



DARTBROOK MINE

VIBRATION MANAGEMENT PLAN

for Dartbrook Mine

22 February 2024

DOCUMENT CONTROL

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1. INTRODUCTION

1.1 BACKGROUND

Dartbrook Mine is owned by an unincorporated Joint Venture (Dartbrook Joint Venture) between Australian Pacific Coal (AQC) and Tetra Resources Pty Ltd. Dartbrook Operations Pty Ltd (Dartbrook Operations) is the appointed operating management company and the Mine Operator under Section 5 of the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2022*. The Dartbrook Joint Venture will acquire AQC Dartbrook Management Pty Ltd (ABN 62 007 377 577) which is the holder of the Development Consent and Environment Protection Licence), and AQC Dartbrook Pty Ltd (ABN 46 000 012 813) which is the holder of the relevant mining and coal authorities.

Dartbrook Mine is located approximately 10 km north-west of Muswellbrook and 4.5 km south-west of the village of Aberdeen in New South Wales (see **Figure 1**). Dartbrook Mine operated as an underground longwall coal mine from 1993 until December 2006, when it was placed in care and maintenance by the previous owner, Anglo Coal (Dartbrook Management) Pty Ltd. The mine was acquired by AQC in 2017 and remained in care and maintenance throughout AQC's period of ownership.

Dartbrook Mine is authorised by Development Consent DA 231-07-2000 granted under the *Environmental Planning and Assessment Act 1979*. DA 231-07-2000 was granted on 28 August 2001 and has been modified on seven occasions (as summarised in **Table 1**). DA 231-07-2000 enables mining operations to be carried out until 5 December 2027.

Dartbrook Operations is preparing to recommence mining activities in 2024, thereby transitioning Dartbrook Mine from care and maintenance back to an operational phase.

Table 1 Modifications to DA 231-07-2000

Modification	Approval Date	Activities
MOD 1	19 June 2002	MOD1 was an administrative modification to DA 231-07-2000 that altered the conditions regarding blasting notifications and structural inspections.
MOD 2	16 June 2003	MOD2 approved the construction and operation of an additional emergency tailings storage cell at the Coal Handling and Processing Plant (CHPP).
MOD 3	4 November 2003	<p>MOD3 proposed the following changes to the site access arrangements:</p> <ul style="list-style-type: none"> Continued use of Dartbrook Road to provide access to the West Site; and Use of local public roads by traffic associated with Dartbrook Mine. <p>Prior to construction of the Kayuga Mine Access Road, access to the West Site was via Dartbrook Road. It was envisaged that Kayuga Mine Access Road would replace Dartbrook Mine as the primary access to the West Site. However, the Kayuga Mine Access Road was being used by trucks to haul coal to the CHPP. To avoid interactions between haul trucks and private vehicles, MOD3 proposed that Dartbrook Road should continue to be used as the primary access road for mine personnel.</p> <p>MOD3 also sought approval for locally based employees to access the West Site via local roads (Kayuga Road, Dartbrook Road and Blairmore Lane). For employees residing in the surrounding areas, these local roads provide more convenient access than the Western Access Road.</p>
MOD 4	30 March 2004	DA 231-07-2000 allowed for truck haulage of coal to the CHPP over an 18-month period. Truck haulage was to be discontinued upon

Modification	Approval Date	Activities
		completion of the conveyor system for the Kayuga Seam, which would enable coal to be transferred to the CHPP via the Hunter Tunnel. MOD 4 extended the duration of truck haulage by 3 months to allow for haulage to continue until the completion of the Kayuga Seam conveyor system.
MOD 5	4 May 2005	MOD 5 facilitated changes to the rejects disposal system at Dartbrook Mine. The approved rejects disposal system involved the commissioning of a pipeline and pumping system for the transportation and disposal of reject materials. Engineering studies indicated that this method would pose significant technical risks due to the variability in relative quantities of coarse and fine rejects produced by the CHPP. MOD5 obtained approval for rejects to be transported to the Rejects Emplacement Area (REA) using trucks.
MOD 6	16 November 2005	MOD 6 provided approval for the following activities: <ul style="list-style-type: none"> • Establishment of four new Run of Mine (ROM) coal stockpiles and expansion of the existing emergency ROM coal stockpile at the CHPP; • Disposal of tailings within the Wynn Seam goaf; and • Operation of a Nitrogen Injection Plant to prevent the oxidation of coal.
MOD 7	11 March 2022	MOD 7 was determined by the NSW Independent Planning Commission (IPCN) on 9 August 2019. The IPCN approved the alternate mining method (bord and pillar mining) but not the proposed five-year extension to the duration of mining operations. Without the extension to operate under DA 231-07-2000 for a further five years, it was impractical to recommence mining at Dartbrook. In November 2019, an appeal was lodged against the IPCN's determination in the NSW Land and Environment Court. The court proceedings were resolved on 11 March 2022, with the proposed five-year extension of mining being approved. As a result, DA 231-07-2000 currently enables mining operations to be undertaken until 5 December 2027.

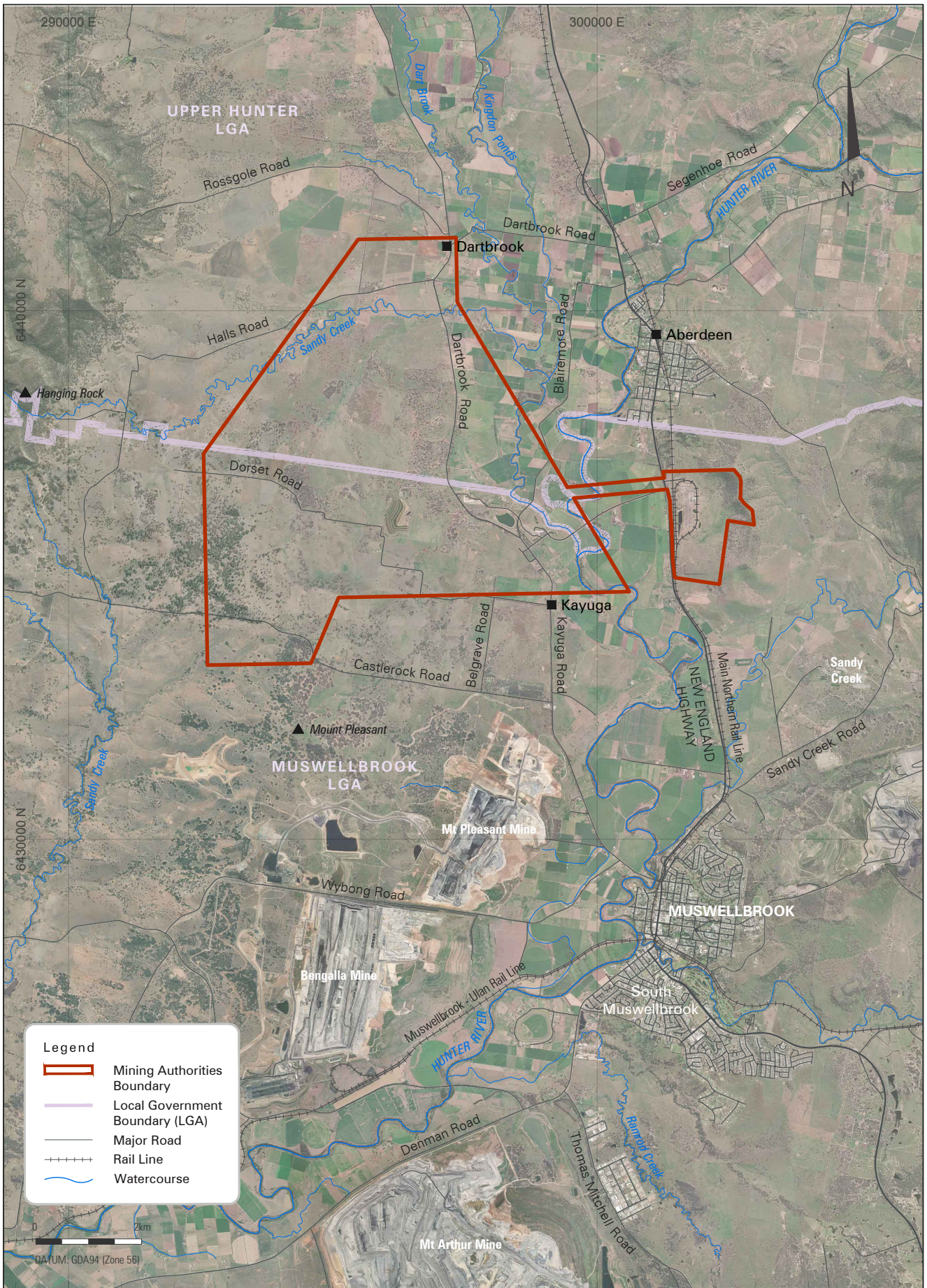
1.2 VIBRATION MANAGEMENT PLAN

This Vibration Management Plan has been developed in accordance with the conditions of DA 231-07-2000.

Figure 1 shows the location of Dartbrook Mine.

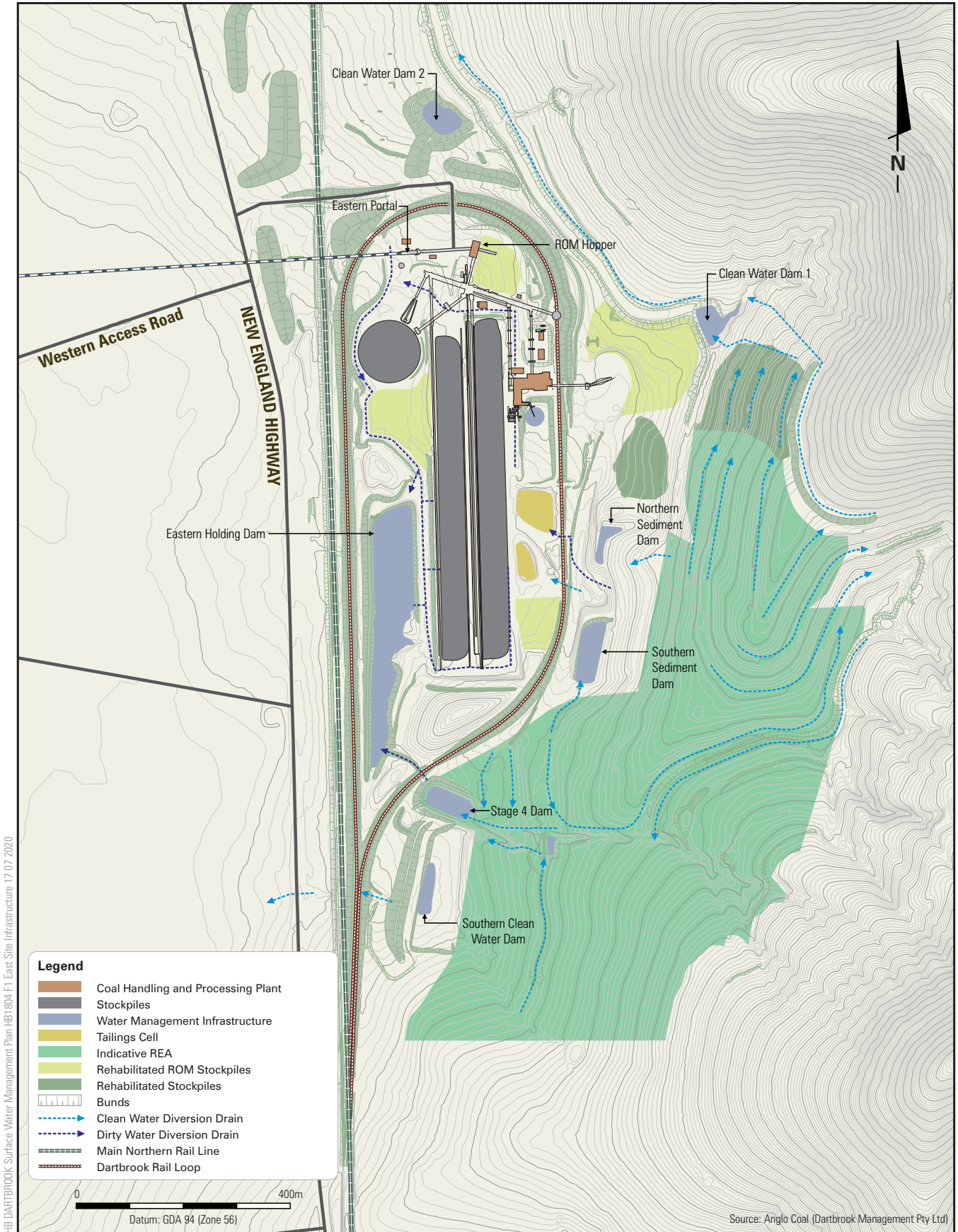
This management plan specifically addresses ground vibration from the existing Dartbrook CHPP and Rail Loop (**Figure 2**). Blasting is the only other element of Dartbrook Mine operations which may potentially generate significant ground vibration. This management plan does not address ground vibration due to blasting, as any blasting operations will be conducted in accordance with a separate Blasting Management Plan, prepared in accordance with Condition 6.3(f) of DA 231-07-2000. Any such plan will include blast vibration management measures.

This management plan does not address low frequency noise (air-borne vibration). Low frequency noise management measures are included in the Noise Management Plan.



JBA 2188 DAR - F 01 SITE LOCALITY (14/03/2022)

DARTBROOK MINE



DARTBROOK MINE

Dartbrook Mine Layout - East Site

FIGURE 2

1.3 MANAGEMENT PLAN REQUIREMENTS

The Vibration Management Plan documents the management strategies designed to address ground vibration impacts from the operation of the Dartbrook CHPP and Rail Loop. The primary objective of the plan is to ensure that vibration from the CHPP and Rail Loop does not impact on neighbouring private residences. This objective will be met through the implementation of the management strategies specified in **Section o**.

The specific requirements of the Vibration Management Plan are contained Condition 6.6 (b) of DA 231-07-2000. These requirements are listed in **Table 2** with a reference to where each specific requirement is addressed in the management plan.

Table 2 Vibration Management Plan Requirements Checklist

Development Consent Conditions	Reference
6.6 Vibration Management Plan (b) Prior to the commencement of mining operations, the Applicant shall prepare and implement a Vibration Management Plan to the satisfaction of the Secretary which will include, but need not be limited to, the following matters:	This document is the Vibration Management Plan which has been prepared to the satisfaction of the Secretary.
<ul style="list-style-type: none"> • compliance standards; 	Section 2
<ul style="list-style-type: none"> • monitoring program; 	Section 4.2
<ul style="list-style-type: none"> • mitigation measures; 	Section 4.1 and 4.3
<ul style="list-style-type: none"> • remedial action in an event of exceedance of criteria in subclause 6.6(a) above; 	Section 4.3
<ul style="list-style-type: none"> • monitoring methods and program; and 	Section 4.2 and 4.3
<ul style="list-style-type: none"> • measures to be undertaken to demonstrate that Dartbrook Mine is achieving best practice in minimising vibration levels from the rail loop and/or CHPP, irrespective of set standards. 	Section 4.1

It should be noted that this plan is limited to considering vibration impacts from the Dartbrook CHPP and Rail Loop. The Dartbrook Rail Loop joins the Main Northern Railway which traverses the Dartbrook mining lease (**Figure 2**). Management of any vibration impacts from the Main Northern Railway is the responsibility of the State Rail Authority, who owns and operates this infrastructure.

2. CRITERIA

Ground vibration peak particle velocity criteria for the project are specified in Condition 6.6 (a) of DA 231-07-2000. The development consent criteria are presented in italics below.

6.6(a) *Ground vibration peak particle velocity from the rail loop and/or CHPP facility must not:*

Exceed 2.82 mm/s at any time,

at any residence or noise sensitive location (such as a school or hospital) that is not owned by the Applicant, or subject to a private agreement between the owner of the residence, or noise sensitive location and the Applicant, as to an alternative vibration level.

3. VIBRATION IMPACTS

A Noise and Vibration Assessment of the Dartbrook Mine was undertaken as part of the environmental impact assessment. The conclusions of the assessment are summarised below.

3.1 ENVIRONMENTAL CONTEXT

Potential sources of ground vibration from the Dartbrook Mine operations include vibrating equipment within the CHPP and train movements along the Rail Loop (**Figure 2**).

The closest sensitive receptors to ground vibration in the vicinity of the CHPP and Rail Loop are:

- Gordon residence, which is approximately 200 m south-west of the southern end of the Rail Loop and 1 km south of the southern end of the CHPP; and
- Day residence, which is approximately 600 m north-west of the CHPP and Rail Loop.

3.2 PREDICTED VIBRATION LEVELS

The Dartbrook Extended EIS noted that an investigation of ground vibration levels induced by passing coal trains was conducted in 1997 by Wilkinson Murray P/L. The worst-case results of that study showed a peak particle velocity of approximately 0.11 mm/s, at a central frequency of 40 Hz, at a distance of 20 m from the rail line. This is more than an order of magnitude lower than the development consent criterion of 2.82 mm/s. The nearest residence (Gordon) is 200 m from the Dartbrook Rail Loop and 70 m from the Main Northern Railway. Ground vibration impacts from trains on the Dartbrook Rail Loop are therefore likely to be more than an order of magnitude below the development consent criterion and undetectable at the most affected private residence.

The Day residence is the closest private residence to vibrating CHPP equipment that could potentially give rise to ground vibration. Monitoring of ground vibration was conducted at the Day residence during the Dartbrook Extended Commission of Inquiry. Monitoring was conducted on two separate occasions when the Dartbrook CHPP was operating. Monitoring results indicated that there was no detectable ground vibration at the Day residence from the operation of the Dart brook CHPP or any other source.

4. MANAGEMENT, MONITORING AND RESPONSE PROCEDURES

4.1 MITIGATION MEASURES AND BEST PRACTICE MEASURES

The lack of any significant sources of ground vibration associated with the current operation of the Dartbrook CHPP and Rail Loop negate the requirement for any mitigation measures for the Dartbrook Mine operations. Similarly the demonstration of best practice ground vibration control for these facilities is not relevant. In the unlikely event that unexpected ground vibration impacts from this infrastructure arise in the future, appropriate mitigation measures will be implemented as necessary as part of the response procedure specified in **Section 4.3**.

4.2 MONITORING

Due to the absence of any detectable ground vibration from the Dartbrook CHPP and Rail Loop at the closest residences, a regular ground vibration monitoring program is not proposed. However, ground vibration monitoring will be undertaken if necessary, in response to complaints, in accordance with the response procedure described in **Section 4.3**.

4.3 RESPONSE PROCEDURES

Dartbrook Coal maintains a 24-hour response line, in accordance with development consent condition 10.2 (a). Any complaints received are managed in accordance with the Dartbrook Complaints Protocol. If a community complaint is received in relation to ground vibration from the Dartbrook CHPP or Rail Loop, the following procedure will be followed:

1. The environmental officer will be informed of the complaint and details will be recorded in the complaints register;
2. The environmental officer will investigate the complaint to determine the source of the vibration. If necessary, the investigation will include vibration monitoring at the complainant's residence;
3. Where a problem source is found, the method of operation will be altered, or controlled, or if possible, the source will be modified to reduce the impact;
4. Any corrective action will be recorded and reported to the Dartbrook environmental officer who will keep a record of all significant actions; and
5. The results of the investigation and any corrective action will be reported back to the complainant by the environmental officer.

It should be noted that based on past operational experience and monitoring results, it is considered unlikely that any privately owned residences will be affected by ground vibration from the Dartbrook CHPP or Rail Loop.

5. REPORTING

Dartbrook Operations will document any complaints received by the mine, including any vibration complaints, in a Complaints Register. The results of any ground vibration monitoring and any corrective actions will also be reported in the Annual Review. In accordance with Condition 9.2 (c) of DA 231-07-2000, Annual Reviews will be submitted to the Department of Planning, Housing and Infrastructure, Mining, Exploration and Geoscience, NSW Environmental Protection Authority, NSW Department of Climate Change, Energy, the Environment and Water, National Parks and Wildlife Service, Muswellbrook Shire Council, Upper Hunter Shire Council and the Dartbrook Community Consultative Committee. The Annual Review will also be published on the Dartbrook website.

6. RESPONSIBILITIES

The key personnel with responsibility for environmental management on the mine site will be the Dartbrook Environmental Officer and the Production Supervisor(s).

The Dartbrook Environmental Officer will be responsible for ensuring that the requirements of this management plan are implemented. Specific responsibilities of the Dartbrook Environmental Officer will include implementing the response procedure described in **Section 4.3**, in the event of a complaint in relation to ground vibration.

7. REFERENCES

- HLA-Envirosciences (2000). *Dartbrook Extended Environmental Impact Statement*.

ABBREVIATIONS

Term	Definition
AQC	Australian Pacific Coal Limited
CCC	Community Consultative Committee
CHPP	Coal Handling and Preparation Plant
DA	Development Consent
Dartbrook Operations	Dartbrook Operations Pty Ltd
DPHI	Department of Planning, Housing and Infrastructure
IPCN	Independent Planning Commission
MSC	Muswellbrook Shire Council
REA	Rejects Emplacement Area
ROM	Run of Mine
UHSC	Upper Hunter Shire Council