SHEC MANAGEMENT SYSTEM

DARTBROOK MINE

DUST MANAGEMENT PLAN

DBK Doc No: **2200**

Approval: **J. Fittler**

Issue	*Issue Date*	*Originator*	*Reviewed*	*Approved*
1	5 August 2002	Hansen Consulting	Tony Willmott	Tony Willmott
2	4 September 2002	Hansen Consulting	Tony Willmott	Tony Willmott
3	24 September 2002	Hansen Consulting	Tony Willmott	Tony Willmott
4	10 December 2002	Hansen Consulting	Tony Willmott	Tony Willmott
5	15 March 2006	Hansen Consulting	Fiona Yench	Fiona Yench
6	22 March 2006	Hansen Consulting	Fiona Yench	Fiona Yench
7	7 June 2006	Hansen Consulting	Fiona Yench	Fiona Yench
8	30 June 2011	Hansen Consulting	Katy Shaw/ Doug Stewart	Jason Fittler
9	16 June 2015	Hansen Consulting	Doug Stewart	Jason Fittler

Amendments

Issue	Date:	Description	Initial
1	05/08/02	Draft for Dartbrook Coal Review	TW
2	04/09/02	Draft for EPA, MSC, SSC Review	TW
3	24/09/02	Version for Planning NSW Approval	TW
4	10/12/02	Version Approved by Planning NSW	TW
5	15/03/06	Revised Draft for ACDM Review	FY
6	22/03/06	Version for EPA, MSC, UHSC Review	FY
7	07/06/06	Version for Department of Planning	FY
8	30/06/11	Revision and update due to five yearly review and care and maintenance standards compliance	KS/DS
9	16/6/15	Update with reduced monitoring changes and latest corporate badging	DS

Distribution List

COPY No.	Distributed To:
1	Department of Planning and Environment (DP&E)
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3	Muswellbrook Shire Council (MSC)
4	Upper Hunter Shire Council (UHSC)
5	Dartbrook Document Control System

AngloAmerican

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1 INTRODUCTION

1.1 Background

Anglo Coal (Dartbrook Management) Pty Ltd (ACDM) was granted Development Consent (DA 231-07-2000) on 29 August 2001 for an extension to the Dartbrook Underground Coal Mine. The approved development involved extending Dartbrook Coal Mine's life for another 21 years and increasing raw coal production from 3.5 Mtpa to 6.0 Mtpa. The Development Consent was modified on 4 May 2005 to continue to utilise haul trucks for the transport and disposal of combined reject material rather than converting to a pumped reject disposal system. A further modification was obtained on 16 November 2005 to approve the establishment of new Run of Mine (ROM) coal stockpiles, disposal of tailings underground in the Wynn Seam goaf area, and operation of a Nitrogen Injection Plant over the Kayuga Seam mine workings.

Longwall mining operations commenced in the Wynn Seam in 1996 and ceased in May 2004. At this time the longwall was relocated from the Wynn Seam to the Kayuga Seam. Construction of mine access and development roadways for the Kayuga Seam commenced in 2001. Mining of the Kayuga seam ceased in October 2006; due to ongoing geological difficulties. The mine was placed on, and is currently operating under Care and Maintenance (C&M).

1.2 Dust Management Plan

This Dust Management Plan has been developed in accordance with the conditions of the current Dartbrook Development Consent. The plan includes dust management strategies for all components of the Dartbrook C&M operations including:

- operation of the West Site Surface Facilities including Mine surface facilities, Kayuga Seam Access Slot and Kayuga Seam Access Road;
- underground development and longwall mining operations in the Kayuga, Piercefield and Mt Arthur seams;
- operation of the Coal Handling and Preparation Plant (CHPP) at the East Site, construction and operation of existing and new ROM coal stockpiles, and construction and operation of a tailings filter press plant at the CHPP;
- disposal of tailings underground in the Wynn Seam goaf;
- construction, operation, and progressive rehabilitation of the current and the expanded Rejects Emplacement Area (REA) at the East Site;
- construction and operation of ventilation shafts, gas drainage boreholes, plants and associated pipelines, electrical substations, mine dewatering boreholes, dropholes, and the tailings return water pipelines and pumping system.

Figure 1 shows the location of Dartbrook Care and Maintenance operations.

1.3 Management Plan Requirements

This Dust Management Plan documents the dust management strategies for the Dartbrook C&M operations. The primary objective of the plan is to manage and minimise the impact of dust from

Dartbrook C&M operations on the environment and nearby residences. For Care and Maintenance activities this objective will be met through the implementation of the dust management strategies specified in Section 5.

Coaling operations ceased in 2006. Under the limited C&M activities it is highly unlikely that visible dust will be generated.

The specific requirements of the original Dust Management Plan are contained in Development Consent Condition 6.1(a). These requirements are listed in Table 1 with a reference to where each specific requirement is addressed in the management plan.

Table 1

Dust Management Plan Requirements Checklist

Development Consent Condition	Reference / status
6.1 Dust Management Plan a) The Applicant shall, prior to the commencement of construction or Mining Operations, prepare a Dust Management Plan detailing air quality safeguards and procedures for dealing with dust emissions from the Dartbrook Underground Mine Extension to the satisfaction of the Director-General. The Dust Management Plan shall be prepared in consultation with the EPA, MSC and SSC. The Plan shall include, but not be limited to, details of:	This document is the Dust Management Plan which has been prepared in consultation with the Department of Environment and Conservation – Environment Protection Authority (EPA), (Muswellbrook Shire Council (MSC) and the Upper Hunter Shire Council (UHSC), (previously SSC) and to the satisfaction of Department of Planning (DoP).
(i) the identification of dust affected properties in accordance with the relevant air quality standards/goals in Tables 1 and 2 (Table 2 in this management plan);	There are no dust affected properties under C&M. Dust impacts are discussed in Section Error! Reference source not found..
(ii) reporting of the dust emissions from the Mine in comparison to all of the air quality standards and goals provided in Tables 1 and 2 (Table 2 in this management plan).	Section 8.and in each Annual Environmental Management Plan (AEMR)
(iii) specification of the procedures for the dust monitoring program for the purpose undertaking independent dust investigations;	Section 0.
(iv) outline the procedure to notify property owners and occupiers likely to be affected by dust from the mine in excess of standards/goals detailed in Tables 1 and 2 (Table 2 in this management plan);	Section 7.
(v) measures to reduce the potential for wind erosion from exposed surfaces;	Section 5.
(vi) methods for making dust monitoring data publicly available, such as the placement of monitoring details and results on the internet;	Section 8.
(vii) measures to manage and mitigate short term episodic events including investigations into the relationships between short-term variations in dust levels (particularly TSP and dust deposition) and levels of complaints and annoyance, with a view to reviewing the monitoring approaches and criteria for acceptable levels of impact;	Section 5.3.

Development Consent Condition		Reference / status
(viii)	the establishment of a protocol for handling dust complaints that include recording, investigating, reporting and acting on complaints, including where complaints are received and it is demonstrated dust levels are below the criteria contained in this consent;	Section 7. All complaints, including dust complaints, will be managed in accordance with the Dartbrook Mine's approved Complaints Handling Protocol. This protocol includes requirements for recording, investigating, reporting and acting on all complaints.
(ix)	appropriate mechanisms for community consultation;	Sections 7 and 8.
(x)	outlining proactive/predictive and reactive mitigation measures to be employed to minimise dust emissions;	Sections 5 and 7.
(xi)	outlining mitigation measures to be employed to minimise dust emissions including dust from reject emplacement areas in dry and windy conditions;	Section 5.
(xii)	equipment to be available and used to control dust generation;	Section 5.2.
(xiii)	methods to determine when and how the mine operation is to be modified to minimise the potential for dust emissions, particularly from surface activities if the relevant criteria are exceeded;	Sections 5 and 7.
(xiv)	identification of longer term strategies directed towards mitigating dust levels that exceed the air quality standards/goals in Tables 1 and 2 (Table 2 of this management plan);	Based on the low levels of predicted dust emissions from the Dartbrook's C&M operations long term strategies are highly unlikely. The response procedure specified in Section 7 incorporates the principle of continuous improvement in relation to mine dust control. Its ongoing implementation will lead to improved mine dust control in the long term.
(xv)	details of locations for dust monitoring and deposition gauges at the residential areas and frequency of monitoring, as agreed with the EPA;	Section 6.1
(xvi)	a program to continue baseline monitoring undertaken prior to development consent; and	Section 6.1
(xvii)	monitoring and reporting protocol for PM_{10} (particulate matter less than 10 microns) and a comparison with the: • National Environment Protection Council PM_{10} goal of 50 µg/m^3 (24-hour average); and EPA PM_{10} goal of 50 µg/m^3 (annual average).	Section 8.

2 CRITERIA

The dust standards/goals applicable to Dartbrook C&M operations are specified in Condition 6.1(a1) of the Development Consent as presented in Table 2.

Table 2

Development Consent Air Quality Standards/Goals

Health Based Standards/Goals		
Dust Type	Standard/Goal	Agency
Total Suspended Particulate Matter (TSP)	90 µg/m^3 (annual mean)	NHMRC[1]
Department of Environment and Conservation Amenity Based Air Quality Standards/Goals		
Existing Dust Fallout Level (g/m^2/month)	Maximum Acceptable Increase Over Existing Deposition Levels (g/m^2/month)	
	Residential	Other
2	2	2
3	1	2
4	0	1

1. NHMRC National Health and Medical Research Council

In addition to these compliance standards/goals, Development Consent Condition 6.1(a)(xvii) requires PM_{10} (particulate matter less than 10 microns) monitoring and reporting. AEMR reporting is required to include a comparison of the monitoring results with the goals listed in Table 3.

Table 3

PM_{10} Reporting Goals

PM_{10} Goal	Agency
50 µg/m^3 (24-hour average)	NEPC[1]
50 µg/m^3 (annual average)	DEC[2]

1. NEPC National Environment Protection Council
2. EPA – Environmental Protection Authority

The NEPC 24-hour PM_{10} goal allows for 5 exceedances per year. It should be noted that unlike the standards/goals listed in Table 2, the Table 3 goals are not compliance standards, and are reporting goals only. The Development Consent does not require any action or mitigation works in response to any monitored results above these goals.

3 EXISTING ENVIRONMENT

3.1 Introduction

A detailed Air Quality Impact Assessment for the Dartbrook Extended Project was conducted by Holmes Air Sciences and is included in Appendix O of the Dartbrook Extended EIS. Baseline air quality data for this study were obtained from ten years of monitoring data from the existing Dartbrook operations dust monitoring program. This monitoring program includes monitoring of monthly dust deposition and 24-hour total suspended particulate (TSP) matter concentrations.

Modifications to the Dartbrook Development Consent were granted to allow for the use of trucks to:

- haul and dispose of rejects on the Dartbrook Extended REA; and
- haul ROM coal to and from new stockpiles.

Modification applications were supported by Statements of Environmental Effects (SEEs) which contains air quality assessments of the modified operations at the East Site.

The following sections provide a summary of the dust assessments from the EIS and SEEs and provide proposed mitigation measures for Dartbrook C&M operations.

3.2 Dust Deposition

The EPA amenity standard for annual average dust deposition is 4 g/m^2/month, and a deposition rate higher than this indicates air quality not generally suitable for residential areas (Section 2).

Historical dust deposition monitoring results for the area surrounding the Dartbrook operations are presented in the Dartbrook Extended EIS and the SEEs. Annual average dust deposition levels in the vicinity of the mine have been below 4 g/m^2/month at the majority of monitoring sites, and are generally below 2 g/m^2/month. Although certain dust gauges have occasionally recorded levels in excess of 4 g/m^2/month, these elevated readings are known to have been caused by activities other than mining, such as earthworks and irrigation or organic contamination.

3.3 Dust Concentrations

Historical annual average TSP monitoring results for the area surrounding the Dartbrook operations are presented in the Dartbrook Extended EIS and the SEEs. All recorded results were below the health-based standard of 90 $\mu g/m^3$ specified in the Development Consent conditions (Table 2).

Investigations and research carried out by the NSW State Pollution Control Commission in 1986 showed that for suspended particulates from mining operations, annual average PM_{10} concentrations can be estimated as 39% of annual average TSP concentrations. Consequently, it may be assumed that the highest average annual PM_{10} concentration in the vicinity of Dartbrook operations would also be below the reporting goal of 50 $\mu g/m^3$ specified in the Development Consent (Table 3).

The Dartbrook Extended EIS (2000) stated that the majority of 24 hour average TSP concentrations monitored in the vicinity of the Dartbrook lease over 10 years prior to the EIS were below

50 µg/m^3. Therefore estimated 24-hour PM_{10} concentrations were also below the reporting goal of 50 µg/m^{3}Some higher concentrations have been monitored due to bushfires and dust storms.

4 IMPACT ASSESSMENT

4.1 Introduction

4.1.1 Background

Sources of potential dust emissions from the Dartbrook C&M operations addressed by this plan included:

- maintenance of the CHPP;
- ROM and stockpile maintenance;
- construction, maintenance of rehabilitated areas;
- maintenance of infrastructure including train rail lines; and
- Windblown dust from hardstand areas and roadways.

The location of these sources is shown in Figures 2 & 3.

4.1.2 Dust Assessment Approach

The estimated dust impacts presented in this section were for Dartbrook mining operations at the maximum approved raw coal production level of 6 Mtpa and have been included for historical and comparative purposes. The impact assessment approach generally involves the comparison of estimated Dartbrook operations' dust emission levels and monitored background dust levels with the air quality standards and goals. This a conservative approach as the monitored background levels already include dust emissions from the Dartbrook Mine.

Under C&M the dust monitoring has continued to reflect the low background levels.

4.1.3 Dust Receptors

The Dartbrook Operations are divided into two distinct areas known as the East Site and the West Site (Figure 2). These two sites are approximately 3 km apart. The prevailing wind directions in the Upper Hunter Valley are along the south-east/north-west axis and consequently residences in the vicinity of each site are unlikely to be affected by dust from the other site.

East Site

Private properties in the vicinity of the East Site may potentially have been impacted by dust emissions from the East Site operations. These operations would have included the ongoing operation of the Dartbrook CHPP; train loading facilities; reject and ROM coal haulage operations; and intermittent earthworks associated with the progressive construction and rehabilitation of the REA. The moisture content of the rejects will be approximately 35%, which will ensure that loading and dumping operations will not generate dust and that spreading of rejects will generate very little dust.

The closest private residences to the East Site operations are:

- O'Brien residence - approximately 750 m south-west of the Dartbrook rail loop;
- Day residence - approximately 750 m north-west of the CHPP; and
- The closest Aberdeen residence – was approximately 1 km to the north of the CHPP

The location of these and other nearby residences is shown on Figure 2 and Figure 3.

West Site

Properties in the vicinity of the West Site may potentially have been impacted by dust from the ongoing operation of the Dartbrook Mine West Site Surface Facilities.

The closest private residences to the West Site mining operations are:

- Standing residence - approximately 250 m south of the Kayuga Seam Access Road;
- J & A Lonergan and JS & NM Lonergan residences - approximately 500 m south of the Dartbrook Mine surface facilities; and
- Wattus residence - approximately 600 m north-east of the Kayuga Seam Access Road.

The location of these properties in relation to the mining operations is also shown in Figure 2 and Figure 3.

4.2 Dust Predictions

4.2.1 Mining Operations

During operations the predicted maximum dust deposition, and TSP and PM_{10} concentrations for the Dartbrook mining operations are presented in Figure 4 to Figure 7. These figures are from the Dartbrook Extended EIS, 2000, Table 4 presents predicted dust levels at the Day Residence, from the Dartbrook Extended EIS Dust Assessment and adjusted in accordance with the findings of the SEE.

Data is presented for the Day residence, as this is the residence with the highest predicted levels for all dust parameters. The model shows that the majority of dust emissions are from the East Site CHPP area with limited dust generated by the mining operations at the West Site. Consequently the private properties with the highest predicted dust levels are located in the vicinity of the East Site. Prevailing winds are strongly aligned along the north-west /south-east axis and as a result the Day Residence has the highest predicted levels for all dust parameters.

Under Care and Maintenance it is expected that there will be minimal dust emissions.

As indicated in Table 4, predicted dust concentrations from the Dartbrook under full mining operations, at the most affected residence, are well within the relevant standards/goals for all dust

parameters. The total dust levels at the most affected residence, calculated by adding the predicted Dartbrook dust levels to monitored background levels are also within the relevant standards/goals.

Table 4
Predicted Dartbrook Dust Levels at the Day Residence

Dust Parameter	Predicted Impact	Standard / Goal (Tables 2 & 3)
Annual Average Dust Deposition	0.5 g/m^2/month	2 g/m^2/month
Annual Average TSP	3.6 $\mu g/m^3$	90 $\mu g/m^3$
Annual Average PM_{10}	2.3 $\mu g/m^3$	50 $\mu g/m^3$
Maximum 24-hour PM_{10}	16.5 $\mu g/m^3$	50 $\mu g/m^3$

5 DUST CONTROLS

5.1 Introduction

The dust management system for Dartbrook C&M operations consists of a combination of both active and reactive control measures. Active control measures have been designed to minimise the generation of wind-blown dust from any bare surfaces and the generation of dust from rural and drilling activities. Active dust control measures are discussed in Section 5.2. Reactive control measures have been designed to enable effective control of any episodic dust events which may occur. Specific details of the proposed reactive management strategies are provided in Section 7.

5.2 Active Dust Control Measures

The active dust control measures proposed for the Dartbrook C&M operations are listed in Table 5.

Table 5
Active Dust Control Measures

Source	Control Measures
CHPP Area	Existing conveyors are shielded and automatic sprays are fitted at transfer points. Trafficable areas will be sprayed by water cart in the event of visible dust generation.
Existing ROM Stockpiles and associated Coal Handling Activities	The unused stockpile areas will be sprayed by existing sprinklers system or water cart in the event of visible dust generation.
REA and minor surface infrastructure construction areas.	The minimum area necessary for construction will be disturbed. Construction and haulage tracks will be kept moist when in use. Other disturbed areas will be sprayed by water cart in the event of visible dust generation. All disturbed areas will be rehabilitated as soon as practicable.
Haulage of Rejects to REA and ROM coal to new Stockpile	Haulage roads and tracks will be kept moist when in use. Generally not applicable under C&M,
CHPP Coal Stockpile Areas	CHPP stockpiles have automatic sprinklers that operate when wind speed exceeds 6 m/s.
West Site Hardstand Areas & Mine Access Road	Hardstand areas and trafficable areas will be sprayed by water cart in the event of visible dust generation.

ACDM will hire a water cart hire for dust suppression spraying of roads and work areas when required. During any periods of peak dust-generating activity, additional water carts will be made available on site, as necessary.

5.3 Management of Short-Term Dust Episodes

Problem episodic dust events due to Dartbrook operations have not occurred in the past, whilst mining and are not expected to occur in future under care and maintenance.
Investigations into the relationship between short-term variations in dust levels and levels of complaints and community annoyance, with a view to reviewing the monitoring approaches and criteria for acceptable levels of impact, are therefore not necessary.

Section 7 describes response procedures that will be implemented for any short term dust episodes.

6 MONITORING PROGRAM

6.1 Periodic Dust Monitoring

Dartbrook Mine has an established and ongoing dust monitoring program for C&M operations.

The aim of the monitoring program will be to confirm the compliance status of Dartbrook C&M operations in relation to the dust standards/goals specified in **Table 2**, and to enable reporting in comparison to the reporting goals in **Table 3**.

The Dartbrook dust monitoring network is shown in **Figure 3** and includes the following components:

- three dust deposition gauges at locations representative of the closest private residences (including Aberdeen) to the East Site;
- two PM_{10} monitoring locations located to the south of the CHPP and south of the West site workshop representative of the closest private residences;
- two dust deposition gauges at locations representative of the closest private residences to the south and west of the West Site surface operations;
- a meteorological station at the East and West Sites.

Dust deposition gauges will be sampled monthly in accordance with Australian Standard AS3580-2003.

Data from the PM_{10} samplers is collected on the EPA approved 6-day cycle (24 hour average measured every 6^{th} day). PM_{10} will be monitored at locations representative of the closest private residences downwind of operations in the prevailing wind directions (north-east in winter and south-west in summer).

PM_{10} monitoring data is also used to estimate annual average TSP levels. Monitored annual average PM_{10} levels are approximately 40% of annual average TSP levels. This estimation method for the determination of annual average TSP levels has been approved by the EPA.

In accordance with Development Consent Condition 8.2(a) ACDM will continue to maintain and operate the East Site meteorological station in accordance with the requirements of AS 2922-1987 and AS 2923-1987. Meteorological data will be analysed and documented on a monthly basis to characterise the site meteorological conditions.

6.2 Quality Assurance

Sampling and analysis will be undertaken by a suitably qualified and experienced person with best practice standards of diligence, care and efficiency. All aspects of monitoring including collection, sampling, transport, analysis and reporting will be subject to a Quality Control System.

The Quality system generally should;

- satisfy the International Standard ISO 9001 "Quality Management Systems – Requirements",

- generally meet the requirements of AS/NZS ISO 14001:2004, and
- use a NATA accredited laboratory for the analysis of samples.

All dust monitoring equipment will conform to relevant Australian Standards and will be of a type approved by EPA. Sampling and analysis procedures will be conducted in accordance with relevant Australian Standards, including DEC's 2005 "*Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales*"

7 RESPONSE PROCEDURES

7.1 Complaints

Response procedures will be activated by a community complaint or a short-term dust event resulting in adverse dust impacts at a neighbouring property. The awareness of short-term dust problems normally arises from three sources:

- community complaints from neighbouring landholders who contact the mine when an awareness of high levels of dust exists;
- review of prevailing dust and weather conditions by the Environmental Coordinator; and
- visual observations from UGM, Anglo or other contractor personnel.

ACDM maintains a 24-hour response line, in accordance with Development Consent Condition 10.2(a). Any dust complaints are managed in accordance with the approved Dartbrook Complaints Handling Protocol.

In situations where the dust emission levels are perceived by neighbouring landholders or site personnel to be a problem, the following procedures will be undertaken:

- the Mine Supervisor and /or the Environmental Coordinator will investigate the situation to determine any signs of visible dust and possible sources;
- where a problem source is found, the method of operation will be altered or controlled;
- if the source of dust is vehicles on mine roads or access tracks, then additional road watering will be employed as required, and/or vehicle movements re-routed or slowed;
- if the source of the dust problem is the coal stockpiles areas, then additional dust suppression spraying will be employed, as required;
- any corrective action will be recorded and reported to the Environmental Coordinator who will record all significant actions, in accordance with the Complaints Handling Protocol;
- the Environmental Coordinator will be informed of any complaint and the details will be recorded in the complaint register, in accordance with the Complaints Handling Protocol; and
- the Environmental Coordinator will notify potentially affected residents by personal contact or by letter if dust monitoring results indicate that the dust criteria identified in **Table 2** are being exceeded due to Dartbrook's C&M operations.

In the event that monitoring demonstrates that the dust criteria (**Table 2**) have been exceeded, the following measures will be implemented:

- an investigation will be conducted to confirm whether Dartbrook C&M operations are the source of the dust;

- if Dartbrook C&M operations are determined to be the source of the dust, an investigation of feasible and reasonable site dust controls will be conducted;
- if identified, feasible and reasonable dust controls will be implemented and monitoring will be conducted to confirm the effectiveness of the controls;
- if no reasonable and feasible site dust controls are identified, and the dust levels are in excess of the dust criteria, the landowner will be able to request acquisition of the property in accordance with Development Consent Condition 11.3.

Cumulative dust impacts on private property above the dust criteria in Table 2 are not anticipated. Any dust complaints arising from cumulative dust impacts will be investigated and dealt with, in cooperation with other relevant mining operations, in accordance with Development Consent Condition 11.1.

7.2 Independent Dust Investigation Procedure

The Independent Dust Investigation process is set out in Development Consent Condition 6.1(c). The process will be triggered when a landowner/ occupier considers that dust from the Dartbrook C&M operations is exceeding the dust criteria and submits a written request, the DoP must also be satisfied that an investigation is required.

The key steps in the process will be as follows:

- ACDM shall prepare a list of independent consultants with appropriate qualifications and submit the list to the Director-General for consideration. The Director-General will appoint an independent consultant of his/her choice (which may include a consultant not listed on the list provided by ACDM).
- The independent consultant will be engaged by and report directly to the Director-General. The independent consultant will develop a methodology for the investigation in consultation with ACDM and the complainant, and to the satisfaction of the Director-General. The independent dust investigation will be conducted to the satisfaction of the Director-General.
- If the independent dust investigation determines that dust criteria are being exceeded, ACDM shall implement the measures listed in Development Consent Conditions 6.1(c) (iii) and (iv), where necessary.
- If, after implementing these measures, the independent investigation confirms that dust levels are above the criteria, the process that follows is provided in Development Consent Conditions 6.1(d), (e) and (f).

7.3 Incident Management

Incidents are a set of circumstances that have caused, or have the potential to cause, significant risk of material harm to either human-health or the environment, and/or breaches of performance measures/criteria in the consent. Examples of incidents are uncontrolled dust generation on haul roads and hardstands and this Dust Management Plan.

The triggering of a TARP is not necessarily an incident but commences an investigation which may find that the exceedance is within the above definition of an incident or may require an action to manage the TARP such avoiding dust prone areas or resurfacing the area with gravel. The investigation response is subject to which TARP is exceeded. Multiple exceedances may occur

before investigations determine that an incident has occurred. All incidents are thoroughly investigated and managed using Dartbrook's Enablon data management system.

Section 8 outlines the process for the reporting and notification of incidents as well as their inclusion in the Annual Environmental Management Report.

Within the context of Dartbrook's Care and Maintenance strategy and cessation of coal production Dartbrook has limited influence on dust generation. Table 6 shows a summary of the main TARPs, their aspects risks and responses

Table 6. Responses to TARP exceedances.

Dust Generation	Risk	TARP	Response
Dust Fallout Level	Elevated readings from Dust Deposition gauges	>4 g/m^2/month	• Investigation • Microscopic examination •Regular inspections
Total Suspended Particulate Matter (TSP)	Elevated readings from HV Samplers	>90 µg/m^3	As above
PM_{10}	As above	>50 µg/m^3	As above
Prolonged Visible Dust	Visual Offence	Visible dust emanating offsite for longer than 5 minutes	Cease operations. Engage a water cart.

8 REPORTING

8.1 Annual Reporting

Environmental reporting to various state government agencies, MSC, UHSC and the Dartbrook Community Consultative Committee (CCC) is required by the Development Consent. Under C&M operations this report is made to the CCC three times a year. Further a comprehensive dust management report is included in the Annual Environmental Management Report (AEMR) which is submitted to DP&E, DR&E, EPA, MSC, UHSC. The AEMR will also be made available for public information at the MSC and UHSC offices and local libraries.

The AEMRs will include:

- dust monitoring results;
- an assessment of compliance comparing monitoring results against the dust criteria specified in Table 2;
- comparison of dust monitoring results with the reporting goals specified in Table 3;
- a review of the effectiveness of dust control measures, and any necessary dust management targets or strategies for the following year;
- a summary of any dust complaints from the public relating to the mine;
- performance of dust control measures, and dust monitoring results; and
- complaints received by the mine, including any dust complaints.

ACDM will also make dust monitoring results available, through the AEMR, to the EPA, MSC, UHSC, DPI and the Dartbrook CCC.

8.2 Incident reporting

As described in Section 7 all dust related incidents will be reported to the relevant Statutory Departments especially the DP&E, EPA, DRE and NOW.

Mine generated Air Pollution may be defined as adverse levels of gaseous, solid or liquid particles that may remain suspended in the air and may reduce visual amenity and adversely impact health

The site Pollution Incident Response Management Plan requires the reporting of "pollution incidents *immediately* to the EPA", DP&E, other appropriate Authorities and neighbours if there is actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial."

As per Section 6.1 all incidents are also reported in the AEMR

9 RESPONSIBILITIES

The key personnel with responsibility for environmental management on the mine site will be the Dartbrook Environmental Coordinator and UGM's Project Manager.

The Environmental Coordinator will be responsible for ensuring that the requirements of this management plan are implemented while UGM's Project Manager will be responsible for implementing dust control measures specified in this plan.

Specific responsibilities of the Environmental Coordinator will include:

- ensuring that all personnel are given adequate training in environmental awareness, legal responsibilities and dust control methods;
- ensuring that mine personnel are aware of the appropriate dust management controls to be installed in areas disturbed by mining operations;
- ensuring that dust monitoring is conducted as described in Section 6;
- undertaking inspections to ensure dust controls are adequately implemented; and
- coordinating response procedures in accordance with Section 7.

Specific responsibilities of UGM's Project Manager include:

- implementing dust control measures in accordance with the requirements of this management plan; and
- in the event that a dust complaint occurs, investigating the source and undertaking the response procedures outlined in this plan.

10 REVIEW REQUIREMENTS

In accordance with condition 3.2(f) of the Dartbrook Development Consent, this plan will be reviewed every five years or when significant changes are made to the Air Quality (Dust) Management system and prior to the conclusion of the care and maintenance period.

* * *

FIGURES

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DRAWN	REVISIONS	REV.	DATE	BY	DESCRIPTION	CHK.
PC		A	20/11/14	PC	Initial Issue – Updated H&B Plan	DS
20/11/14						

Dartbrook Mine
Site Layout - Dust Management Plan
Figure 1

Datum :	AHD	SCALE	A3	DRG.	REV.
GRID :	MGA(56)	1:32000		32626	A

Legend

2 DP 540336 Cadastral Identity

Dwelling owned by Anglo Coal

Privately owned Dwelling

Land owned by Anglo Coal

Land owned by other mining company

Cadastral details have been derived from the DCDB with its inherent inaccuracies. Land Ownership and cadastral parcel details are as of the 2014 MOP application
Lease areas are stratified and subsurface in all areas excepting those where surface facilities exist. These areas being the CHPP, Western Drift portals, #1 & #2 vent shafts and the Kayuga Box Cut.
See MOP Plans 1C & 1 D for Lease Details.

N

0 100 200 400 600 800 1000 metres

TO SCONE

ABERDEEN

TO MUSWELLBROOK

AngloAmerican

Coal & Allied

CL386

ML1497

Mining Lease

Upper Hunter Shire

Muswellbrook Shire

Halls Road

Dartbrook Road

Dart Brook

Hunter River

Blairmore Lane

Wattus Residence

Southern Aberdeen Residences

Day Residence

New England Highway

Main Northern Railway

No 2 Shaft Access Rd

No1 Shaft

No2 Shaft

Kayuga Entry

Evap Ponds

Western Access Road

CHPP

Rejects Emplacement Area

Casey Residence

Standing Residence

JS & MA Lonergan Residence

Dorset Road

O'Brien Residence

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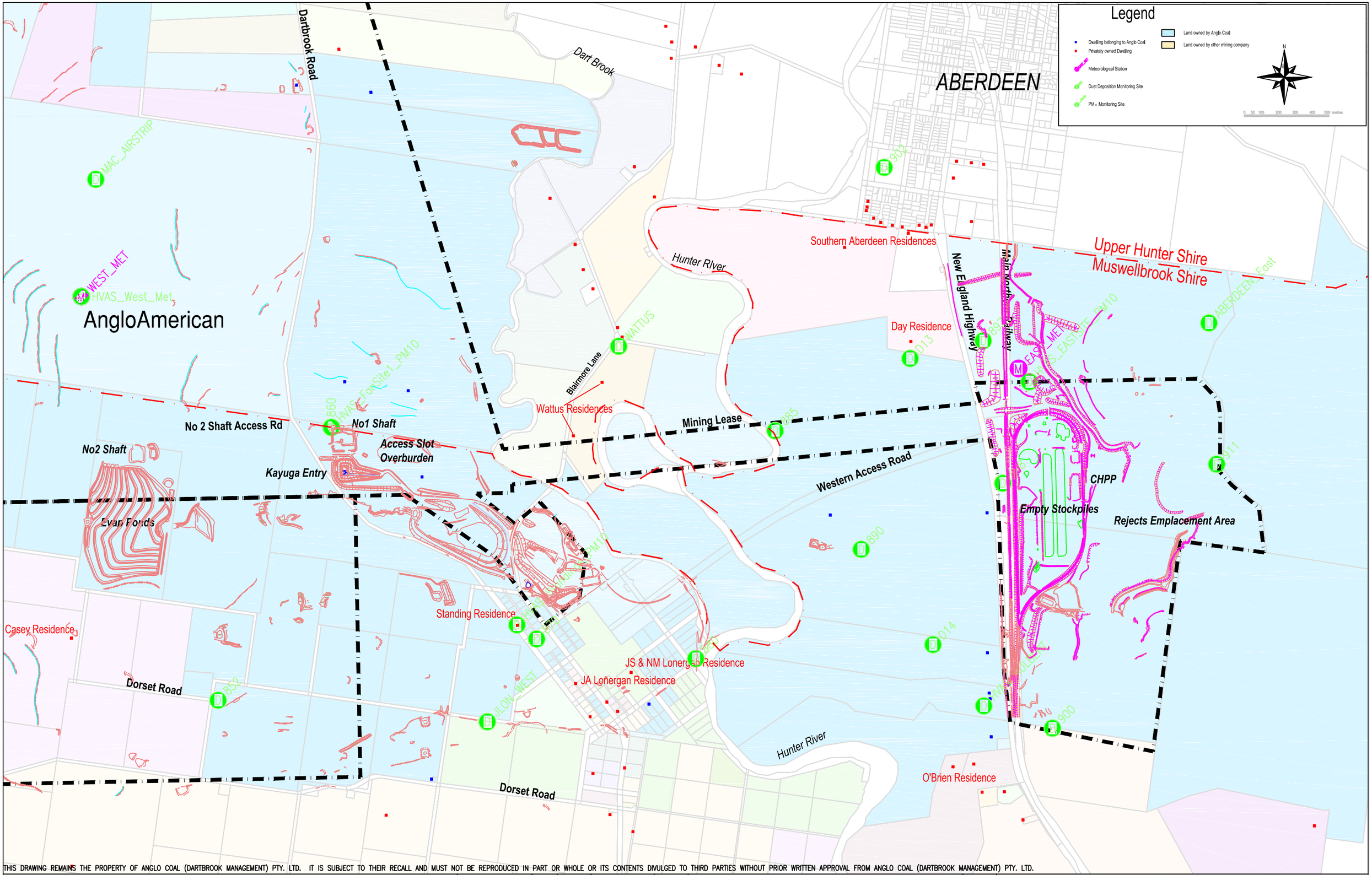
REVISIONS	REV.	DATE	BY	DESCRIPTION	CHK.
	A	20/11/14	PC	Initial Issue – Updated H&B Plan	DS

Dartbrook Mine
Property Ownership - Dust Management Plan
Figure 2

Datum : AHD	SCALE 1:32000	A3	DRG. 32627	REV. A
GRID : MGA(56)				



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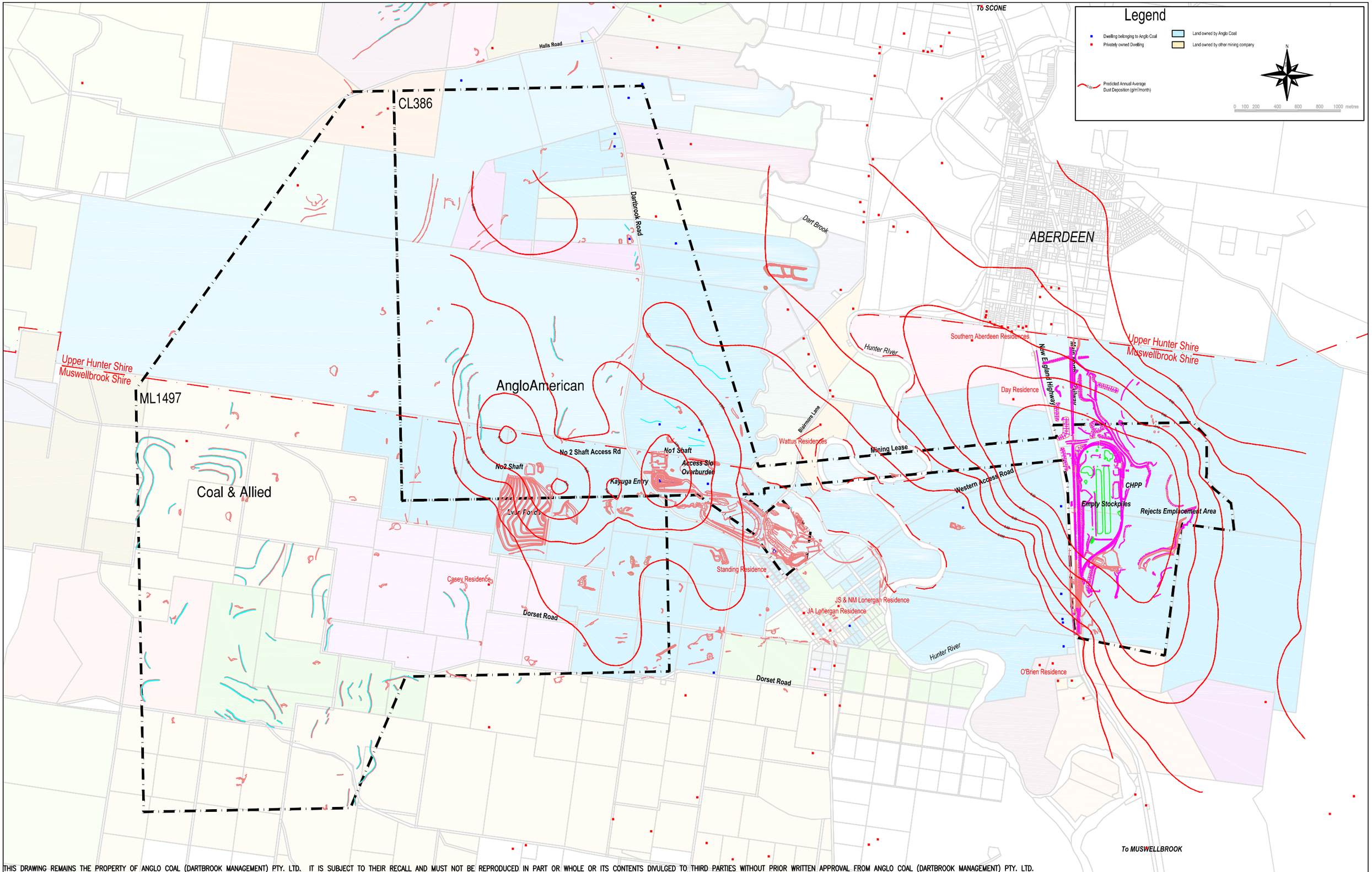
DRAWN	REVISIONS	REV.	DATE	BY	DESCRIPTION	CHK.
PC		A	20/11/14	PC	Initial Issue – Updated H&B Plan	DS
20/11/14						

Dartbrook Mine
Dust Monitoring - Dust Management Plan
Figure 3

Datum :	AHD	SCALE	A3	DRG.	REV.
GRID :	MGA(56)	1:20000		32628	A



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PC		A	21/11/14	PC	Initial Issue – Updated H&B Plan	DS
21/11/14						

Dartbrook Mine
Dust Monitoring - Predicted Annual Average Dust Deposition
Figure 4

Datum :	AHD	SCALE	A3	DRG.	REV.
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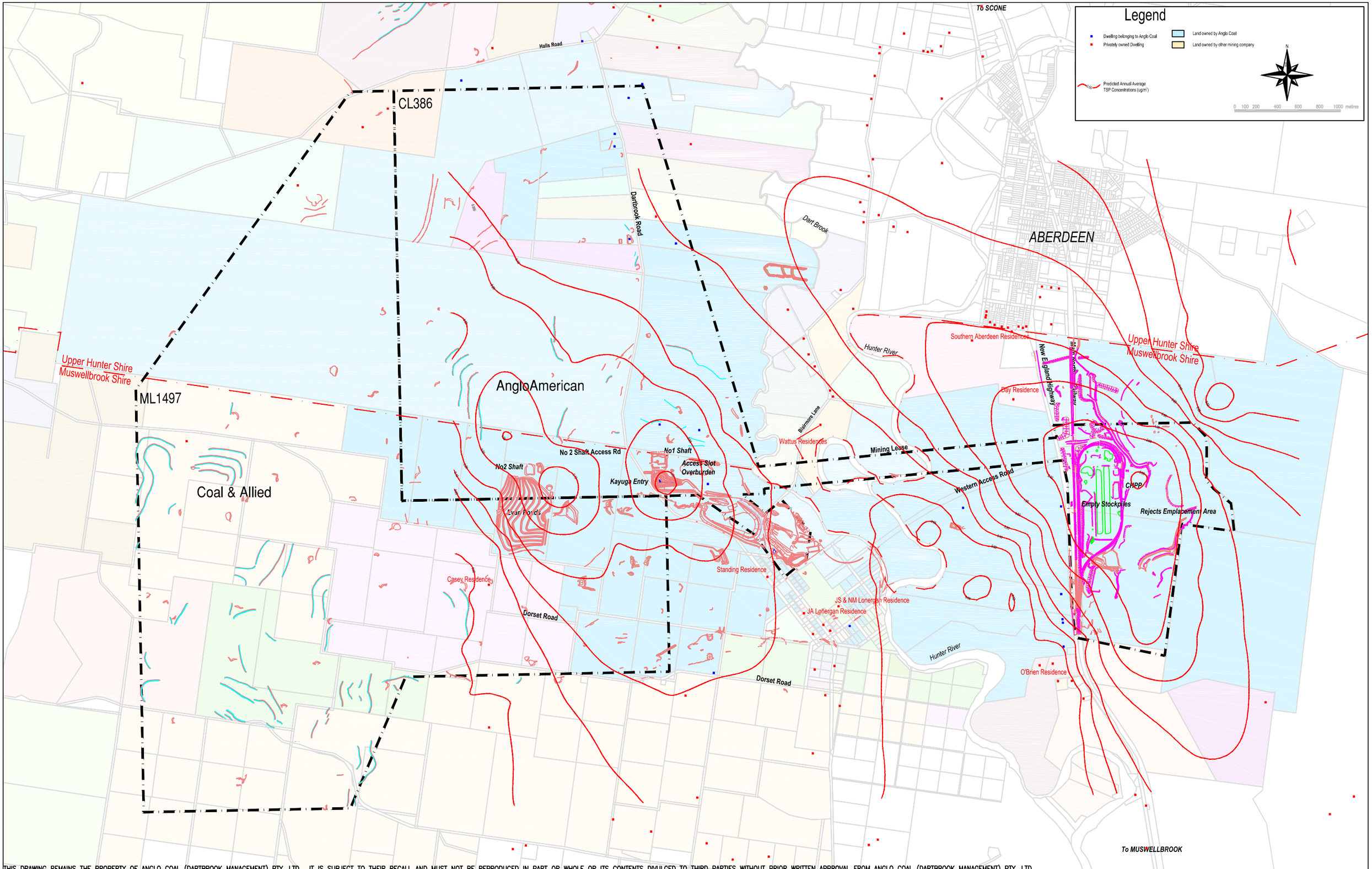

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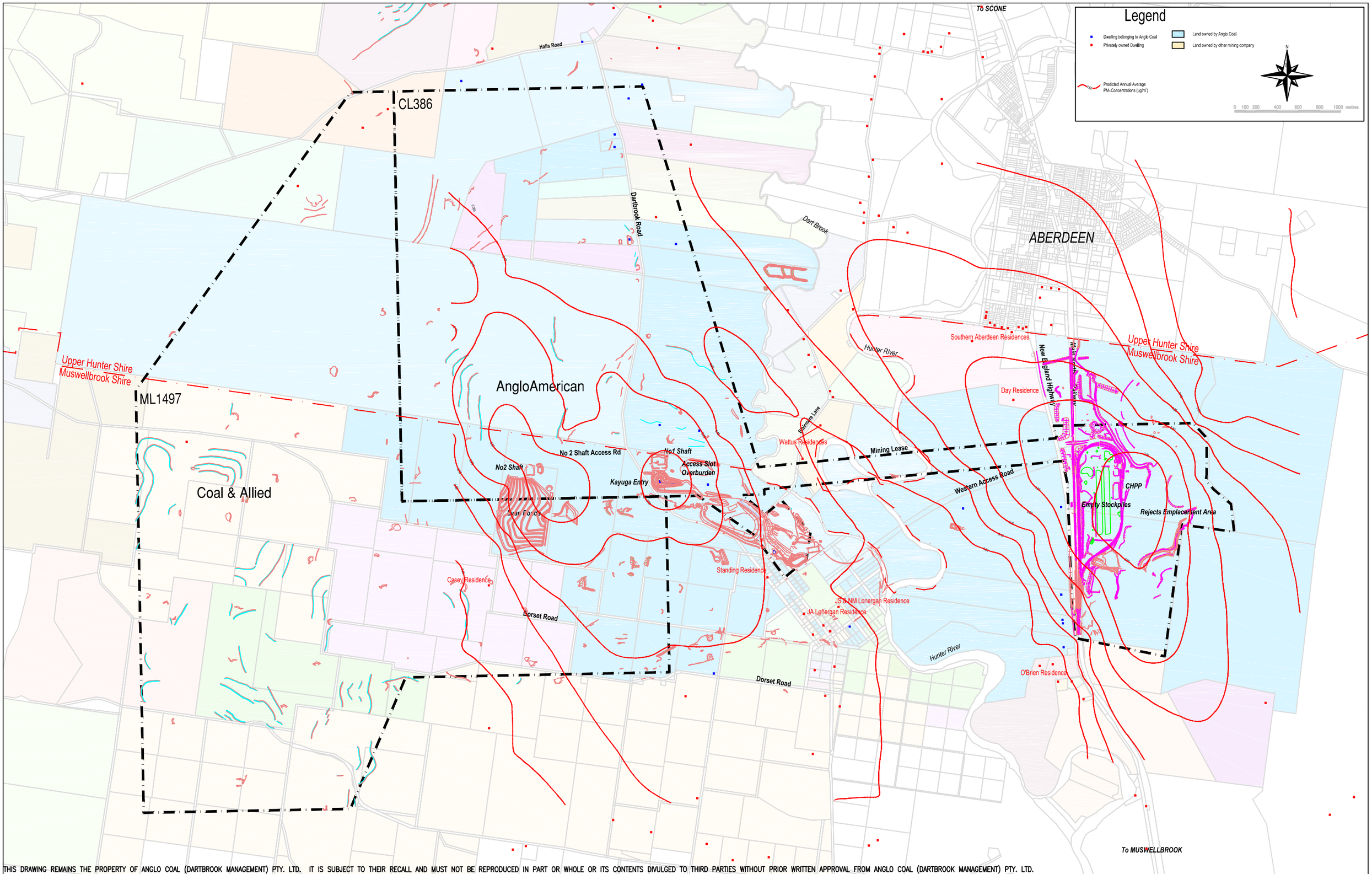
DRAWN	REVISIONS	REV.	DATE	BY	DESCRIPTION	CHK.
PC		A	21/11/14	PC	Initial Issue – Updated H&B Plan	DS
21/11/14						

Dartbrook Mine
Dust Monitoring - Predicted Annual Average TSP Concentrations
Figure 5

Datum :	AHD	SCALE	A3	DRG.	REV.
GRID :	MGA(56)	1:20000		32630	A



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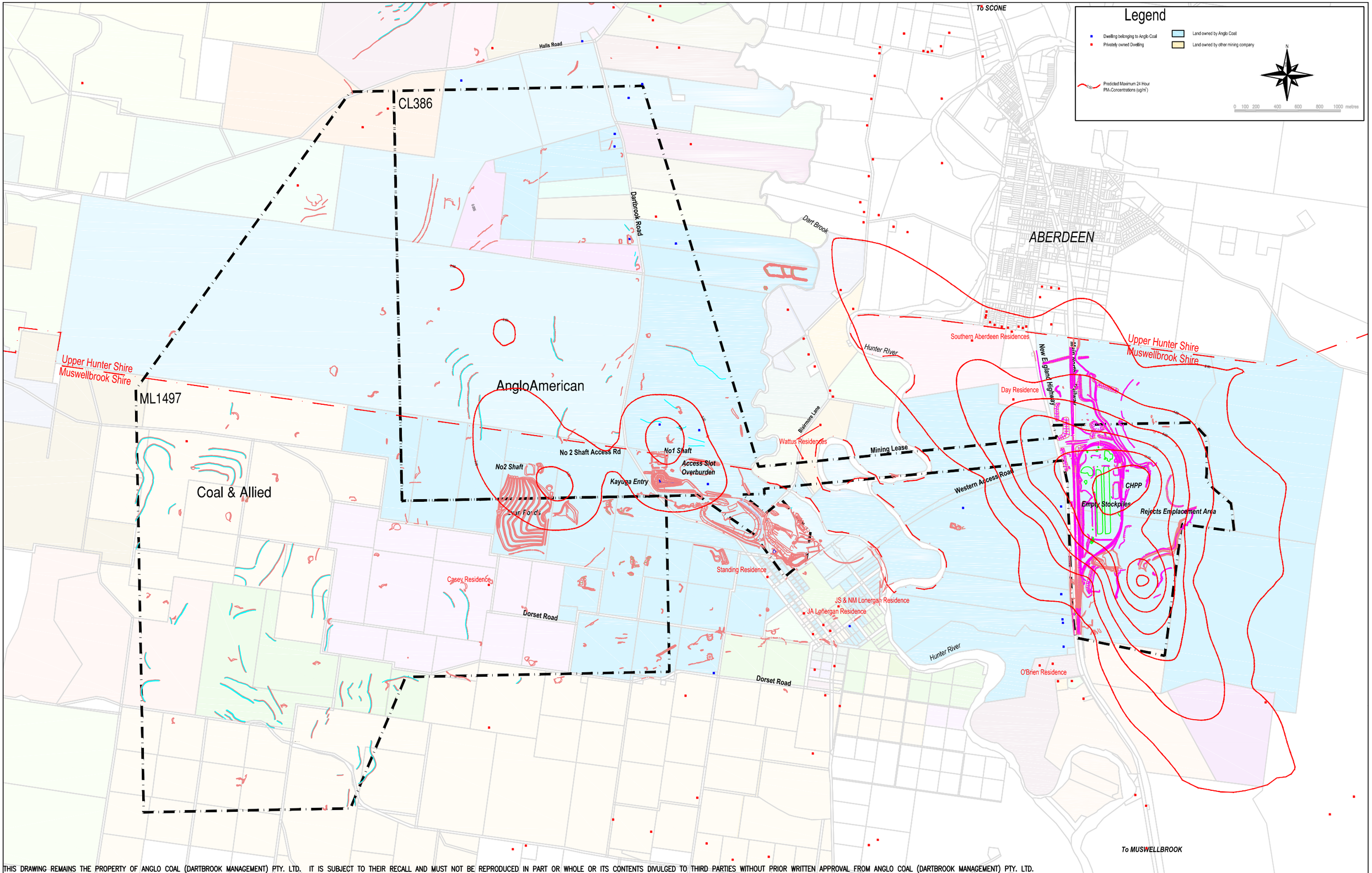
PC		A	21/11/14	PC	Initial Issue – Updated H&B Plan	DS
21/11/14						

Dartbrook Mine
Dust Monitoring - Predicted Annual Average PM10 Concentrations
Figure 6

Datum :	AHD	SCALE	A3	DRG.	REV.
GRID :	MGA(56)	1:20000		32631	A



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DRAWN	REVISIONS	REV.	DATE	BY	DESCRIPTION	CHK.
PC		A	21/11/14	PC	Initial Issue – Updated H&B Plan	DS
21/11/14						

Dartbrook Mine
Dust Monitoring - Predicted Maximum 24 Hour PM10 Concentrations
Figure 7

Datum :	AHD	SCALE	A3	DRG.	REV.
GRID :	MGA(56)	1:20000		32632	A

APPENDIX A

DP&E Letter of Approval for this Dust Management Plan dated 24th November 2015.

NSW GOVERNMENT | Planning & Environment

Contact: Scott Brooks
Phone: (02) 6570 3401
Fax:(02) 6575 3415
Email:scott.brooks@planning.nsw.gov.au
DA 231-07-2000

Doug Stewart
Environmental Coordinator
Dartbrook Mine
PO Box 517
MUSWELLBROOK NSW 2333

Dear Doug,

Dartbrook Mine – C & M Site Dust Management Plan Approval

Thank you for forwarding the Dartbrook Mine Dust Management Plan (Rev 9) for review. It is required by Condition 6.1 of the Dartbrook DA 231-07-2000.

The Department has reviewed the plan and found it generally satisfies the requirements of the Approval. I would like to advise you that the Secretary has approved the Plan.

This Plan comes into force on the 30th November 2015 replacing all earlier versions, and remains in force until replaced by any future updated approved Plans.

Could you please forward a finalised copy of the above plan (preferably in PDF format with a copy of this approval letter appended) for the Department's records by the end of November 2015, and place a copy of this approved Plan on the Dartbrook Mine website.

If you require further information or clarification in this matter please contact Scott Brooks on 6575 3401 or by email to scott.brooks@planning.nsw.gov.au.

Yours sincerely

Scott Brooks
Investigations (Lead) Compliance
24-11-2015
As Nominee for the Secretary, Department of Planning & Environment