energy Research Development and Demonstration Council

^d - maximum increase in deposited dust level

^e - particulate materials with an aerodynamic diameter less than 10 µm

^f - National Environment Protection Council

^g - National Environment Protection (Ambient Air Quality) Measure



Figure 1: Runnymede Quarry (Yellow dots indicates nearest sensitive receptors)

5. METEOROLOGICAL DATA

A synthetic meteorological data file was prepared to model emissions from quarry operations at maximum production and maximum development extent. The synthetic meteorological data file includes a wide combination of worst-case meteorological data that may not be representative of the locality. These include combinations of wind speed, stability class and mixing height. A sample of the synthetic meteorological data file is attached in Appendix I.

6. RESULTS AND DISCUSSION

Table 2 and Table 3 list the results of the Level 1 AQIA at the nearest sensitive receptors where the predicted TP deposition or PM_{10} concentration is at ground level. A Level 1 AQIA is a screening-level dispersion modelling technique using worst-case input data.

The predicted cumulative PM air quality impacts listed in the tables show compliance to the NSW EPA air quality criteria for both the 24 hour, annual and dust deposition averaging periods. No further assessment of air quality impacts is required. Appendix II and Appendix III provide emissions inventory and plots of predicted impacts of the quarry respectively.

Table 2: Level 1 Impact PM₁₀ Assessment at Sensitive Receptors

Receptor Location	Averaging Period	Predicted Increment	Background ² ($\mu\text{g}/\text{m}^3$)	Cumulative Impact (increment + background)	
		All Site Source Emissions ¹ ($\mu\text{g}/\text{m}^3$)		All Site Source Emissions ¹	Criterion ($\mu\text{g}/\text{m}^3$)
Kirkton	24 hour	19.9	16.5	36.4	50
	Annual	5.29		21.8	30
Sheba Downs	24 hour	13.2		29.7	50
	Annual	3.43		19.9	30

Notes:

¹ - All Runnymede site source emissions including ginning buildings and major haul roads.² - Background PM₁₀ obtained from NSW OEH Air Quality Monitoring Network - 2013 Tamworth 24hr and annual PM₁₀ average over full calendar year.

Table 3: Level 1 Impact TP Deposition Assessment at Sensitive Receptors

Receptor Location	Averaging Period	Predicted Increment	Background ² ($\text{g}/\text{m}^2/\text{month}$)	Cumulative Impact (increment + background)	
		All Site Source Emissions ¹ ($\text{g}/\text{m}^2/\text{month}$)		All Site Source Emissions ¹	Criterion ($\text{g}/\text{m}^2/\text{month}$)
Kirkton	Monthly	0.24	1.36	1.60	4.0
Sheba Downs	Monthly	0.053		1.41	

Notes:

¹ - All Runnymede site source emissions including ginning buildings and major haul roads.² - In the absence of NSW OEH dust deposition data, monthly average dust deposition levels have been estimated by assuming a TP concentration of 90 $\mu\text{g}/\text{m}^3$ will have a corresponding dust deposition value of 4 $\text{g}/\text{m}^2/\text{month}$. The use of this relationship indicates a monthly average dust deposition level of 1.36 $\text{g}/\text{m}^2/\text{month}$ for the area surrounding the proposed Runnymede quarry expansion.

7. CONCLUSIONS AND RECOMMENDATIONS

This study has evaluated air quality impacts for the proposed expansion of Runnymede quarry in accordance to NSW EPA Level 1 assessment requirements. The Level 1 AQIA indicates PM₁₀ and TP (as deposited dust) air quality impacts at the sensitive receptors Kirkton and Sheba Downs are below NSW EPA air quality criteria. No further air quality assessment is required.



Appendix I

Sample of Synthetic Meteorological Data file

"LEVEL1 MET FILE"

04010101 34 0.5 113 A 200
04010102 34 1.0 113 A 200
04010103 34 1.5 113 A 200
04010104 34 2.0 113 A 200
04010105 34 2.5 113 A 200
04010106 34 3.0 113 A 200
04010107 34 0.5 113 B 200
04010108 34 1.0 113 B 200
04010109 34 1.5 113 B 200
04010110 34 2.0 113 B 200
04010111 34 3.0 113 B 200
04010112 34 4.0 113 B 200
04010113 34 5.0 113 B 200
04010114 34 2.0 113 C 200
04010115 34 3.0 113 C 200
04010116 34 4.0 113 C 200
04010117 34 5.0 113 C 200
04010118 34 6.0 113 C 200
04010119 34 7.0 113 C 200
04010120 34 0.5 113 D 200
04010121 34 1.0 113 D 200
04010122 34 1.5 113 D 200
04010123 34 2.0 113 D 200
04010124 34 3.0 113 D 200
04010201 34 4.0 113 D 200
04010202 34 5.0 113 D 200
04010203 34 6.0 113 D 200
04010204 34 7.0 113 D 200
04010205 34 8.0 113 D 200
04010206 34 10.0 113 D 200
04010207 34 12.0 113 D 200
04010208 34 14.0 113 D 200
04010209 34 17.0 113 D 200
04010210 34 20.0 113 D 200
04010211 34 0.5 113 E 5000
04010212 34 1.0 113 E 5000
04010213 34 1.5 113 E 5000
04010214 34 2.0 113 E 5000
04010215 34 2.5 113 E 5000
04010216 34 3.0 113 E 5000
04010217 34 4.0 113 E 5000
04010218 34 5.0 113 E 5000
04010219 34 0.5 113 F 5000
04010220 34 1.0 113 F 5000
04010221 34 1.5 113 F 5000
04010222 34 2.0 113 F 5000



Appendix II

Model Input Data

MODEL INPUT DATA

Emission Inputs

In all circumstances the emission of the estimated PM_{10} is constant with time over the entire modelled period. Table A1 details the quarry emissions as a user input emissions file into AUSPLUME. The emission inventory attempts to reflect steady state operations over the entire simulation.

Table A1: Operating Hours

AUSPLUME Emission Source ID	Emission Source	Current Production Operating Hours	TP emission ¹ (g/s)	PM_{10} emission ¹ (g/s)
FC	Face crusher	24/7	0.104	0.0417
Exc	Excavator	24/7	0.26	0.125
R1a-j	In-pit haul road	24/7	2.00	0.59
C1-4	Vehicle combustion source	24/7	NA ²	0.26 ³
D1	Material dumping	24/7	0.125	0.0447
D2	Material dumping	24/7	0.15	0.0538
D3	Material dumping	24/7	0.15	0.0538
MC	Main crusher	24/7	0.38	0.15
SC	Secondary crusher	24/7	0.38	0.15
FEL1	Front end loader	24/7	0.313	0.15
CT	Conveyor transfer	24/7	0.00403	0.00187
FEL2	Front end loader	24/7	0.38	0.15
R2a-j	Haul road	24/7	1.81	0.536
A1a-d	Stockpile wind erosion	24/7	3.31	1.65
A2	Stockpile wind erosion	24/7	0.553	0.276
A3	Stockpile wind erosion	24/7	0.355	0.178

¹ - Aggregated emissions. TP and PM_{10} particulates have a density of 2900 kg/m³. TP characterised as particles 30 µm in diameter, PM_{10} characterised as particles 10 µm in diameter.

² - There is no TP emissions from diesel combustion sources.

³ - Diesel PM_{10} particulates have a density of 2600 kg/m³.

Emission Sources

Table A2: Point Source Characteristics

AUSPLUME Emission Source ID	Emission Source	Emission Height (metres)	Stack Diameter (metres)	Temperature (°C)	Exit Velocity (m/s)
C1-4	Vehicle combustion source	5	0.05	80	10.0

Table A3: Volume Source Characteristics

Source ID	Source Description	Height (metres)	Horizontal Spread (metres)	Vertical Spread (metres)
FC	Face crusher	2.5	0.93	2.3
EcV	Excavator	2.5	1.2	2.3
D1-3	Material dumping	2.5	0.93	2.3
MC	Main crusher	2.5	0.93	2.3
SC	Secondary crusher	2.5	0.93	2.3
FEL1	Front end loader	2.5	0.7	2.3
FEL2	Front end loader	2.5	0.7	2.3
CT	Conveyor transfer	3.0	0.4	2.8

Table A4: Area Source Characteristics

Source ID	Source Description	Source Width (metres)	Source Height (metres)
R1a	In-pit haul road element	41	1.86
R1b	In-pit haul road element	41	1.86
R1c	In-pit haul road element	41	1.86
R1d	In-pit haul road element	41	1.86
R1e	In-pit haul road element	41	1.86
R1f	In-pit haul road element	41	1.86
R1g	In-pit haul road element	41	1.86
R1h	In-pit haul road element	41	1.86
R1i	In-pit haul road element	41	1.86
R1j	In-pit haul road element	41	1.86
R2a	Haul road element	45	1.86
R2b	Haul road element	45	1.86
R2c	Haul road element	45	1.86
R2d	Haul road element	45	1.86
R2e	Haul road element	45	1.86
R2f	Haul road element	45	1.86
R2g	Haul road element	45	1.86
R2h	Haul road element	45	1.86
R2i	Haul road element	45	1.86
R2j	Haul road element	45	1.86

Source ID	Source Description	Source Width (metres)	Source Height (metres)
A1a-d	Stockpile wind erosion	274	0.5
A2	Stockpile wind erosion	223	0.5
A3	Stockpile wind erosion	179	0.5



Appendix III

Sample Modelling Contour Plot Output

PM₁₀

Figure 2 and Figure 3 show GLCs for PM₁₀.

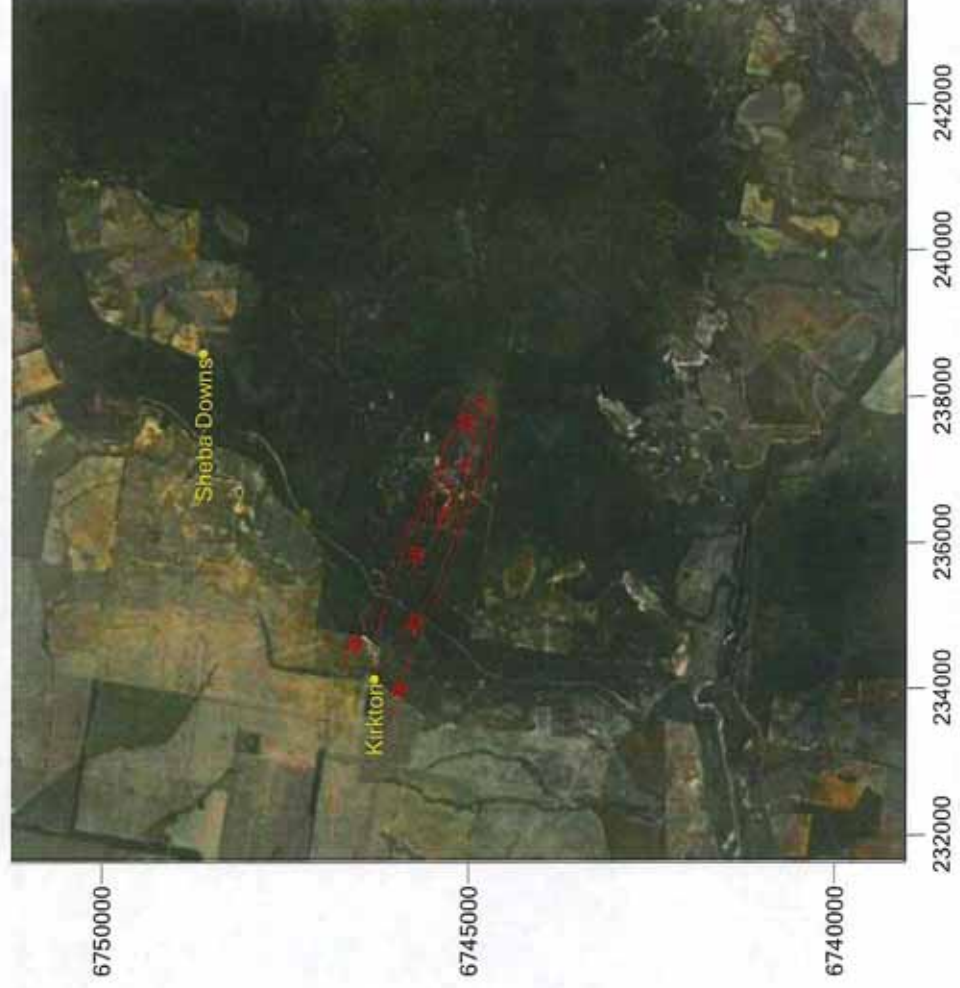


Figure 2: 'Kirkton' Predicted 24 hour PM₁₀ GLC from all Emission Sources, 100th percentile.
(Red triangles represent emission sources. Contour labels = 10, 20, 50, 100, 200 in $\mu\text{g}/\text{m}^3$)

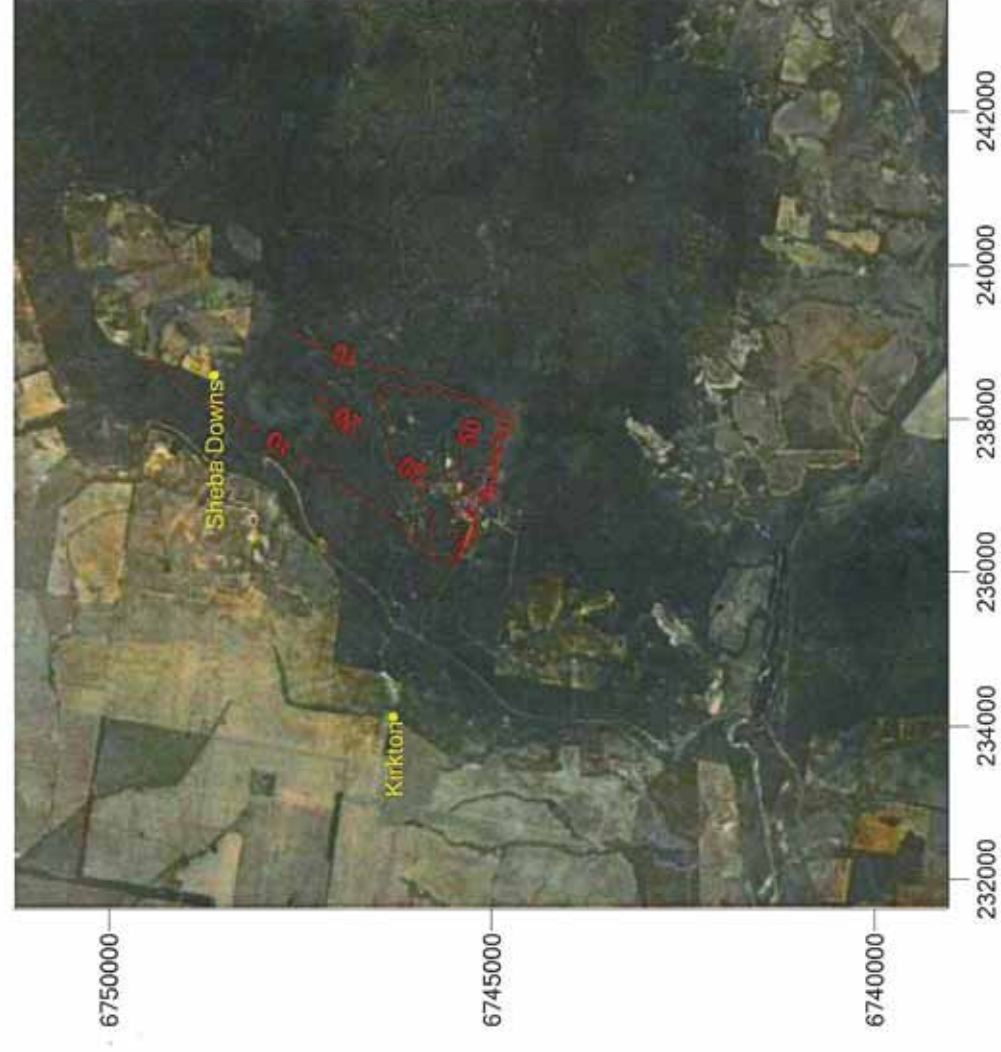


Figure 3: 'Sheba Downs' Predicted 24 hour PM_{10} GLC from all Emission Sources, 100th percentile.

(Red triangles represent emission sources. Contour labels = 10, 20, 50, 100, 200 in $\mu g/m^3$)

5. Aboriginal Heritage

5.1. AHIMS Search Results



AHIMS Web Services (AWS) Search Result

Your Ref Number : 14/09

Client Service ID : 129941

SMK Consultants

P O Box 774

Moree New South Wales 2400

Attention: Sarah Grady

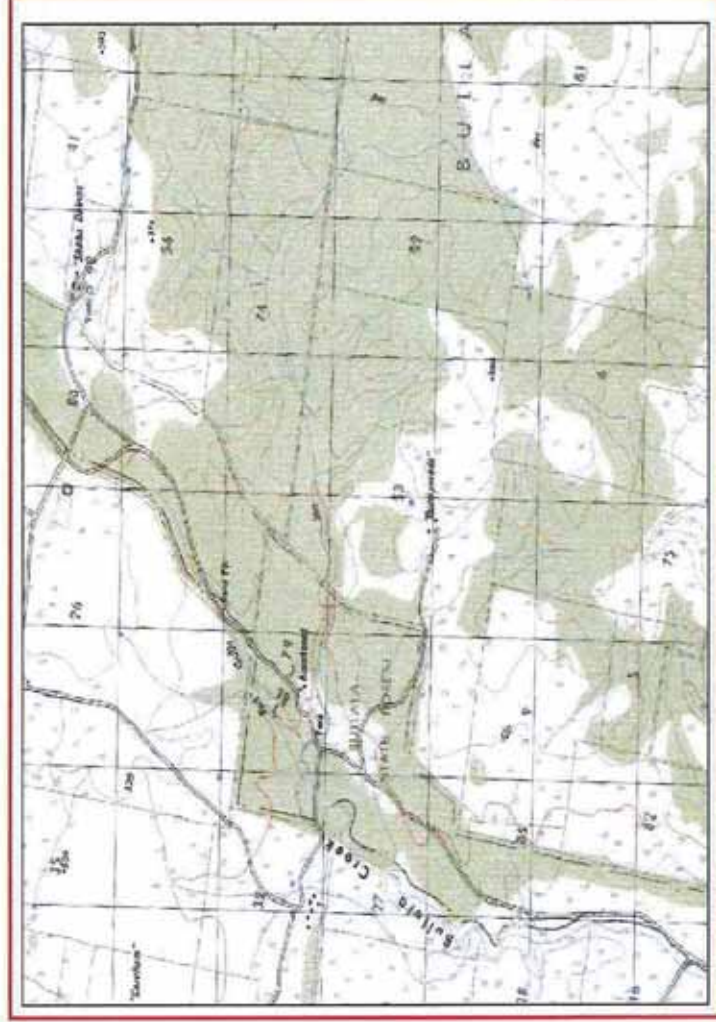
Email: sarah@smk.com.au

Dear Sir or Madam:

Date: 28 March 2014

AHIMS Web Service search for the following area at Lat. Long From : -29.4119, 150.2542 - Lat. Long To : -29.3668, 150.3258 with a Buffer of 50 meters, conducted by Sarah Grady on 28 March 2014.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location.*

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (<http://www.nsw.gov.au/gazette>) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings.
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

PO BOX 1967 Hurstville NSW 2220
43 Bridge Street HURSTVILLE NSW 2220
Tel: (02)9585 6345 (02)9585 6471 Fax: (02)9585 6094

ABN 30 841 387 271
Email: ahims@environment.nsw.gov.au
Web: www.environment.nsw.gov.au

5.2. Statement of Aboriginal Significance

The report was prepared by Suzanne Hudson Consulting as part of the original investigations of the site. A copy of the report is attached and concludes that the proposed expansion of the quarry would not disturb any artifacts or sites of aboriginal significance. The proposed development involves an expansion of the annual limit of the quarry and not the footprint of the quarry. On this basis, the conclusion from the investigation of aboriginal heritage matters would continue to be relevant.

STATEMENT OF ABORIGINAL SIGNIFICANCE

FOR JOHNSTONE'S READYMIX CONCRETE
"RUNNYMEDE" PALLAMALLAWA



Bitter quandong (*Santalum murrayanum*)

SUZANNE R HUDSON CONSULTING
15 Judith Street, Armidale 2350
Phone: 02 6771 4877
Mobile: 0412 649 580
email: sue.hud@bigpond.net.au

OCTOBER 2009



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SITE ASSESSMENT

On Friday 23rd October 2009, an on-site assessment was made at Johnstone's Ready Mix Concrete quarry site on Gil-Gil Creek Road, Pallamallawa for Aboriginal objects, sites or places of significance.

Those present included:

Sue Hudson – Consulting Archaeologist, Armidale
Peter Taylor – SMK Consultants, Moree (on behalf of the owners)
Charlie Groves – Aboriginal Site Officer, Land Council, Moree
Liza Duncan – Site Officer, Ashford
Vicky Duncan – Site Officer, Inverell

The site being surveyed is located east of the present quarry and has been subjected to farming and grazing practices in the past. The area is covered with basalt “floaters” and is no longer suitable to farming, as these floaters have been brought to the surface by ploughing the ground. The area is situated on top of a hill and is surrounded by regrowth of native trees and shrubs. The photograph below shows a typical collection of basalt rocks.



Basalt floaters lying on the ground surface

Two transects were covered on foot with the group spread out between 5 and 10 metres apart and the ground was searched for any stone material that may have been brought in by Aboriginal people in the past. Each transect was walked from the edge of the present quarry to the eastern end of the proposed development area (west to east and return).



Transect 1 facing east from quarry



Bitter quandong tree at the end of transect 1
(Photo shows Vicky Duncan, Liza Duncan
and Peter Taylor eating fruit)



Transect 1 facing west to quarry



Transect 2 facing east to tree line at eastern edge
of development area

RESULTS

It is considered by the archaeologist that there are no signs of Aboriginal occupation at this site. The hilltop where the development is to proceed contains no water to sustain a living site but would have been part of the hunter-gatherer activities undertaken by the traditional people using the area.

CONCLUSION

No Aboriginal objects, sites or places of significance were found during survey of this area and it is the opinion of the site officers present and the archaeologist that the development can proceed. It is recommended that the Bitter quandong tree at the edge of the proposed development be preserved, as Aboriginal people may wish to pick the fruit during spring.



6. Amended Surface Water Management Plan

The following presents an amended Surface Water Management Plan for the Runnymede Quarry.

(AMENDED) Appendix 5: Site Water Management Plan

**SMK
CONSULTANTS**

surveying – irrigation – environmental - planning

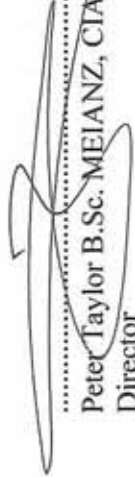
ABN 63 061 919 003

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Goondiwindi,
Gatton, Brisbane, Miles

**Johnstone Concrete and Quarries
Runnymede Quarry
Site Water Management Plan**

**SMK CONSULTANTS
May 2014**

SMK Consultants Document Control

Proponent: Johnstone Concrete and Quarries Site water Management Plan.			
Report No. 14/09 Additional Information - SWMP (2014)			
Prepared for:	Johnstone Concrete and Quarries Pty Ltd PO BOX 941 MOREE NSW 2400		
Prepared by:	SMK Consultants P.O. Box 774 Moree NSW 2400 Contact: Peter Taylor ptaylor@smk.com.au Ph.02 6752 1021		
Authors:	 Sarah Grady B. Env. Sc. Environmental Consultant		
Reviewed by:	 James Maxwell B.Sc M. Env Mgmt Environmental Consultant		
 Peter Taylor B.Sc. MEIANZ, CIAG Director SMK Consultants, Moree			
Revision History			
Revision No.	Date Issued	Reason/Comment	
0	28 May 2014	Initial Issue	

1. Introduction

This Site Water Management Plan ("SWMP") has been prepared as part of additional information submitted to Gwydir Shire Council alongside the Environmental Impact Statement for the proposed increase in production at the Runnymede Quarry ("the quarry") for Johnstone's Concrete and Quarries Moree ("the proponent").

The SWMP has been prepared in accordance with the Landcom document *Managing Urban Stormwater: Soils and Construction, Vol. 1, 4th eds.* (Landcom, 2004) (the 'Blue Book').

The SWMP incorporates:

- The predicted site water balance (Section 3);
- An Erosion and Sediment Control Plan (Section 5); and
- A Surface Water Monitoring Plan (Section 6).

For management purposes, the water within the development site has been divided into two classes.

"Clean" water - surface runoff from undisturbed catchments or relatively undisturbed by extraction, processing or related activities.

"Dirty" water - surface runoff from disturbed catchments such as the active extraction, crushing, stockpiling and loading areas which could produce significant concentrations of suspended sediment.

2. Objectives

The principal objectives of site water management are as follows:

- To ensure sufficient quantities of water can be obtained through the capture of surface water to meet the operational and dust suppression requirements of the quarry.
- To ensure the segregation of "dirty" water from "clean" water, and maximise the retention time "dirty" water such that any discharge from the quarry meets the water quality objectives as stipulated in Environmental Protection Licence 7379 and detailed below:

• Total suspended Solid	50 mg/L (100 percentile concentration limit)
• Oil & Grease	
- To minimise the volume of water discharged from the quarry site but, should the discharge prove necessary, ensure that sufficient settling time is provided prior to discharge such that concentration of suspended solids.

3. Site Water Balance

This section reviews available water storage against water availability to present a water balance for the Runnymede Quarry in order to determine whether management can meet the intended dust suppression strategy. The water balance is provided for average, wet and dry years (10th, 50th and 90th percentile rainfall years).

3.1.Site Catchments

The Study Area can be divided into six catchments mainly, 1A, 1B, 2 and 3, 4 and 5. Catchment 1B is considered a clean water catchment, with the runoff generated in this catchment to be diverted around the active extraction area and off site via natural drainage depressions. Catchments 1A, 2, 3, 4 and 5 are dirty water catchments, encompassing the product stockpiling area, surge stockpile area, active extraction area, and the area just to the south of the extraction area (illustrated below in Figure 1) with a total area of 61 ha.

The quarry is located on the top of an east-west trending ridge and surface water from the undeveloped part of the ridge (catchment 1B) flows to three ephemeral drainage lines, two from the northern side of the ridge trending northwards and the third, on the southern side of the ridge trending west-north-west. All three drainage lines flow to Bullala Creek.

The method employed to divert clean water from entering the active pit is the use of topsoil and/or overburden to form a bund along the northern and southern faces and adjacent to the active eastern quarry face to ensure that all rain water falling on undisturbed areas continues to proceed to the abovementioned drainage lines. No additional water is directed to these drainage lines therefore there is no increase in the velocity of water in the drainage lines that could result in erosion or scouring. This diversion bund is progressively extended in an easterly direction as topsoil and overburden is removed prior to each drill and blast campaign.

Runoff from disturbed catchments 1A, 2, 3, 4 and 5 is directed to sediment basins where the water is used for dust suppression following settling. Over time, catchment 1A will progressively incorporate catchment 1B and this additional area has been taken into account in calculating runoff.

A summary of the Study Area catchments is provided in the following table, and illustrated in the Figure 1.

Table 1: Study Area Catchments

Catchment	Area (m ²)	Disturbance
Clean water catchment		
1B	274,959	Grazing
Total area	274,959	
Disturbed catchments		
1A	61,274	Working pit, blasting, excavation, primary crushing and stockpiling
2	141,055	Stockpiles, pug mill, homestead, topsoil storage and grazing
3	30,636	Workshop, stockpiles, road, weighbridge, homestead and grazing
4	78,215	Secondary crusher, screens, stockpiles and loading
5	24,090	Topsoil storage and grazing
Total area	335,270	

SCALE: 1:5000 (A4)	DATE: 14/09/05	PROJECT: RUNNWEDE SWAMP	CLIENT: JOHNSTONE CONCRETE & QUARRIES PTY LTD
DESIGN: J. MCKINNON	DATE: 14/09/05	PROJECT: RUNNWEDE SWAMP	DESCRIPTION: RUNNWEDE DEVELOPMENT SITE CATCHMENTS
REVISION: 1.0	DATE: 14/09/05	PROJECT: RUNNWEDE SWAMP	PLAN REVISION: SWP D
REVISION: 1.0	DATE: 14/09/05	PROJECT: RUNNWEDE SWAMP	PLAN REVISION: SWP E
REVISION: 1.0	DATE: 14/09/05	PROJECT: RUNNWEDE SWAMP	PLAN REVISION: SWP F
REVISION: 1.0	DATE: 14/09/05	PROJECT: RUNNWEDE SWAMP	PLAN REVISION: SWP G

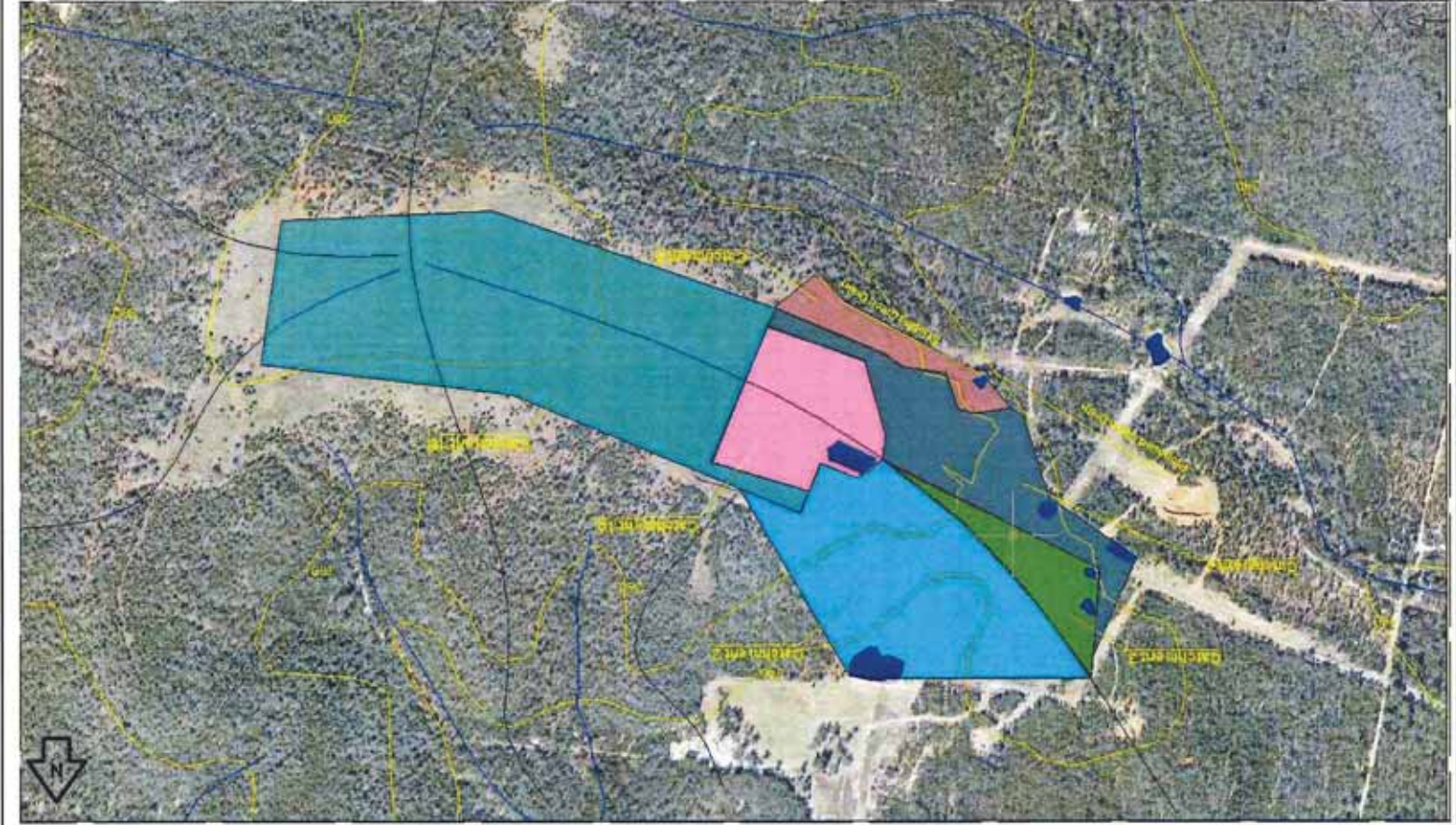


Figure 1: Development Site Catchments

3.2. Rainfall/Runoff

The water balance considers rainfall and runoff generated during low (annual 10th percentile), average (annual 50th percentile) and high (annual 90th percentile) rainfall years. The rainfall data has been obtained from the Bureau of Meteorology monitoring station at Warialda Post Office (station 054029), which is considered to be the most representative of the development site. Rainfall is as follows.

- Annual 10th percentile (dry year): 448.2 mm
- Annual 50th percentile (average year): 677.8 mm
- Annual 90th percentile (wet year): 935.4 mm

Rainfall is summer dominant although rainfall is generally present in all months.

As discussed above, runoff generated in clean water catchment 1B would be directed around the active extraction area. Runoff generated within the disturbed catchments would be directed to sediment basins and gully dams. The sediment basins are to be used as the first source of water so that the dams are drained and then recapture internal runoff. The capacity of these sediment ponds will be maintained to ensure they meet the sedimentation requirements.

A runoff coefficient of 0.45 has been estimated for the clean water catchment 1B which consists of undisturbed pasture. Dirty water catchment 1A is estimated at 0.8 as the floor of the pit contains significant areas of unbroken basalt underlain by sandstone. Runoff coefficients for catchments 2, 3 and 4 are have been estimated as 0.51 as they have been disturbed and surfaced with crushed aggregate which allows infiltration and impedes runoff velocity. Catchment 5 has also been estimated as 0.51 although it remains vegetated and contains significant areas of sandy soil which facilitates infiltration.

The gully dam catchment to the south of the site consists of relatively natural undisturbed rocky and steep country. The runoff coefficient for this land is considered as relatively high and in the order of 0.6.

Daily rainfall data for Warialda from 1889 to 2002 was modelled through the USDA rainfall runoff model with a KII index of 83.2 for catchment 1B and 93.9 for the internal quarry catchments combined. The model predicts potential runoff yield from each rainfall event based on the previous 7-days of rainfall.

Table 2: Average annual runoff per catchment in ML

Catchment	Area ha	Average	Maximum	Minimum	10 percentile wet year	50 percentile wet year	90 percentile wet year
Clean water catchment							
1B	27	16	78	0	2	14	32.7
Dirty water catchments							
1A, 2,3,4,5	33.5	53	154	7	19.3	50.5	90.8
Total		69	232	7	21.3	64.5	123.5

Table 2 presents the potential yield from the catchments available within the quarry area. Total storage capacity with all sediment ponds and catch dams is in the order of 20 ML. In an

average rainfall year, the storages have the potential of filling three times and therefore maximum potential yield is in the order of 60 ML if the water is used between fills.

No groundwater is expected to be intersected during the extraction operation. Some minor seepage occurs in the quarry area after rainfall as a result of fractures in the rock being that hold water after a rainfall event. Groundwater seepage has therefore not been included as an input to the water balance, as it is assumed that any water pooling in the active extraction area would be a result of runoff after a rainfall event, and this water would naturally drain to the sump in the northwest corner of the extraction area. Runoff entering the extraction area is accounted for in the runoff calculations for Catchment 1A as it is recoverable when required.

This Surface Water Assessment has reviewed the storage dams and the quarry sump. It is assumed that the only loss from the dams would be evaporation as all dams are sealed and hold water to an acceptable level. Evaporation losses have been calculated as the direct evaporation from the surface of the dams and the sump.

The nearest rainfall BOM station to the development site is at the Warialda Post Office. This station does not collect evaporation data. Mean evaporation data was therefore obtained from the Moree BOM station (No. 053048), with the average yearly evaporation being 2,044 mm. The evaporation loss from the water storage dams has been calculated as follows:

Evaporation loss = Dam surface area x average yearly evaporation x 0.7.

It is estimated that the water storage dams and quarry sump would have a combined average surface area of 9,667m². A factor of 0.7 has been used to account for evaporation losses from the surface of the ponds resulting in water loss from the dams that may be additional to water used on the site.

The combined annual average evaporation from the on-site dams and sump is therefore estimated at 13.83 ML. Average evaporation rates have minimal variation from year to year and therefore the evaporation loss is general constant.

On this basis, the annual water availability on the site is presented below:

Table 3: Annual water available from internal quarry catchments

Description	Average	10-percentile	90-percentile
ML per Annum Available from main storages	55	8	110

Table 3 does not include the gully storage to the south. This is considered as a harvestable right storage. Total harvestable right for the property is in the order of 0.65 ML per Ha or 422 ML per annum. The potential yield from this harvestable right catchment was calculated to be in the order of 80 ML per annum average. The 10-percentile and 90-percentile yields ranged from 7 ML to 167 ML respectively. The storage holds approximately 12 to 15 ML at full capacity. The storage provides back-up water to the main system when required. This water can be used for industrial purposes in addition to water captured within the site's sedimentation systems which are approved under the POEO Act.

3.3.Site Water Use

3.3.1. Dust Suppression

Dust suppression would consist of two main components:

- mist sprays in the secondary crushing and sieving plant;
- road watering.

At present the secondary crushing and sieving plant is fitted with misting sprays that can be used if the gravel material being processed is dry and dust is generated during the processing phase. The sprays operate the majority of the time during crushing and sieving unless the moisture content of the raw material is elevated as a result of rain. The misting sprays aim to wet the finer particles that tend to carry further from the plant. Heavier particles travel shorter distances. The rock being crushed is relatively clean as it does not include any dirt particles. The finer dust is generated from the crushing process. The process aims to maximise the recovery of the crushed rock and therefore aims to minimise losses to windblown dust during the sieving or crushing phases where the rock is transferred by conveyor. The misting sprays apply only a fine amount of water into the stream of process materials as it is stockpiled or transferred within the sieving process.

Road watering is generally undertaken when site operations are occurring and only ceases as a result of rain. The majority of the roads utilised by hauling machinery and trucks are surfaced with coarse gravel to minimise fines. This reduces the overall dust level on the roads other than in turning areas where the road surface is disturbed and the stockpile area associated with fines for production of road based gravel blends.

Wheel dust from incoming trucks also creates issues on the site as the trucks presently travel over gravel roads to the quarry. This dust tends to drop when the trucks stop and therefore soil fines are accumulated around the weighbridge where the trucks weigh in and out. The area is targeted by the water truck and also capped with coarse gravel on occasions to cover the fine clays present in this wheel dust.

The pug-mill includes a stockpile area for fines and products such a lime to blend into the required road base material to meet NSW RMS requirements. The stockpiles of fines are confined when possible but watering of these fines is not possible. Management options for these sites are limited to confinement and controlled loading activity.

The following Table 4 presents estimated water consumption data for the existing dust suppression plan currently being undertaken at the quarry.

Table 4: Water balance for average rainfall year – Current operation

Source	Flow rate L/s	Daily Use KL	Volume (ML/Yr)	Calculation methodology
Secondary crusher and sieve (dust sprays)	1.5	43	10.8	Based on present use for a 5-day operating week for 50-weeks per year
Dust suppression on internal roads		27	6.75	Based on application of 5mm for 300m of road for 3 times per day (average)
Total water applied			17.55	
Average annual Runoff from into sediment pond system			55	Average rainfall on catchment determined by USDA model
Additional available water after average daily use			37.45	Runoff from disturbed catchments less total water out

Table 5 present the estimated annual water use once the operation on the site is extended to include an average of 6-days per week to crush and despatch 225,000 to 300,000 tonnes of product from the site.

Table 5: Water balance for average rainfall year – Proposed operation

Source	Flow rate L/s	Daily Use KL	Volume (ML/Yr)	Calculation methodology
Secondary crusher and sieve (dust sprays)	1.5	65	20	Based on present use for a 5-day average operating week for 52-weeks per year
Dust suppression on internal roads		36	11	Based on application of 5mm for 300m of road for 4 times per day (average)
Total water applied			31	Water used for dust suppression
Average annual Runoff from into sediment pond system			55	Average rainfall on catchment determined by USDA model
Additional available water after average daily use			24	Runoff from disturbed catchments less total water used

The crushing equipment will operate for longer periods to produce more gravel from the site. Water use for the misting sprays will therefore almost double if dust is to be suppressed on the site.

Under the proposed increased operating hours, additional water may be necessary for road watering. The increase as indicated in previous section would not involve any significant

changes to daily truck trips, however the trucks would be larger and therefore potentially produce more dust. On this basis, the roads will require more regular watering to suppress potential dust emissions from road dust.

Table 5 indicates an excess of water under average conditions for the increased production. This would mean that the storages would have a carry over capacity to provide additional water for the following years. However, this is applicable during average and above average rainfall years.

During below average rainfall years, water management may become critical to the continued operation of an appropriate dust suppression program. During such years, three options are available. Option 1 would be to utilise the water available in the southern gully dam. This would produce a minimum of 7 ML. Option 2 could be implemented under emergency conditions and would involve use of the onsite bore water as a temporary back up source of water once an appropriate allocation is obtained from the aquifer. The bore has a limited extraction rate in the order of some 2 L/s or 72 KL per 10-hour day or approximately 4-days of average water use. At present, the bore can only be used for suppression of dust at the quarry in order to minimise dust impacts at the residence. This option can only be implemented if a Zero Share Licence is granted by the NSW Office of Water. An Option 3, to be used under worst case conditions, would involve water being purchased and imported to the site in order to continue production.

Under extreme circumstances where no water is available for dust suppression, operation of trucks hauling to and from the site in addition to operation of the secondary crushing and sieving plant will be restricted. The restrictions would be based on dust emissions at the boundary of the property. Potential recipients of dust are based to the west of the site and therefore under easterly based winds (NE, E, and SE), operations would be severely reduced if dust generated on the site was observed to reach the boundary of the property. Such conditions are typically noted in the morning periods or periods immediately prior to a rainfall event. Under southerly and westerly based winds (S, SW, W, NW) dust emissions from truck and sieving activity would generally be carried back into the quarry area.

The main parameter controlling activity on the site under conditions where water is limited is the distance of dust movement from the site. Where general observations of dust travel indicate that qualitative observations are insufficient, monitoring of PM10 and PM2.5 would be undertaken at a downwind position to quantify emissions.

Road watering is an essential part of the dust suppression program. The increase in production may result in further dispersment of truck trips to and from the site. On this basis, roads would have longer periods between truck movements to dry out. Planning of road watering will therefore need to include truck arrival and departure factors. This would include an initial road watering prior to arrival of trucks, road watering during any periods where truck traffic becomes congested on the site and road watering under windy conditions where wind borne dust is generated.

The proposed operating hours include an option to operate on a 24-hour basis under exception circumstances to produce and deliver road base materials and gravel to local and state authorities for road reconstruction or emergency work. Such work is generally associated with an extreme rainfall event or flood event that has caused road damage and

other infrastructure damage. The rainfall event that has triggered such circumstances would cause two conditions to occur at the quarry site. Firstly, the rainfall event would fill all storages and therefore excess water would be available for the dust suppression program. Secondly, the gravel material to be processed on the site would retain a high moisture content and the road surfaces within the quarry would generally be wet or have substantial moisture present. The processing of wet gravel would require only limited use of the dust suppression misting system during the secondary crushing and the sieving process in order to limit the moisture content of the road base material to the specification established for delivery of these materials. (10-20% moisture) The haul roads within the pit would retain a high subgrade moisture level and therefore only require light surface watering to minimise dust generated by truck movements within the quarry area. Under such emergency circumstances, major reconstruction of roads would be delayed until conditions where suitable machinery became available to the road authorities. If such delays occurred, the water storage capacity at Runnymede is considered as more than sufficient to undertake a full dust suppression program if the quarry material and roads become dry.

Dust suppression forms part of the Environmental Management Plan (EMP) for Runnymede Quarry. The EMP includes management tools identified as part of normal daily operations that will ensure that the quarry complies with dust emission criteria in accordance with the POEO Act, in particular sections 124 and 127.

4. Groundwater

There are no significant groundwater sources likely to be intersected by the extraction activities. Any minor seepage that may occur in the active extraction area would be collected by a sump in the northwest corner of the pit area and used for dust suppression. Should the proposed development should intersect an unknown groundwater source the NSW Office of Water would be advised.

As the development and operation of the proposed extraction operations is unlikely to have a significant impact on local water tables, this will not constrain development of best management practice water management.

5. Erosion and Sediment Control Plan

An Erosion and Sediment Control Plan has been prepared in accordance with the DECCW publication (2008) *Managing urban stormwater: soils and construction – mines and quarries*. (“Blue Book”) All erosion and sediment control structures will be constructed or erected in accordance with the recommendations identified in the relevant standard drawing and construction notes of the Blue Book.

The ESCP has been structured as follows:

- (i) Section 5.1: identifies activities for the construction and operational phases of the development that could cause erosion and generate sediment.
- (ii) Section 5.2: describes the management principles to be implemented.
- (iii) Section 5.3: describes the detail on the measures to be employed, including the location, function and capacity of erosion and sediment control structures.
- (iv) Section 5.4: describes the surface water best management practices
- (v) Section 5.5: describes the Surface Water Monitoring Program

5.1.Sources of Sediment

5.1.1. Construction

The main potential sources of sediment during construction are:

- Clearing and stripping activities undertaken to expose the hard rock;
- Construction of roads and other infrastructure such as surface drains and bunds
- Blasting of the quarry face as production moves east into the resource.

5.1.2. Operations

The main potential sources of sediment during operations are:

- Uncontrolled run-off from active extraction areas;
- Uncontrolled run-off from roads and drainage areas; and
- Uncontrolled overflow of sediment ponds.

5.2.Erosion and Sediment Management Principles

The principal objective of surface water management at the Runnymede Quarry is to ensure that the water quality leaving the site meets the appropriate quality standards set in Environmental Protection Licence 7379. This objective is essential to erosion and sedimentation designs and controls, and is achieved by implementing the following principles:

- Adopting appropriate land clearing procedures for all proposed disturbance areas.
- Separating *undisturbed*, “clean water”, runoff from *disturbed* “dirty water” runoff where possible to minimise and isolate the amount of “dirty water” runoff.
- Directing sediment-laden runoff into designated sediment control retention basins.
- Diverting “clean water” runoff unaffected by the operations away from disturbed areas and off site.
- Constructing the haul road and working quarry face with effective surface drainage that flows to sediment control retention ponds.

- Maintaining sediment control structures to ensure that the designed capacities are maintained for optimum settling of sediments.
- Implementing an effective revegetation and maintenance program for the site.

The principle design aspects of the quarry will be the diversion of “clean water”, containment of dirty water within the extraction/quarry area, and the treatment and recycling of “dirty water” to eliminate any uncontrolled runoff.

5.3.Erosion and Sediment Controls

5.3.1. Minimal Disturbance

Land disturbance will be minimised by clearing the area immediately adjacent to the quarry face as the need arises and leaving this disturbed for the shortest possible time. This will be achieved by:

- Limiting the cleared area to that required to accommodate the next blast phase and excavation within the quarry pit; and
- Programming works so that only the areas being actively excavated or blasted are cleared, therefore limiting the time the areas are exposed and limiting the potential for erosion and sedimentation.
- As far as practical, ground disturbing activities should be scheduled such that the time from commencement to completion is less than 6 months.
- Cleared areas ahead of extraction should be restricted to the areas defined for each clearing campaign.
- Access to areas designated for ground disturbing activities should be limited to within 10 m (and preferably 5 m) of the designated area and identified with fencing, flagging or other methods.
- Prior to the commencement of any ground disturbing activities, upslope diversion banks and downstream sediment fencing and/or other sediment retention structures should be constructed/installed.

General vegetation clearing and soil stripping will not be undertaken until earthwork operations are ready to commence. All proposed erosion and sediment control measures will be implemented in advance of, or in conjunction with, clearing and stripping operations. Prior to clearing commencing, the limits of clearing shall be marked by pegs placed at intervals on each side of the disturbed area. All operations will be planned to ensure that there is no damage to any trees outside the limits to be cleared.

5.3.2. Management of Stockpiles

Topsoil stripping should be undertaken when the soil is in a slightly moist condition thus reducing damage to soil structure, achieving a higher standard of revegetation and reduce maintenance requirements. The soil materials should not be stripped in either a dry or wet condition. Stripped material should be placed directly onto the bund with excess material being stockpiled.

A maximum stockpile depth of approximately 3 metres should be maintained to preserve viability and reduce soil deterioration. Longer term soil stockpiles should be sown with the species recommended in the following table as soon as possible after stockpiling. Soil

stockpiles should be constructed with a slope of <2:1(H:V) and the stockpile surface left roughened. Placement within natural or constructed drainage lines should be avoided.

Table 6: Pasture specification and sowing rate

Pasture Specification		
Species	Sowing rate kg/ha (as mixture)	
	Spring	Autumn
Queensland Bluegrass (<i>Dichanthium sericeum</i>)	0.5 - 2	0.5 - 2
Kikuyu (<i>Pennisetum clandestinum</i>)	1 - 2	1 - 2
Perennial Ryegrass (<i>Lolium perenne</i>)	3 - 10	3 - 10
Lucerne (<i>Medicago sativa</i>)	2 - 4	2 - 4
Narrow leaf plantain (<i>Plantago lanceolata</i>)	1 - 4	1 - 4

5.3.3. Soil Respreding

Before soil respreding, the ground surface should be scarified or ripped along the line of the contour to break any compacted and smooth surfaces and assist in keying the respred soil. Topsoil respred over areas of rehabilitation should be approximately 100mm on flat or shallow slopes (<4(H):1(V)) and no greater than 50mm on steeper slopes (>4(H):1(V)). The respred soils should be left with a roughened surface and sown with an improved pasture species mix (such as set out above) as soon as possible to stabilise the soils.

5.3.4. Rainfall Erosivity

The rainfall erosivity factor, R, is a measure of the ability of rainfall to cause erosion. It is the product of two components, namely:

- total energy; and
- maximum 30 minute intensity for each storm.

Based on the key map in Appendix B of the Blue Book, the development site is located within a rainfall erosivity zone of approximately 1,500 (a relatively low to moderate erosivity zone).

5.3.5. Soil Erodibility

Soil erodibility is a measure of the susceptibility of individual soil particles to detachment and transport by rainfall and runoff. Soil texture is the principal component affecting soil erodibility, but structure, organic matter and permeability also contribute. The type of soils and the moderate slopes indicate the soils within the development site are sensitive to erosion without implementation of appropriate surface water and erosion control measures.

5.3.6. Soil Characteristics

Blue Book classifications for the soil in catchment 1B show that the soils are type F soils, which are generally fine-grained soils with less than 10 percent of the soil materials dispersible. Type F soils are slow settling in wet basins. Surface water from this catchment is considered to be 'clean' and is diverted off-site.

The working surfaces in catchments 2, 3 and 4 have been gravelled with crushed aggregate produced on-site and are not prone to erosion. The soils in catchment 5 on the southern slope

of the ridge comprise type F at the upper levels grading to type C at lower levels. Type C soils are coarse grained soils, again with less than 10 percent of the soil materials dispersible.

As the sediment basins will have to accommodate runoff that may also contain dust that is entrained during dust suppression operations soil type F has been set as the design standard. Designing a sediment basin to a Type F specification is a quite conservative method, and therefore this approach has been used.

5.4. Surface Water Best Management Practices

Best management practices for water on the development site will consider:

- (i) the diversion of clean water within a predominantly segregated clean water system;
- (ii) the capture and storage of dirty water within a segregated dirty water system; and
- (iii) the discharge of excess water from the development site.

Detail is provided to the extent considered necessary to illustrate the concepts and objectives of water management implemented at the development site, and to describe the appropriate design and function of the various BMPs used to achieve these concepts and objectives.

5.4.1. Water Capture and Diversion

A primary objective of water management on the development site is to segregate clean and dirty water flows, and diverting surface water flows away from the active extraction area is essential in achieving this objective. Uncontrolled water flows over disturbed areas of the development site would also greatly increase the risk of erosion. By diverting water flowing from undisturbed areas of the development site away from the active areas of disturbance, and directing this water at non-erosive velocities to stable areas in adjacent drainage lines, this risk would greatly be reduced.

As discussed above, the general topography of the development site is on the top and the western end of an east/west trending ridge and sloping downward towards the north and the south. The ridge top also has a slight slope to the west, therefore, without any control measures in place, some clean water runoff generated at the top of the development site (to the east of the extraction area) could flow into the active extraction area.

The following section presents an examination of the surface water BMP structures employed on the development site to divert and treat dirty water in accordance with the requirements of the Blue Book.

5.4.1.1. Diversion Structures (Low Flow)

These structures comprise simple earth banks, natural drainage depressions, table drains and contoured surfaces that guide runoff to sediment basins. Kirpich's formula was used to determine the time of concentration for catchments 2, 3, 4 and 5. Catchments 1A and 1B were excluded as catchment 1A comprises the pit floor, there is no run on water and a lip six metres high at the pit entrance prevents any water leaving the pit. Catchment 1B remains undisturbed and any runoff from this catchment consists of clean water at natural volumes and velocities.

The quarry is an existing development and dirty water diversion and capture structures are in place and have operated effectively to capture and treat dirty water runoff for the past seventeen years.

For the assessment of catchments 2, 3, 4 and 5 the methods set out in Appendix J of the Blue Book were used. The soil was assumed to be type F and the sediment basin design requirement was assumed to be for this soil type.

$$\text{Settling zone volume (M}^3\text{)} = 10 \times C_v \times A \times R$$

Catchment	Constant	Coefficient (Appendix F)	Catchment Area ha	5 day 90% Rainfall for Moree	Settling Volume M3
2	10	0.51	14.11	36.3	2,612
3	10	0.51	3.06	36.3	566.5
4	10	0.51	7.82	36.3	1,448
5	10	0.51	2.4	36.3	444

Table 7 Settling zone volume calculated from Blue Book for Type F basin

$$\text{Sediment zone volume (M}^3\text{)} = A \times (R \times K \times LS \times P \times C)/1.3$$

Catchment	Area ha	P Factor	R Factor	K Factor	Length Slope	C Factor	Sediment zone volume M3
2	14.11	0.8	1500	0.03	0.19	0	74.24
3	3.06	0.8	1500	0.03	0.19	0	16.1
4	7.82	0.8	1500	0.03	0.19	0	41.15
5	2.4	1.0	1500	0.036	1.47	0.2	146.55

Table 8 Sediment zone volume calculated by Revised Universal Soil Loss Equation 2

$$\text{Total Required Capacity (M}^3\text{)} = \text{Settling zone volume} + \text{Sediment zone volume}$$

Catchment	Settling zone ML	Sediment zone ML	Required capacity ML
2	2,612	0.07424	2,686
3	0.5665	0.0161	0.5826
4	1,448	0.4115	1,48915
5	0.444	0.14655	0.59055

Table 9 Total required capacity based on Revised Universal Soil Loss Equation 2

$$\text{Size of catchment storage} = 10 \times A \times I \times T_c \times Y$$

Catchment	Area A ha	Tc in hours	Design storm	Storm intensity I (mm/hr)	Yield coefficient Y	Total runoff volume (ML)
2	14.11	0.098	1:100 (tc)	251	0.51	1.77
3	3.06	0.126	1:100 (tc)	233	0.51	0.458
4	7.82	0.248	1:100 (tc)	164	0.51	1.622
5	2.4	0.102	1:100 (tc)	233	0.51	0.29

Table 10 Dam sizing for 1:100 ARI (tc) rainfall event

Catchment	Existing storage (ML)	Required capacity (ML)	1:100 Storage (ML)	Comments
2	3.6	2.686	1.77	Adequate
3	0.8	0.5826	0.458	Adequate
4	2.1	1.48915	1.622	Adequate
5	0.4	0.590	0.29	Not adequate

Table 11 Assessment of storage adequacy

The storage for catchment 5 has a calculated deficiency of 0.19 megalitres (190 cubic metres) based on settlement and sediment storage capacity. The capacity of this sediment basin should be increased to 0.8 megalitres to ensure that it is capable of meeting BMP requirements.

The sediment basins and drains should be inspected monthly, or following a significant rainfall event to ensure that they retain sufficient available volumes to be capable of settling sediment and meeting licence conditions for any discharge. In the event that sediment volumes exceed allowable volumes, the sediment should be excavated and reclaimed.

5.4.2. Road Drainage

Spoon drains are open drains constructed with a parabolic or trapezoidal channel and used to divert water flows from road side drainage to sediment basins, vegetated or otherwise erosion protected areas. The primary function of the spoon drain is to reduce the concentration and velocity of water flows within the road side drainage and, therefore minimise the potential for erosion and transport of sediment to discharge points. Spoon drains divert water from the table drains on the steeper section of the access road to three sediment basins.

Each spoon drain should be inspected at least monthly, or following heavy rainfall with particular emphasis on the condition of land immediately down-slope of the discharge point. Any maintenance work should be completed within 7 days of the initial inspection.

5.4.3. Dirty Water Capture and Settlement

By ensuring surface water which falls or flows over disturbed areas within the development site is captured in structures designed to allow for settlement of sediment in the water, the potential for downstream pollution of clean waters and/or lands would be minimised and/or eliminated. The following sub-sections describe the design, location and construction of these structures aimed at diverting, capturing and settling dirty water on the development site.

Figure 2: Sediment Basin Location



5.4.3.1. Sediment Basins

The above Figure 2 depicts the site sediment basins strategically located to capture dirty water runoff from active quarry areas described as catchments 2, 3, 4 and 5.

Based on Blue Book specifications for a Type F sediment basin, the required size of the dams is:

- catchment 2 – 2.686 ML
- catchment 3 – 0.5826 ML
- catchment 4 – 1.622 ML
- catchment 5 – 0.59 ML

The parameters used to assess the adequacy of the dams are set out in the tables above. The key assumptions used to calculate the sediment basin size are as follows.

- Catchment area
- Design storm of 5 day, 90th percentile. This is based on the recommendations in version 2 of the Blue Book (Mines and Quarries), which recommends adopting a 90th percentile design storm event when designing a Type D/F basin where the duration of disturbance will be greater than two years.

To ensure the dams are also of a sufficient size to capture a 1 in 100 year ARI rainfall event and prevent the escape of contaminated water they were assessed against the 1:100 ARI rainfall event as well as the required volume based on the Blue Book. The assessment of the dams against the 1:100 ARI based on catchment yield showed that this yield is smaller than the Blue Book volume thus confirming that a dam constructed to accommodate the volume required by the Blue Book would also provide sufficient volume to accommodate runoff from a 1:100 ARI for a duration equal to the time of concentration for that catchment.

The assessment determined that the dam for catchment 5, although it has operated satisfactorily since the development commenced, does not meet the settling zone requirements calculated in accordance with the Blue Book. It is therefore recommended that, as a conservative approach, this dam be reconstructed as a Type F sediment basin with a minimum capacity of 0.59 ML. To provide further redundancy, the sizing could be increased to 0.8 ML which would allow the dam to adequately function in rainfall events beyond required design standards.

The entry to the extraction pit is across a lip with a height of approximately 6 metres above the pit floor. An approximately 1.1ML sump has been constructed in the northwest corner of the active extraction area. This is the low point within the disturbance area, and therefore any dirty water generated within the extraction area from runoff or groundwater seepage would naturally flow to this sump. The combination of the raised lip and the sump allows for all water generated within the extraction area and internal haul road to be totally contained within the extraction area.

A monthly inspection of all dams together with diversion structures and the quarry sump should be undertaken where the following information is recorded.

- General condition.
- Evidence of overflow and condition of downstream catchment.

- Water colour, eg. highly turbid, brown, clear etc.
- Evidence of eroding surfaces.
- Evidence of sediment discharge.
- Approximate retained capacity.

6. Surface Water Monitoring Program

Surface water monitoring is a requirement of the Environmental Protection Licence issued by the Environmental Protection Authority. The Licence requires wet weather discharge points on sediment basins to be monitored and sampling to be undertaken should an overflow event occur. There are 5 monitoring points listed in the EPL these are detailed below:

Water and land

EPA Identification no.	Type of monitoring point	Type of discharge point	Description of location
1	Wet weather discharge Discharge quality monitoring	Wet weather discharge Discharge quality monitoring	Overflow from sediment basin located approximately 300 metres to the north-east of the Runnymede residence as shown on map titled 'EPA Identification Points' dated 13/11/06
2	Wet weather discharge Discharge quality monitoring	Wet weather discharge Discharge quality monitoring	Overflow from the final sediment basin located approximately 250 metres to the west of the Runnymede residence and within the catchment of the washing plant for the precoat product, as shown on map titled 'EPA Identification Points' dated 13/11/06.
3	Wet weather discharge Discharge quality monitoring	Wet weather discharge Discharge quality monitoring	Overflow from sediment basin located approximately 400 metres to the south of the Runnymede residence and south of the stockpiles and main crushing plant area as shown on map titled 'EPA Identification Points' dated 13/11/06.
4	Wet weather discharge Discharge quality monitoring	Wet weather discharge Discharge quality monitoring	Overflow from sediment basin located approximately 150 metres south of the Runnymede residence and west of the stockpiles and main crushing plant area, as shown on map titled 'EPA Identification Points' dated 13/11/06
5	Wet weather discharge Discharge quality monitoring	Wet weather discharge Discharge quality monitoring	Overflow from sediment basin located approximately 700 metres to the south of the Runnymede residence and south of the stockpiles and main crushing plant area, as shown on map titled 'EPA Identification Points' dated 13/11/06

7. Maintenance

All sediment structures should be regularly inspected and maintained as these structures represent the final control point for water discharged from the development site. Each structure should be inspected monthly, or following significant rainfall (i.e. greater than 25mm in 24 hours) and the general condition recorded, including:

- whether the structure(s) has been damaged or not;
- amount of sediment present upstream and downstream;
- breaches of the structure(s);
- presence of eroding surfaces; and
- requirement for maintenance.

In the event maintenance is required, works should be completed within 7 days of the inspection.

8. Summary

Based on the information presented above in relation to the proposed increase in annual production from Runnymede Quarry, and with the implementation of the recommended mitigation and control measures relating to soil and water management at the development site, it is anticipated that there would be minimal impact on surface water within and downstream of the development site as a result of the proposed operations. The key features of the proposed water management system are as follows.

- All clean water would be diverted around the site, minimising the amount of dirty water to be captured and treated.
- All runoff from the site would pass through the existing retention basins.
- If excess water is present in the sediment basins this water should be used to irrigate pastures on the site to ensure that the sediment basins retain sufficient capacity to function as designed.

These basins should remain in place and serve as a 'backup' following rehabilitation of the site should there be an extreme rainfall event.

7. Current Consents

Our Reference: DA1568/2011:13/13413:grp:pmc
Contact: Glen Pereira – 02 6729 3000
Your Reference: 11-171

14th August 2013

SMK Consultants
PO Box 774
MOREE NSW 2400

Dear Richard

Modification Consent 1568/2011

I refer to your letter dated the 7th August 2013 requesting the correction of certain details on the approval document for Development Modification No. 1568/2011.

Attached is an amended first page from the approval, correcting the applicants name and including Lot 52 DP 751093, which was incorrectly omitted. Please replace the first page of the approval formerly received by you with the attached.

For further information please contact Council's Building and Environmental Services Department.

Yours faithfully



Glen Pereira
Building and Environmental Services Director
enc

Modification Development Consent 64/94/95

D/A 1568/2011

This notice is issued to an applicant, and any person who made a submission about the applicant's proposal, once the application has been assessed by the consent authority.

1. Details of the Applicant

Name: Johnstone Ready Mixed Concrete P/L

Address: c/- PO Box 774
MOREE NSW 2400

2. Details of the land to be developed

Address: 530 Gil Gil Creek Road Crooble

Description: Lot: 52 DP: 751093 & Lot: 53 DP: 751093

Description of the development:

Quarry

If the development involves a building, state the class of the building under the Building Code of Australia.

N/A

3. Decision of the consent authority

Consent is granted subject to the conditions and reasons listed in the attached schedule.

Date from which the consent operates: 29 November 2012

Date the consent expires: 29 November 2017

Date of this decision: 29 November 2012

SCHEDULE OF CONDITIONS

PART A – GENERAL

- 1 This consent amends and replaces existing Development consent 64/94/95 dated 24th May 1995 and 24th October 1995.
- 2 This consent relates to drawings/details submitted to Council with Development Application Number 1568/2011.

Submitted Item	Council's Stamp No/Date	Drawing/ Job No	Drawn by	Dated
Schedule to a Section 96 Application	1568/2011 29/11/2012	Booklet	SMK Consultants	July 2011
Addendum Report	1568/2011 29/11/2012	Sht's 27/27	SMK Consultants	September 2012

Note: Any amendment to the development or to these conditions will require the consent of the Council.

- 3 In order that the development of the land is undertaken in an orderly and coordinated manner, the development consent shall lapse five years after the determination date unless the development has been physically commenced as set out in s95 (4) and (5) of the Environmental Planning and Assessment Act, 1979.
- 4 Superseded by Condition 15-1.1 of this consent - "Production Limits"
[Formerly condition 1 of DA 64/94/95 – Determined 24th May 1995]
- 5 That a plan of soil conservation and rehabilitation be prepared in conjunction with the Soil Conservation Service be submitted for approval within a period of three (3) months from the date of consent.
Reason: To ensure proper conservation and rehabilitation programs and methods are put in place.
[Formerly condition 2 of DA 64/94/95 – Determined 24th May 1995]
- 6 The proposed improvements to Road 16 be carried out in conjunction with Council's Manager of Engineering and Technical Service.
Reason: To ensure that Council standards are maintained.
[Formerly condition 3 of DA 64/94/95 – Determined 24th May 1995]

7 That the applicant meet with Council's representatives to discuss future maintenance of roads within the area.

Reason: To create an avenue for agreement for maintenance assistance.

[Formerly condition 4 of DA 64/94/95 – Determined 24th May 1995]

8 That necessary licenses be obtained from EPA and Mines Department.

Reason: Statutory requirement.

[Formerly condition 5 of DA 64/94/95 – Determined 24th May 1995]

9 That an erosion and sedimentation plan be prepared for the extraction, plant and stockpile sites to the guidelines and specification of the Department of Land and Water Conservation. Such plan to include the following matters and be submitted within three (3) months of date of consent -

- A site plan showing permanent work to control runoff and sedimentation.
- Temporary runoff erosion and sedimentation works to be implemented as required.
- Proposed clearing/staging of clearing of native vegetation.
- Staging of the implementation of permanent/temporary erosion and sedimentation control works
- Revegetation of each stage of proposed rehabilitation
- Progressive rehabilitation of site
- Staging of extraction, proposed batter grades and final landforms.
- Topsoil removal, stockpiling and replacement
- Maintenance strategies for all control measures to ensure they continue to operate to design capacities.

Reason: So as to ensure erosion control and restoration is properly planned and executed.

[Formerly condition 1 of DA 64/94/95 – Determined 24th October 1995]

10 Topsoil to be retained on site of rehabilitation.

Reason: To ensure that soil is available for rehabilitation and top dressing of batters...

[Formerly condition 2 of DA 64/94/95 – Determined 24th October 1995]

11 The access roads to and within the site to be protected with appropriate erosion and sediment control works. All disturbed areas excluding the road to be sown with a recommended seed/fertiliser mixture.

Reason: To provide stability to disturbed soils where necessary

[Formerly condition 3 of DA 64/94/95 – Determined 24th October 1995]

12 That all necessary approvals and licenses are obtained from the Environment Protection Authority and the Department of Mineral Resources.

Reason: These are statutory requirements of the Government Agencies.

[Formerly condition 4 of DA 64/94/95 – Determined 24th October 1995]

13 That acceptable arrangements to both parties are made so as to maintain roads in a reasonable condition and improve poor areas identified in survey

Reason: It is in both parties interest to ensure that the roads, to be utilised for transport of gravel, do not deteriorate and in fact are improved to cater for the increased usage.

[Formerly condition 5 of DA 64/94/95 – Determined 24th October 1995]

14 The quarry operator shall pay a contribution to Council for the movement of trucks on Council's roads in accordance with Council's Section 94 Plan – Traffic Generating Development.

15 Limit Conditions

Production Limits

1.1 Production from the premises must not exceed a total of 90,220 tonnes in any consecutive 12 month period

Justification: Noise and air assessments provided in support of the modification application indicate that predicted impacts were based on non increase in production. The application of the current rate of production as the production limit is therefore recommended to ensure impacts do not exceed those predicted.

Operating Hours

2.1 Activities at the premises may only be carried out at the times specified in the table below:

Activity	Monday to Friday	Saturday	Sunday	Public Holiday
Dispatch to trucks to haul aggregate or arrivals of trucks delivering products	7.00am to 5.30pm	7.00am to 2.00pm	8.00am to 2.00pm	Nil
Arrival and loading of trucks to haul aggregate	6.30am to 5.30pm	7.00am to 2.00pm	8.00am to 2.00pm	Nil
Light vehicle traffic associated with employees, site residents or light service vehicles entering or leaving the site	24 hours a day	24 hours a day	24 hours a day	24 hours a day
Maintenance of plant and equipment including workshop activity, repairs/alterations to processing equipment and unloaded test runs	6.00am to 10.00pm	7.00am to 5.00pm	7.00am to 5.00pm	7.00am to 5.00pm
Operation of primary crushers and associated equipment within the confines of the excavated quarry area	6.00am to 6.00pm	7.00am to 5.00pm	8.00am to 2.00pm	8.00am to 2.00pm
Operation of secondary crushers, sieves, separators, blending, pug-mill and conveyors outside quarry confines	7.00am to 6.00pm	7.00am to 5.00pm	8.00am to 2.00pm	8.00am to 2.00pm
Operation of loaders, excavators, trucks, pre-coating equipment within the lower storage yard area	7.00am to 6.00pm	7.00am to 5.00pm	8.00am to 2.00pm	8.00am to 2.00pm
Drilling	7.00am to 6.00pm	7.00am to 5.00pm	8.00am to 2.00pm	8.00am to 2.00pm
Blasting	9.00am to 4.00pm	Nil	Nil	Nil

Exceptional circumstances – all crushing, loading and product haulage activities within and from the site to enable manufacture and delivery to high priority RTA or Shire Projects only. Haulage outside normal operating hours is to be limited to four (4) trucks only.	24 hours with written notification and approval from Gwydir Shire Council and the Environment Protection Authority	24 hours with written notification and approval from Gwydir Shire Council and the Environment Protection Authority	24 hours in emergencies only with written notification and approval from Gwydir Shire Council and the Environment Protection Authority	Nil
--	--	--	--	-----

Justification: To amend the approved operating hours as request by the proponent.

Noise Limits

- 3.1 Noise generated from the premises must not exceed the noised limits in the table below. The locations referred to in the table below are defined within the document entitled Runnymede Quarry (Moree) Acoustic Assessment by Vipac Engineers and Scientists Pty Ltd dated 10/09/2012:

Locality and Location	Day L.Aeq (15 minute)	Evening L.Aeq (15 minute)	Night L.Aeq (15 minute)	Night L.A1 (1 minute)
The residence on the property "Kirkton" as marked in the document entitled <i>Runnymede Quarry (Moree) Acoustic Assessment by Vipac Engineers and Scientists Pty Ltd dated 10/09/2012</i>	35 dB(A)	35 dB(A)	35 dB(A)	45 dB(A)
Any other affected residence not owned by the proponent	35 dB(A)	35 dB(A)	35 dB(A)	45 B(A)

3.2 For the purpose of the condition above:

- a) Day is defined as the period from 7am to 6pm on any day;
- b) Evening is defined as the period 6pm to 10pm on any day; and
- c) Night is defined as the period from 10pm to 7am on any day.

Justification: For the purpose of the noise criteria for this condition, 5dBA must be added to the measurement level if the noise is substantially tonal or impulsive in character.

3.3 The noise limits set out in the Noise Limits table apply under all meteorological conditions except for the following;

- a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or
- b) Stability category F temperatures inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
- c) Stability category G Temperature inversion conditions.

For the purpose of this condition:

- d) Data recorded by the appropriate meteorological station (that is located in a situation where it will provide meteorological data that is representative of those at the site) to be nominated by the proponent in writing or approval by the EPA must be used to determine meteorological conditions; and
- e) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

3.4 To determine compliance:

- a) With the Leq(15 minute) noise limits in the Noise Limits table, the noise measurement equipment must be located:
 - i) Approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
 - ii) Within 30 metres of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable

- iii) Within approximately 50 metres of the boundary of a National Park or a Nature Reserve.
- b) With the LA1(1 minute) noise limits in the Noise Limits table, the noise measurement equipment must be located within 1 metre of a dwelling façade.
- c) With the noise limits in the Noise Limits table, the noise measurement equipment must be located:
 - i) At the most affected point at a location where there is no dwelling at the location; or
 - ii) At the most affected point within an area at a location prescribed by part (a) or part (b) of this condition

Note: A non-compliance of the Noise Limits table will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- i) At a location other than an area prescribed in part (a) or part (b); and/or
- ii) At a point other than the most affected point at a location.

3.5

For the purpose of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

Justification: *The Acoustic assessment provided in support of the modification application indicates that the relevant noise criteria (established as noise limits above) will not be exceeded under normal operating scenarios. It is not clear whether the proposed provision for 24 hour operations in exceptional circumstances will create additional impacts. As such, EPA recommends that the relevant noise criteria apply as noise limits at all times. Should complaints arise following approved 24 hour exceptional circumstances operations the EPA reserves the right to require noise monitoring to determine whether 24 hour operations exceed the noise limits, and to require the proponent to approach any receptors potentially impacted by 24 hour operations in exceptional circumstances and negotiate acceptable noise agreements in accordance with*

the NSW Industrial Noise Policy with respect to these short duration, infrequent impacts.

Where negotiated agreements are reached with respect to the 24 hour operations during exceptional circumstances approved further to condition L2.1, the EPA may vary the licence to amend the noise limits applying to operations during approved exceptional circumstances for the relevant receptors.

16 Monitoring Conditions

For each monitoring/discharge point or utilization area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure and sample at the frequency, specified opposite in the other columns:

Pollutant	Units measure	Frequency	Sampling method
PM10	Micrograms per cubic metre	Special frequency 1	AM-18
Solid Particles	Grams per square metre per month	Special frequency 1	AM-19

Note: *For the purpose of this condition, Special Frequency 1 means sampling as required from time to time in writing by the EPA.*

Justification: *The air assessments provide in support of the modification application compared the proposed operating scenarios to existing air emissions. This comparison has predicted that dust and PM10 emissions will be reduced by the proposed reduction in operational intensity. However, the supporting assessment of current site emissions against relevant air emissions criteria was limited to a single 24-hour period. Air quality impacts at the nearest surrounding residences may vary with meteorological conditions and may therefore be higher than measured at times.*

While the EPA notes that complaints regarding dust emissions from the quarry premises have not been received from the closest residents to the site to date, the EPA recommends applying air monitoring conditions

to the modification approval that can be triggered in the event that complaints are received following the commencement of the extended operating hours given the extremely limited nature of the monitoring that has been undertaken to date. This will enable the EPA to determine whether impacts exceed relevant criteria and require mitigation works if necessary to protect surrounding residents.

PART B - OTHER APPROVALS

There were no other approvals issued with this consent.

REASONS FOR CONDITIONS:

The above conditions have been imposed:-

- (a) to ensure compliance with the terms of the Environmental Planning Instrument and/or Development Control Plan;
- (b) having regard to Council's duties of consideration under Section 79C(1) of the *Environmental Planning and Assessment Act, 1979* (as amended) as well as Section 80A of the Act which authorises the imposing of consent conditions.
- (c) to protect the existing and likely future amenity of the locality;
- (d) prevent, minimise, and/or offset adverse environmental impacts;
- (e) set standards and performance measures for acceptable environmental performance;
- (f) require regular monitoring and reporting;
- (g) provide for the on-going environmental management of the development;
- (h) having regard to the circumstances of the case and the public interest; and
- (i) to ensure compliance with the *Building Code of Australia* and referenced standards.

8. Flora and Fauna Assessment

SMK

CONSULTANTS

surveying – irrigation – environmental - planning

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Flora and Fauna Assessment of Significance

For the increased production at Runnymede Quarry

SMK CONSULTANTS
April 2014

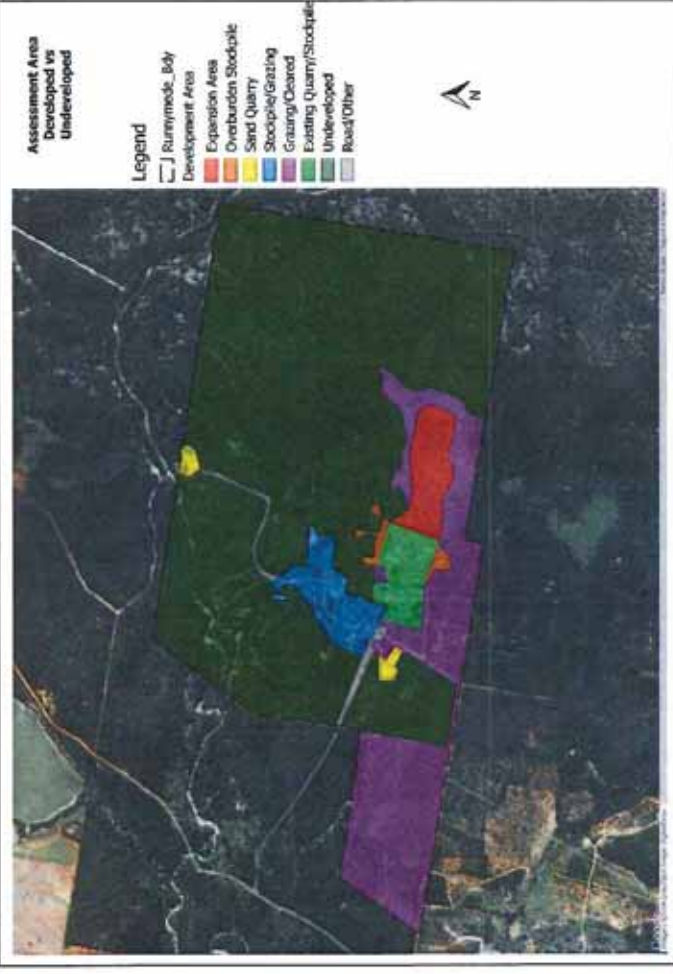
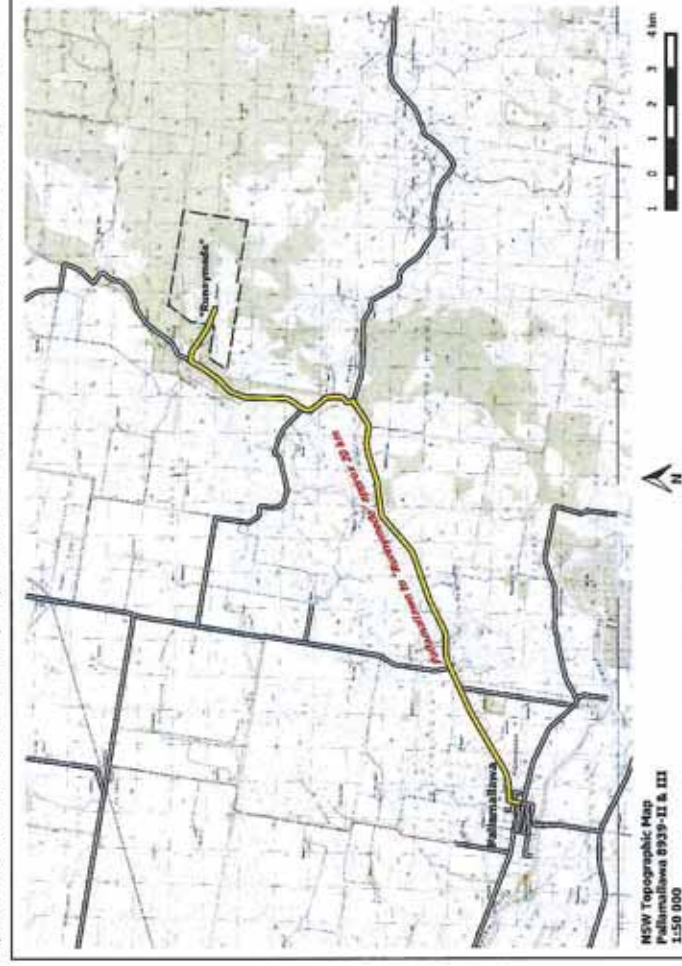
SMK Consultants

Document Control

Proponent: Johnstone Concrete and Quarries		
Development Application for the Increase in Annual Production.		
Report No. 14/09 Flora and Fauna Assessment		
Prepared for:	Johnstone Concrete and Quarries Pty Ltd PO BOX 941 MOREE NSW 2400	
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Revision History		
Revision No.	Date Issued	Reason/Comment
0	April 2014	Initial Issue

1. Background

SMK Consultants was commissioned by Johnstone Concrete and Quarries (the Proponent) to prepare an Assessment of Significance for the proposed increase in annual production from their existing quarry located on Lots 52 & 53 DP 751093 known as "Runnymede". The quarry is located approximately 20 km east of the village of Pallamallawa. (Figure 1). The proposal will involve the stockpiling of topsoil (overburden) to allow access to the hard rock below the surface. This rock is then drilled, blasted and crushed for use in the construction of roads and buildings in the region. The site has a significant history of farming and grazing along with forestry operations within the adjoining Bullala National Park (Formerly State Forest). The proposed area of expansion consists of farmland that was historically used for cultivation and grazing and more recently used only for grazing with some regrowth species regenerating across the site. There are large areas of forest/woodland vegetation within the property boundary that will not be disturbed by the quarry operations. The current and proposed area of disturbance is shown on Figure 2.



2. Purpose

The 'Assessment of Significance' refers to factors that are to be assessed to determine whether the proposed development and associated works are likely to have a significant effect on threatened biodiversity ('7 part test')

In addition to fulfilling this statutory requirement, the aim of undertaking an Assessment of Significance is to improve the standard of consideration and protection afforded to the threatened biodiversity in the planning and decision making process.

3. Scope of Assessment

The scope of the assessment can be summarised in three points, mainly:

1. Determine the extent of native vegetation in the local area and the ground disturbance works required for the development proposal; and
2. Determine the extent of likely impact(s) of the proposal on the vegetation and fauna populations within and adjoining the proposed development area.
3. Assess the potential impact on threatened species, populations and ecological communities that are likely to occur on the development site and adjoining study area

Subject site means the area directly affected by the proposal as defined by the property boundary on Figure 2. Study area means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. This assessment has considered all features within the proposed "expansion area" as shown by the red shading on Figure 2 and the immediate environs connecting to land. In particular the assessment considered:

4. Methodology

The methodology adopted for this investigation has been guided by the *Threatened Biodiversity Survey and Assessment: Guidelines for Development and Activities* (DECCW, 2004) and follows the '9 step process' outlined in Section 3 – Survey and Assessment Requirements & Process.

Steps 1-3 were conducted and managed by Sarah Grady (SMK Consultants) in the preparation for this report.

Steps 4-6 were used to guide the assessment overall and the final assessment under each of the headings mentioned by the assessment scope.

The survey methodology consisted of two parts, mainly a desktop database search, then field searches. A database search of the Bionet Atlas of NSW Wildlife was undertaken and provides a list of threatened species recorded on the site. A broader search was undertaken of species known or predicted to occur in the Border Rivers-Gwydir CMA subregion. Searches were also performed using the EPBC Protected matters Search Tool for matters of state and national significance.

Once a list of species and habitat preferences were determined from databases, field work was initiated. The field work included:

1. An initial inspection of the site to determine the extent of various micro-habitats within the study area
2. Secondary inspections to obtain an appreciation of the dominant flora species and conditional variations within the habitat whilst targeting specific habitat requirements for threatened species.
3. Ground traverses of the site on a 100 m grid as part of a targeted search for threatened species,
4. Targeted spotlighting for nocturnal threatened species.

The initial inspection was undertaken on the 14th March 2014 and secondary inspections on the 23rd April 2014.

4.1. Field Assessment

A variety of methods were employed during the field assessment stage. The field assessment was designed to capture as much information about the vegetation on the site whilst gaining an understanding of the use (or potential use) of the site and surrounding area by threatened species.

Listed threatened species were targeted during the searches. No trapping or destructive fauna searches were undertaken as these methods were not considered warranted given the habitats likely to be used by threatened species (as defined by the desktop assessment prior to entering the field). Table 1 provides a summary of field methodologies/targets and field notes.

4.1.1. Habitat Searches

Systematic habitat searches were undertaken for reptiles and mammals during the warmest hours of the day. Scats and other evidence of animal presence were searched for concurrently. Vehicle searches were undertaken on a 100m traverse lines for the entire site. On-foot searches were also completed.

4.1.2. Opportunistic Methods

Opportunistic survey of the adjoining roadside environs was undertaken during travel to and from the site. Whilst affected by weeds, they offered a range of habitats not found on the development site.

Table 1: Field survey methods used

Intended Target	Methodology	Conducted	Survey Period Notes
Diurnal Birds	Area search, where the observer walked the length and width of the site twice in its entirety	Yes, SMK Consultants	Weather was mild, clear with some patchy cloud. Quarry was not operational on the day of survey
	Point count method where observations were made from for 20mins each	Yes, SMK Consultants	Weather was mild, clear with some patchy cloud. Quarry was not operational on the day of survey
Nocturnal Birds	Day habitat search. Search habitat for pellets, and likely hollows plus spotlighting	Yes, SMK Consultants	Weather was mild, clear with some patchy cloud. Quarry was not operational on the day of survey
Non-Flying Mammals	Spotlighting	Yes, SMK Consultants	
	Search for scats and signs – 30 minutes searching relevant habitat, including trees for scratch marks	Yes, SMK Consultants	
Bats	Spotlighting on foot – 2 hours walking the site on 1 night	Yes, SMK Consultants	
Reptiles	Day habitat search	Yes, SMK Consultants	Weather was mild, clear with some patchy cloud. Quarry was not operational on the day of survey
Invertebrates	Day habitat search	Yes, SMK Consultants	Weather was mild, clear with some patchy cloud. Quarry

			was not operational on the day of survey
Amphibians	Day habitat search	Yes, SMK Consultants	Weather was mild, clear with some patchy cloud. Quarry was not operational on the day of survey

5. The Existing Environment

5.1. Meteorological data

The climate in the area of the development is characterised as warm to hot summers, mild winters and summer dominant rainfall. Average rainfall in the area is 688.3 mm. Climate records for this area are recorded from the Warialda Post Office (Station Number: 054029) and the Moree Meteorological station (Station Number: 053115).

5.2. Landform and Geology

The landform in the area comprises undulating low stone hills with sandy wash and a mixture of sandy loams and heavy clays deposited on the valley floors. The area to be quarried consists of a ridgeline approximately 300 m in width moderate to steep natural slopes on either side with the ridge rising to the east. Rocky outcrops are present across the site.

The surrounding gullies are steep and contain small ephemeral water holes that fill after rain, Dams were historically constructed in these gullies to provide stock water with the dams converted to sediment ponds as part of the initial quarry development.

5.3. Soil Types and Properties

Surface soils on the site consist of shallow black loams with extensive rock outcrops and rocky subsoil material. The soils on the slopes consist of similar soil; however they have been naturally affected by erosion and the extent of exposed rock increases with slope.

Soils on the lower flatter areas on the western part of the property consist of sands and sandy loams to a depth of 2 metres or more. These sands appear to exist as a result of erosion of the sandstone material available in the surrounding gullies.

Clay content of the surface soils increases to the west. On the western side of Bullala Creek, only a few areas of sand are present. The majority of surface soils to the west consist of grey black and brown clays.

5.4. Vegetation Pattern and Bioregion

The dominant species across the site are White Cypress with various Acacia and Eucalypts species. There are two distinct soil types comprising basalt derived red-brown well-structured clays and the other sandy clay loams which define the distributions and abundance of native trees, shrubs, grasses and forbs across the site.

Vegetation within the Quarry site varies with location with rocky slopes having less ground cover and more mid to upper stratum consisting of Cypress Pine (*Callitris glaucophylla*) and Curracabah (*Acacia leiocalyx*). Ground cover species consisted of Wiregrass (*Asristida sp*), Kidney Weed (*Dichondra repens*) and Clover Medic (*Medicago sp*).

Outside the quarry boundary the changing soil type also sees a change in land use from farmland and grazing to grazing and forestry (historically). Much of the area within the Bullala National Parks is conservation area with visible disturbance from timber harvest, fire and grazing. The dominant

species noted in this area was Baradine Red Gum (*E. Cloroclada*), Blakely's Red Gum (*Eucalyptus blakelyi*), White Cypress (*Callitris glaucophylla*) and patches of Grass Trees (*Xanthorrhoea sp.*).

5.4.1. Regional Vegetation Community (RVC)

Regional Vegetation Communities for the Border Rivers Gwydir CMA (BRG-CMA) have been mapped and defined by DECC (2014) who commissioned Eco Logical Australia in 2006 & 2009 to integrate a series of vegetation data sets into standard regional vegetation community (RVC) classifications.

The following map shows the RVC on and around the Quarry site.

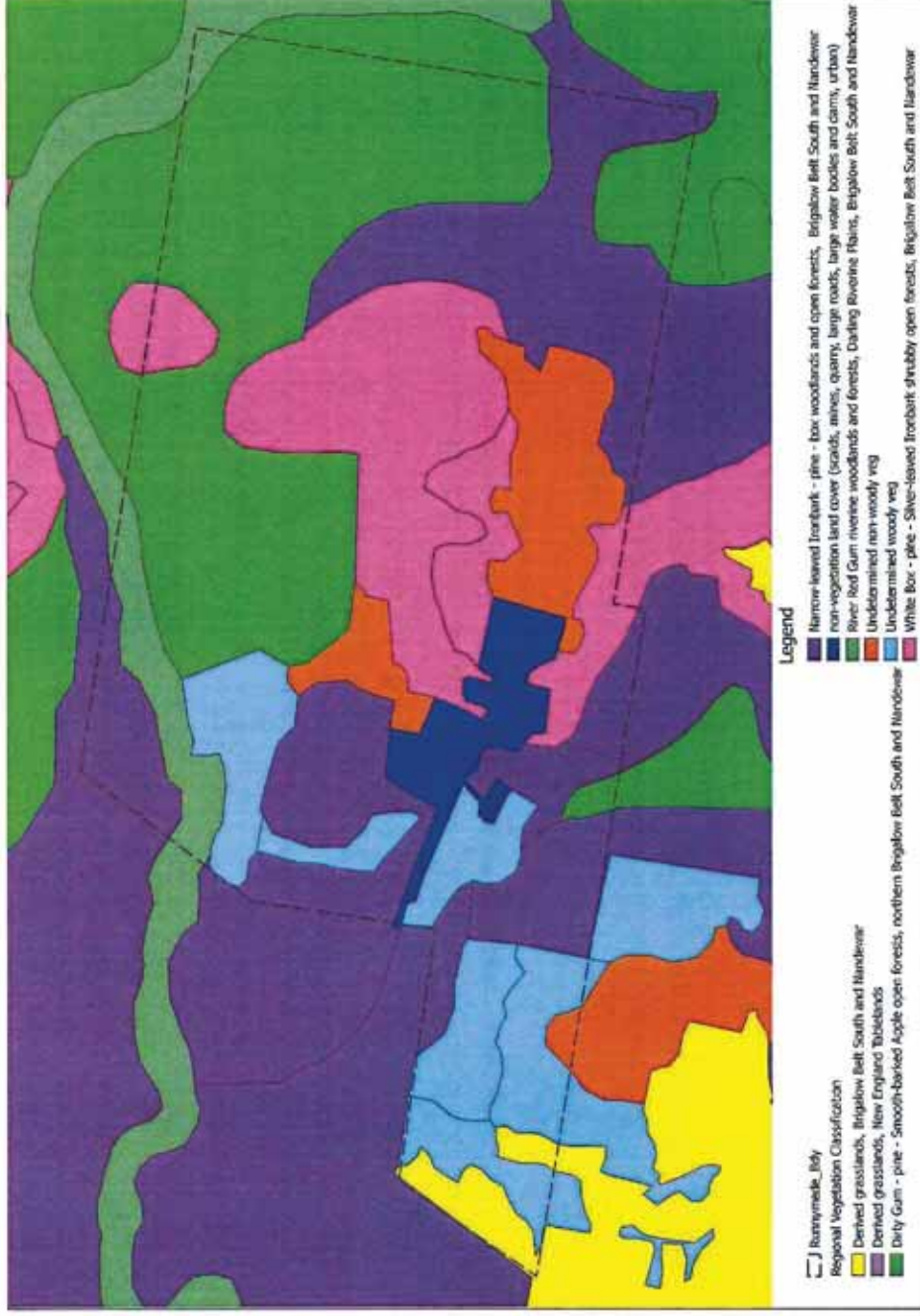


Figure 3: Regional Vegetation Communities

The following table (Table 2) provides a description of each of the Regional Vegetation Communities shown in Figure 3 above.

Table 2: Regional Vegetation Communities

Regional Vegetation Community	Description*
Derived grasslands, Brigalow Belt South and Nandewar	Derived Grassland resulting from clearing of woodland of open forest vegetation. Most common grass species are wiregrasses (<i>Aristida ramose</i> , <i>A personata</i> , <i>A vagans</i>), Queensland Blue Grass (<i>Dicanthium sericeum</i>), Spear Grass (<i>Austrostipa scabra</i>) Red Grass (<i>Bothriochloa decipiens</i> and/or <i>B. macra</i>), Plains Grass (<i>Austrostipa aristiglimis</i>), Slender Bamboo Grass (<i>Austrostipa verticillata</i>), Yadbila Grass (<i>Panicum queenslandicum</i>), Barbed Wire Grass (<i>Cymbopogon refractus</i>), Hairy Panicum (<i>Panicum effusum</i>) and Niggerheads (<i>Enneapogon gracilis</i>). Other common species include Common Woodruff (<i>Asperula conferta</i>), Slender Sedge (<i>Cyperus gracilis</i>), Glycine spp. and Kidney Weed (<i>Dichondra repens</i>). Scattered trees such as

	White Cypress Pine (<i>Callitris glaucophylla</i>), White Box (<i>Eucalyptus albens</i>), Yellow Box (<i>E. melliodora</i>), Blakely's Red Gum (<i>E. blakelyi</i>), Narrow-leaved Ironbark (<i>E. crebra</i>) and Silver-leaved Ironbark (<i>E. melanophloia</i>) are sometimes present. Occasional shrubs include Wilga (<i>Geijera parviflora</i>) and Native Olive (<i>Notelaea microcarpa</i>). Open Forests dominated by Northern Smooth-barked Apple (<i>Angophora leiocarpa</i>), Rough-barked Apple (<i>Angophora floribunda</i>), Long-fruited Bloodwood (<i>Corymbia dolichocarpa</i>), Caley's Ironbark (<i>Eucalyptus caleyi</i> subsp. <i>caleyi</i>), Black Cypress Pine (<i>Callitris endlicheri</i>), Silver-leaved Ironbark (<i>Eucalyptus melanophloia</i>) with Slender Teatree (<i>Leptospermum brevipes</i>), Blunt Beard-heath (<i>Leucopogon muticus</i>), Purple Wire Grass (<i>Aristida ramosal</i>), <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>, <i>Cheilanthes distans</i>, <i>Eragrostis brownie</i> in lower storeys
Dirty Gum – pine – Smooth-barked Apple open forests, northern Brigalow Belt South and Nandewar Narrow-leaved Ironbark – pine – box woodlands and open forests, Brigalow Belt South and Nandewar	Either a shrubby or grassy woodland or open forest dominated by Narrow-leaved Ironbark (<i>Eucalyptus crebra</i>) with Black Cypress Pine (<i>Callitris endlicheri</i>) and/or White Cypress Pine (<i>C. glaucophylla</i>). Other tree species present may include White Box (<i>E. albens</i>), Tumbledown Red Gum (<i>E. dealbata</i>), Red Stringybark (<i>E. macrorhyncha</i>), Dwyer's Red Gum (<i>E. dwyeri</i>), Dirty Gum (<i>E. chloroclada</i>), Yellow Box (<i>E. melliodora</i>), Orange Gum (<i>E. prava</i>), Norton's Box (<i>E. nortonii</i>) and Silver-leaved Ironbark (<i>E. melanophloia</i>). There is sometimes a well-developed shrub layer of species such as Motherumbah (<i>Acacia cheelii</i>), Sticky Daisy-Bush (<i>Olearia elliptica</i>), Native Olive (<i>Notelaea microcarpa</i>), Sticky Hopbush (<i>Dodonaea viscosa</i>), Deane's Wattle (<i>Acacia deanei</i>), Cough Bush (<i>Cassinia quinquefaria</i>), Urn-heath (<i>Melichrus urceolatus</i>), Sticky Wallaby Bush (<i>Beyeria viscosa</i>) and Spurwing Wattle (<i>A. triptera</i>). The ground layer is variable with common species being wiregrasses (<i>Aristida</i> spp.), Mulga Fern (<i>Cheilanthes sieberi</i>), Red-anther Wallaby Grass (<i>Joycea pallida</i>), Speargrass (<i>Auistrostipa scabra</i>), Pomax (<i>Pomax umbellata</i>), Clustered Lovegrass (<i>Eragrostis elongata</i>) and Kidney Weed (<i>Dichandra</i> sp. A).
River Red Gum riverine woodlands and forests, Darling Riverine Plains, Brigalow Belt South and Nandewar	Tall open forest or woodland with large spreading trees up to 30 m tall dominated by River Red Gum (<i>Eucalyptus camaldulensis</i>) with occasional Black Box (<i>Eucalyptus largiflorens</i>), Coolabah (<i>E. coolabah</i>), Yellow Box (<i>E. melliodora</i>), Rough-barked Apple (<i>Angophora floribunda</i>) and, in the easterly-most extent, River Oak (<i>Casuarina cunninghamiana</i>) may be present. The shrub layer may vary from absent to relatively dense with River Cooba (<i>Acacia stenophylla</i>), Black Tea-tree (<i>Melaleuca bracteata</i>), River Cooba (<i>Acacia stenophylla</i>), Lignum (<i>Muehlenbeckia florulenta</i>), tea-trees (<i>Leptospermum</i> spp.) and various bottlebrushes (<i>Melaleuca</i> spp.) usually being the most common species. In more western occurrences short chenopods such as Galvanized Burr (<i>Sclerolaena birchii</i>) and Ruby Saltbush (<i>Enchylaena tomentosa</i>) are sometimes present. The ground layer is often a dense mixture of native and exotic grasses and herbs such as Warrego Summer Grass (<i>Paspalum jubiflorum</i>), Couch Grass (<i>Cynodon dactylon</i>), Umbrella Cane Grass (<i>Leptochloa digitata</i>) and Spiny-headed Mat-rush (<i>Lomandra longifolia</i>). Along the water's edge are often moisture-loving plants such as Nardoo (<i>Marsilea drummondii</i>) and a range of sedges (<i>Cyperus</i> spp.) and rushes (<i>Juncus</i> spp.).
White Box – pine – Silver-leaved Ironbark shrubby open forests, Brigalow Belt South and Nandewar	A shrubby open forest or woodland that is usually dominated by some combination of White Box (<i>Eucalyptus albens</i>), Silver-leaved Ironbark (<i>E. melanophloia</i>) and cypress pine (<i>C. endlicheri</i>) and/or <i>C. glaucophylla</i>. Other tree species sometimes present include Rough-barked Apple (<i>Angophora floribunda</i>), Yellow Box (<i>E. melliodora</i>), Tumbledown Red Gum (<i>E. dealbata</i>), Blakely's Red Gum (<i>E. blakelyi</i>), Red Stringybark (<i>E. macrorhyncha</i>), Caley's Ironbark (<i>E. caleyi</i>), Norton's Box (<i>E. nortonii</i>), Dirty Gum (<i>E. chloroclada</i>) and Narrow-leaved Ironbark (<i>E. crebra</i>). There is usually a well-developed shrub layer with frequently occurring species being Sticky Daisy-bush (<i>Olearia elliptica</i>), Native Olive (<i>Notelaea microcarpa</i>), Motherumbah (<i>Acacia cheelii</i>), Cough Bush (<i>Cassinia</i>

	<i>quinquefaria</i>), Sifton Bush (<i>Cassinia arcuata</i>), Western Silver Wattle (<i>Acacia decora</i>), Sticky Wallaby Bush (<i>Beyeria viscosa</i>) and Currant Bush (<i>Carissa ovata</i>). The ground layer is variable and some of the common species are purple wiregrass (<i>Aristida ramosa</i> and <i>A. vagans</i>), Snow Grass (<i>Poa sieberiana</i>), Spear Grass (<i>Austrastipa scabra</i>), Large Tick-trefoil (<i>Desmodium brachypodum</i>), Mulga Fern (<i>Cheilanthes sieberi</i>), Barbed Wire Grass (<i>Cymbopogon refractus</i>), Yellow Burr Daisy (<i>Calatis lappulacea</i>) and Kidney Weed (<i>Dichondra sp. A</i>).
Non-vegetation land cover (scalds, mines, quarry, large roads, large water bodies and dams, urban)	Cleared land that contains developed sites or scalded sites eg: scalds, mines, quarry, large roads, large water bodies and dams, urban
Undetermined non-woody veg	Non- Woody Vegetation that has not yet mapped or identified under RVC.
Undetermined woody veg	Woody Vegetation that has not yet mapped or identified under RVC.

*Descriptions sourced from Namoi CMA (2013), and Biometric Vegetation Types Database (OEH, 2014).

5.5. Surrounding land uses

The development site is located in a rural environment. The surrounding land is used for conservation and forestry within the Bulliala National Park (formerly state forest) and grazing and dry land cropping on adjoining farms.

6. Threatened Species, Populations and Ecological Communities

The content of this section is guided by STEP 4 in Threatened Species Survey and Assessment Guidelines (DECCW, 2004) and intends to determine the likely hood of the study area and subject site supporting threatened species.

6.1. Description of the study area

The subject site to be used for the quarry consists of cleared grazing land that has been cultivated in the past. There is minimal shrub layer in the area of proposed disturbance and the scattered trees are a mixture of regrowth of White Cypress Pine and various Acacia Species. Ground Cover species include Wirry Panic, Wiregrass, Medic, Kidney Weed with scattered Prickly Pear and Tiger Pear. There is evidence of grazing on the subject site with domestic scats including cattle, horses and goats in addition to other scats including Kangaroo, wallaby and Fox.

In the adjoining area outside of the quarry edge, the ground cover was sparse with rocks and bare ground representing significant portions of the quadrants. The tree layer consists of Cypress Pine, various Acacia Species, scattered Iron Bark and Wilga. The following tables 3 and 4 presents a listing of observed flora and fauna.

Table 3: Observed Flora onsite

Scientific Name	Common Name	Scientific Name	Common Name
<i>Paspalum dilatatum</i>	Pasalum	<i>Acacia leiocalyx</i>	Curcabah
<i>Cynodon dactylon</i>	Couch	<i>Acacia deanei</i>	Dean's Wattle
<i>Entolasia stricta</i>	Wiry Panic	<i>Callitris glaucophylla</i>	White Cypress
<i>Bothriochloa decipiens</i>	Pitted Bluegrass	<i>Eucalyptus creba</i>	Ironbark
<i>Aristida Spp</i>	Wiregrass	<i>Eromophila mitchelli</i>	Budda
<i>Hyparrhenia herta</i>	Coolatai Grass	<i>Geijera paviflora</i>	Wilga
<i>Acacia farnesiana</i>	Mimosa	<i>Eucalyptus chloroclada</i>	Dirty Gum
<i>Opuntia stricta</i> sp	Prickly Pear	<i>Eucalyptus blakelyi</i>	Blakely's Red Gum
<i>Opuntia aurantiaca</i>	Tiger Pear	<i>Neptunia gracilis</i>	Native Sensitive Plant
	Hop Bush	<i>Swainsona grayana</i>	Darling Pea
<i>Dichondra repens</i>	Kidney Weed	<i>Medicago sp</i>	Medic
<i>Glycine sp</i>	Native Glycine		Burr Daisy

Table 4: Observed Fauna during field survey

Scientific Name	Common Name *	Scientific Name	Common Name
<i>Macropus giganteus</i>	Grey Kangaroo (Ob, Sc)	<i>Geopelia striata</i>	Peaceful dove (Ob)
<i>Cracticus tibicen</i>	Australian Magpie (Ob,Sc)	<i>Acanthiza sp</i>	Thornbill (Ob,Hd)
<i>Capra aegagrus hircus</i>	Goats (Ob,Sc)	<i>Heteronympha merope</i>	Common Brown Butterfly (ob)
<i>Bos primigenius</i>	Cattle (Ob,Sc)	<i>Anthophila sp</i>	Bee
<i>Cacatua galerita</i>	Sulphur Crested Cockatoo (Ob,Hd)		

Photo 1 & Photo 2: Sample Quadrats 1 m² from area immediately adjoining main disturbance zone.

*Ob – Observed, Sc – Scats, Hd- Heard

6.2. Known threatened species, populations and ecological communities

6.2.1. Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Threatened Species

Flora

Consultation with the EPBC Protected Matters Search Tool for the proposed development area returned 2 Endangered Communities, 3 Critically Endangered Communities and 5 vulnerable species whose habitat may or is likely to occur within the specified geographic range. The table below considers their likely hood of occurring on the development site.

Table 5: EPBC Protected Matters Search Results - Flora

Species	Preferred Habitat	EPBC Act Status	Likelihood*
Coilbah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	-	Endangered	No – the community does not occur on the site.
Natural Grasslands on basalt and fine textured alluvial plains of northern NSW and southern QLD	-	Critically Endangered	Likely – Grassland areas occur on the site however they are in a degraded state and have significant evidence of disturbance as a result of cultivation and extended grazing history.
New England Peppermint (<i>Eucalyptus novaengelica</i>) Grassy Woodlands	-	Critically Endangered	No - the community does not occur on the site.
Weeping Myall Woodland	-	Endangered	Potential – Myall trees have been located in the area, however no tress are present on the site.
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	-	Critically Endangered	Likely – Species that make up this community are known to occur in the area. The community is known to occur on adjoining land but was not noted on the subject development site
Ooline – <i>Cadellia pentatylis</i>	Ooline is found in undulating terrain on a variety of soil types usually between 300-450 m ASL. Forms a closed canopy with Eucalypts and Cypress pine species.	Vulnerable	Unlikely – The species is recorded in the region but was not observed on the site or adjoining land.
Belson's Panic – <i>Homophalis belsonii</i>	Belson's Panic occurs in roadside corridors and beneath remnant and regrowth Brigalow in poorer soils.	Vulnerable	Unlikely – The species is recorded in the

			region but was not recorded on the site.
Bluegrass – <i>Dicanthium setosum</i>	Blue grass is found in a variety of communities such as dry sclerophyll woodland, grassy sclerophyll woodlands and grasslands in varying soil types.	Vulnerable	Unlikely – The area of disturbance has been heavily grazed in the past and was not observed on the site.
Slender Darling Pea – <i>Swainsona murrayana</i>	Slender Darling-pea is found in grassland, herb land, and open Black-box woodland, often in depressions.	Vulnerable	Unlikely – species not previously recorded or identified onsite
<i>Tylophora lineris</i>	<i>Tylophora lineris</i> grows in dry scrub and open forest. Recorded from low-altitude sedimentary flats.	Vulnerable	Unlikely – species not previously recorded or identified onsite.

Fauna

Consultation with the EPBC Protected Matters Search Tool for the Development area returned 2 Endangered, 10 Vulnerable and 9 Migratory species whose habitat may or is likely to occur within the specified geographic range. The table below considers their likely hood of occurring on the site.

Table 6: EPBC Protected Matters Search Results – Fauna

Species	Preferred Habitat	EPBC Act Status	Likelihood*
Birds			
Regent Honeyeater – <i>Anthochaera phrigia</i>	Temperate woodlands and Open forests	Endangered	Potential – Habitat may be present in adjacent woodlands
Red Goshawk – <i>Erythrotriorchis radiatus</i>	Open woodland and forest vegetation in proximity to permanent water.	Vulnerable	Potential – Habitat may be present in the area.
Squatter Pigeon (Southern) <i>Geophaps scripta scripta</i>	Grassy Woodlands and plains. Sandy areas close to water.	Vulnerable	Potential – Habitat may be present in the area.
Australian Painted Snipe – <i>Rostratula australis</i>	Margins of densely vegetated swamps and wetlands	Endangered	Unlikely – subject site does not contain suitable habitat.
Fish			
Murray Cod – <i>Maccullochella peelii</i>	Slow flowing turbid rivers and billabongs.	Vulnerable	No – No suitable habitat.
Mammals			
Large-eared Pied Bat – <i>Chalinolobus dwyeri</i>	Roosts in caves, crevices in cliffs, old mine workings and the disused mud nests of Fairy Martins. Forages in open forest, woodland and timbered gully areas.	Vulnerable	Potential – Habitat may be present in the area.
South-eastern Long-eared Bat, Corbans Long-eared bat – <i>Nyctophilus cobeni</i>	Most abundant in vegetation with a distinct canopy and a dense cluttered shrub layer	Vulnerable	Unlikely – subject site does not contain suitable habitat. Suitable habitat may be available on adjoining land.
Koala (combined Populations QLD, NSW, ACT) – <i>Phascolarctos cinereus</i>	Temperate, sub-tropical and woodland communities dominated by Eucalypts	Vulnerable	Potential – subject site contains some secondary feed trees, no evidence of scratch marks on trees or scats.
Reptiles			

Five-Clawed Worm Skink – <i>Anomalopus mackayi</i>	Deep tunnel like burrows and deep soil cracks in deep cracking loose clay soils and moist black soils with fallen timber and leaf litter particularly grassy white box woodlands.	Vulnerable	Potential – Site does contain some suitable habitat.
Pink-tailed Worm-lizard, Pink-tailed legless Lizard – <i>Aprasia parapulchella</i>	Open woodland areas with native grass cover, well drained soils and rocky outcrops.	Vulnerable	Potential – Site does contain some suitable habitat.
Border Thick-tailed Gecko – <i>Uvidicolus sphyrurus</i>	Forest and woodland areas with steep rocky slopes usually with dense canopy.	Vulnerable	Potential – Site does contain some suitable habitat.
Bell's Turtle – <i>Wollumbinia belli</i>	Shallow to deep pools in upper reaches or small tributaries of major rivers in granite country.	Vulnerable	No – No suitable habitat
Migratory Marine Birds			
Fork Tailed Swift – <i>Apus pacificus</i>	Spend most their life airborne. Build their nests on cliffs.	Migratory	No – No suitable habitat
Migratory Terrestrial Birds			
White-bellied Sea-Eagle – <i>Haliaeetus leucogaster</i>	Habitats are characterised by the presence of large areas of open water (larger rivers, swamps, lakes, and the sea).	Migratory	Unlikely – Site does contain some suitable habitat (sediment ponds). Species may utilise the site opportunistically.
White Throated Needletail – <i>Hirundapus caudacutus</i>	Spend most their life airborne. Build their nests on rocky hills.	Migratory	No – No suitable habitat
Rainbow Bee-eater – <i>Merops ornatus</i>	Occurs mainly in open forests and woodlands, shrub lands.	Migratory	Unlikely – Site does contain some suitable habitat. (Sediment Ponds). Species may use the site opportunistically.
Satin Flycatcher – <i>Myiagra cyanolueca</i>	Inhabit eucalypt forests, often near wetlands or watercourses.	Migratory	Unlikely – Site does contain some suitable habitat. (Sediment Ponds). Species may use the site opportunistically.
Migratory Wetland Species			
Great Egret – <i>Ardea alba</i>	Reported in a wide range of wetland habitats usually frequents shallow waters.	Migratory	Unlikely – Site does contain some suitable habitat. (Sediment Ponds). Species may use the site opportunistically.
Cattle Egret – <i>Ardea ibis</i>	Occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands	Migratory	Unlikely – Site does contain some suitable habitat. (Sediment Ponds). Species may use the site opportunistically.
Latham's Snipe – <i>Gallinago hardwickii</i>	Usually inhabit open, freshwater wetlands with low, dense vegetation.	Migratory	Unlikely – Site does contain some suitable habitat. (Sediment Ponds). Species may use the site opportunistically.

Painted Snipe – <i>Rostratula benghalensis (sensu lato)</i>	Inhabits shallow terrestrial freshwater lakes, swamps and claypans.	Migratory	Unlikely – Site does contain some suitable habitat. (Sediment Ponds). Species may use the site opportunistically.
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* The categories of Likelihood of occurrence used are based on recorded sightings listed in credible databases, the presence or absence of suitable habitat, other features of the site, results of the field survey and professional judgement. These categories are:

‘Yes’ The species/community was or has been observed on the site.

‘Likely’ A medium to high probability that a species uses the site

‘Potential’ A suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as ‘likely’ or ‘unlikely’ to occur.

‘Unlikely’ A very low to low probability that a species uses the site.

‘No’ Habitat on the site and in the vicinity is unsuitable for the species.

6.2.2. Threatened Species Conservation Act 1995 (TSC Act) searches

Flora

A search of the Bionet Atlas of NSW Wildlife website revealed no threatened flora species recorded in the specific geographical search area.

Fauna

A search of the Bionet Atlas of NSW Wildlife website revealed 10 vulnerable species and one endangered species recorded in the specific geographical search area.

Table 7: Bionet Threatened Fauna

BIRDS	Species	Preferred Habitat	TSC Act Status	Likelihood*
	Glossy Black-Cockatoo – <i>Calyptrorhynchus lathami</i>	Forest and Woodland Areas made up of Allocasurinas, Eucalypts, Cypress and Acacia	Vulnerable	Likely – has been recorded in the area. Was not observed on the site as no preferred feed trees present.
	Little Lorikeet – <i>Glossopsitta pusilla</i>	Open forests and woodlands and riparian habitats containing Eucalypts, Angophora and Melaleuca.	Vulnerable	Potential – habitat may be available in the area.
	Turquoise Parrot – <i>Neophema pulchella</i>	Edges of eucalypt woodlands adjoining clearings timbered ridges and creeks. Forages on the ground for seeds, grasses and herbaceous plants	Vulnerable	Potential – habitat may be available in the area.
	Masked Owl – <i>Tyto novaehollandiae</i>	Eucalypt forest and open woodlands feeding on small ground and tree dwelling mammals.	Vulnerable	Potential – habitat may be available in the area.

Speckled Warbler – <i>Chthonicola sagittata</i>	Eucalypt woodlands with grassy understorey.	Vulnerable	Potential – habitat may be available in the area.
Grey-crowned Babbler (eastern Species) – <i>Pomatostomus temporalis temporalis</i>	Open Box-Gum Woodlands, Box-Cypress Woodlands and open Box woodlands on alluvial plains.	Vulnerable	Potential – habitat may be available in the area.
FISH			
Murray Cod – <i>Maccullochella peelii peelii</i>	Slow flowing turbid rivers and billabongs.	Vulnerable	No – No suitable habitat.
MAMMALS			
Squirrel Glider – <i>Petaurus norfolcensis</i>	Mature (old growth) Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Divide.	Vulnerable	Potential – Habitat may be available in the undeveloped area on the site and on adjoining land.
Black-striped Wallaby – <i>Macropus dorsalis</i>	Dense woody or shrubby vegetation within 3 m of the ground near open grassy areas for feeding.	Endangered	Potential – the undeveloped area may provide suitable habitat.
Yellow-bellied Sheath-tail-bat – <i>Saccolaimus flaviventris</i>	Roosts in tree hollows, buildings and burrows. Foraging above the forest canopy and low in open country.	Vulnerable	Potential – habitat may be available in the area.
Little Pied Bat – <i>Chalinolobus picatus</i>	Dry open forest & woodlands, mulga woodland, chenopod shrub lands, roosting in caves, tree hollows, rock outcrops, tunnels, shafts and buildings.	Vulnerable	Potential – habitat may be available in the area.
Koala – <i>Phascolarctos cinereus</i>	Temperate, sub-tropical and woodland communities dominated by Eucalypts	Vulnerable	Potential – subject site contains some secondary feed trees, no evidence of scratch marks on trees or scats.

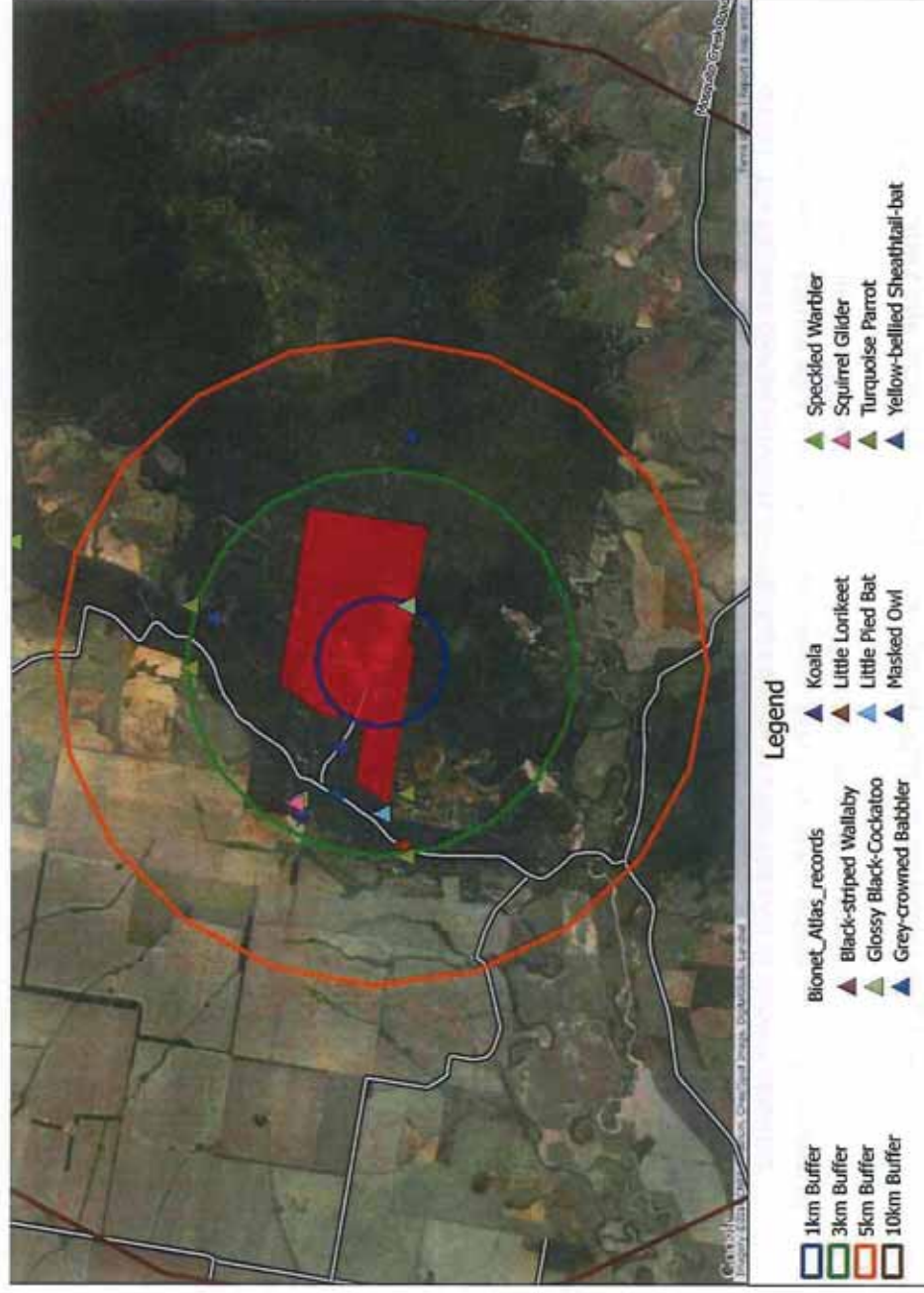


Figure 4: Threatened Fauna and Flora - Bionet Atlas of NSW Wildlife

7. Physical and Chemical Impacts

7.1. Is the proposal likely to impact on soil quality or land stability?

Soil Quality – No.

Land Stability – Yes, There is likely to be mobilisation of some soil as a result of the nature of the proposal (Quarry). The quarry will be extended as a below ground activity and all major disturbance to soil will be located within the quarry floor area apart from the development of a surrounding road to access the quarry face area for drilling and blasting. The site is also susceptible to some movement as a result of vibrations from blasting activities. Mitigation measures that are implemented on the site extend to but are not limited to the following:

- An approved Erosion and Sediment Control Plan has been prepared for the existing development and is being progressively implemented as the quarry moves the cut face to the east.
- Maintenance and checking of the erosion and sediment controls to be undertaken on a regular basis in accordance with existing approvals. These include actions such as sediment to be cleared from behind barriers on a regular basis and all controls are continuously managed to ensure they work effectively at all times.
- No Stockpiles to be established on areas of vegetation to be retained.
- If heavy rain is predicted vehicle movements on and around the site are limited.

- Prior to and after blasting check of areas surrounding the site for suspect stability issues and rectify problem areas immediately.

7.2. Is the activity likely to affect a water body, watercourse or wetland or natural drainage system?

No – The existing site has an established drainage network to capture dirty water that runs off the disturbed site and diversion banks to minimise water run onto the site.

7.3. Is the activity likely to change flood or tidal regimes, or be affected by flooding?

No – The proposed activity is not likely to change flood or tidal regimes or be affected by flooding. Water runoff from clean areas is diverted round the quarry to prevent the flow of water through the quarry site. All water captured within the quarry site is directed into sediment dams for settling and reuse.

7.4. Does the proposal involve the use, storage or transport of hazardous substances or the use or generation of chemicals which may build up residues in the environment?

Yes. The proposal requires the storage of diesel on the site. The storage area is currently established in a bunded area. The proposed development **would not** increase the amount of diesel to be stored on site. The bitumen coating products are also kept on site in a bunded area to prevent potential spills and leaks entering the surrounding environment. There are no hazardous materials designated to be stored on site or to be introduced to areas of undeveloped native vegetation.

7.5. Does the activity involve the generation or disposal of gaseous, liquid or solid wastes or emissions?

Yes. The operation of machinery and equipment on the site produce mainly diesel motor emissions. No disposal of liquids, gases or solid wastes is required on the site other than general packaging and garbage which is to be disposed of at the local Council Managed waste facility.

7.6. Will the activity involve the emission of dust, odours, noise, vibration, or radiation in the proximity of residential/urban areas or other sensitive locations?

The development involves the emission of dust, noise and vibrations however not in the proximity of residential or urban areas. The surrounding area is a rural area in addition to an area of National Park reserve which is irregularly used for recreational purposes.

8. Biological Impacts

8.1. Is any vegetation to be cleared or modified?

The area of vegetation to be cleared has a history of farming and grazing. The original suitable timber in the area was historically used for construction of fences. Some areas of regrowth vegetation would be required to be removed as the quarry face progresses east. The vegetation in the disturbance area is cleared on an as needed basis, usually in small increments as the quarry face moves east.

The existing quarry and infrastructure footprint covers an area of approximately 40 ha. It is proposed to extend the quarry to the east over an additional area of approximately 20 ha of land that is

currently open grazing land. The remainder of the property includes 70 ha of open woodland used for opportunity grazing of cattle in addition to an area of approximately 500 ha of undisturbed forest and woodland.

8.2. Is the activity likely to have a significant effect on threatened flora or fauna species, populations, or their habitats, or critical habitat; or an endangered ecological community or its habitat?

No – The proposed development is to extend within an existing approved area for development as a quarry. The quarry is extending eastward across an area that has a history of disturbance from cultivation and cattle grazing on generally sparse native pasture and weeds. The proposal requires the removal of minimal vegetation within this disturbed zone. The proposal is not considered to cause any additional fragmentation of habitat as this area was cleared prior to the mid 1990's when the land was originally farmed. The adjoining woodland on the property has been retained as a continuously linked as a surrounding woodland area linking all adjoining land including the adjacent National Park.

8.3. Does the activity have the potential to endanger, displace or disturb fauna (including fauna of conservation significance) or create a barrier to their movement?

Endanger – No. The rural use of the land and the proposed development has been an ongoing activity since the mid-90's. The degraded habitat created prior to development of the quarry site would have moved any endangered species from the area of additional disturbance.

Displace – No.

Disturb – Yes. The approved expansion of the quarry follows the paddock which was previously cleared and farmed in the 90's. Some regrowth of grasses and mainly Acacia is present within this area identified for the continuing quarry operations. No areas of remnant vegetation are required to be removed as part of this development. The area proposed for significant disturbance has a history of disturbance from cultivation and grazing and contains only regrowth vegetation. The daily operation of the quarry creates a barrier in addition to the 14 m to 18 m deep approved excavation. The excavation will occur under existing approvals. The barrier of the quarry would mean that fauna would need to migrate around to the east or west to link between habitat on the northern and southern side of the quarry.

8.4. Is the activity likely to impact on an ecological community of conservation significance?

No. The proposed development does not include the clearing or disturbance of an ecological community of conservation significance.

8.5. Is the activity likely to cause a threat to the biological diversity or ecological integrity of an ecological community?

No. The proposed development is not likely to cause a threat to the biological diversity or ecological integrity of an ecological community.

8.6. Is the activity likely to introduce noxious weeds, vermin, feral species or genetically modified organisms into an area?

Vermin – No.

Feral Species – No.

Noxious Weeds - Possible. The movement of vehicles, plant, equipment and people on and off the quarry site has the potential to introduce noxious weeds to the area. Due to the nature of the quarry, vehicle movements are generally restricted to gravel paved roads which does not offer a viable seed bed for weed species. No specific noxious weed species have invaded the property since commencement of operations in 1995.

Additionally, the following strategies are to apply to weed management within the site:

- Minimal impact techniques are to be used, ensuring no native species are damaged during weed control activities.
- Soil disturbance by vehicle and pedestrian access is to be kept to a minimum outside the construction footprint.
- Herbicide application is to be administered by authorised personnel only (e.g. Chem Cert Accreditation – AQF 3), in accordance with the directions on the container (application rates, MSDS requirements) and any applicable Work Cover requirements.
- All machinery used within the site is to be thoroughly cleaned by removing all plant material, dust or soil, and any accumulation of grease from the machine prior to the commencement of the construction.
- Any weeds removed (particularly those bearing seeds) are to be disposed of appropriately at the nearest waste management facility.
- If required, only topsoil from areas with no noxious or highly invasive weed species should be re-used in rehabilitation (it is generally assumed that if there is no evidence of noxious or invasive weeds in an area, the topsoil in this area is not contaminated with the seeds of such weeds).

9. Assessment of Significance

The following section assesses whether the proposal (as discussed and reviewed in this assessment) is likely to have significant effect on threatened biodiversity by addressing the factors of s5A of the EP&A Act and s94 of the TSC Act.

The factors that need to be considered when assessing whether an action, development or activity is likely to significantly affect threatened species, populations or ecological communities or their habitats was revised under the Threatened Species Conservation Amendment Act 2002 (previously known as the '8 Part Test'). These changes affect s5A of the EP&A Act s94 of the TSC Act and s220ZZ of the Fisheries Management Act 1994 (FM Act).

The revised factors maintain the same intent as earlier legislation but focus particularly on the likely impacts to local rather than regional environment, as the long-term loss of biodiversity at all levels arises primarily from the accumulation of losses and depletions of populations at a local level.

When applying each factor, the following sections have considered all perceived likely direct and indirect impacts of the proposal as outline by previous sections of this document.

- Direct impacts are those that directly affect the habitat and individuals. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat.
- Indirect impacts occur when project related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious weed invasion, fertiliser drift, or increased soil salinity, erosion, inhibition of nitrogen fixation, sensitive habitat areas.

The species considered under this assessment listed in the tables above have been categorised into the following:

- Woodland Birds
Glossy Black Cockatoo, Little Lorikeet, Turquoise Parrot, Speckled Warbler & Grey-Crowned Babbler
- Birds of Prey
Masked Owl
- Arboreal Mammals
Koala & Squirrel Glider
- Terrestrial Mammals
Black Striped Wallaby
- Bats
Little Pied Bat & Yellow-bellied Sheath-tail bat

9.1. Factors for consideration – s5A EP&A Act and s94 of the TSC Act

- (a) *In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the lifecycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.*

Comment: The project does not require the removal of any mature hollow bearing trees. And requires minimal clearing of otherwise viable foraging habitat of all those species listed.

- (b) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the lifestyle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.*
- Comment:** No. There are no Endangered Populations listed for this site and are unlikely to utilise the development site in its current form.

- (c) *In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

- i. *Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
- ii. *Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.*

Comment: The proposed development does not require the clearing of any of the endangered ecological communities listed. The extent of works is within an area that has a history of disturbance. Therefore the proposal is unlikely to have an adverse effect on the extent of an EEC, nor will it substantially or adversely modify the composition of an EEC.

- (d) *In relation to the habitat of a threatened species, population or ecological community:*

- i. *The extent to which habitat is likely to be removed or modified as a result of the action proposed, and*

Comment: The proposal does not require the removal of any hollow bearing trees and would result in the minimal removal of otherwise viable foraging habitat of the Woodland Birds, Birds of Prey, Terrestrial Mammals and Bats.

- ii. *Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and*

Comment: The proposed development is in an area of existing disturbance and is unlikely to result in fragmentation or isolation of habitat. The remaining vegetation

on site would have good connectivity to the undeveloped area on the property and adjoining land.

- iii. *The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.*

Comment: The area to be developed has a history of disturbance. The vegetation in the area of the development that requires removal is of minimal significance to those species within the locality.

- (e) *Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)*

Comment: There is no critical habitat listed for the proposed development site.

- (f) *Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.*

From the Species listed in Table 7 the Masked Owl and the Koala have recovery plans.

The proposed development is consistent with the objectives of the listed recovery plans as minimal to no remnant vegetation is required to be cleared by this proposal and the proposal is unlikely to cause further fragmentation of the listed species habitats.

- (g) *Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of a key threatening process.*

Comment: A threatening process is something that threatens, or could potentially threaten, the survival or evolutionary development of a species, population or ecological community. A threat can be listed under the TSC Act as a 'Key Threatening Process' if it adversely affects threatened species, populations or ecological communities or if it could cause species, populations or ecological communities that are not threatened to become threatened. There are currently 34 listed threatening process recognized by the TSC Act (NSW) and a further 19 by the EPBC Act (Commonwealth).

The following Key Threatening processes are considered relevant:

Key threatening Process	Is the proposal of a class of activity that is recognised as a threatening process?		
	Likely	Possible	Unlikely
Land Clearance (Cwth)		✓	
Clearing of native vegetation (NSW)		✓	
Removal of dead wood and dead trees (NSW)			✓

The proposal requires clearing within the already disturbed area. Clearing would be undertaken to the minimum extent necessary and would involve the removal of ground cover, shrubs and scattered trees. Any fallen timber would be relocated within the development site to be retained as potential habitat. There would be no loss of hollow bearing trees or limbs. The proposal therefore is not likely to be part of or increase the impact of a key threatening process.

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9. Revised Environmental Management Plan (EMP)



Johnstone Concrete & Quarries

Runnymede Quarry Environmental Management Plan

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2014

Document Verification

Johnstone Concrete and Quarries					
Environmental Management Plan					
Revision	Date	Purpose	Prepared by	Checked by	Authorised by
Signature			Peter Taylor (SMK Consultants)	Brett Schoppe (JCQ Operations Manager)	Mitchell Johnstone (JCQ Director)
	18-5-10	Initial Release			
Signature	18-5-11	1 st Review			
Signature	28-4-12	2 nd Review			
Signature	29-5-14	3 rd Review			

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Glossary of abbreviations

AEMR	Annual Environmental Management Report
CCC	Community Consultative Committee
DCP	Development Control Plan
DECCW	Department of Environment Climate Change and Water
DNR	Department of Natural Resources
DPI	Department of Primary Industries
DoP	Department of Planning
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EP&A Act	Environmental Planning and Assessment act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
INP	Industrial Noise Policy
LEP	Local Environmental Plan
LGA	Local Government Area
OH&S Act	Occupational Health and Safety Act 2000
OH&S	Occupational Health and Safety
POEO Act	Protection of the Environment Operations Act 1997
RTA	Roads and Traffic Authority
WMF	Waste Management Facility
WTS	Waste Transfer Station

1 Introduction

This Quarry Environmental Management Plan has been prepared for Johnston Ready Mixed Concrete Pty Ltd (ACN 106433390). Johnston Ready Mixed Concrete Pty Ltd is a family-owned company that operates several quarries and concrete batching plants in the Moree, Narrabri, Wyallda and Mungindi areas. The company is ISO 9001 endorsed and supplies road-building materials to both the RTA and local government in its areas of operation as well as concrete to the construction industry.

The Runnymede Quarry is located approximately 22km northeast of Pallamallawa on Lots 52 and 53 DP 751093 in the Parish of Bullala County of Burnett. The Quarry falls within the Gwydir Shire Council Local Government Area. Plan 1 shows the Quarry site and surrounding area.

2 Strategic Context

The approach to the environmental management of the Runnymede Quarry will be largely drawn from the experience of Johnston Ready Mixed Concrete Pty Ltd together with Ian Johnston from the operation of this quarry and other sites they manage within northern New South Wales.

3 Statutory Requirements

The “Runnymede” Quarry must comply with the following statutory instruments:

- Environmental Planning and Assessment Act 1979
- Protection of the Environment Operations Act 1997
- The National Parks and Wildlife Act 1974
- Native Vegetation Act 2003
- Threatened Species Conservation Act 1995
- Soil Conservation Act 1938
- Noxious Weeds Act 1993
- Mine Health and Safety Act 2004
- Occupational Health and Safety Act 2000
- Water Act 1912
- Water Management Act 2000
- Rural Fires Act 1997
- Contaminated Land Management Act 1997
- Yallaroi Local Environmental Plan 1991

4 Environmental Performance Management, Monitoring and Reporting

4.1 ENVIRONMENTAL MANAGEMENT PROGRAM

Environmental management at the “Runnymede” Quarry will be undertaken in accordance with Development Approval, the Environmental Protection Licence, the statutory instruments identified above and this Environmental Management Plan.

These documents will be reviewed, and if necessary updated, in consultation with the Gwydir Shire Council and relevant agencies to ensure effective environmental performance. The following measures will be adopted to ensure effective environmental management:

Issue	Safeguards
Air quality	
Control dust emissions	Keep areas of open excavation to a minimum. Undertake progressive rehabilitation of excavation areas. Water excavation areas and internal roads as required. Water stockpile area as required. Ensure loads are covered on trucks transporting materials.
Surface water	
Runoff management	Ensure that catch drains and sediment ponds are constructed prior to clearing of vegetation. Cleared vegetation to be spread on exhausted pit areas.
Control erosion and sediment	Place overburden on exhausted pit areas. Progressively revegetate disturbed areas. Ensure that batters are not less than 3 horizontal to 1 vertical (3:1 H:V). Maintain catch drains and diversion drains. Maintain sediment ponds and remove accumulated sediments to ensure adequate volumes are maintained. Spread removed sediment on regeneration or cultivation areas. Keep areas of open excavation to a minimum.
Noise	
Control noise emissions	Maintain equipment to manufacturers' specification. Operate equipment in accordance with the equipment operator's manual. Ensure that all guards and silencers are in place when equipment is being used.
Hazard and risk	
Worker safety	Develop and implement an OH&S Plan. Ensure all workers, contractors and visitors receive a site induction prior to commencing work or entering the worksite.
Aboriginal heritage	
Protection of Aboriginal objects	Aboriginal objects are protected under the NP&W Act 1974 regardless of location. Should any Aboriginal objects be identified during the excavation all works must cease and the DECCW contacted in regard to appropriate permit requirements before any further work at the site is undertaken.
Training	All employees and contractors working on site are to be made aware of the NP&W Act 1974 and the fact that it is an offence to move, disturb or destroy Aboriginal objects without the written permission of the Director General of the DECCW.

4.2 ENVIRONMENTAL MONITORING

The table below presents a summary of proposed monitoring that will be undertaken. Any non-compliance with the conditions of consent or statutory instruments will be recorded and included in the annual report along with measures used to mitigate impacts. An incident register (See Appendix 1, section 8.1.1) will be maintained to record any incident and the method adopted to mitigate any environmental harm or non-compliance.

Monitoring Requirements		Frequency
Air Quality		
Visually monitor dust generation from work zones to ensure that excessive dust is not being produced.		Daily.
Inspect sites to ensure that adequate dust controls are being used, such as watering roads, pits and stockpiles.		Daily.
Record any dust complaints in the complaints register and take corrective action.		When received.
Surface Water		
Inspect the site prior to vegetation removal to ensure that catch drains and sediment ponds have been installed and that necessary sediment and erosion controls are in place.		Prior to vegetation removal.
Inspect erosion and sediment controls to ensure that they are installed and operating correctly. Corrective action would be instituted if necessary and follow up inspections would be undertaken to verify the outcome of the corrective action.		Weekly and within 24 hours of a significant rainfall event.
Soils		
Monitor the condition of extraction areas and ensure that batters meet appropriate standards (3H:1V).		Weekly.
Inspect disturbed areas that have the potential for wind and water erosion and confirm stability.		Weekly.
Monitor sedimentation ponds and drains for sediment build up.		As required.
Site Rehabilitation		
Monitor rehabilitated areas to ensure that pasture establishment is proceeding and that erosion controls are functioning as designed.		Monthly.
Aboriginal Heritage		
Report any Aboriginal objects discovered during operations to the Department of Environment and Climate Change. Cease work in the area the object came from pending advice from DECC.		As necessary.
Hazard and Risk		
Visual inspection of fire breaks, groundcover, fuel loads and machinery to assess general fire hazard, particularly during the bushfire season.		Quarterly.
Noise		
Inspect machinery and ensure all guards, panels and silencers are in place and operational.		Daily.
Operate machinery in accordance with the manufacturer's requirements.		At all times.
Record any noise complaint in the complaints register and take corrective action.		When received.

4.3 SHUTDOWN PROTOCOL IN RESPONSE TO ENVIRONMENTAL TRIGGERS

Shutdown procedures will be initiated by management should any of the following events occur:

- Onset of heavy rainfall events
- Dust emissions exceed daily average of 50 µg at the nearest sensitive receiver
- Noise emissions exceed 35 dB at the nearest sensitive receiver

4.4 ANNUAL ENVIRONMENTAL MANAGEMENT REPORT

Runnymede quarry management are responsible for the preparation of an Annual Environmental and Management Report (AEMR) which is to be submitted to the DECCW once a year. This report is to

demonstrate that the site is complying with specific conditions set out by DECCW and the development consent. A copy of the Licence document can be found in Appendix 2 (section 8.2).

5 Complaint Management

The company maintains a telephone number 0427 540 212 and a Post Office box 941 Moree 2400 to enable public contact. All complaints will be recorded in the complaints register (See Appendix 1, section 8.1.2) and the complainant will be contacted and advised of the action taken to address the complaint.

6 Responding to Emergencies

6.1 FIRE

The company will ensure that vehicles and plant used in the quarry operation are fitted with effective exhaust systems to reduce the possibility of bushfire.

All earthmoving machines and trucks used on site will be equipped with suitable fire extinguishers.

Effective fire breaks shall be established and maintained around work areas and appropriate asset protection zones shall be established and maintained around buildings and plant storage areas.

6.2 INJURY

Suitable first aid equipment will be maintained on site in accordance with OH&S requirements. At least one person who holds a current senior first aid qualification will be employed on site.

6.3 FUEL AND OIL SPILL

Fuel and oil sufficient to refuel and service plant and machinery used in the quarry operations will be transported to the site on a day to day basis as required. This will ensure that should there be a spill the quantity involved will be small.

Should any fuel or oil be spilt then contaminated soil will be moved to a bunded area for remediation in accordance with the requirements of the Contaminated Land Management Act.

7 Accountability and Responsibility

Runnymede Quarry is owned by Johnston Ready Mixed Concrete Pty Ltd. The site is managed by one of the company directors Ian Johnston, who is responsible for the environmental management and performance of the quarry operation.

8 Appendices

8.1 APPENDIX 1 – INCIDENT REPORTING FORMS AND REGISTER FORMS

8.1.1 Incident Report form

Date	Time	Nature of incident	Details of action taken. If no action taken, what were the reasons why no action was necessary?

8.1.2 Complaints Register

Date	Time	Complainant name and contact details	Method of complaint	Nature of complaint	Details of action taken. If no action taken, what were the reasons why no action was necessary?

Appendix 2 – Environmental Protection Licence 7379

Section 55 Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 7379

Environment,
Climate Change
& Water

<u>Licence Details</u>	
Number:	7379
Anniversary Date:	25-June
<u>Licensee</u>	
JOHNSTONE, IAN ANTHONY	
PO BOX 941	
MOREE NSW 2400	
<u>Licence Type</u>	
Premises	
<u>Premises</u>	
'RUNNYMEDE'	
GIL GIL ROAD	
PALLAMALLAWA NSW 2399	
<u>Scheduled Activity</u>	
Crushing, grinding or separating	
Extractive activities	
<u>Fee Based Activity</u>	<u>Scale</u>
Land-based extractive activity	> 100000 - 500000 T obtained
<u>Region</u>	
North West - Armidale	
Level 1, NSW Govt Offices, 85 Faulkner Street	
ARMIDALE NSW 2350	
Phone: 02 6773 7000	
Fax: 02 6772 2336	
PO Box 494 ARMIDALE	
NSW 2350	

Section 55 Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 7379


**Environment,
Climate Change
& Water**

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Environment Protection Licence

Licence - 7379



Information about this licence

Dictionary

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

Responsibilities of licensee

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

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

Variation of licence conditions

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

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

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

Duration of licence

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

Licence review

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

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

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

The EPA publication "A Guide to Licensing" contains information about how to calculate your licence fees.

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Environment Protection Licence

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**Environment,
Climate Change
& Water**

The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

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

Transfer of licence

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

Public register and access to monitoring data

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

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

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

This licence is issued to:

JOHNSTONE; IAN ANTHONY
PO BOX 941
MOREE NSW 2400
JOHNSTONE; LEE- ANNE ROBYN
PO BOX 941
MOREE NSW 2400
JOHNSTONE; PAUL FRANCIS
PO BOX 941
MOREE NSW 2400
JOHNSTONE; JULIE MARGARET
PO BOX 941
MOREE NSW 2400

subject to the conditions which follow.

1 Administrative conditions

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Environment Protection Licence

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A1 What the licence authorises and regulates

A1.1 Not applicable.

A1.2 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

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

Scheduled Activity
Crushing, grinding or separating
Extractive activities

Fee Based Activity	Scale
Land-based extractive activity	> 100000 - 500000 T obtained

A1.3 Not applicable.

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Environment Protection Licence

Licence - 7379



A2 Premises to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
'RUNNYMEDE'
GIL GIL ROAD
PALLAMALLAWA
NSW
2399
LOT 52 & 53 DP751093, PARISH OF BULLALA, COUNTY OF BURNETT

A3 Other activities

A3.1 Not applicable.

A4 Information supplied to the EPA

A4.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

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

2 Discharges to air and water and applications to land

P1 Location of monitoring/discharge points and areas

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Environment Protection Licence

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P1.1 Not applicable.

P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

P1.3 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

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Environment Protection Licence

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**Environment,
Climate Change
& Water**
Water and land

EPA Identification no.	Type of monitoring point	Type of discharge point	Description of location
1	Wet weather discharge	Wet weather discharge	Overflow from sediment basin located approximately 300 metres to the north-east of the Runnymede residence as shown on map titled 'EPA Identification Points' dated 13/11/06.
	Discharge quality monitoring	Discharge quality monitoring	
2	Wet weather discharge	Wet weather discharge	Overflow from the final sediment basin located approximately 250 metres to the west of the Runnymede residence and within the catchment of the washing plant for the precoat product, as shown on map titled 'EPA Identification Points' dated 13/11/06.
	Discharge quality monitoring	Discharge quality monitoring	
3	Wet weather discharge	Wet weather discharge	Overflow from sediment basin located approximately 400 metres to the south of the Runnymede residence and south of the stockpiles and main crushing plant area as shown on map titled 'EPA Identification Points' dated 13/11/06.
	Discharge quality monitoring	Discharge quality monitoring	
4	Wet weather discharge	Wet weather discharge	Overflow from sediment basin located approximately 150 metres south of the Runnymede residence and west of the stockpiles and main crushing plant area, as shown on map titled 'EPA Identification Points' dated 13/11/06.
	Discharge quality monitoring	Discharge quality monitoring	
5	Wet weather discharge	Wet weather discharge	Overflow from sediment basin located approximately 700 metres to the south of the Runnymede residence and south of the stockpiles and main crushing plant area, as shown on map titled 'EPA Identification Points' dated 13/11/06.
	Discharge quality monitoring	Discharge quality monitoring	

3 Limit conditions

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Licence - 7379


**Environment,
Climate Change
& Water**
L1 Pollution of waters

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

L2 Load limits

L2.1 Not applicable.

L2.2 Not applicable.

L3 Concentration limits

L3.1 For each monitoring/discharge point or utilisation area specified in the table(s) below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L3.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L3.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table(s).

Water and Land**POINTS 1,2,3,4,5**

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	30GM concentration limit	100 percentile Concentration Limit
Total suspended solids	milligrams per litre				50

L3.4 Exceedence of the discharge quality limit specified in this licence for Total Suspended Solids from Points 1 to 5 is permitted if the discharge occurs during, or within 24 hours after, a rainfall event at the premises exceeding a total of 42 millimetres over any consecutive five day period.

L4 Volume and mass limits

L4.1 Not applicable.

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Environment,
Climate Change
& Water**L5 Waste**

L5.1 Not applicable.

L6 Noise Limits

L6.1 Not applicable.

L7 Hours of operation

L7.1 Activities covered by this licence must only be carried out between the hours of 0700 and 1730 Monday to Friday and at no times on Public Holidays

4 Operating conditions**O1 Activities must be carried out in a competent manner**

O1.1 Licensed activities must be carried out in a competent manner.

This includes:

- (a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
- (b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:

- (a) must be maintained in a proper and efficient condition; and
- (b) must be operated in a proper and efficient manner.

O3 Dust

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

5 Monitoring and recording conditions

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**Environment,
Climate Change
& Water**
M1 Monitoring records

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

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

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

M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

*Water and Land***POINTS 1,2,3,4,5**

Pollutant	Units of measure	Frequency	Sampling Method
Oil and Grease	milligrams per litre	Special Frequency 1	Representative sample
Total suspended solids	milligrams per litre	Special Frequency 1	Representative sample

For the purposes of the table(s) above Special Frequency 1 means the collection of samples on the first day of each discharge event.

M3 Testing methods - concentration limits

M3.1 Not applicable.

M3.2 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

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M4 Recording of pollution complaints

- M4.1** The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.
- M4.2** The record must include details of the following:
- (a) the date and time of the complaint;
 - (b) the method by which the complaint was made;
 - (c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
 - (d) the nature of the complaint;
 - (e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
 - (f) if no action was taken by the licensee, the reasons why no action was taken.
- M4.3** The record of a complaint must be kept for at least 4 years after the complaint was made.
- M4.4** The record must be produced to any authorised officer of the EPA who asks to see them.

M5 Telephone complaints line

- M5.1** The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.
- M5.2** The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.
- M5.3** Conditions M5.1 and M5.2 do not apply until 3 months after:
- (a) the date of the issue of this licence or
 - (b) if this licence is a replacement licence within the meaning of the Protection of the Environment Operations (Savings and Transitional) Regulation 1998, the date on which a copy of the licence was served on the licensee under clause 10 of that regulation.

M6 Requirement to monitor volume or mass

- M6.1** Not applicable.

M7 Requirement to monitor weather

- M7.1** Rainfall at the premises must be measured and recorded in millimetres per 24 hour period, at the same time each day.

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Note: The rainfall monitoring data collected in compliance with Condition M7.1 can be used to determine compliance with L3.4.

6 Reporting conditions

R1 Annual return documents

What documents must an Annual Return contain?

- R1.1** The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
- (a) a Statement of Compliance; and
 - (b) a Monitoring and Complaints Summary.
- A copy of the form in which the Annual Return must be supplied to the EPA accompanies this licence. Before the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

Period covered by Annual Return

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

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

R1.3

Where this licence is transferred from the licensee to a new licensee:

- (a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- (b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

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

R1.4

Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:

- (a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- (b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

Deadline for Annual Return

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

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**Notification where actual load can not be calculated**

R1.6 Not applicable.

Licensee must retain copy of Annual Return

R1.7 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

Certifying of Statement of Compliance and signing of Monitoring and Complaints Summary

R1.8 Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:

- (a) the licence holder, or
- (b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R1.9 A person who has been given written approval to certify a certificate of compliance under a licence issued under the Pollution Control Act 1970 is taken to be approved for the purpose of this condition until the date of first review of this licence.

R2 Notification of environmental harm

Note: The licensee or its employees must notify the EPA of incidents causing or threatening material harm to the environment as soon as practicable after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

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

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

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:

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

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

R3.3 The request may require a report which includes any or all of the following information:

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

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

General conditions

G1 Copy of licence kept at the premises

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

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

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

Pollution studies and reduction programs

U1 Spill Control

U1.1 COMPLETED

U2 Real Time Video Monitoring and Recording

U2.1 To ensure the licensee is complying with condition L7.1 of this licence the Department requires the licensee to install, operate and maintain real time video equipment that monitors the weighbridge and entrance/s to the licensed premises. The video monitoring must operate 24 hours a day seven days a week and must record continuously. These recordings must be kept for a minimum of three months from the time of recording and must display the time and date on the recorded image.

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The licensee must submit to the Department's Armidale office by no later than **25 February 2011** for approval a proposal which details the type of real time video monitoring and recording equipment to be installed and used at the site, the locations where it will be installed and the measures that will be incorporated to ensure it cannot be tampered with or altered to enable out of hours operations to go undetected. Installation must be undertaken by a suitably qualified person and must occur within one month of the equipment being approved by the Department.

COMPLETION DATE: 25 FEBRUARY 2011

Special conditions

E1.1 Not applicable.

Dictionary

General Dictionary

In this licence, unless the contrary is indicated, the terms below have the following meanings:

3DGM [in relation to a concentration limit] Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples

Act Means the Protection of the Environment Operations Act 1997

activity Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997

actual load Has the same meaning as in the Protection of the Environment Operations (General) Regulation 1998

AM Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

AMG Australian Map Grid

anniversary date The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.

annual return Is defined in R1.1

Approved Methods Publication Has the same meaning as in the Protection of the Environment Operations (General) Regulation 1998

assessable pollutants Has the same meaning as in the Protection of the Environment Operations (General) Regulation 1998

BOD Means biochemical oxygen demand

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CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 1998.
flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 1998
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
Noise	Means "sound pressure levels" for the purposes of conditions under L6 of this licence
Noise sensitive locations	Means buildings used as residence, hospital, school, child care centre, places of public worship and nursing homes. A noise sensitive location includes the land within 30 metres of the building
NSW Industrial Noise Policy	Means the document titled "NSW Industrial Noise Policy" published by the Environment Protection Authority in January 2000
O&G	Means oil and grease
percentile [in	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit

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relation to a
concentration limit
of a sample]

specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.

plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [for water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Mr Nigel Sargent

Environment Protection Authority

(By Delegation)

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Date of this edition - 10-Feb-2011

End Notes

1	Licence varied by notice 1009590, issued on 20-Sep-2002, which came into effect on 15-Oct-2002.
2	Licence transferred through application 141531, approved on 16-Oct-2002, which came into effect on 15-Oct-2002.
3	Licence varied by notice 1032383, issued on 06-Jan-2004, which came into effect on 31-Jan-2004.
4	Licence varied by notice 1052269, issued on 09-Jan-2007, which came into effect on 09-Jan-2007.
5	Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
6	Licence varied by notice 1105999, issued on 23-Nov-2009, which came into effect on 23-Nov-2009.
7	Licence varied by notice 1124038, issued on 10-Feb-2011, which came into effect on 10-Feb-2011.

10. Mapping and Plans

Plan 2: Site Plan



NSW Topographic Map
Pallamallawa
8939-II & III

Legend

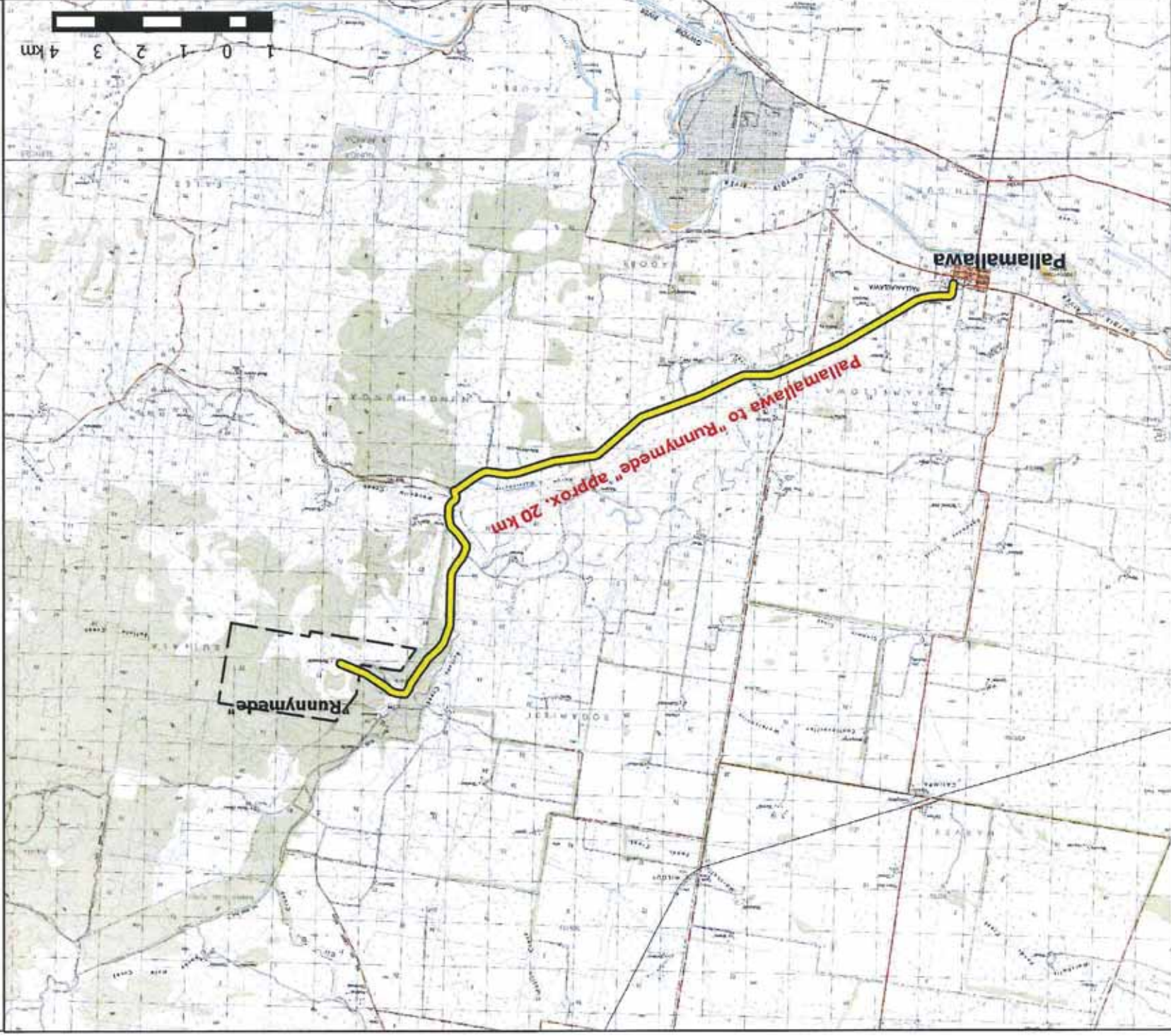
-  Haul Road
-  Runnymede_Bdy
-  currentTOPogeo50



SMK
CONSULTANTS
surveying - irrigation - environmental

Prepared By: Sarah Grady
Date: 28/05/2014

Disclaimer:
The information in this map has been provided in good faith. While all effort has been made to ensure the accuracy and completeness of the information the data providers take no responsibility for any errors or omissions that may occur or losses or damage that may result from the use of this information.



Ground Water Bore Location "Runnymede"

Legend

- Runnymede_Bdy
- Bore
- roads

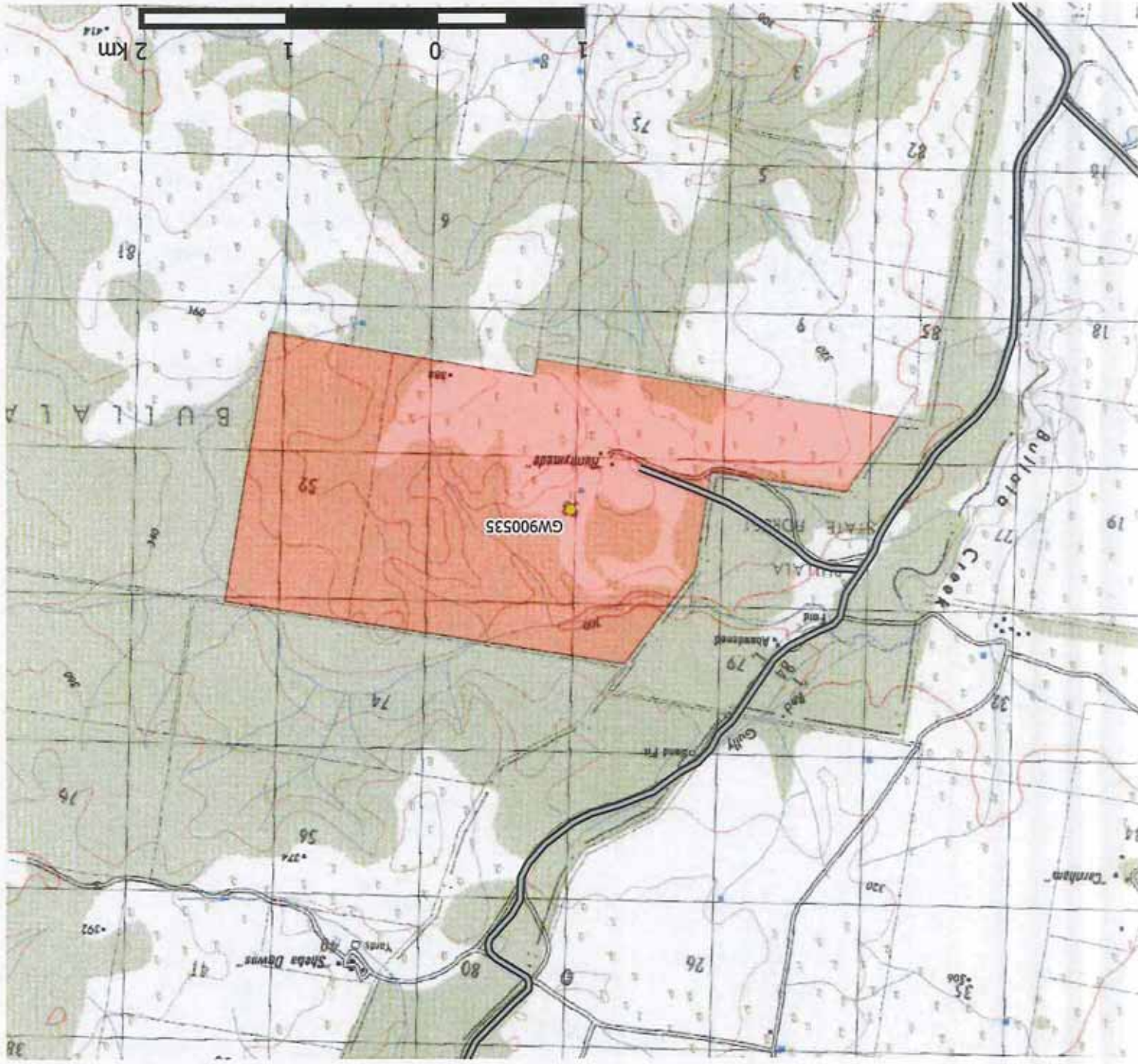
Bore Location:
237141.69 m E
6745524.45 m S
MGA Zone 56



Coordinate System: GDA 94
Prepared by: Sarah Grady, 28th April 2014

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Nearest Sensitive Receivers

- Legend**
- Haul Road
 - Sensitive Receivers
 - Runnymede_Bdy
 - roads
 - Google Satellite



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Prepared By: Sarah Grady
 Date: 27/05/2014

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Assessment Area Developed vs Undeveloped

Legend

-  Runnymede_Bdy
-  Expansion Area
-  Overburden Stockpile
-  Sand Quarry
-  Stockpile/Grazing
-  Grazing/Cleared
-  Existing Quarry/Stockpile
-  Undeveloped
-  Road/Other



"Runnymede" Site Drainage

Legend

-  Runnymede_Bdy
-  Sediment_Ponds
-  Diversion_Str
-  Diversion bank
-  Natural flow line
-  Overflow
-  Quarry face bund
-  Google Satellite



Prepared by: Sarah Gray
Date: 29 April 2014

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