



**Hanson**

ABN : 90 009 679 734

# Noise Management Plan

(incorporating a Traffic Noise Management Plan)



for the

## East Guyong Quarry

February 2013

*Prepared by:*



**R.W. CORKERY & CO. PTY. LIMITED**

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ABN : 90 009 679 734

## Noise Management Plan (incorporating a Traffic Noise Management Plan)

for the

# East Guyong Quarry

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<b>Next Review Due</b>	<p>Within 3 months of the submission of an:</p> <ul style="list-style-type: none"> <li>(a) annual review under Schedule 5 condition 3;</li> <li>(b) incident report under Schedule 5 condition 6;</li> <li>(c) audit report under Schedule 5 condition 8; and</li> <li>(d) any modifications to this approval,</li> </ul> <p>the Proponent shall review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Director-General.</p>			

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## **COMMONLY USED ACRONYMS**

AS	Australian Standard
DP&I	Department of Planning and Infrastructure
ENCM	Environmental Noise Control Manual
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	Environment Protection Authority
EPL	Environment Protection Licence
INP	Industrial Noise Policy
NATA	National Association of Testing Authorities
PA	Project Approval



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## 1. INTRODUCTION

This *Noise Management Plan* (the Plan) has been prepared by R W Corkery & Co Pty Limited on behalf of Hanson Construction Materials Pty Ltd (the Company) for the East Guyong Quarry (the Quarry). The Quarry is located approximately 22km southeast of Orange and 36km west of Bathurst (**Figure 1**).

This Plan has been prepared in satisfaction of *PA Condition 3(7)* of Project Approval (PA) 06\_0193<sup>1</sup> and describes the following.

- The consultation undertaken during preparation of this Plan.
- The legal and other requirements associated with management of noise emissions from the Quarry.
- The objectives and key performance outcomes for this Plan and the Quarry.
- Roles and responsibilities.
- Competence training and awareness.
- Surrounding residences and potential noise sources and impacts.
- Noise management measures that will be implemented during construction and operation of the Quarry.
- Noise-related monitoring that will be undertaken.
- Evaluation of compliance with noise criteria.
- Complaints handling and response procedures that will be implemented.
- Continual improvement actions that will be implemented should exceedance(s) of the relevant criteria be identified.
- Incident reporting procedures.
- Publication of monitoring information.
- Plan review.

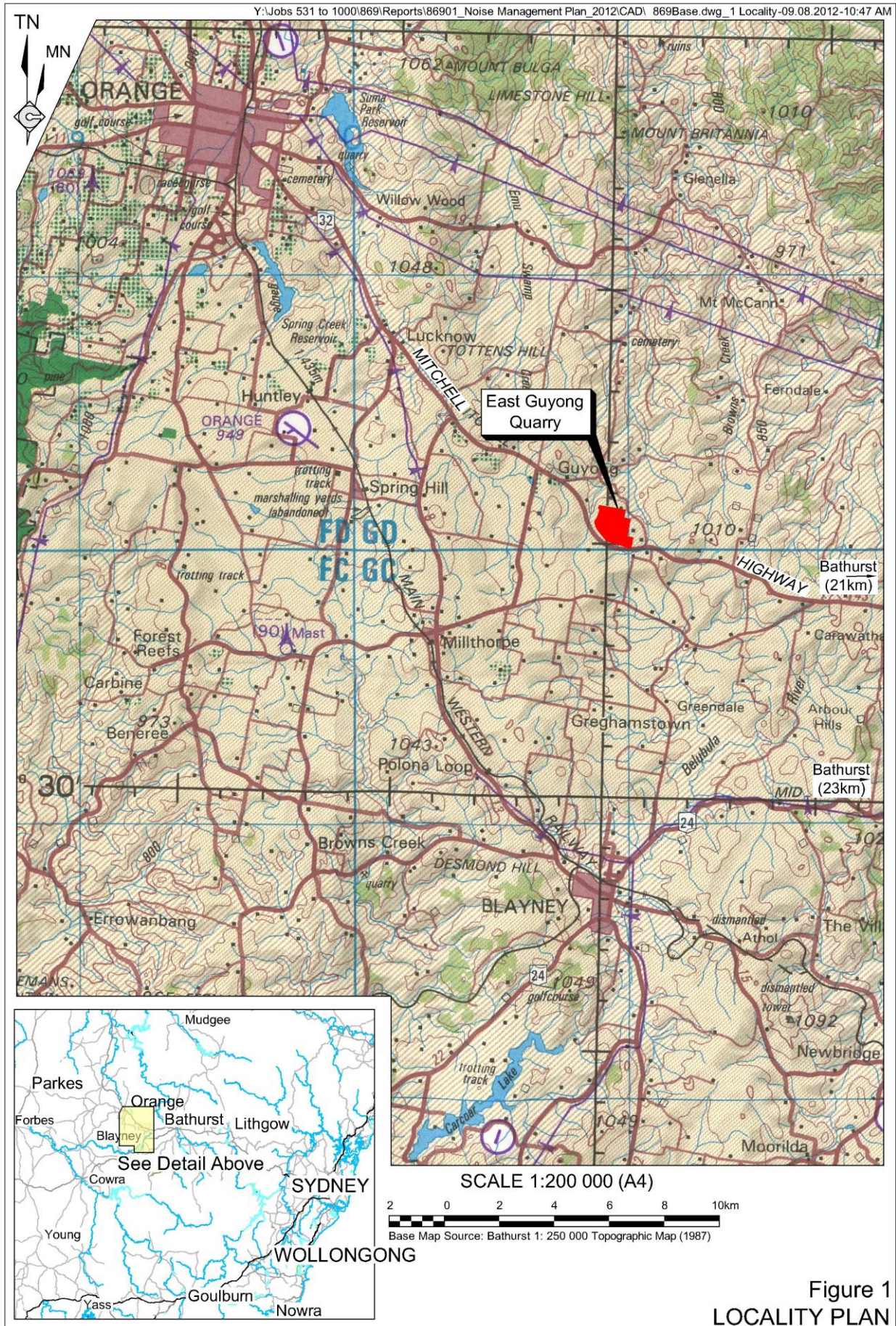
The approved Quarry is fully described in the following document and no further background information is provided in this Plan.

- *Environmental Assessment* dated September 2009 and associated documentation prepared to support the application for PA 06\_0193.
- *Detailed Response to Public Exhibition Submissions* (undated).
- *Preferred Project Report* (undated).

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<sup>1</sup> All conditions in Project Approval 06\_0193 are referred to as *PA Condition* .....







In addition, a range of other management plans have also been prepared to guide operations within the Quarry. These include the following.

- *Environmental Management Strategy.*
- *Soil and Water Management Plan.*
- *Asbestos Management Plan.*
- *Landscape Management Plan.*
- *Blast Management Plan.*
- *Aboriginal Cultural Heritage Management Plan.*
- *Air Quality Monitoring Program.*

## **2. APPROVED ACTIVITIES**

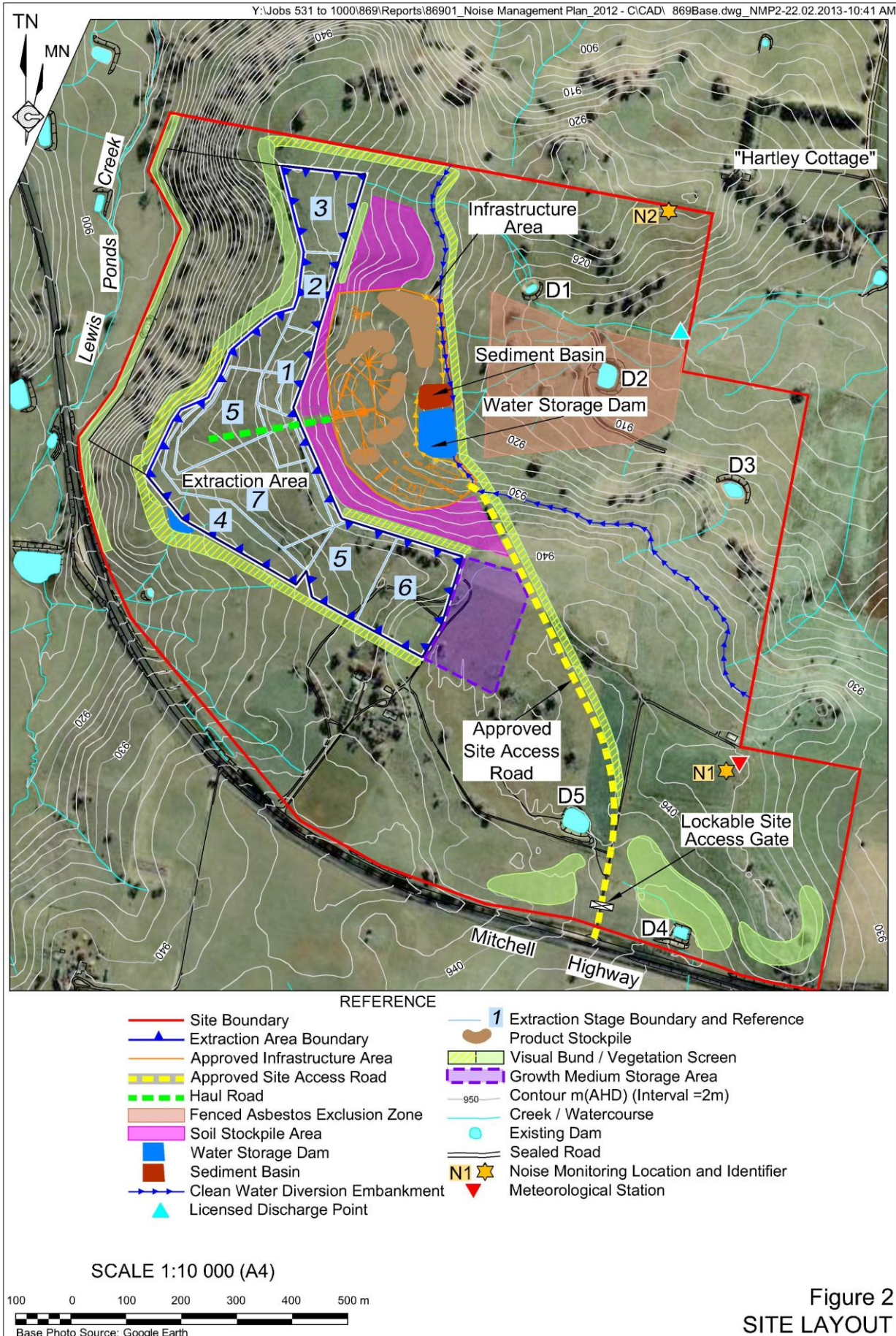
The approved activities at the Quarry comprise the following (**Figure 2**).

- Establishment of an extraction area to extract basalt using standard drill, blast, load and haul techniques.
- Construction and use of a processing plant to process the extracted basalt to produce a range of quarry products, including aggregates and road base, and stockpiling of the resulting products adjacent to the processing plant.
- Construction of a site access road and intersection with the Mitchell Highway.
- Transportation of up to 400 000t per year of quarry products via the Mitchell Highway using truck and dog and B Double trucks.
- Construction of a range of bunds and mounds and establishment of native vegetation to provide visual screening for the quarry operations.

The approved quarry life is until 31 December 2042 and the approved hours of operation are as follows.

- Monday to Friday (non-daylight savings) – 6:00am to 6:00pm.
- Monday to Friday (daylight savings) – 6:00am to 8:00pm.
- Saturdays – 7:00am to 1:00pm.
- Sundays and public holidays – nil.

Product despatch between 5:00am and 6:00am and from 6:00pm to 10:00pm (non-daylight savings) and 8:00pm to 10:00pm (daylight savings), Monday to Saturday is permitted following negotiation of written agreements with the seven surrounding landholders nominated in *PA Condition (3)6*.



### 3. CONSULTATION

#### 3.1 GOVERNMENT AGENCY CONSULTATION

The following government agency consultation was undertaken during the preparation of this Plan.

- Initial consultation by telephone to the Environment Protection Authority on 24 July 2012 to determine any requirements for inclusion in this Plan.
- Email to the Environment Protection Authority (EPA) on 24 July 2012 to confirm any requirements for this Plan by 8 August 2012.
- A draft version of this Plan was provided to EPA on 9 August 2012, with a request to review the Plan and provide feedback. A response was received on 4 September 2012 indicating that the EPA did not intend to provide comments on the draft Plan.

#### 3.2 LANDHOLDER CONSULTATION

*PA Condition 4(1)* requires within 3 months of the Project Approval, the Company shall notify, in writing, the landowners of all residences located within one kilometre of any of the site boundaries of their right to request monitoring in accordance with *PA Condition 4(3)* (see **Figure 3**).

**Table 1** presents the consultation undertaken with the relevant landholders to date and the responses received.

It is noted, however, that following receipt of the requests for noise monitoring at the “Quinton” and “Wheatfield’s” properties, the owners of those properties sold them. The Company contacted the purchaser, Mr Errol Babbage on 3 August 2012. During that conversation, it was agreed that monitoring should be done on the Company-owned land, as close as practicable to the residences on “Quinton” and “Wheatfields” (see Section 11.2 for further details of the monitoring program).

Community consultation was also undertaken through informal and formal consultation processes during the assessment period prior to the approval of the Quarry. Feedback received by the community has been taken into account when preparing this Plan.



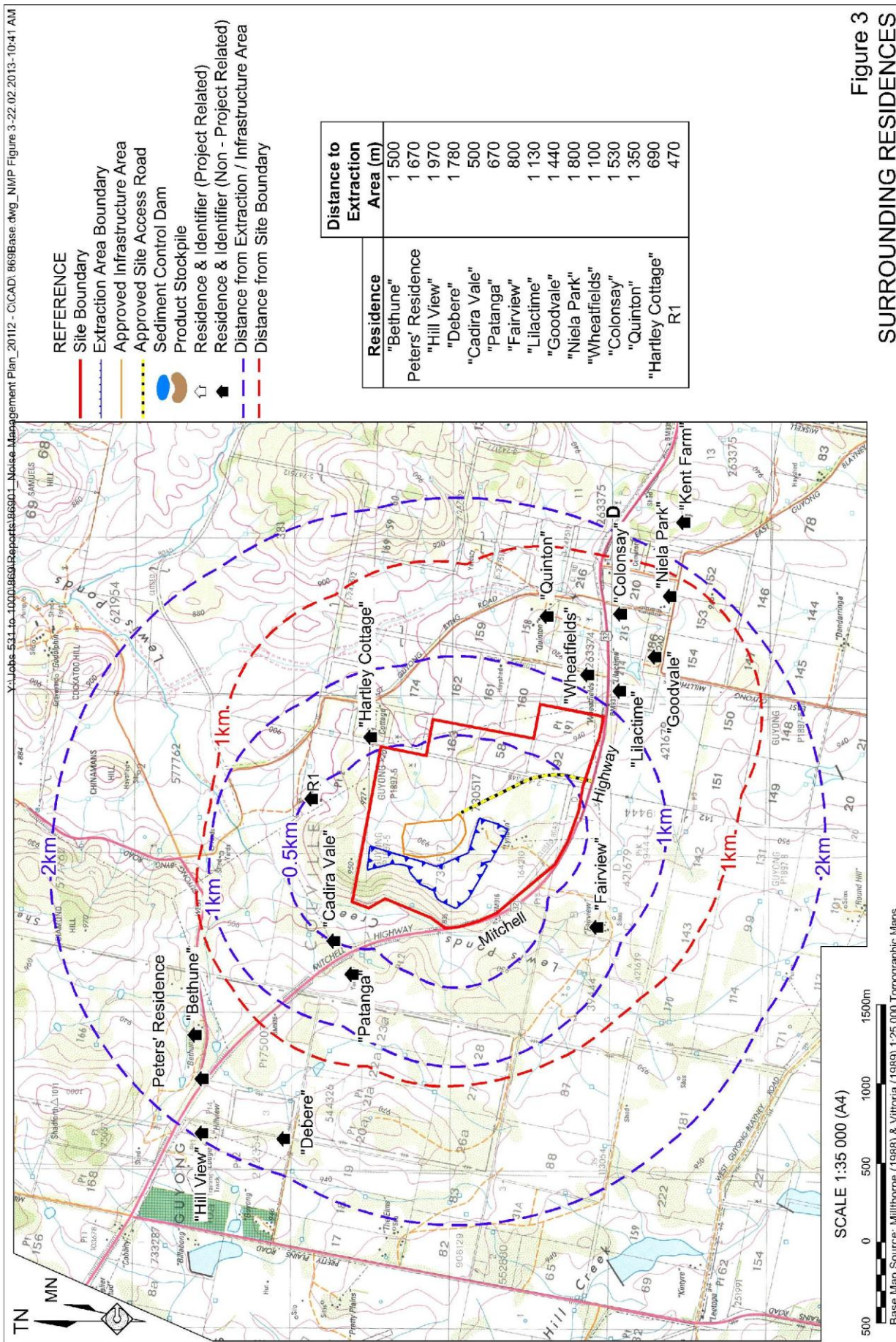


Figure 3  
SURROUNDING RESIDENCES

**Table 1**  
**Landholder Consultation**

Landholder	Property Name <sup>1</sup>	Type of Communication	Date Sent	Response Received
Gordon Family (1)	"Bethune"	Letter	5 April 2011	Nil
Gordon Family (2)		Letter	5 April 2011	Nil
RJ, MG and GJ Munro	"Cadira Vale"	Letter	5 April 2011	Nil
S and T Gordon	R1	Letter	5 April 2011	Nil
Mr & Mrs McPhee	"Colonsay"	Letter	5 April 2011	Nil
D Harris	"Fairview"	Letter	5 April 2011	Nil
S and T Gordon	"Hartley Cottage"	Letter	5 April 2011	Nil
Mrs J E Pritchard	"Kent Farm"	Letter	5 April 2011	Nil
RE and CM Hindmarsh	"Kintyre"	Letter	5 April 2011	Nil
Mr and Mrs Bestwick	"Lilac Time"	Letter	5 April 2011	Nil
Stephanie Bestwick and Simon Warner		Letter	5 April 2011	Nil
RE and CM Hindmarsh	"Patanga"	Letter	5 April 2011	Nil
Mr Peters	Cnr Byng Road and Mitchell Highway	Letter	5 April 2011	Nil
H McNair and D Mansfield	"Quinton"	Letter	5 April 2011	Received letter 8 April 2011 requesting noise monitoring
H McNair and D Mansfield	"Wheatfields"	Letter	5 April 2011	Received letter 8 April 2011 requesting noise monitoring
Note 1: See <b>Figure 3</b> .				
Source: Hanson Construction Materials Pty Ltd.				

## 4. LEGAL AND OTHER REQUIREMENTS

The Company was granted project approval (PA) 06\_0193 by the NSW Land and Environment Court on 21 May 2012 pursuant to Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The approval includes the required criteria that the construction and operational activities of the Company must comply with and sets out the core requirements of this Plan. Relevant noise-related conditions associated with this approval are reproduced in **Table 2**.

**Table 2**  
**Noise-related Project Approval Requirements**

Page 1 of 4

Schedule	Condition	Section Where Addressed																								
<b>NOISE</b>																										
3(5)	<p><b>Impact Assessment Criteria</b></p> <p>The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 2.</p> <p><i>Table 2: Noise impact assessment criteria dB(A) <math>L_{Aeq}(15min)</math></i></p> <table border="1" data-bbox="317 613 1177 835"> <thead> <tr> <th>Location</th> <th>Day</th> <th>Evening</th> <th>Night</th> </tr> </thead> <tbody> <tr> <td>"Hartley Cottage"</td> <td>35</td> <td>35</td> <td>35</td> </tr> <tr> <td>"Cadira Vale"</td> <td>35</td> <td>35</td> <td>35</td> </tr> <tr> <td>"Lilac Time"</td> <td>35</td> <td>35</td> <td>35</td> </tr> <tr> <td>"Fairview"</td> <td>36</td> <td>35</td> <td>35</td> </tr> <tr> <td>All other privately owned land</td> <td>35</td> <td>35</td> <td>35</td> </tr> </tbody> </table> <p>Notes:</p> <ul style="list-style-type: none"> <li>To interpret the locations referred to Table 1, see Figure 3 in Appendix 1.</li> <li>Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.</li> <li>The noise limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences/land to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.</li> </ul>	Location	Day	Evening	Night	"Hartley Cottage"	35	35	35	"Cadira Vale"	35	35	35	"Lilac Time"	35	35	35	"Fairview"	36	35	35	All other privately owned land	35	35	35	11.2.1
Location	Day	Evening	Night																							
"Hartley Cottage"	35	35	35																							
"Cadira Vale"	35	35	35																							
"Lilac Time"	35	35	35																							
"Fairview"	36	35	35																							
All other privately owned land	35	35	35																							
3(6)	<p><b>Operating Hours</b></p> <p>The Proponent shall comply with the operating hours in Table 3.</p> <p><i>Table 3: Operating Hours</i></p> <table border="1" data-bbox="317 1220 1198 1451"> <thead> <tr> <th>Activity</th> <th>Day</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td rowspan="4">All quarrying operations. Transportation off-site</td> <td>Monday – Friday during AEST (except Public Holidays)</td> <td>6:00am to 6:00pm</td> </tr> <tr> <td>Monday – Friday during AEDT (except Public Holidays)</td> <td>6:00am to 8:00pm</td> </tr> <tr> <td>Saturdays</td> <td>7:00am to 1:00pm</td> </tr> <tr> <td>Sundays and Public Holidays</td> <td>No Activities</td> </tr> </tbody> </table> <p>However, the Proponent may undertake:</p> <p>(a) transportation activities on and off-site outside of these hours (but only between hours up to and including 5.00 am and 10.00 pm, Monday to Saturday), if the Proponent has negotiated agreements to this effect with the owners of the following residences (whilst privately-owned) "Fairview", "Lilac Time", "Cadira Vale", "R1", "Hartley Cottage", "Quinton" and "Wheatfields", as shown in Figure 3 of Appendix 1, and the Proponent has advised the Department in writing of the terms of these agreements; and</p> <p>(b) maintenance activities at any time provided that the activities are not audible at any privately owned residence.</p> <p><i>Note: This condition does not apply to delivery of material if that delivery is required by police or other authorities for safety reasons, and/or the operation or personnel or equipment are endangered. In such circumstances, notification is to be provided to EPA and the affected residents as soon as possible, or within a reasonable period in the case of emergency.</i></p>	Activity	Day	Time	All quarrying operations. Transportation off-site	Monday – Friday during AEST (except Public Holidays)	6:00am to 6:00pm	Monday – Friday during AEDT (except Public Holidays)	6:00am to 8:00pm	Saturdays	7:00am to 1:00pm	Sundays and Public Holidays	No Activities	10.1												
Activity	Day	Time																								
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	Saturdays	7:00am to 1:00pm																								
	Sundays and Public Holidays	No Activities																								



**Table 2 (Cont'd)**  
**Noise-related Project Approval Requirements**

Schedule	Condition	Section Where Addressed
<b>NOISE (Cont'd)</b>		
3(7)	<p><b>Noise Management</b></p> <p>The Proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Director-General. This plan must:</p> <p>(a) be prepared in consultation with EPA, and be submitted to the Director-General for approval prior to the commencement of construction activities;</p> <p>(b) include:</p> <ul style="list-style-type: none"> <li>• a description of the measures that would be implemented to minimise noise emissions from the project, with particular focus on: <ul style="list-style-type: none"> <li>- quarrying operations within 500 metres of residences on privately-owned land;</li> <li>- transportation activities; and</li> <li>- continual improvement of noise performance;</li> </ul> </li> <li>• a noise monitoring protocol for evaluating compliance with the relevant noise limits in this approval;</li> <li>• a protocol for the investigation, notification and mitigation of identified exceedances of the relevant noise limits; and</li> <li>• a continual improvement program for investigating, implementing and reporting on reasonable and feasible measures to reduce noise generated by the project.</li> </ul>	<p>3.1</p> <p>10</p> <p>10.3</p> <p>10.5</p> <p>15</p> <p>11</p> <p>12</p> <p>12</p>
4(1)	<p><b>Notification of Landholders</b></p> <p>Within 3 months of this approval, the Proponent shall notify, in writing, the landowners of all residences located within one kilometre of any of the project site boundaries of their right to request monitoring in accordance with <i>PA Condition (4)3</i>.</p>	3.2
4(2)	<p>If the results of the monitoring required in Schedule 3 identify that the impacts generated by the project on site are greater than the relevant impact assessment criteria, and there is no negotiated agreement in place to allow the impact, then within 2 weeks of obtaining the monitoring results the Proponent shall:</p> <p>(a) notify the Director-General, the affected landowners and tenants (including tenants of quarry owned properties) accordingly, and provide monitoring results to each of these parties until the results show that the project is complying with the relevant criteria in Schedule 3; and</p>	12

**Table 2 (Cont'd)**  
**Noise-related Project Approval Requirements**

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Schedule	Condition	Section Where Addressed
<b>NOISE (Cont'd)</b>		
5(2)	<p><b>Management Plan Requirements</b></p> <p>The Proponent shall ensure that the Management Plans required under this approval are prepared in accordance with any relevant guidelines, and include:</p> <p>(a) detailed baseline data;</p> <p>(b) a description of:</p> <ul style="list-style-type: none"> <li>• the relevant statutory requirements (including any relevant approval, licence or lease conditions);</li> <li>• any relevant limits or performance measures/criteria; and</li> <li>• 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;</li> </ul> <p>(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;</p> <p>(d) a program to monitor and report on the:</p> <ul style="list-style-type: none"> <li>• impacts and environmental performance of the project; and</li> <li>• effectiveness of any management measures (see (c) above);</li> </ul> <p>(e) a contingency plan to manage any unpredicted impacts and their consequences;</p> <p>(f) a program to investigate and implement ways to improve the environmental performance of the project over time;</p> <p>(g) a protocol for managing and reporting any:</p> <ul style="list-style-type: none"> <li>• incidents;</li> <li>• complaints;</li> <li>• non-compliances with statutory requirements; and</li> <li>• exceedances of the impact assessment criteria and/or performance criteria; and</li> </ul> <p>(h) a protocol for periodic review of the plan.</p> <p><i>Note: At the discretion of the Director-General, some of these requirements may be waived where they are either not relevant or necessary.</i></p>	<p>9</p> <p>4</p> <p>10.1 &amp; 11.2.1</p> <p>11.2.1</p> <p>10</p> <p>11</p> <p>11</p> <p>12</p> <p>12</p> <p>14</p> <p>13</p> <p>12</p> <p>12</p> <p>16</p>

**Table 2 (Cont'd)**  
**Noise-related Project Approval Requirements**

Schedule	Condition	Section Where Addressed
<b>NOISE (Cont'd)</b>		
5(4)	<p><b>Revision of Strategies, Plans and Programs</b></p> <p>Within 3 months of the submission of an:</p> <p>(a) annual review under <i>PA Condition 5(3)</i>;</p> <p>(b) incident report under <i>PA Condition 5(6)</i>;</p> <p>(c) audit report under <i>PA Condition 5(8)</i>; and</p> <p>(d) any modifications to this approval,</p> <p>the Proponent shall review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Director-General.</p> <p><i>Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project.</i></p>	16
5(6)	<p><b>Incident Reporting</b></p> <p>The Proponent shall notify the Director-General and any other relevant agencies of any incident associated with the project as soon as practicable after the Proponent becomes aware of the incident. Within 7 days of the date of the incident, the Proponent shall provide the Director-General and any relevant agencies with a detailed report on the incident.</p>	14

**Table 3** presents the relevant noise-related commitments from the Statement of Commitments incorporated within PA 06\_0193 and where each is addressed in this document.

**Table 3**  
**Noise-related Commitments**

Commitment		Section Where Addressed
<b>NOISE</b>		
Noise	An Operational Noise Management Plan will be developed for the proposal and be implemented prior to extraction commencing. The plan will incorporate a noise monitoring program to monitor noise emissions and determine compliance with the project specific noise goals. The Plan will include:	
	<ul style="list-style-type: none"> <li>• Noise monitoring on site and within the community</li> </ul>	11
	<ul style="list-style-type: none"> <li>• Prompt response procedures to any community issues of concern</li> </ul>	13
	<ul style="list-style-type: none"> <li>• Refinement of on-site noise mitigation measures and quarry operating procedures where practical</li> </ul>	12
	<ul style="list-style-type: none"> <li>• Mechanism for discussion and negotiation with relevant property holders to assess concerns</li> </ul>	12 & 13
	<ul style="list-style-type: none"> <li>• Traffic Noise Management Plan will be developed and implemented for truck movements on and accessing/exiting the site.</li> </ul>	10.3.2 & 11.5
Environmental Management, Monitoring and Auditing	<ul style="list-style-type: none"> <li>• Within 7 days of detecting an exceedance of the limits/performance criteria in this approval or an incident causing (or threatening to cause) material harm to the environment, the proponent shall report the exceedance/incident to EPA and any relevant agency. The report will:</li> </ul>	
	<ul style="list-style-type: none"> <li>- describe the date, time and nature of the exceedance/incident;</li> </ul>	13
	<ul style="list-style-type: none"> <li>- identify the cause (or likely cause) of the exceedance/incident;</li> </ul>	13
	<ul style="list-style-type: none"> <li>- describe what action has been taken to date; and</li> </ul>	13
	<ul style="list-style-type: none"> <li>- describe the proposed measures to address the exceedance/incident.</li> </ul>	13
	<ul style="list-style-type: none"> <li>• Prior to the commencement of any operations, proponent will implement, publicise and list with a telephone company a contact phone number which will enable the general public to reach a person who can arrange appropriate response action to the enquiry. The proponent will maintain a register to record details of all enquiries received and actions undertaken in response. This record will be made available to the EPA as required.</li> </ul>	13

**Table 4** presents the relevant noise-related requirements from the Environment Protection Licence.

**Table 4**  
**Noise-related Environment Protection Licence Requirements**

<b>Condition Number</b>	<b>Condition</b>	<b>Section Where Addressed</b>
	To be completed once Environment Protection Licence received	

## 5. OBJECTIVES AND OUTCOMES

Table 5 presents the objectives and key performance outcomes for this Plan and the Quarry.

**Table 5**  
**Objectives and Key Performance Outcomes**

OBJECTIVES	KEY PERFORMANCE OUTCOMES
<b>Noise</b>	
(a) To ensure compliance with all relevant Project approval and Environment Protection Licence criteria and reasonable community expectations.	(i) Compliance is achieved with all relevant criteria nominated in the Project Approval 06_0193 and Environment Protection Licence and reasonable community expectations.
(b) To implement appropriate noise management and mitigation measures during all stages of the Project.	(ii) All identified noise management and mitigation measures are implemented to the extent required.
(c) To implement an appropriate monitoring program to establish compliance or otherwise with relevant criteria during all stages of the Project.	(iii) All identified monitoring is undertaken in accordance with the relevant procedures and at the relevant intervals.
(d) To implement an appropriate complaints handling and response protocol	(iv) Complaints (if any) are handled and responded to in an appropriate and timely manner.
(e) To implement continual improvement for investigating, implementing and reporting on reasonable and feasible measures to reduce noise.	(v) An appropriate continual improvement program has been implemented.
(f) To implement an appropriate incident reporting program, if required.	(vi) Incidents (if any) are reported in an appropriate and timely manner.

## 6. ROLES AND RESPONSIBILITIES

**Table 6** presents the roles and responsibilities for the implementation of this *Noise Management Plan*.

**Table 6**  
**Roles and Responsibilities**

<b>ROLES</b>	<b>RESPONSIBILITIES</b>
Operations Manager	Must ensure adequate resources are available to enable implementation of the Plan.
Quarry Manager	Accountable for the overall environmental performance of the East Guyong Quarry operations, including the following outcomes of this Plan. <ul style="list-style-type: none"> <li>• Implementation of all noise controls outlined in Section 10.2 and 10.3.1 are implemented.</li> <li>• Implementation of all traffic mitigation measures outlined in Section 10.3.2.</li> </ul>
Quarry Supervisor	Manage the implementation of the following components of this Plan. <ul style="list-style-type: none"> <li>• Noise monitoring as outlined in Sections 11.3.1., 11.3.2, 11.3.3 and 11.5.</li> <li>• Evaluation of compliance as outlined in Section 12 and related follow-up actions.</li> <li>• Complaints handling and response as outlined in Section 13.</li> <li>• Incident reporting as outlined in Section 14.</li> <li>• Continual improvement of noise management as outlined in Section 15.</li> <li>• Publication of monitoring data and reports as outlined in Section 16.</li> <li>• Review of this Plan as outlined in Section 17.</li> </ul>
All personnel	Ensure training and awareness induction has been undertaken. Compliance with this Plan.
Source: Hanson Construction Materials Pty Ltd.	

## 7. COMPETENCE TRAINING AND AWARENESS

All Company personnel and contractors and their employees will undergo Company and site specific inductions, incorporating basic noise management awareness training as part of the site induction program. The following areas will be covered in the induction.

- Use of only approved reversing alarms.
- Use of noise screens or silenced enclosures around lighting plants, generators and other stationary, surface noise sources.
- Awareness of prevailing wind directions and their potential to increase noise emissions downwind.
- Awareness of the noise enhancing effects of temperature inversions and the times of day and meteorological conditions under which they may occur.
- Awareness of operating hours.
- Awareness of community complaints protocols.
- Monitoring of noise emissions at the nearest privately owned residences.

The Quarry Manager will be responsible for ensuring the appropriate noise management training is included in the induction.

## 8. SURROUNDING RESIDENCES

Figure 3 displays the locations of residences within 2km of the Quarry Site.

## 9. ASSESSED IMPACTS

### 9.1 INTRODUCTION

This section describes the background noise levels and noise levels that were predicted during the environmental assessment of the proposed activities. This information was used in the design of mitigation measures and monitoring procedures described in Sections 10 and 11 to ensure best practices are adopted for noise management for the Quarry. In addition, this information will be referred to ensure practices are developed for the continual improvement of noise management as described in Section 15.

### 9.2 BACKGROUND NOISE SOURCES AND LEVELS

The main noise sources contributing to the background noise levels are traffic on the Mitchell Highway, agricultural machinery, stock and wind.



**Table 7** lists the background noise levels measured continuously from 13 December 2002 to 23 December 2002 at a number of representative locations. It is recognised that the noise levels recorded are likely to be lower than corresponding levels in 2012 due to increases in traffic levels on the Mitchell Highway. Hence, the levels provided in **Table 7** are recognised to be conservative.

**Table 7**  
**Ambient Noise Levels – Unattended (dB(A) re 20µPa)**

Location	Ambient ( $L_{A90(15\text{minute})}$ ) Level All Noise Sources <sup>1</sup>			$L_{Aeq}$ (period) Existing Ambient Noise Level <sup>1</sup>		
	Day	Evening	Night	Day	Evening	Night
North-west boundary (adjoining the “Carina Vale” boundary)	37	31	30	63	61	60
Southern Boundary <sup>2</sup>	32	31	30	54	46	46
“Lilac Time”	40	32	30	54	55	55
Eastern Boundary (adjacent to “Hartley Cottage”)	30	30	30	52	59	55

Note 1: The  $L_{A90}$  represents the level exceeded for 90% of the interval period and is referred to as the average minimum or background noise level. The  $L_{Aeq}$  is the equivalent continuous noise level defined as the level of noise equivalent to the energy average of noise levels occurring over a measurement period.  
Note 2: The offset distance from the road to this monitoring location is similar to that for the “Fairview” receiver.  
Source: Heggies (2007) - Modified after Table 7.

In addition, operator-attended noise measurements were conducted on 13 and 23 December 2002 (see **Table 8**).

**Table 8**  
**Ambient Noise Levels Attended  $L_A$  ( $L_{A15\text{-minute}}$ )**

Location	Date/ Time	Primary Noise Descriptor (dB(A) re 20µPa)						Description of Noise Emission Sources
		$L_{Amax}$	$L_{A1}$	$L_{A10}$	$L_{A90}$	$L_{Amin}$	$L_{Aeq}$	
North-west boundary (adjoining the “Carina Vale” boundary)	13/12/02 12:30	77	73	68	46	37	64	Traffic from Mitchell Highway: 46-77 dB(A) Rural Background 37-45 dB(A)
Southern Boundary	23/12/02 13:30							Fence impact – 77 dB(A) Wind – 45-48 Mitchell Highway Traffic 32-36 dB(A)
“Lilac Time”	13/12/02 13:30	70	63	56	44	38	53	Traffic from Mitchell Highway: 46-70 dB(A) Rural Background 38-43 dB(A)
Eastern Boundary (adjacent to “Hartley Cottage”)	23/12/02 14:26	53	51	49	43	41	46	Rural Machinery Dominant 40 to 53 dB(A)
Eastern Boundary (noise logger)	18/12/02 14:50	62	53	41	31	28	41	

Source: Heggies (2007) - Modified after Table 6

It is proposed that background levels (without the quarry operating) will also be recorded during the proposed monitoring programs discussed in Section 11.

### 9.3 POTENTIAL IMPACTS

The potential noise-related impacts will arise from the use of the mobile earthmoving equipment, fixed plant and road-registered trucks on site.

The sound power levels of the acoustically significant plant and equipment used in predictive noise modelling presented in the *Environmental Assessment* are provided in **Table 9**.

**Table 9**  
**Typical Noise Levels from Mobile Equipment and Fixed Plant**

Noise Source	L <sub>Aeq</sub> Octave Band Linear Sound Power Level (dB re 10pW)
	Overall L <sub>Aeq</sub> dB(A)
<b>Mobile Earthmoving Equipment</b>	
Cat 773 Dump Truck	106
Gardener Denver Re-drill <sup>1</sup>	112
Komatsu WA 500 Loader	106
<b>Mobile Earthmoving Equipment</b>	
Komatsu WA 420 Loader	109
Volvo A25 Articulated Haul Truck	103
Hydraulic Rock Breaker	112
Isuzu 6 Wheel Water Cart	101
<b>Road Registered Vehicles</b>	
Road Truck	102
<b>Fixed Plant</b>	
Crusher, Screens, and Conveyors	112

Source: Heggies (2007) - Modified after Appendix F

### 9.4 PREDICTED IMPACTS

**Table 10** lists the predicted operating noise levels at four representative residences around the Quarry.

## 10. MANAGEMENT MEASURES

*PA Condition 3(7)(b)* requires that this Plan describes the noise mitigation measures that will be adopted to ensure compliance with *PA Conditions 3(5) and 3(6)* (**Table 2**). This section has been prepared in satisfaction of that requirement.

**Table 10**  
**Predicted Operating Noise Levels**

Receiver <sup>1</sup>	Stage	Daytime (0700-1800)		Evening (1800-2200)		Night-time (2200- 0700) calm	
		Predicted L <sub>Aeq</sub> (15 minute) noise level	L <sub>Aeq</sub> (15 minutes) intrusive criterion	Predicted L <sub>Aeq</sub> (15 minute) noise level	L <sub>Aeq</sub> (15 minute intrusive criterion)	Predicted L <sub>Aeq</sub> (15 minute) noise level	L <sub>Aeq</sub> (15 minute) intrusive criterion
“Cadira Vale”	1	22	35	20	35	20	35
	4	29		21		21	
	7	28		23		23	
“Fairview”	1	25	36	22	35	23	35
	4	36		22		22	
	7	31		25		25	
“Lilac Time”	1	23	35	22	35	22	35
	4	20		19		19	
	7	22		20		20	
“Hartley Cottage”	1	29	35	29	35	29	35
	4	32		27		27	
	7	28		27		27	
Note 1: See <b>Figure 3</b> .							
Source: Heggies (2007) – Modified after Table 11.							

## 10.1 OPERATING HOURS AND CONDITIONS

The Company will ensure that the operating hours and conditions identified in *PA Conditions 3(6)* (**Table 2**) are strictly complied with.

The Quarry Manager will be responsible for ensuring the operating hours are included in the site induction and that no departures will be tolerated.

## 10.2 ENGINEERING NOISE CONTROLS

Heggies (2007) identified that targeted noise attenuation measures will need to be applied to several major noise sources in order for the noise criteria to be achieved at surrounding residences. The Company has accepted these recommendations and the following engineering noise controls will be implemented.

- The sound power levels of the mobile equipment to be used at the Quarry will be as follows.
  - Front-end loader (20t) SWL L<sub>Aeq</sub> 109 dB(A).
  - Blasthole drill SWL L<sub>Aeq</sub> 112 dB(A).
- The location(s) of rock hammering operations will be selected to achieve maximum attenuation of noise emissions.

- If required, during Stage 7 (**Figure 3**) the following equipment will be replaced or modified in order to meet the respective sound power levels:
  - Front-end loader (30t) SWL  $L_{Aeq}$  106 dB(A).
  - Dump Truck SWL  $L_{Aeq}$  101 dB(A).
  - Articulated Haul Truck  $L_{Aeq}$  102 dB(A).
- Implementation of alternative reversing alarm options, including frequency modulated alarms, proximity alarms and visual alarms. Such alternative alarms will only be used if the Company is satisfied that the safety-related risks of the alternative alarm are acceptable. The Company will use the least intrusive reversing alarms that do not compromise safety.
- The Company will ensure that all earthmoving equipment brought onto have sound power levels less than or equal to those listed in **Table 9**.

### 10.3 PROCEDURAL NOISE CONTROLS

#### 10.3.1 Quarrying Operations

The following best practice operational noise management measures will be adopted.

- Mobile plant will be fitted with high efficiency mufflers, where available. These will be maintained to manufacturer's specifications.
- Regular and effective maintenance of all equipment including vehicles travelling on and off the Quarry Site will be conducted. Prompt attention will be given to repair of loose or rattling parts and broken equipment. All maintenance work will be carried out by qualified persons.
- All Company personnel, and contractors and their employees, will be made aware of their obligations and responsibilities with regard to minimising noise emissions. Contractors will familiarise themselves with methods of controlling noisy equipment and alternative construction procedures as identified in AS2436-1981 "*Guide to Noise Control on Construction, Maintenance and Demolition Sites*".
- If required, consideration will be given, in consultation with landholders, to acoustical mitigation at receivers.
- Restriction of drilling operations to daytime only (7:00am to 6:00pm) and then with recognition of avoiding periods of temperature inversions.

In addition, any quarrying operations within 500m of residences on privately-owned land will be reviewed prior to undertaking scheduled activities to ensure noise criteria identified in *PA Condition 3(5)* can be achieved (**Figure 3**). This review will include the assessment of:

- sound power levels for equipment to be used;
- topography and bunding relative to the residence;

- prevailing and predicted weather conditions; and
- noise criteria to be achieved.

If the review identifies that there is the potential for noise criteria levels to be above those listed in *PA Condition 3(5)* the Quarry Manager will implement preliminary attended noise monitoring at the potentially affected residence/s to determine if noise levels can be achieved.

If it is determined that noise levels are above the relevant criteria further mitigation measures will be implemented. If following implementation of those measures it becomes apparent that the approved noise criteria cannot be achieved, consultation with the relevant owner/s of the residences/land will be undertaken to determine if a written agreement can be obtained for the activity to occur.

If a written agreement is obtained by the relevant owner, a copy will be provided to the Department of Planning and Infrastructure prior to activities occurring. Alternatively, if an agreement is not possible, investigations re further mitigation measures would be undertaken. This would include relocating the noise source or ceasing the relevant activity.

The Quarry Manager will be responsible for ensuring all activities are within the required noise criteria identified in *PA Condition 3(5)*.

### **10.3.2 Traffic**

The following best practice traffic noise management measures will be implemented.

- Construction of an alternative site access road within a topographic depression to mitigate quarry traffic noise at “Hartley Cottage” (**Figure 2**).
- Monitoring of heavy vehicle departure times and weights via the Company’s weighbridge management system.
- Implementation of a Drivers’ Code of Conduct. (see *Traffic Management Plan*)
- Enforcement of a 50km/h speed limit on the site access road and a 20km/h speed limit in the vicinity of the weighbridge, processing plant and stockpile area. The respective limits will be sign posted at the entrance to the site and near the weighbridge.

Transportation operations between 5:00am and 6:00am and 8:00pm and 10:00pm, Monday to Saturday will only be permitted following negotiation of written agreements with the seven surrounding landholders nominated in *PA Condition 3(6)*.

The Quarry Manager will be responsible for the implementation of procedural noise controls.

## 11. NOISE MONITORING PROTOCOL

### 11.1 INTRODUCTION

*PA Condition 3(7)(b)* requires that this Plan include:

- a noise monitoring protocol for evaluating compliance with the relevant noise limit criteria identified in *PA Condition 3(5)*; and
- a protocol for determining exceedances of the relevant conditions of the approval.

This sub-section has been prepared in satisfaction of that requirement.

It is noted that the criteria nominated in *PA Condition 3(5)* relate to all Quarry-related activities undertaken within the Company's property including extraction, processing, product loading and truck movements until they depart from the Quarry onto the Mitchell Highway.

### 11.2 ATTENDED MONITORING

#### 11.2.1 Purpose and Criteria

The purpose of the attended noise monitoring will be to determine compliance with the criteria identified in *PA Condition 3(5)* (**Table 2**). It is noted that the criterion are nominated to be  $L_{Aeq\ 15\ minutes}$  35dB(A) at any residence at any time of day or night, with the exception of "Fairview" where the daytime criterion are 36dB(A).

#### 11.2.2 Noise Monitoring Locations

It is proposed to monitor operational noise levels at two locations near the eastern (Location N1) and northeastern (Location N2) boundary of the Company's property (see **Figure 2**). These locations are in effect intermediate locations between operational areas and surrounding residences to the southeast and northwest of the Quarry. Location N2 is approximately 150m southwest of the "Hartley Cottage" residence and Location N1 is approximately 500m west-northwest "Wheatfields", the closest residence to the southeast of the Quarry.

The use of the two intermediate monitoring locations is proposed in lieu of the current owners of the surrounding residences nominating their agreement for Hanson to undertake monitoring at their property and to ensure that these residents are not unduly inconvenienced as a result of the attended monitoring program. Hanson notes that in the event that the owners of the properties identified in **Table 1** change their minds and subsequently request inclusion of their property in the noise monitoring program, that the relevant residences would be included in the program and that this plan would be amended to reflect that request.

Attended noise monitoring will also be undertaken at surrounding residences in the event of a substantiated noise-related complaint (see Section 11.3) or in the event that a landholder exercises their rights under *PA Condition 4(3)* to request an independent review of noise-related impacts.

### **11.2.3 Methodology**

Attended noise monitoring will initially be undertaken quarterly as a minimum, commencing during the initial stages of construction operations. The Company may undertake more frequent attended noise monitoring during the initial stages of the Quarry to ensure that the nominated noise-related management and mitigation measures are operating as anticipated.

Attended noise monitoring will be undertaken during the approved operating hours, to ensure that all project-related operations are monitored. All attended noise monitoring will be conducted in accordance with the requirements of the following documents, as amended.

- *NSW Industrial Noise Policy (INP).*
- *AS 1055.1-1997 “Acoustics – Description and Measurement of Environmental Noise – General Procedures”*

Attended monitoring will be undertaken using a Type 1 integrating sound level meter with 1/3 octave filter and will be set to A-weighting (fast response).

Attended noise monitoring will expressly seek to identify and quantify any relevant modification factors referred to in Chapter 3 of the INP.

All acoustic instrumentation employed throughout the monitoring program will comply with the requirements of AS IEC 61672-2004, *Electroacoustics - Sound Level Meters*, as amended, and will carry current NATA or manufacturer calibration certificates. Instrument calibration will be checked before and after each survey, with the variation in calibrated levels not exceeding  $\pm 0.5\text{dB(A)}$ .

Where possible, measurements will be taken during the day, evening and night-time period at each monitoring location so that noise levels during the full range of operating times / activities are monitored.

The maximum ( $L_{A\text{max}}$ ), and the energy equivalent ( $L_{A\text{eq}}$ ) intrusive noise level from quarrying operations over a 15 minute measurement period will be recorded. If necessary, other descriptors such as  $L_{A10}$ ,  $L_{A50}$ ,  $L_{A90}$ ,  $L_{A99}$  and  $L_{A\text{min}}$  could also be recorded. Wherever possible, the  $L_{A90}$  noise level (i.e. without contributions from the Quarry) will be recorded to identify the prevailing a background noise level compared with those recorded in 2001. Information that will be recorded during monitoring and about each location will include:

- the name of the person undertaking the monitoring;
- locations of the monitoring;
- recording intervals (date and times);
- meteorological conditions i.e. temperature, humidity, cloud cover, and wind speed and direction drawn from the on-site meteorological station;
- statistical noise level descriptors together with notes identifying the principal noise sources;

- instrument make, model, serial number and calibration details; and
- a brief description of activities occurring within the Quarry during the monitoring period.

#### 11.2.4 Assessment Criteria

*Condition 3(5)* of PA 06\_0193 identifies noise-related assessment criteria for the Quarry at five residences. However, as indicated in Section 11.2.2, in the interests of not unduly inconveniencing surrounding residents, the Company intends to undertake noise monitoring on its own property at two locations, namely Locations N1 and N2. These locations are between the approved operations and the closest residences, namely “Hartley Cottage” and “Wheatfields.”

As a result, Mr Dick Godson of SLR has undertaken an assessment of equivalent noise levels at the Locations N1 and N2 that will ensure compliance with the approved noise criteria at surrounding residences. This assessment has been undertaken in accordance with the procedures outlined in Section 11.2.4 of the *Industrial Noise Policy*.

In summary, Mr Godson nominates the following noise levels at the monitoring locations. Compliance with these noise levels will, in the opinion of Mr Godson, ensure compliance with the approved assessment criteria at the residences identified in *PA Condition 3(5)*.

- Location N1 - 43dB(A).
- Location N2 - 50dB(A).

In order to confirm the assessment undertaken by Mr Godson, during the initial noise monitoring program, noise levels at Locations N1, N2, “Wheatfields” and “Hartley Cottage” will be monitored and compared with the predicted noise levels. If required, this plan will be adjusted to reflect any amendment to the relevant noise levels at Locations N1 and N2.

Any distinctive Quarry-generated noise sources (i.e. haul trucks, bulldozers, crushing and screening equipment, front-end loaders, road trucks etc.) will be recorded, together with any extraneous noise sources. In addition, the Company will maintain copies of the relevant fixed plant and mobile equipment operating shift logs and extraction location(s) for inclusion in the noise monitoring report.

The Quarry Manager will be responsible for noise monitoring of Quarry activities. In the event of an exceedance of the relevant noise levels at Locations N1 and N2, the Noise Specialist will contact the Quarry Manager to inform of the location and time of the exceedance and then contact the relevant site personnel immediately following the monitoring advising them of the exceedance and informing them of the location, the margin of exceedance and the source(s) of emission.

#### 11.3 SUPPLEMENTARY NOISE SURVEYS

In the event of a substantiated noise-related complaint or a landholder exercising their rights under *PA Condition 4(3)* to request an independent review of noise-related impacts, the Company will undertake a supplementary attended noise survey as described in Section 11.2.3.



In addition, the Company may, particularly during the initial construction stages of the Quarry, undertake supplementary attended noise surveys in accordance with the procedures identified in Section 11.2.3.

## **11.4 METEOROLOGICAL MONITORING**

All attended noise monitoring will be accompanied by a quantitative record of weather conditions during the monitoring period together with a qualitative description of weather conditions, including cloud cover, fog etc. The weather data during the periods of noise monitoring will be recorded through the use of the data collected at the on-site automated weather station which records.

- rainfall;
- temperature at 10m;
- temperature at 2m;
- relative humidity;
- net solar radiation;
- sigma theta;
- wind direction; and
- wind speed.

**Figure 2** displays the location of the on-site meteorological station.

## **12. EVALUATION OF COMPLIANCE AND CONTINUAL IMPROVEMENT**

A noise monitoring report will be prepared within 7 days of each attended noise monitoring event. This report will include an assessment of the monitoring results against the criteria identified in *PA Condition 3(5)*. Mitigation of any exceedances will be undertaken in accordance with the continual improvement program described in Section 15.

All monitoring reports will be reviewed by the Quarry Manager and a copy included within each *Annual Review*.

In the event that attended noise monitoring identifies an exceedance of the noise criteria identified in *PA Conditions 3(5)* or in Section 11.2.4, the exceedance will be investigated to determine the likely cause. The investigation will seek to determine:

- whether the exceedance of the criteria was directly related to a source associated with the Quarry or if environmental factors contributed to the exceedance;
- the primary cause of the incident;
- any contributing factors which led to the incident;
- whether appropriate controls were implemented to prevent the incident; and
- corrective and preventative measures that may be implemented to prevent a recurrence of the incident.

Corrective and/or preventative actions will be assigned to relevant Company personnel. Actions will be communicated internally through planning meetings and toolbox talks and outstanding actions will be monitored for their effectiveness upon completion.

A copy of the investigation report and regular updates on the status of the identified corrective and/or preventative actions will be provided to the EPA and DP&I and, if required, the complainant, in accordance with the procedures identified in Sections 14 and 13 respectively. In addition, a copy of the report will be placed on the Quarry website and included in the *Annual Review*.

### 13. COMPLAINTS HANDLING AND RESPONSE

The *Environmental Management Strategy* as required by *PA Condition 5(1)* includes a detailed complaints management procedure. This sub-section records the procedures that would be implemented following receipt of a noise-related complaint.

Noise-related complaints may be received either via one of the following methods.

- Directly via the 24-hour, 7 day per week Company's general Emergency Line (1800 882 478). This number will be advertised widely in the local media, on signage at the Site entrance and on the Company's web site ([www.hanson.com.au](http://www.hanson.com.au)).
- Directly via a dedicated email address which will be advertised in a similar manner to the Community Information Line.
- Indirectly via the relevant government agencies.

In addition, consultation will be held with the community as part of the Company's standard consultation procedures, namely informal meeting with surrounding landholders as required. These meetings will provide a further forum at which complaints maybe received.

Following receipt of any noise-related complaint, the Company will implement the following procedure.

1. The complaint will be reviewed by the Quarry Manager or their delegate to determine the nature, date and time of the noise source. This will include contacting or meeting with the complainant.
2. A supplementary attended noise survey will be undertaken in accordance with the procedures identified in Section 11.2. The resulting attended noise monitoring report will be provided to the complainant on receipt.
3. Should the attended noise monitoring report indicate that no exceedance of the criteria identified in *PA Condition 3(5)*, the Quarry Manager will continue to consult with the complainant in relation to managing noise emissions within the Site.
4. Should the attended noise monitoring report indicate that an exceedance of the criteria identified in *PA Condition 3(5)*, the Quarry Manager will notify the Director-General in accordance with the procedures identified in Section 14 and implement the procedures identified in Section 12. In addition, the Quarry Manager will continue to consult with the complainant, as required, in relation to the complaint.

5. In the event that multiple complaints are received from the same individual(s) and the Company can demonstrate:
  - at least three attended noise surveys at the subject residence in question have demonstrated compliance with the criteria identified in *PA Conditions 3(5)*; and
  - there is documented evidence of a genuine attempt by the Company to discuss the issue and seek a resolution with the complainant;
  - then the Company may, in consultation with the EPA and / or Department of Planning and Infrastructure, limit responses to further complaints to Steps 1 and 2 above.

All complaints would be recorded using a proforma complaints record sheet and the nature and outcome of the complaint and subsequent investigation provided in summary form to the Community Consultative Committee and in the Annual Review.

## **14. INCIDENT REPORTING**

In the event that an initial investigation concludes that an exceedance of an environmental criterion was directly attributed to activities associated with the Quarry, as described in Section 12, the event will be reported to NSW Department of Planning and Infrastructure and EPA within 24 hours of confirming the exceedance.

Within 7 days of identifying the exceedance, the Company will submit a written report with regular updates on the status of the additional mitigation actions to the Director-General, EPA and, where relevant, the complainant, in accordance with the procedures identified in Section 12. In addition, a copy of all reports will be provided to the Community Consultative Committee, made publicly available on the Quarry website and will be included in the *Annual Review*.

The Quarry Manager will be responsible for incident reporting.

## **15. PUBLICATION OF MONITORING INFORMATION**

The Company will place a copy of all attended noise monitoring reports, as well as incident and noise exceedance investigation reports on the Company's website.

In addition, the Company will include all attended noise monitoring reports as appendices to the *Annual Review*. That document, once approved by the relevant government agencies, will be published on the Company's website.

Finally, the Company will also provide the Community Consultative Committee with a copy of all monitoring reports. The Quarry Manager will be responsible for publication of all relevant monitoring information.

## 16. REVIEW

In accordance with *PA Condition 5(4)*, this *Noise Management Plan* will be reviewed and, if required, revised within 3 months of:

- the submission of an annual review under *PA Condition 5(3)*;
- the submission of an incident report under *PA Condition 5(6)*;
- the submission of an audit report under *PA Condition 5(8)*; and
- any modification to the conditions of PA 06\_0193.

The Quarry Manager will be responsible for the review of this Plan.

## 17. REFERENCES

**Heggies (2007)** *Proposed Hard Rock Quarry, Guyong, NSW. Operational and Transportation Noise and Blasting Impact Assessment.* Prepared by Heggies Pty Ltd and included in Volume 3 of the *Environmental Assessment* prepared to support the application for Project Approval.