

Champions Quarry Expansion

NOISE MANAGEMENT PLAN

Final Report

Version 2.2 (September 2017)

REVISION HISTORY AND APPROVAL OF THE NOISE MANAGEMENT PLAN

Version	Date	Description	By	Review
1.0 (September 1.0)	September 2013	Final Report Noise Management Plan	Champions Quarry	Jeff Champion
1.0 (September 2013)	October 2013	Final Report Noise Management Plan	EPA	Completed
1.1 (February 2014)	March 2014	Final Report Noise Management Plan	EPA	Completed
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2.1 (March 2017)	March 2017	Final Report Noise Management Plan	Champions Quarry	Jeff Champion
			DP & E	Approved
2.2 (September 2017)	September 2017	Final Report Noise Management Plan	Champions Quarry	Jeff Champion
			DP & E	Approved

This Management Plan has been prepared after due consideration of the Guidelines which seek to ensure that this is an effective and user friendly Plan. It is not a prescriptive or detailed document but provides a broad framework and direction.

This Management Plan is considered a dynamic document and will be reviewed where necessary as part of the annual review process (see Section 8 of the EMS). This Management Plan and any subsequent revisions must be approved by Champions Quarry Management and DP & E. The Management Plan must be prepared in consultation with the NSW Environmental Protection Authority and then submitted to the Secretary (or a nominee) of the DP & E for approval in accordance with the Project Approval.

A copy of the revised Management plan will be available from the Proponent's website.

REVISION HISTORY AND APPROVAL OF PROJECT APPROVAL (CONDITIONS OF APPROVAL)

Date	Description	By	Review
30 August 2012	Project Approval	Champions Quarry	Jeff Champion
		DP & I	
29 October 2013	Notice of Modification (09_0080 MOD 1)	Champions Quarry	Jeff Champion
		DP & I	
16 September 2016	Notice of Modification (09_0080 MOD 2)	Champions Quarry	Jeff Champion
		DP & E	
9 August 2017	Notice of Modification (09_0080 MOD 3)	Champions Quarry	Jeff Champion
		DP & E	

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REFERENCES

GLOSSARY

Biodiversity Offset Strategy	The conservation and enhancement strategy described in the documents listed in condition 2(a) of Schedule 2, and shown in the figure in appendix 6 of the Project Approval
CoA	Planning and Assessment Commission of NSW Conditions of Approval dated August 30, 2012 (incorporating the Statement of Commitments (SoC)) as amended from time to time
Contractor	Contractor engaged by the Proponent to undertake activities associated with the Project (and includes Subcontractors)
dB(A)	Noise measures in units called decibels (dB).
DECCW	Department of Environment, Climate Change and Water
Department	Department of Planning and Environment
DoP	Department of Planning
DP & I	Department of Planning and Infrastructure (previously known as DoP)
DP & E	Department of Planning and Environment (previously known as DP & I)
DPI (Agriculture)	Department of Primary Industries - Agriculture
DPI (Water)	Department of Primary Industries - Water
DRG	Division of Resources and Geoscience within the NSW Department of Planning and Environment
Environment	Surroundings in which the Project operates within including: air, water, land, natural resources, flora, fauna, humans, heritage and their interrelation
Environmental Aspect	Element of organisational activities or products that can interact with the environment
Environmental Impact	Any changes to the environment, whether adverse or beneficial, wholly or partially resulting from an organisational aspect
Extraction Areas	The Central and Southern Extraction Areas, shown on Figure 9 in Appendix 6 of the Project Approval
EA	Champions Quarry Expansion, Environmental Assessment Report prepared by ERM Pty Limited and dated February 2010
EA (MOD 1)	Modification Application MP 09_0080 MOD 1 dated April 2013
EA (MOD 2)	Modification Application MP 09_0080 MOD 2 dated February 2016, the accompanying annexures A and B and the response to submissions dated April 2016

EA (MOD 3)	Modification Application MP 09_0080 MOD 3 dated February 2017, titled Annexure A – Application pursuant to Section 75W of the Environmental Planning and Assessment Act 1979, and the response to submissions dated July 2017
ECRTN	The Environmental Criteria for Road Traffic Noise (ECRTN) (1999) (DECCW)
EMP	Environmental management practices
EMS	Environmental Management Strategy prepared in accordance with Schedule 5 Condition 1 of the Project Approval
EPA	NSW Environmental Protection Authority
ERM	Environmental Resources Management Australia
EP & A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPL	Environmental Protection Licence under the POEO Act
Guidelines	The Guidelines for Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2004)
Incident	A set of circumstances that: <ul style="list-style-type: none"> • cause or threaten to cause, material harm to the environment; and/or • breaches or exceeds the limits or performance measures/criteria in the Project Approval
INCG	Interim Construction Noise Guideline
LA _{L90}	Background noise, the level exceeded 90% of the time.
LA _{eq}	The energy equivalent. The summation of noise over a selected period of time. It is the energy average noise from a source, and is the equivalent continuous sound pressure level over a given period
LA _{max}	The maximum root mean squared (rms) sound pressure level received at the microphone during a measuring interval.
LCC	Lismore City Council
Management Plan	Refers to this Noise Management Plan
Minister	Minister for Planning, or delegate
NAL	Noise Assessment Locations
OEH	Office of Environment and Heritage
POEO Act	<i>Protection and Environment Operations Act 1997</i>

Preferred Project Report (PPR)	Champions Quarry Expansion, Preferred Project Report prepared by ERM Pty Limited and dated December 2011
Project Approval	Project Approval issued by Planning and Assessment Commission of New South Wales containing the CoA dated 30 August 2012 as amended from time to time
Proponent	Reavill Farm Pty Ltd and Tucki Hills Pty Ltd and any other entity or person who seeks to carry out the development approved under the Project Approval
PSNC	Project Specific Noise Criteria
Response to Submissions (RTS)	Champions Quarry Response to Submissions, prepared by ERM Pty Limited and dated September 2010 and containing the Proposed Quarry Management Plan
RMS	Roads and Maritime Services
Secretary	Secretary of DP & E, or nominee
SoC	Statement of Commitment (Appendix 3 of the Project Approval)
Sound Power Testing	Measurement of total power of sound that is emitted per unit time, measured in watts (W)
Subcontractor	Any company, body or person who is contracted to the Contractor for the purpose of supplying services or goods.

1 BACKGROUND

1.1 OVERVIEW

The Proponent has been granted Project Approval by the NSW Minister for Planning and Infrastructure under Section 75J of the EP & A Act to expand quarrying operations of the quarry known as Champions Quarry located at Tuckurimba (near Lismore) on the Far North Coast of New South Wales (herein referred to as “the Project”).

The approved expansion is to increase the extraction rate from a maximum of 29,000m³ (approximately 64,000 tonnes) of sandstone material to 250,000 tonnes of extractive materials per calendar year until the year 2038. Activities included as part of the expansion include but are not limited to, those activities required for clearing, top soil and over burden removal, extraction of quarry product, processing, stockpiling, loading and transportation of material.

As outlined in the EMS, the Project has undergone a high level of scrutiny as part of a detailed EA and subsequent investigations to evaluate the extent of impact of the proposed quarry expansion on the environment including noise.

1.2 SUMMARY OF INITIAL NOISE ASSESSMENTS AND INVESTIGATIONS

A detailed Noise Impact Assessment was undertaken by ERM to assess the potential noise impacts of the proposed expansion of Champions Quarry on the surrounding environment. An overview of the report is below and a copy of the complete report is provided in Appendix D of the EA.

1.2.1 INTRODUCTION

The noise assessment considered the following:

- Potential noise impact at noise assessment locations from proposed operational noise from the quarry using a range of operational “worst case” scenarios; and
- Potential noise impact at noise assessment locations due to increased traffic flows to and from the quarry expansion.

As no blasting is proposed to be undertaken as part of the Project, a blast impact assessment has not been undertaken.

1.2.2 METHODOLOGY

Four residential properties were originally identified as being potentially affected by noise associated with the quarry expansion and therefore allocated NAL’s 1 to 4. Their approximate locations are illustrated within Figure 1.1 below as receivers 1, 2, 3 and 4.

Figure 1.1 – Receivers Locations

Known as Appendix 2 Project Layout Plans – Figure 2.2 (amended 1 June 2012) extracted from the Planning and Assessment Commission of NSW Conditions of Approval dated 30 August 2012

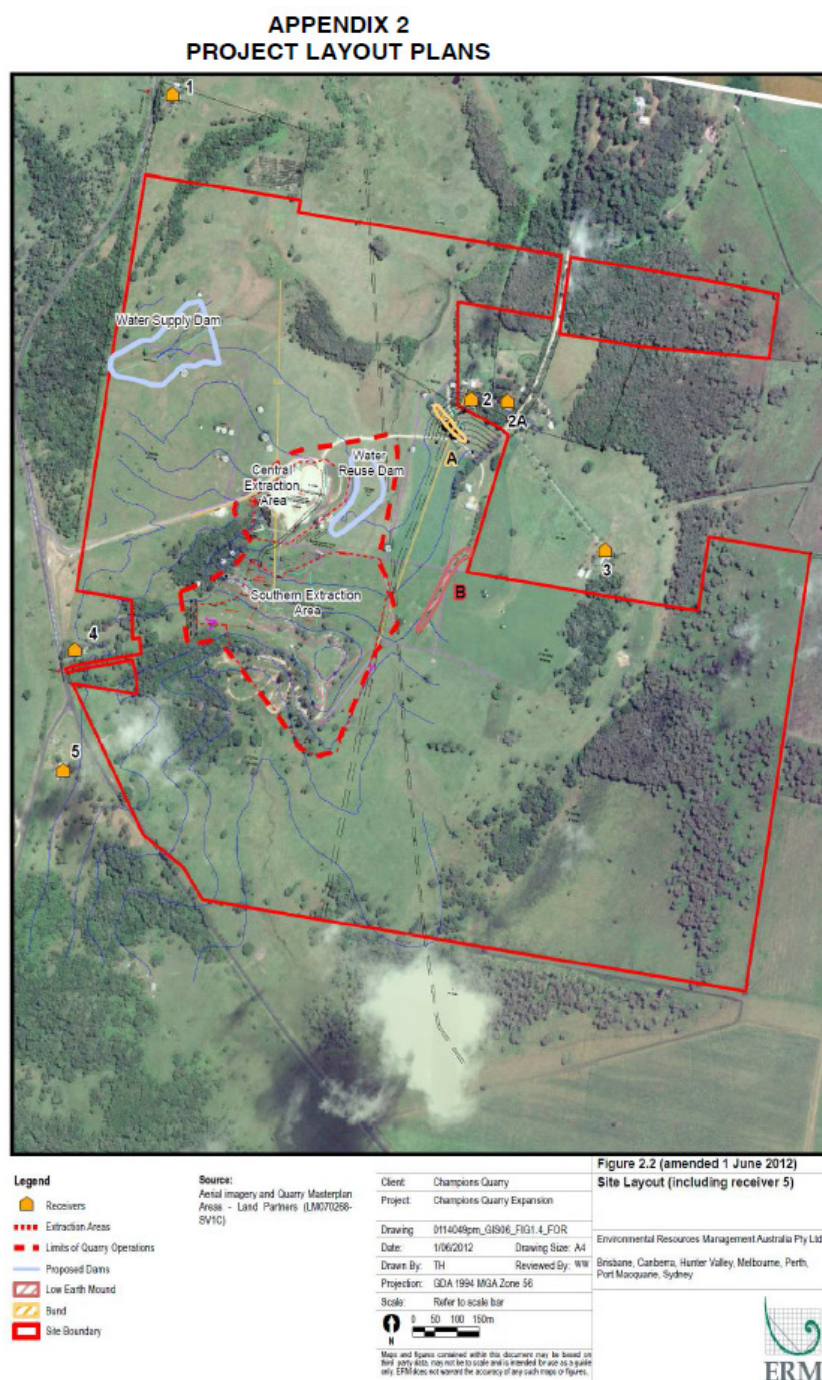


Figure 2: Project Site and Nearest Residential Receivers

Nine noise modelling scenarios including 6 base operations scenarios were created for the assessment:

- (a) Model Validation/Existing Operations Scenario – is representative of the operations measured during model validation and is also representative of typical existing operations. Plant equipment has been modelled in the central extraction area at the existing pit depth.
- (b) Central Extraction Area Scenario – is as per existing operation scenario but includes a dozer and excavator operating in the central extraction area and road trucks collecting product.
- (c) Central Extraction Area Processing Operations Scenario – is representative of crushing, screening and washing extracted material in the central extraction area. It is proposed that this will be undertaken separately to extractive works and has therefore been modelled separately. Processing plant has been located at the western end of the central extraction area.
- (d) Southern Extraction Area Processing Scenario – is representative of crushing and/or screening of the extracted material in the southern extraction area. It is proposed that this will be undertaken separately to extractive works and has therefore been modelled separately. Processing plant has been located at the north western cell of the southern extraction area.
- (e) Southern Extraction Area: Overburden Stripping Scenario – is indicative of approximately the first 3 to 6 months of operations that will be undertaken in the initial 3 ha cells, at the surface whilst overburden stripping occurs. It is proposed shielding will be provided by earth bunds directly adjacent to items of plant during this period. Noise levels will be progressively reduced as topsoil bunding and quarry benches are increased in height. The extractive equipment is located in the north western edge of the southern extraction area, which is where the overburden stripping will be most exposed to residences (NAL 4 in particular).
- (f) Southern Extraction Area Scenario – is indicative of the operations in approximately 5 to 10 years once the benching has been established. Extractive plant is generally located in the pit, which will provide shielding from noise at the assessment locations. A dump truck will be moving material between the southern and central extraction areas. There are road trucks in both the central and southern extraction areas being loaded with material.
- (g) Processing and Extraction Scenarios – represents a combination of scenarios C and F, combining extractive plant located in the southern extraction area and crushing and processing undertaken simultaneously within the central extraction area.
- (h) Rock Hammer Operation – represents a combination of Scenario F with a rock hammer being utilised in the central extraction area.
- (i) Rock Saw Operation – represents a combination of Scenario F with a rock saw being used in the central extraction area.

1.2.3 RESULTS

Noise Modelling

An initial noise model was developed. This included no mitigation measures and is provided below.

Table 1.1 – Noise Modelling Summary with no mitigation measures

Assessment Location	Predicted Daytime $L_{Aeq, 15 \text{ minute}}$ Noise Levels, dB(A)								
	B	C	D	E	F	G	H	I	PSNC
NAL 1	33	31	30	32	33	35	35	34	40
NAL 2	42	41	35	38	40	44	43	41	37
NAL 3	34	36	34	34	38	40	40	39	37
NAL 4	42	40	38	43	44	46	44	44	40

Note: Exceedances of the PSNC are in **BOLD**

Following the identification of a number of exceedances of the PSNC, a model which included the provision of bunding. The modelling results are presented below.

Table 1.2 – Noise Modelling Summary incorporating bunding

Assessment Location	Predicted Daytime $L_{Aeq, 15 \text{ minute}}$ Noise Levels, dB(A)								
	B	C	D	E	F	G	H	I	PSNC
NAL 1	28	26	30	29	30	31	35	31	40
NAL 2	32	35	34	33	34	38	39	36	37
NAL 3	32	34	34	33	33	37	39	35	37
NAL 4	37	33	38	36	36	38	39	37	40

Note: Exceedances of the PSNC are in **BOLD**

Modelling identifies a 1dB(A) exceedance at NAL 2 for Scenario G, which is acoustically insignificant, especially considering the 2 dB(A) tolerance shown in the model validation.

These results also indicate that the noise levels associated with the use of the rock hammer (Criteria H) will result in exceedances of PSNC for receivers NAL 2 and NAL 3 by 2 dB(A). Using the rock hammer (with noise control) in isolation from other plant would remove the cumulative noise impacts on neighbouring receivers. Table 1.3 presents the results of modelling showing the rock hammer working in isolation (ie no other plant working in tandem with rock breaking).

Table 1.3 – Revised Noise Modelling Summary – Rock Hammer Only (with mitigation)

Assessment Location	Predicted Daytime $L_{Aeq, 15 \text{ minute}}$ Noise Levels, dB(A)	
	H	PSNC
NAL 1	33	40
NAL 2	37	37
NAL 3	38	37
NAL 4	35	40

Note: Exceedances of the PSNC are in **BOLD**

The above results indicate that it would be preferable to use a rock saw (Scenario I) for sandstone quarrying as the resulting noise impacts are below the PSNC for all criteria. Notwithstanding this, if the rock hammer (with mitigation) is used in isolation the PSNC would be met at all receivers, with the exception of NAL 3 where there would be a 1dB(A) exceedance, which in any event is within the noise modelling resolution.

To further ameliorate any noise impacts including those associated with the rock hammer and rock saw it is proposed the Proponent will implement mitigation measures outlined in Chapter 5 of this Management Plan.

Road Traffic Noise

Haul trucks enter and leave the quarry via Wyrallah Road. NAL 1 and NAL 4 are representative of the most exposed residences to Wyrallah Road and are both located approximately 20 metres from the Road.

Traffic Noise has been modelled using the Calculation of Road Traffic Noise (CoRTN). All noise predictions have been made to 1 metre in front of the most exposed façade of a dwelling, at a height of 1.5 metres above floor level.

The contribution from non-site related traffic on Wyrallah Road has been calculated at 64dB(A) $L_{Aeq, 15 \text{ hour}}$ NAL 1 and NAL 4, based on a daily traffic volume of 2798 vehicles per day. The contribution from site vehicles has been calculated at 56dB(A) $L_{Aeq, 15 \text{ hour}}$ for NAL 1 and NAL 4. The total combined road traffic noise is 64dB(A) $L_{Aeq, 15 \text{ hour}}$. This complies with ECRTN criteria as site related traffic noise on Wyrallah Road will not increase existing road traffic noise on average over a 15 hour period.

1.3 SUMMARY OF FURTHER NOISE ASSESSMENTS AND INVESTIGATIONS

A subsequent Noise Assessment was undertaken by Bridges Acoustics to confirm the results and conclusions contained in ERM's assessment and to assess acoustic issues associated with minor amendments to the Project. Namely, the relocation of Bund A and a construction noise assessment. An overview of the report is below and a copy of the complete report is provided in Annexure D of the PPR.

1.3.1 OVERVIEW

The Bridges Acoustics report confirmed the results and conclusions contained in the initial assessment carried out by ERM (contained in Appendix D of the EA). In addition the report outlined the impact on noise as a result of the relocation of a Bund referred to in the EA as Bund A and receiver's noise levels during the construction phase

Bund A Relocation

It is proposed that Bund A referred to in the EA (and incorporated into ERM's calculations in the initial noise assessment) is to be relocated to approximately 60 metres south west of Receiver 2 in order to reduce the visual impact of the bund and reduce noise levels during construction of the bund. It is proposed the new Bund A will be to a maximum height of 5.5 metres and together with temporary bunds within the extraction and operational areas will provide the same or better level of noise control than the proposed Bund A referred to in the EA under all operating conditions.

Construction Noise

The EA did not specifically assess received noise levels during the Projects construction phase. Noise levels during construction, including the construction of the relocated Bund A, other bunds, haul roads and dams have been assessed. A table of the construction activities, indicative construction equipment and predicted noise levels to 6 representative receiver locations (identified as receivers 1, 2, 2A, 3, 4 and 5 in figure 1.1) is contained in Annexure D of the PPR.

Construction noise levels were compared to noise criteria in the INCG which are considered the appropriate guidelines. The INCG recommends a criterion 10dB(A) above the background noise level, which is 5 dB(A) above the normal operational noise criteria listed in the EA.

Results from the construction noise assessment indicate receiver 2 would receive 2 dB(A) above the INCG criterion for approximately 5 days, although this very minor exceedance of the criterion would not be 'received' by residents as the work would generally occur while the residence is unoccupied during the day. Given the minor predicted exceedance of noise criterion and the short time such an exceedance may occur, predicted construction noise levels are considered acceptable.

1.3.2 CONCLUSION

Noise levels associated with the Project would be consistent with the levels reported in the EA and would remain acceptable. This conclusion remains valid despite the minor variation

of the location of Bund A and associated increase in height of temporary bunds. Given the only minor and occasional nature of predicted noise criteria exceedances at 2 receivers and the application of all feasible and reasonable noise mitigation measures, predicted noise levels are considered acceptable.

2 PURPOSE AND OBJECTIVES

2.1 PURPOSE

The primary purpose of this Management Plan is to provide procedures to:

- Describe how the Proponent will manage and control risks associated with noise during the expansion and operation of the Project;
- Ensure the protection of nearby receivers in accordance with Schedule 3 Condition 4 and 5 of the Project Approval when carrying out the Project activities;
- Ensure that the EPA and the Secretary are involved in the formulation of this Management Plan;
- Address the requirements of applicable legislation and any ongoing approvals as they are applicable to the Project;
- Meet the Project Approval; and
- Address the requirements of the EA.

This Management Plan provides procedures and actions that may need to be implemented to avoid or minimise the Project noise.

2.2 OBJECTIVES

The noise management plan objectives of the operations are to implement appropriate EMP's to minimise noise impacts. This Management Plan's objectives specifically in relation to the Project are to describe:

- the proposed noise management system;
- a noise monitoring program that:
 - is capable of evaluating the performance of the Project;
 - includes a protocol for determining any exceedances of the Project Approval;
 - evaluates and has a protocol to report on the effectiveness of the noise management system on site.;
- measures to ensure the best management practice is employed;
- measures to ensure noise impacts of the Project are minimised during meteorological conditions when noise limits in the Project Approval do not apply;
- measures to maintain the effectiveness of any noise suppression equipment on plant at all times and ensure defective plant is not used operationally until fully repaired;
- measures to ensure compliance with the relevant conditions of the Project Approval; and
- key roles and responsibilities.

Further in accordance with Schedule 5 Condition 3 of the Project Approval, this Management Plan includes the following information (as determined relevant to the noise of the Project):

- baseline data;

- a description of:
 - relevant statutory requirements;
 - relevant limits or performance measures/criteria;
 - relevant performance indicators;
- a description of the measures that would be implemented to comply with relevant statutory requirements, limits, or performance measures /criteria;
- a program to monitor and report on:
 - the impacts and environmental performance of this Project;
 - the effectiveness and management measures;
 - a contingency plan to manage any unpredicted impacts and their consequences;
 - a program to investigate and implement ways to improve the environmental performance of the project over time;
 - a protocol for managing and reporting any incidents, complaints, non-compliance with statutory requirements and exceedances; and
 - A protocol for the periodic review of this Management Plan.

3 NOISE IMPACTS AND LEGISLATIVE OBLIGATIONS

3.1 ENVIRONMENTAL IMPACTS

The Project activities that are most likely to have the potential to result in noise impacts on residential receivers will be:

- Construction activity noise;
- Quarry operational noise (including the operation of a rock hammer and rock saw); and
- Road traffic noise.

A detailed Noise Impact Assessment was undertaken by ERM to assess the potential noise impacts of the proposed expansion of Champions Quarry on the surrounding environment. A subsequent Noise Assessment was undertaken by Bridges Acoustics to confirm the results and conclusions contained in ERM's assessment and to assess acoustic issues associated with minor amendments to the Project. Namely, the relocation of Bund A and a construction noise assessment. By way of overview it was concluded that noise levels associated with the Project remain acceptable. Any minor and occasional nature of predicted noise criteria exceedances at 2 receivers and the application of all feasible and reasonable noise mitigation measures, predicted noise levels from the Project are considered acceptable.

3.2 LEGISLATION AND POLICIES

The applicable legal and other requirements related to noise and environmental management for the Project are outlined in Table 3.1 below

Table 3.1 – Legal and other requirements for Environmental Management

Legislation and Policies
Environmental Protection and Biodiversity Conservation Act 1999
Environmental Planning and Assessment Act 1979
Environmental Planning and Assessment Regulation 2000
Protection of the Environment and Operations Act 1997
Protection of the Environment Operations (General) Regulations 2009
Protection of the Environment Operations (Noise Control) Regulations 2008
North Coast Regional Environmental Plan 1988 (NCREP)
Lismore Local Environmental Plan 2012 (Lismore LEP)

3.3 MINISTERS CONDITIONS OF APPROVAL

Pursuant to section 75B(1) of the EP & A Act, the Project was declared to be a project under Part 3A of the Act and project approval has been received from the Minister for Planning.

The primary conditions relevant to noise in relation to the Project are contained within Conditions 3 to 9 (inclusive) of Schedule 3 of the Project Approval. These Conditions and other additional clauses that are relevant to noise operations of the quarry are outlined below.

3.3.1 CONDITION 17 (OPERATION OF PLANT AND EQUIPMENT) OF SCHEDULE 2 OF THE PROJECT APPROVAL

Condition 17 of Schedule 2 of the Project Approval states:

“The Proponent must ensure that all plant and equipment used at the site is:

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

3.3.2 CONDITION 20 (COMPLIANCE) OF SCHEDULE 2 OF THE PROJECT APPROVAL

Condition 20 of Schedule 2 of the Project Approval states:

“The Proponent must ensure that all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities”.

3.3.3 CONDITION 3 OF SCHEDULE 3 OF THE PROJECT APPROVAL

Condition 3 of Schedule 3 of the Project Approval states:

“The Proponent must construct:

- Bund A prior to carrying out any quarrying operations on site under this approval;
- Bund D prior to carrying out any quarrying operations within the Southern Extraction Area; and
- Bund E prior to commissioning the sand washing plant within the Southern Extraction Area,

to the satisfaction of the Secretary.”

3.3.4 CONDITION 4 (NOISE CRITERIA – PROJECT CONSTRUCTION) OF SCHEDULE 3 OF THE PROJECT APPROVAL

Condition 4 of Schedule 3 of the Project Approval states:

“During periods in which Bunds A, C (stage 3 only) and D and the water re-use and water supply dams are being actively constructed, the Proponent must ensure that noise generated on site does not exceed the criteria in Table 1 at any residence on privately-owned land”

Table 1 – Noise Criteria – Construction

Receiver	L _{Aeq(15 min)} dB(A)
NAL 1, NAL 4 and NAL 5	45
NAL 2, NAL 2A, NAL 3 and privately owned land along the southern end of Hazlemount Lane	42
All other receivers	40

Notes:

- Receiver locations are shown in Appendix 1 [of the Project Approval].
- Noise generated by the project is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.

3.3.5 CONDITION 5 (NOISE CRITERIA) OF SCHEDULE 3 OF THE PROJECT APPROVAL

Condition 5 of Schedule 3 of the Project Approval states:

“Except for times during which Bunds A, C (stage 3 only) and D and the water re-use and water supply dams are being actively constructed, the Proponent must ensure that the noise generated on site does not exceed the criteria in Table 2 at any residence on privately-owned land.”

Table 2 – Noise criteria

Receiver	L _{Aeq(15 min)} dB(A)
NAL 4 and NAL 5	38

NAL 2, NAL 2A, NAL 3 and privately owned land along the southern end of Hazlemount Lane	37
NAL 1 and all other receivers	35

Notes:

- Receiver locations are shown in Appendix 2 [of the Project Approval].
- Noise generated by the project is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.

“However, these criteria do not apply if the Proponent has a written agreement with the relevant landowner to exceed the criteria, and the Proponent has advised the Department in writing of the terms of this agreement.”

3.3.6 CONDITION 6 (HOURS OF OPERATION) OF SCHEDULE 3 OF THE PROJECT APPROVAL

Condition 6 of Schedule 3 of the Project Approval states:

“The Proponent must comply with the operating hours in Table 3.”

Table 3 – Operating Hours

Day	Construction	Rock Hammer Operations	All other quarrying operations (including on-site truck movements)
Monday – Friday	7am – 6pm	9am – 12 pm and 2pm – 4pm	7am – 6pm
Saturday	8am – 1pm	None	8am – 1pm
Sunday and Public Holidays	None	None	None

Note: Maintenance activities may occur at any time provided they are inaudible at privately-owned residences.

Condition 6A of Schedule 3 of the Project Approval states:

“The following activities may be carried out outside the hours specified in Table 3:

- delivery or dispatch of materials as requested by Police or other public authorities; and
- emergency work to avoid the loss of lives, property or to prevent environmental harm.

In such circumstances, the Proponent must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.”

3.3.7 CONDITION 7 AND 8 (BLASTING AND OPERATING CONDITIONS) OF SCHEDULE 3 OF THE PROJECT APPROVAL

Condition 7 of Schedule 3 of the Project Approval states:

“The Proponent must not carry out any blasting on the site.”

Condition 8 of Schedule 3 of the Project Approval states:

“The Proponent must:

- implement best practice noise management to minimise the construction, operational and traffic noise of the project;

- (b) minimise the noise impacts of the project during meteorological conditions when the noise limits in this approval do not apply;
 - (c) maintain the effectiveness of any noise suppression equipment on plant at all times and ensure defective plant is not used operationally until fully repaired;
 - (c1) carry out noise monitoring to determine whether the project is complying with the relevant conditions of this approval; and
 - (d) regularly assess noise monitoring data and relocate, modify, and/or stop operations on site to ensure compliance with the relevant conditions of this approval,
- to the satisfaction of the Secretary.”

3.3.8 CONDITION 9 (NOISE MANAGEMENT PLAN) OF SCHEDULE 3 OF THE PROJECT APPROVAL

Condition 9 of Schedule 3 of the Project Approval states:

“the Proponent must prepare and implement a Noise Management Plan for the Project to the satisfaction of the Secretary. This plan must:

- (a) be prepared in consultation with the EPA, and submitted to the Secretary for approval prior to the construction of Bund A and/or Bund D;
- (b) describe the measures would be implemented to ensure:
 - best management practice is being employed on site;
 - the noise impacts of the project are minimised during any meteorological conditions when the noise limits in this approval do not apply; and
 - compliance with the relevant conditions of this approval;
- (c) describe the proposed noise management system in detail; and
- (d) include a monitoring program that:
 - is capable of regularly evaluating the performance of the project, including individual items of plant such as the rock hammer and rock saw;
 - includes quarterly monitoring by a suitably qualified and experienced specialist, unless otherwise required by the Secretary;
 - includes annual sound power testing, unless otherwise agreed by the Secretary;
 - includes a protocol for determining exceedances of the relevant conditions in this approval; and
 - evaluates and reports on the effectiveness of the noise management system on site.

The Proponent must implement the approved management plan as approved from time to time by the Secretary.”

3.3.9 CONDITION 1 OF SCHEDULE 4 OF THE PROJECT APPROVAL

Condition 1 of Schedule 4 of the Project Approval states the following in relation to notification of landowners:

“As soon as practicable after obtaining monitoring results showing an:

- (a) exceedance of any relevant criteria in Schedule 3, the Proponent must notify affected landowners in writing of the exceedance, and provide regular monitoring results to each of affected landowner until the project is again complying with the relevant criteria...”

3.3.10 CONDITION 2 AND 3 OF SCHEDULE 4 OF THE PROJECT APPROVAL

Condition 2 of Schedule 4 of the Project Approval states the following in relation to independent review:

“If an owner of privately owned land considers the project to be exceeding the relevant criteria in schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the project on his/her land.

If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary’s decision the Proponent must:

- (a) commission a suitably qualified, experienced and independent expert, whose appointment has been approved by the Secretary, to:
 - consult with the landowner to determine his/her concerns;
 - conduct monitoring to determine whether the project is complying with the relevant criteria in schedule 3; and
 - if the project is not complying with these criteria, then identify measures that could be implemented to ensure compliance with the relevant criteria; and
- (b) give the Secretary and landowner a copy of the independent review.

Condition 3 of Schedule 4 of the Project Approval states the following in relation to independent review:

“If the independent review determines that the project is not complying with the relevant criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the Secretary:

- (a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent expert, and conduct further monitoring until the project complies with the relevant criteria; or
- (b) secure a written agreement with the landowner to allow exceedances of the relevant criteria,

to the satisfaction of the Secretary.”

3.3.11 CONDITION 2 OF SCHEDULE 5 OF THE PROJECT APPROVAL

Condition 2 of Schedule 5 of the Project Approval more broadly states the following in relation to adaptive management:

“The Proponent must assess and manage project related risks to ensure that there are no exceedances of the criteria and/or performance measures in schedule 3...

Where any exceedance of these criteria and/or performance measures has occurred, the Proponent must, at the earliest opportunity:

- (a) take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur;
 - (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
 - (c) implement remediation measures as directed by the Secretary,
- to the satisfaction of the Secretary.”

3.3.12 CONDITION 3 OF SCHEDULE 5 OF THE PROJECT APPROVAL

Condition 3 of Schedule 5 of the Project Approval more broadly states the following in relation to the preparation of management plans:

“The Proponent must ensure that the Management Plans required under this approval are prepared in accordance with any relevant guidelines, and include:

- (a) detailed baseline data;
- (b) a description of:
 - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
 - any relevant limits or performance measures/criteria; and
 - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;
- (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
- (d) a program to monitor and report on the:
 - impacts and environmental performance of the project; and
 - effectiveness of any management measures (see (c) above);
- (e) a contingency plan to manage any unpredicted impacts and their consequences;
- (f) a program to investigate and implement ways to improve the environmental performance of the project over time;
- (g) a protocol for managing and reporting any:
 - incidents;
 - complaints;
 - non-compliance with statutory requirement; and
 - exceedances of the impact assessment criteria and/or performance criteria; and
- (h) a protocol for periodic review of the plan.

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.”

3.3.13 CONDITION 7 OF SCHEDULE 5 OF THE PROJECT APPROVAL

Condition 7 of Schedule 5 of the Project Approval states:

“The Proponent must immediately notify the Secretary and any other relevant agencies of any Incident. Within 7 days of the Incident, the Proponent must provide the Secretary and relevant agencies with a detailed report on the Incident, and such further reports as may be requested.”

3.4 ENVIRONMENTAL PROTECTION LICENCE (EPL) CONDITIONS

An Environmental Protection Licence has been obtained for the operations – EPL 20562.

3.5 RELATED MANAGEMENT PLANS

This Management Plan forms part of an overarching environmental management system for the Project. Where relevant reference should be made to the other plans for the Project listed in Table 3.2.

Table 3.2 – Environmental Management Plan Requirements

Number	Environmental Plan	Condition ¹
EMP 2	Air Quality Management Plan	12
EMP 3	Water Management Plan	17
EMP 4	Transport Management Plan	31
EMP 5	Waste Management Plan	33
EMP 6	Heritage Management Plan	36
EMP 7	Landscape Management Plan	45

3.6 STANDARDS, POLICIES, GUIDELINES AND MODELLING

The standards, policies, guidelines and modelling that have been used in the preparation of this Management Plan and that relate to the Project are listed in Table 3.3.

Table 3.3 – Environmental Standards, Policies, Guidelines and Modelling

Environmental Risk Issue	Standards, Policies, Guidelines and Modelling
Noise	Environmental Noise Model (ENM)
	The Environmental Criteria for Road Traffic Noise (ECRTN) (1999) (DECCW)
	NSW Industrial Noise Policy (INP) (Office of Environment and Heritage (OEH)) (2000)
	Calculation of Road Traffic Noise (CoRTN)
	Interim Construction Noise Guideline (ICNG)
	AS1055.1 – 1997: Acoustics – Description and measurement of environmental noise – General procedures
	AS1259.2 – 1990: Sound level meters
	AS2923 – 1987: Ambient air-guide for measurements of horizontal wind for air quality applications
	Australian and New Zealand Environment and Conservation Councils (ANZECC) Guidelines to Minimise Annoyance Due to

¹ Environmental Performance Conditions, Schedule 3 of the Project Approval

	Blasting Overpressure and Ground Vibration (ANZECC) (1990)
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3.7 CROSS REFERENCING REQUIREMENTS OF MANAGEMENT PLANS AND RELEVANT CHAPTERS/PARAGRAPH

Table 3.4 – Cross Referencing Requirements of Management Plans and Relevant Chapters/Paragraph

Relevant Condition	Statement of Project Approval	Paragraph/Chapter Dealing with Condition
Condition 9 (b) – Schedule 3	The Noise Management Plan must describe the measures would be implemented to ensure best management practice is being employed on site.	Best practices are adopted throughout the Management Plan
Condition 9 (b) – Schedule 3	The Noise Management Plan must describe the measures would be implemented to ensure the noise impacts of the project are minimised during any meteorological conditions when the noise limits in this approval do not apply.	Paragraph 7.5
Condition 9 (b) – Schedule 3	The Noise Management Plan must describe the measures would be implemented to ensure compliance with the relevant conditions of this approval.	Paragraphs 5.1 and 6.2
Condition 17(c) – Schedule 3	The Noise Management Plan must describe the proposed noise management system in detail.	Chapters 5, 6, 7 and 8
Condition 17(d) – Schedule 3	The Noise Management Plan must include a monitoring program that is capable of regularly evaluating the performance of the project, including individual items of plant such as the rock hammer and rock saw.	Chapters 7 and 8
Condition 17(d) – Schedule 3	The Noise Management Plan must include a monitoring program that includes a protocol for determining exceedances of the relevant conditions in this approval.	Paragraph 8.2
Condition 17(d) – Schedule 3	The Noise Management Plan must include a monitoring program that evaluates and reports on the effectiveness of the noise management system on site.	Chapter 8

4 ROLES AND RESPONSIBILITIES

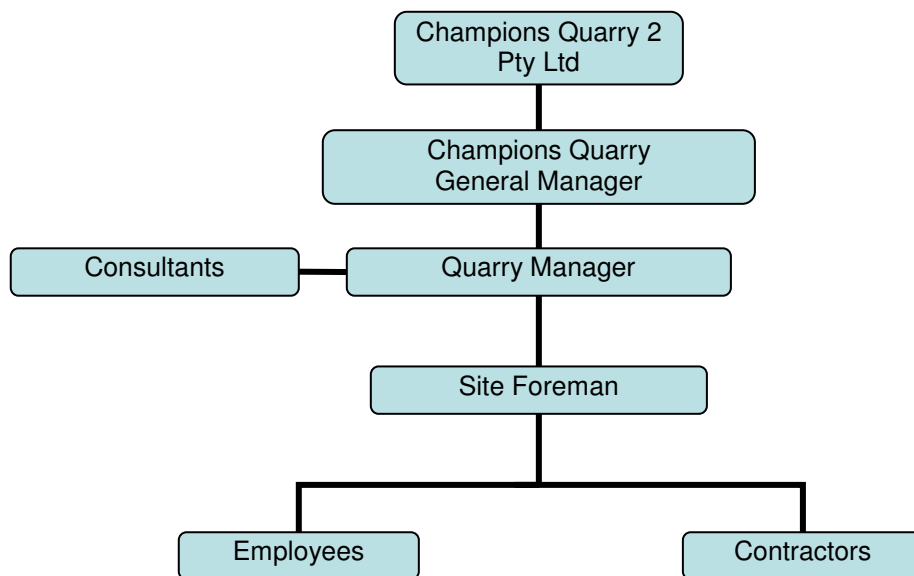
All quarry personnel and Contractors are accountable through conditions of employment or contracts with each individual responsible for ensuring that their work complies with the EMS procedures. An organisational structure for the Project is provided in Section 6 of the EMS.

This section of this Management Plan designates the responsibilities of the Proponent's personnel and Contractors in implementing this Management Plan as it is relevant.

Table 4.1 – Champions Quarry Roles and Responsibilities

PRODUCTION MANAGER		
Action Number	Responsibility and Authority	Timing
NMP.PM.01	Ensuring the Project Approval, Project Commitments and any other relevant licences and approvals are adhered to.	At all times
NMP.PM.02	Prepare the Management Plan in consultation with the EPA and submit the Management Plan to the Secretary for approval.	Prior to the earlier of the construction of Bund A and Bund D
NMP.PM.03	Ensure noise is minimised and instruct the Site Foreman as appropriate.	At all times
NMP.PM.04	Ensure all staff and Contractors receive appropriate and relevant induction training regarding noise management as it applies to their activities and ensuring staff and Contractors are aware of agreed management and mitigation measures as they are applicable to the individuals circumstances.	At all times
NMP.PM.05	Respond to any complaints from the public that relate to noise.	When and if required
NMP.PM.06	Co-ordination of any site investigations in relation to noise incidents.	When and if required
NMP.PM.07	Ensuring all monitoring commitments made as part of this Management Plan are executed.	As detailed in this Management Plan
SITE FOREMAN		
Action Number	Responsibility and Authority	Timing
NMP.SF.01	Ensuring the Project Approval, Project Commitments and any other relevant licences and approvals are adhered to.	At all times
NMP.SF.02	If a complaint is received regarding noise notify the Quarry Manager immediately.	At all times
NMP.SF.03	Ensure directions associated with the EMS, this Management Plan and approvals (if required) are adhered to the satisfaction of the Production Manager.	At all times
QUARRY EMPLOYEES AND CONTRACTORS		
Action Number	Responsibility and Authority	Timing
NMP.EC.01	Employees and Contractors must notify the Site Foreman and/or the Quarry Manager of any significant noise incident.	At all times

Figure 4.1 – Environmental Management Strategy Organisational Chart as it applies to the Noise Management Plan (extracted from the EMS)



5 MANAGEMENT AND MITIGATION STRATEGIES

5.1 PRINCIPAL NOISE MITIGATION MEASURES

The principal measure used to minimise noise impacts will involve the following:

- The Proponent must ensure that all plant and equipment used at the site is maintained in a proper and efficient condition and is operated in a proper and efficient manner (in accordance with Condition 17 of Schedule 2 of the Project Approval and SoC 5);
- Bund D at the indicative location shown in Figure 5.1 must be constructed prior to carrying out any quarrying operations within the Southern Extraction Area under the Project Approval (in accordance with Condition 3 of Schedule 3 of the Project Approval).

Bund D was constructed prior to 30 June 2014;

- Bund A at the location shown in Figure 5.2 must be constructed prior to carrying out any quarrying operations on site under the Project Approval (in accordance with Condition 3 of Schedule 3 of the Project Approval and SoC 5).

Bund A was constructed prior to 30 June 2014;

- The western end of Bund C that runs approximately north-south at the indicative location shown in Figure 5.1 must be constructed prior to carrying out any quarry operations in the southern and western quadrants of the Southern Extraction Area.

Bund C was constructed prior to 30 June 2014;

- Bund E at the indicative location shown in Figure 5.3 must be constructed prior to Bund E prior to commissioning the sand washing plant within the Southern Extraction Area.
- Additional permanent and temporary noise attenuation bunds may be used by the Proponent as a measure to screen potential noise receivers;
- Ensure the rock hammer used on site is only used between the hours of 9:00am – 12:00pm and 2:00pm – 4:00pm Monday to Friday (in accordance with Condition 6 of Schedule 3 of the Project Approval) and that the rock hammer will only be used in isolation from all other quarrying extraction and processing operations (in accordance with SoC 5);
- Complying with operating hours provisions (in accordance with Condition 6 of Schedule 3 of the Project Approval and SoC 5);
- Not carrying out any blasting on the quarry site (in accordance with Condition 7 of Schedule 3 of the Project Approval);
- 'Broadband' reversing beepers or alternative non noise emitting reversing warning arrangements (ie communications based) will be used on all key plant rather than single frequency reversing beepers (in accordance with SoC 5);
- Implement a noise monitoring program as detailed below (in accordance with SoC 5);
- Limit speed of haul trucks accessing the site to 30km/hour (in accordance with SoC 5);
- Prohibit haul trucks from using compression braking onsite (in accordance with SoC 5);
- Effectively place stockpiles of product so that where possible, plant equipment can be working behind stockpiles (in accordance with SoC 5);

- Construct a 5 metre earth bund as a barrier to operational plant that is not shielded by permanent bunding or leading quarry walls (in accordance with SoC 5)
- Ensuring plant operational personnel undergo induction training into quarry operations which help to minimise unnecessary noise emissions from plant equipment (in accordance with SoC 5); and
- Undertake attended noise monitoring (at established permanent NAL's) and plant equipment noise monitoring on an annual basis.

Note: Bund B, the balance of Bund C and Bund F at the indicative locations shown in Figure 5.1 must be constructed at various stages throughout the development however these Bunds are not noise attenuation bunds.

5.2 STAKEHOLDER CONSULTATION

This Management Plan was submitted to the EPA in draft format for consultation purposes. The final Management Plan following consultation with the EPA will be submitted to the Secretary for comment and approval. A revision history is provided in the prelude to this Management Plan.

5.3 APPROVAL REQUIREMENTS

This Management Plan has been provided to the EPA for consultation purposes as required by the Project Approval.

5.4 TRAINING AND AWARENESS

As part of the general site induction process, all Project employees and Contractors and Sub-contractors will be made aware of the conditions of this approval relevant to their respective activities and the importance of managing noise and potential noise that could impact on residential receivers in accordance with Schedule 2, Condition 20 of the Project Approval.

All employees and Contractors (including haulage truck operators) will be made aware of their responsibilities in managing noise from the site and along haulage routes. All employees and Contractors specifically involved in ground disturbance works including topsoil removal and excavation in close proximity to residents will be made aware of their location and assessment of the need for mitigation measures to be implemented. Employees specifically involved in the use of a rock hammer will be made aware of the permitted hours to use the rock hammer and that the rock hammer can only be used in isolation from all other quarrying extraction and processing operations.

Awareness will be raised as part of the toolbox talk process and that on receipt of any noise complaints the Quarry Manager and/or Site Foreman is to be immediately advised so that appropriate action can be taken.

Figure 5.1 – Indicative Locations of Bunds A – D and F, described in the EA

Known as Appendix 2 Project Layout Plans – Figure 4 (amended 1 June 2012) extracted from the Planning and Assessment Commission of NSW Conditions of Approval dated 30 August 2012.

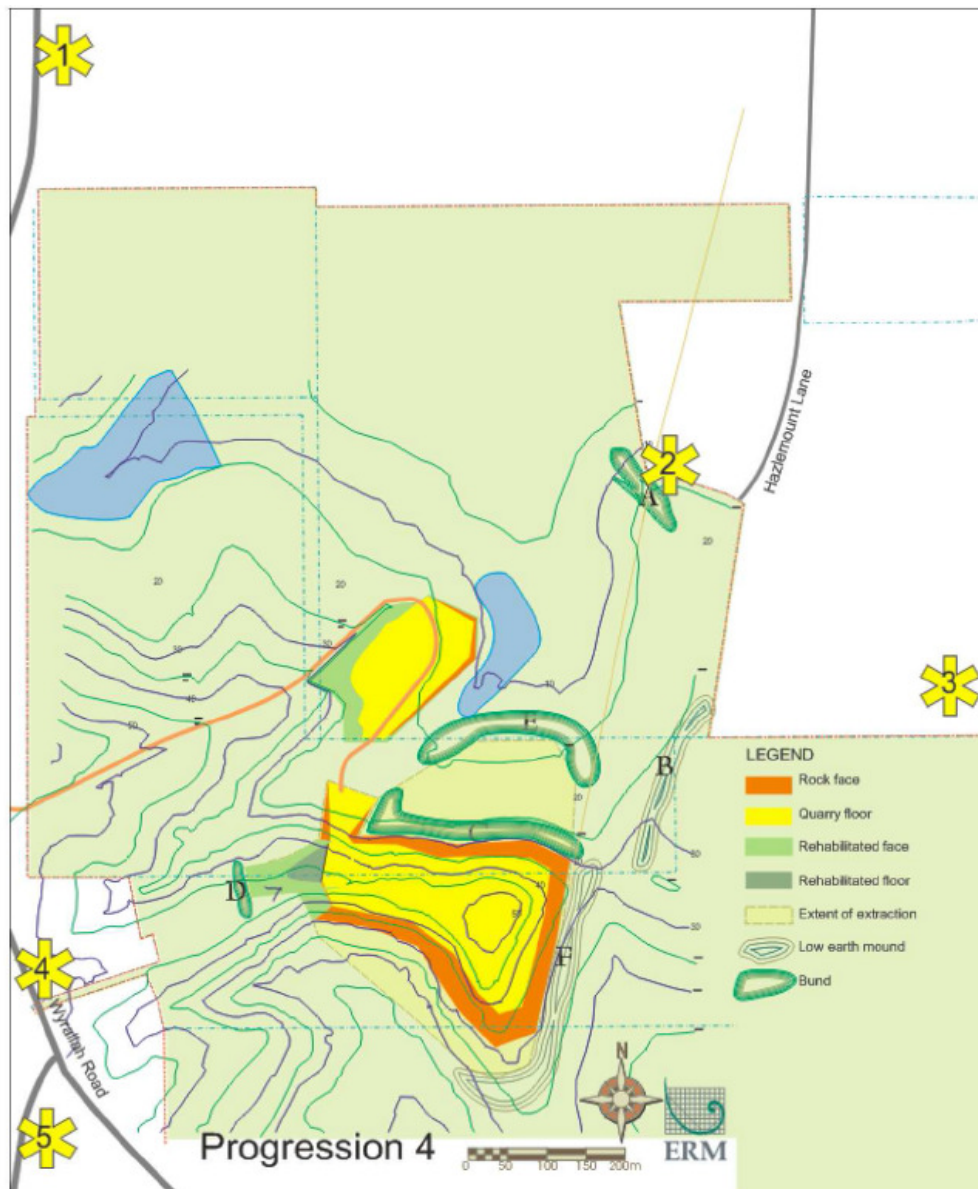


Figure 4: Indicative Locations of Bunds A – F, described in the EA

Figure 5.2 – Location Bund A – Described in the PPR

Known as Drawing Number LM070268-SV26G – Extracted from Annexure B of the PPR.

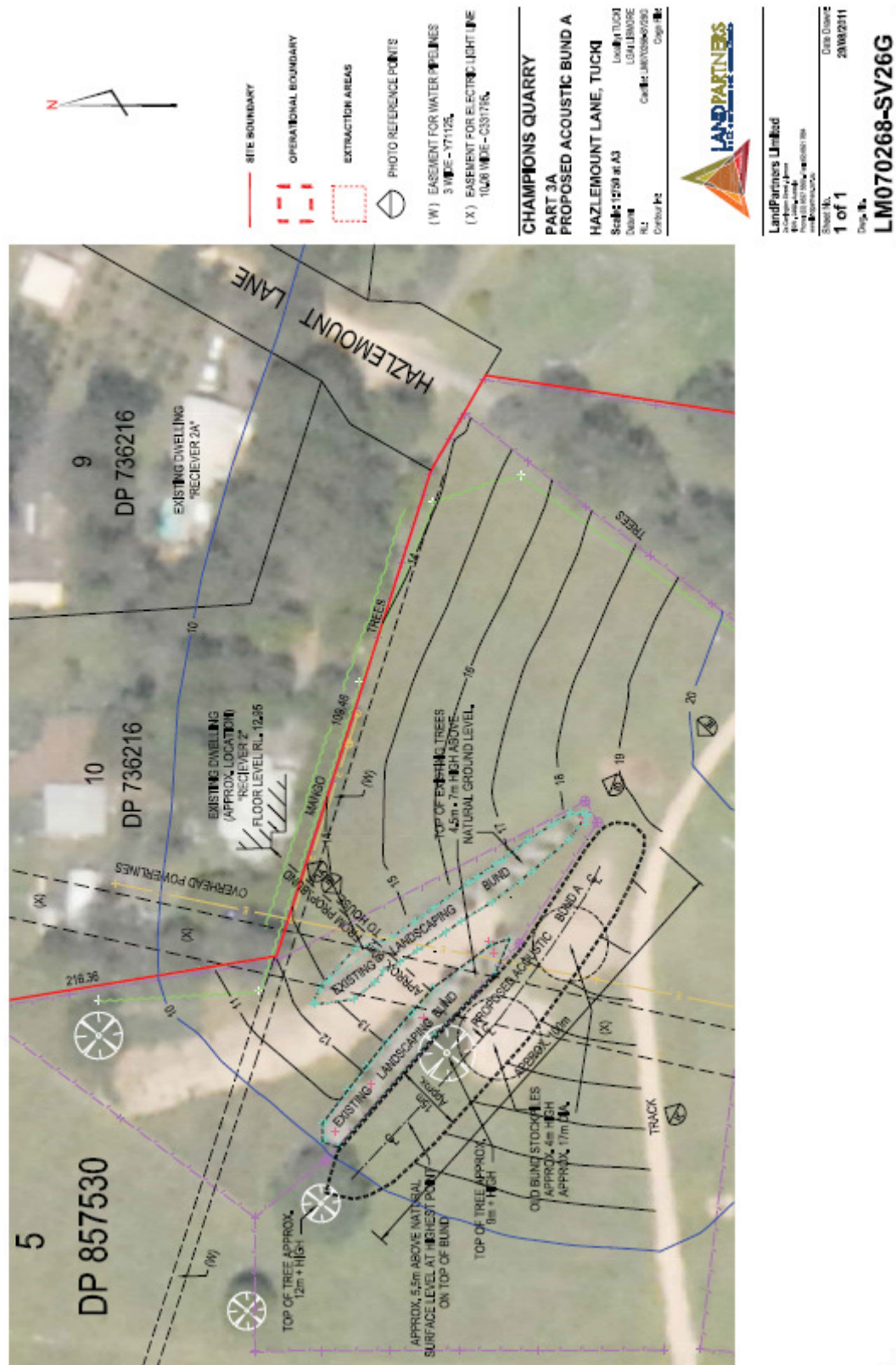
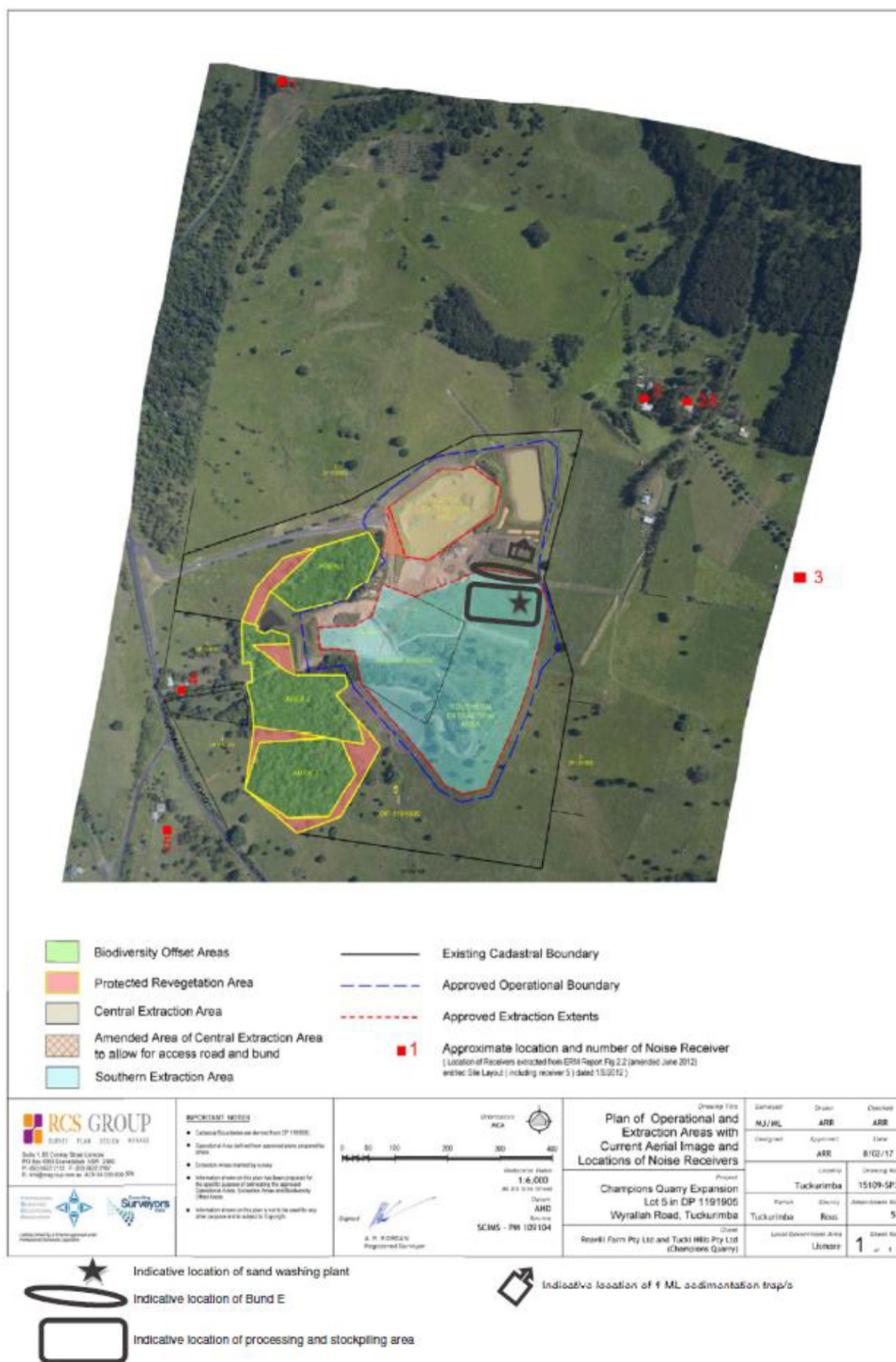


Figure 5.3 – Indicative Location of Bund E

Known as Appendix 2 Project Layout Plans – Figure 3 extracted from the Planning and Assessment Commission of NSW Conditions of Approval dated 30 August 2012 (as amended by Modification 3).

**Figure 3: Site Features and Neighbouring Receivers**

6 NOISE MANAGEMENT SYSTEM – OBJECTIVES AND SITE INSPECTIONS

6.1 OBJECTIVES

The broad objective of this Management Plan and monitoring program is to ensure that the operation of Champions Quarry does not adversely affect nearby receivers. Specific objectives include:

- To implement best practice noise management to minimise the construction, operational and traffic noise of the Project;
- To minimise the noise impacts of the Project during metrological conditions when noise limits in the Project Approval do not apply;
- To maintain the effectiveness of any noise suppression equipment on plant at all times and ensure defective plant is not used operationally until fully repaired;
- To regularly asses noise monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the Project Approval; and
- To manage noise emissions in an attempt to ensure they do not exceed the criteria set out in the Project Approval.

6.2 SITE INSPECTIONS

Routine quarry inspections of work areas, stockpiles, and onsite haulage routes will be conducted by the Quarry Manager and/or Site Foreman to monitor work practices and identify non-conforming areas and activities or work practices which could lead to potential negative and unacceptable noise impacts.

Where non-compliance with nominated performance goal/s is detected, an incident notice will be raised by the Site Foreman and/or Quarry Manager in accordance with the EMS.

Formal analysis and recording of routine quarry inspections of work areas, stockpiles, and onsite haulage routes that are conducted by the Quarry Manager and/or Site Foreman will not be required. However, observations of excessive noise will feed into site management responses to minimise noise impacts on privately owned land.

7 NOISE MANAGEMENT SYSTEM – NOISE TESTING AND MONITORING

7.1 NOISE MEASUREMENT PROCEDURES

The noise measurement procedures employed throughout the monitoring program shall be guided by the requirements of the relevant Australian Standard (including AS1055.1 – 1997: Acoustics – Description and measurement of environmental noise – General procedures) and the relevant NSW Industrial Noise Policy.

7.2 RECEIVERS LOCATIONS

The receivers locations relevant to the noise management system are identified in Table 7.1.

Table 7.1 – Receivers Locations for Noise Assessment

Receiver Number	Description	AMG Coordinates	Approximate distance from Project area boundary (m) ¹
1	Residence	531089, 6799150	810
2	Residence	531738, 6798473	330
2A	Residence	Adjacent to Receiver 2's location	380
3	Residence	532043, 6798156	510
4	Residence	530867, 6797990	220
5	Residence	Adjacent to Receiver 4's location	450
1. The Project area boundary is depicted by indicative line indicating "Limits of Quarry Operations" in Figure 1.1 (Receivers Locations)			
NAL 1 – 1566 Wyrallah Road, Tucki Tucki NAL 2 – 139 Hazlemount Lane, Tuckurimba NAL 2A – 115 Hazlemount Lane, Tuckurimba NAL 3 – 140 Hazlemount Lane, Tuckurimba NAL 4 – 1682 Wyrallah Road, Tuckurimba NAL 5 – South Western Corner of Wyrallah Road and Tuckurimba Road, Tuckurimba			

7.3 NOISE TESTING

7.3.1 BACKGROUND

A detailed Noise Impact Assessment was undertaken by ERM to assess the potential noise impacts of the proposed expansion of Champions Quarry on the surrounding environment. A subsequent Noise Assessment was undertaken by Bridges Acoustics to confirm the results and conclusions contained in ERM's assessment and to assess acoustic issues associated with minor amendments to the Project. The conclusion of both investigations was that predicted noise levels associated with the operation of the quarry following expansion were considered acceptable. Notwithstanding this, regular operator attended testing will be undertaken by the Proponent as set out below. Table 7.2 provides an overview of the frequency of operator attended testing.

Table 7.2 - Overview of Frequency of Operator Attended Testing

Frequency	Location
Annually	Receivers 1, 2A, 4 and 5
Annually	Plant and equipment audit
Quarterly	Receivers 2 and 3
Responsive	Adjacent to the receiver subject of the complaint

7.3.2 ANNUAL OPERATOR ATTENDED TESTING – RECEIVERS LOCATIONS

In accordance with the requirements set out in the SoC, operator attended noise monitoring will be conducted on an annual basis at the established noise assessment location that is adjacent to the selected receivers locations (being receivers 1, 2A, 4 and 5 identified in Table 7.1).

In accordance with Condition 9 of Schedule 3 of the Project Approval annual sound power testing, will be carried out by unless otherwise agreed by the Secretary.

7.3.3 ANNUAL OPERATOR ATTENDED TESTING – PLANT AND EQUIPMENT

In accordance with the requirements set out in the SoC, operator attended noise monitoring will be conducted in accordance with the relevant Australian Standard (including AS1055.1 – 1997: Acoustics – Description and measurement of environmental noise – General procedures and the relevant NSW Industrial Noise Policy) on an annual basis to evaluate the performance of the Proponents plant and equipment (including any rock hammer and rock saw).

The results of the plant and equipment audit will be compared to the Representative $L_{Aeq15 \text{ minute}}$ Sound Power Level (SWL dB(A)) for the relevant indicative machinery to be used on site as established in the detailed Noise Impact Assessment undertaken by ERM (Appendix D of the EA) and reproduced in Figure 7.1 below.

In accordance with Condition 9 of Schedule 3 of the Project Approval annual sound power testing, will be carried out by unless otherwise agreed by the Secretary.

Figure 7.1 – Plant and Equipment Power Levels (known as Table 6.1 Plant Sound Power Levels extracted from Annexure D of the PPR)

Table 6.1 Plant Sound Power Levels

Plant Item	Model	Source	Representative $L_{Aeq,15 \text{ minute}}$ Sound Power Level (SWL), dB(A)
Mobile Crushing and Screening Plant	Terex Pegson: XA400 primary crusher, 428 Trackpactor tertiary crusher, 2 x Chieftain 2100 Powerscreen.	Measured by ERM at Alstonville Quarry	114
Washing Plant	Terex Finlay Hydrasander 150E or similar	ERM File Data	105
Site Truck (Central Section)	Ford L8000	Measured by ERM on-site	91
Dump Truck (Southern Section)	Caterpillar 35T or similar	ERM File Data	119
Road Truck	Scania 124L Truck and Dog or similar	Measured by ERM on-site	103
Water Truck (Pass-by)	Isuzu	ERM File Data	90
Excavator	Komatsu PC200	Measured by ERM on-site	100
Excavator	Komatsu PC400	ERM File Data	106
Bull Dozer	Caterpillar D8/D9 or similar	ERM File Data	109
Front-End Loader	Komatsu WA320	Measured by ERM on-site	101
Grader	Unknown	ERM File Data	105
Rock Hammer	Typical medium sized Rock Hammer	ERM File Data	121
Rock Saw	Typical medium sized Rock Saw	ERM File Data	113
Notes:			
1. Refer to Annex D for spectral data used for noise modelling			
2. The sound power of the rock hammer was modified to reflect its limited utilisation as the hammer would be used for periods of approximately 5 minute intervals over any 15 minute period.			

7.3.4 QUARTERLY OPERATOR ATTENDED TESTING – RECEIVERS LOCATIONS

Operator attended noise monitoring will be conducted on a quarterly basis at the established noise assessment location that is adjacent to the selected receivers (being receivers 2 and 3).

In accordance with Condition 9 of Schedule 3 of the Project Approval quarterly monitoring will be carried out by a suitably qualified and experienced specialist, unless otherwise required by the Secretary.

7.3.5 RESPONSIVE OPERATOR ATTENDED TESTING

Additional operator attended testing will be initiated by the Quarry Manager in response to:

- legitimate complaints from a receiver (as identified in Figure 1.1 as 1, 2, 2A, 3, 4 and/or 5) in relation to noise generated from quarrying operations;
- issues being raised by the EPA or the Secretary that warrant or require noise testing.

Note: Where on-site monitoring data, recorded atmospheric conditions or other observations or evidence contradict the complaint, then the Proponent may refer the complaint to the DP & E to determine whether it is legitimate or not.

The Quarry Manager or appropriate staff member must conduct a noise test as soon as reasonably practical after the Quarry Manager is made aware of the occurrence of the event warranting the testing.

In the event that the testing occurs as a result of a legitimate complaint from a receiver then the appropriate site for testing is at the established noise assessment location that is adjacent to the selected receiver's location'.

In the event that the testing occurs other than as a result of a legitimate complaint from a receiver then the appropriate site for testing will be at the established noise assessment location that is adjacent to the selected receiver(s) locations that the Quarry Manager deems to be worst affected by the quarry generated noise

7.4 METEOROLOGICAL CONDITIONS

Noise monitoring should not be conducted (or the data should be excluded) when average winds speeds (over 15 minute periods) at microphone height are greater than 5 metres/second or when rainfall occurs. If testing does occur under these conditions then the data will be excluded.

7.5 METEOROLOGICAL CONDITIONS WHEN THE NOISE LIMITS IN THE APPROVAL DO NOT APPLY

The noise criteria set out in the Project Approval do not apply during certain meteorological conditions as specified in the NSW Industrial Noise Policy (Project Approval Condition 4 and 5 of Schedule 3). These meteorological conditions include:

- during rain; and
- when wind speeds are greater than 3.0 m/s.

During these times the Proponent will attempt to minimise the noise impacts of the Project where feasible and reasonable by adopting noise mitigation management strategies which may include some or all of the following:

- operating behind bunds;

- confining noisier operations to the least noise sensitive part of the day (which would be when background noise is highest); and
- maintaining plant and equipment to ensure design specifications continue to be met.

The NSW Industrial Noise Policy states an average person in practice perceives noise levels of less than approximately 2 dB are generally imperceptible.

7.6 NOISE MONITORING METHODOLOGY AND RECORDING

Operator – Attended Testing

During operated-attended noise monitoring the following will be recorded for each attended monitoring survey which will last for a 15 minute monitoring period per monitoring location:

1. Operators name;
2. Reason instigating the test (ie scheduled or responsive);
3. Location of measurement (ie receiver 1, 2, 2A, 3, 4 or 5);
4. The applicable noise criteria established under the Project Approval;
5. Whether any exceedance of the noise criteria occurred;
6. Height of the microphone above the ground;
7. Date and time that monitoring began and ended at each location;
8. Qualitative description of local weather conditions (including cloud cover, approximate wind direction and speed if known);
9. Quantitative meteorological information identified in Table 7.3;
10. Statistical noise levels descriptors over each 15 minute period (ie L_{Aeq});
11. Notes identifying any significant quarry and non-quarry generated noise sources (ie haul trucks, bulldozers, excavators, planes, agricultural equipment etc); and
12. Instrument calibration details before and after the monitoring period.

Table 7.3 – Metrological Measurement Parameters

Measured Parameter	Unit	Sample Interval
Mean wind speed	m/s	15 – 30 minutes
Mean wind direction	Degrees	15 – 30 minutes
Aggregate rainfall	mm	15 – 30 minutes
Mean air temperature	C°	15 – 30 minutes

Quantitative meteorological measurements should where possible be guided by the requirements of AS2923 – 1987: Ambient air-guide for measurements of horizontal wind for air quality applications and the DECCW. Rainfall data will be either collected from an onsite rain gauge or be obtained from the Bureau of Metrology for the Lismore Observation Station. Other quantitative meteorological measurements will be obtained from the Bureau of Metrology for the Lismore Observation Station.

7.7 MAINTENANCE

All environmental monitoring equipment will be calibrated and maintained according to industry standards and/or manufacturers specifications (including AS1259.2-1990 Sound level meters).

8 REVIEW AND REPORTING OF MONITORING RESULTS

8.1 REVIEW OF MONITORING RESULTS

Processing Monitoring Results

Upon receipt of monitoring results, the results into a spreadsheet that compiles all historical data. The results will then be reviewed by the Quarry Manager within 28 days of receiving monitoring results for any obvious trends or exceedances of the relevant criteria identified in Table 1 and Table 2 in Section 3 of this Management Plan (derived from the Project Approval). Exceedances will be dealt with in accordance with paragraph 8.2.

Internal Record Keeping

Records of the following will be kept at the Proponents office (being either the onsite or offsite office):

- Written complaints including an analysis of why and when the complaint was made, actions (if any) and resolutions (if applicable);
- Details of the operated-attended noise monitoring, including:
 - Operators name;
 - Reason instigating the test (ie scheduled or responsive);
 - Location of measurement (ie receiver 1, 2, 2A, 3, 4 or 5);
 - The applicable noise criteria established under the Project Approval;
 - Whether any exceedance of the noise criteria occurred;
 - Height of the microphone above the ground;
 - Date and time that monitoring began and ended at each location;
 - Qualitative description of local weather conditions (including cloud cover, approximate wind direction and speed if known);
 - Quantitative meteorological information identified in Table 7.3;
 - Statistical noise levels descriptors over each 15 minute period (ie L_{Aeq});
 - Notes identifying any significant quarry and non-quarry generated noise sources (ie haul trucks, bulldozers, excavators, planes, agricultural equipment etc);
 - Instrument calibration details before and after the monitoring period; and
 - Whether there has been compliance or non-compliance. If any exceedance of the criteria occurred:
 - i. The level of any exceedances of noise criteria;
 - ii. Identify the possible causes of non-compliance (ie operational activities, metrological events);
 - iii. Describe actions taken (if any) to remedy non-compliance; and
 - iv. Whether any subsequent testing was undertaken.

The Quarry Manager is responsible for ensuring all records are kept up to date. Records must be kept for a minimum of 4 years after the event and produced to any authorised personnel who requests to see them.

Publicly Available on Website

Additionally, the following information will be made publicly available on the Proponents website:

- a summary of the monitoring results of the Project within 28 days of receipt of monitoring results by the Proponent including whether there has been compliance or non-compliance with the noise criteria, where there is non-compliance, the reasons for non-compliance, management strategies and whether there is any proposed retesting;
- a complaints register including an analysis of why and when the written complaint was made, actions (if any) and resolutions (if applicable) and updated on a quarterly basis;
- a copy of all annual reviews of this Management Plan over the last 5 years (refer to paragraph 8.3.2).

8.2 EXCEEDANCE OF CRITERIA

In the event that the Quarry Manager identifies any unexplained abnormalities or exceedances in the monitoring results (as a result of reviewing the monitoring results – refer to paragraph 8.1) the response of the Proponent might include some or all of the following procedures:

- Assess the likely reasons for the occurrence (ie excessive noise from the Proponent, adverse weather conditions, existing background noise whilst the Proponent is not operating);
- Identify the potential impacts and consequences of the exceedance;
- Resample and reanalyse the results if the results are questionable (consider also conducting a comparative operator attended noise test whilst the Proponent is not operating);
- Where significant potential impact and consequences are identified, discuss the occurrence with an acoustic specialist or environmental scientist with acoustic experience; and
- Develop and implement feasible and reasonable mitigation strategies to prevent future exceedances.

Mitigation strategies may include operating behind bunds, extending existing bunds, and/or creating new noise attenuation bunds within the Operational Area, and other feasible and reasonable mitigation strategies.

In addition, where there is an exceedance of the criteria set out in Chapter 3 of this Management Plan, the Quarry Manager (or a delegate) must notify affected landowners in writing of the exceedance, and provide regular monitoring results to each of affected landowner until the project is again complying with the relevant criteria.

In accordance with Condition 2 of Schedule 5 of the Project Approval, where there is any exceedance of the criteria set out in Chapter 3, the Proponent must:

- Take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur;
- Submit a report to DP & E describing the exceedances and any preferred remediation measures or other course of action; and

- Implement remediation measures as directed by the Secretary.

Further, in accordance with Condition 7 of Schedule 5 of the Project Approval, the Proponent will:

- immediately to the Secretary and any other relevant agencies of the Incident; and
- within 7 days of the date of the Incident, provide the Secretary and any relevant agencies with a detailed report on the Incident, and such further reports as may be requested.

8.3 ANNUAL REPORTING

The Proponent will evaluate the effectiveness of the noise management system on site on an ongoing basis and will report on the effectiveness on an annual basis as part of its annual noise monitoring results report (refer to paragraph 8.3.1) and the general annual reporting (refer to paragraph 8.3.2).

8.3.1 ANNUAL NOISE MONITORING RESULTS REPORT

As part of the annual reporting under paragraph, 7.4.2 the Proponent will prepare annual report based on all routine monitoring results collected during the previous 12 months. The Annual Report should consist of the following information:

1. Summary of noise monitoring results including:
 - Reason for noise monitoring (eg routine or in response to a complaint);
 - Where noise monitoring was conducted (eg Receiver 1,2, 2A, 3, 4, and/or 5);
 - The operational status of the quarry whilst testing occurred;
 - Noise monitoring criteria (as set out in the Project Approval);
 - If any exceedance of the criteria occurred:
 - i. The level of any exceedances of noise criteria;
 - ii. Identify the possible causes of non-compliance (ie operational activities, metrological events);
 - iii. Describe actions taken (if any) to remedy non-compliance;
 - iv. Whether any subsequent testing was undertaken;
 - Impact of adverse weather (if any); and
2. Details of any complaints that initiated noise testing and the complaints state of resolution.

8.3.2 GENERAL ANNUAL REPORTING

The Proponent will by the end of March each year (commencing in March 2014) review the environmental performance of the Project to the satisfaction of the Secretary in accordance with Schedule 5 Condition 4 of the Project Approval. The review will:

- (a) Describe the development (including rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;

- (b) Include a comprehensive review of the monitoring results and complaints records of the project over the previous calendar year, which includes a comparison of these results against:
 - The relevant statutory requirements, limits or performance measures/criteria;
 - The monitoring results of the previous year; and
 - The relevant predictions of the EA, EA (MOD 1) and EA (MOD 2);
- (c) Identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
- (d) Identify any trends in the monitoring data over the life of the Project and the effectiveness of the noise management system on site;
- (e) Identify any discrepancies between the predicted and actual impacts of the Project and analyse the cause of any significant discrepancies; and
- (f) Describe what measures will be implemented over the current calendar year to improve the environmental performance of the Project.

Further in accordance with Schedule 5 Condition 5 of the Project Approval within 3 months of the submission of one of the following the Proponent must review and if necessary revise the strategies, plans and programs required under the Project Approval to the satisfaction of the DG:

- (a) Annual review under Schedule 5 Condition 4 of the Project Approval;
- (b) Incident report under Schedule 5 Condition 7 of the Project Approval;
- (c) Audit report Schedule 5 Condition 9 of the Project Approval; and
- (d) Any modifications to the Project Approval.

The Proponent in consultation with the Quarry Manager will implement any changes arising from reviews of the quarry strategies, plans and programs. Records of such reviews will be maintained. Details of any significant changes made to this Strategy and associated monitoring programs and monitoring plans will be forwarded to all relevant project personnel.

REFERENCES

- The Guideline for Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2004);
- EA – Champions Quarry Expansion, Environmental Assessment Report prepared by ERM Pty Limited and dated February 2010;
- Champions Quarry Noise Impact Assessment performed by ERM forming part of the Environmental Assessment Report dated 25 February 2010 (Appendix D);
- Preferred Project Report – Champions Quarry Expansion, Preferred Project Report prepared by ERM Pty Limited and dated December 2011;
- Acoustic Assessment (Bridges Acoustics) dated 9 December 2011 forming part of the Preferred Project Report (Annexure D);
- Planning and Assessment Commission of NSW Conditions of Approval dated August 30, 2012;
- Minister for Planning and Infrastructure - Notice of Modification dated October 29, 2013; and
- Minister for Planning - Notice of Modification dated September 16, 2016.