



# WERRIS CREEK COAL Air Quality Monitoring Program



Whitehaven Coal – Werris Creek Project  
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**ISSUE AND AMENDMENT CONTROL HISTORY**

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1	2005	AQMP (Original)	WCC
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## 1.0 INTRODUCTION

This Air Quality Monitoring Programme has been prepared:

- In accordance with Condition 6 (Schedule 4) of DA 172-7-2004;
- In consultation with DECCW (Armidale); and
- Is consistent with the monitoring requirements identified in Environment Protection Licence (EPL) 12290 and with Condition 1 (Schedule 4) of DA 172-7-2004.

The following sub-sections identify the monitoring locations, the nature of the monitoring equipment to be used; equipment set up, sample collection and chain-of-custody procedures, data analysis / compliance evaluation and reporting procedures.

For completeness, and to ensure that this document represents an effective tool for site personnel, air quality complaint management procedures are also identified.

## 2.0 MONITORING LOCATION

Air quality monitoring location have been specifically chosen on properties surrounding the Werris Creek site to monitor all points of the compass and to obtain air quality analysis on private and project related properties. This analysis will determine compliance with limitations set in the Conditions of Consent, DA-172-7-2004 and maintain monitoring requirements of the Environmental Protection Licence – 12290.

A wide range of monitoring locations have been identified on **Figure 1** (page 14), representing deposited dust sampling sites and **Figure 2** (page 15), representing high volume air sampler locations for particulate matter. **Tables 1 and 2** below, detail the identified monitoring location and the name of the property owner/s.

**TABLE 1****Air Quality Monitoring Locations for Deposited Dust**

DEPOSITED DUST MONITORING	
RECEIVER LOCATION (AS PER FIGURE 1)	NAME
"Plain View"	R. and A. Maxwell
"Railway View"	WCC
"Tonsley Park"	L & V Patterson
"Cintra"	E.R. Windsor, P.R & A.H Windsor

**TABLE 2****Air Quality Monitoring Locations for Particulate Matter**

PARTICULATE MATTER MONITORING PM <sub>10</sub>	
RECEIVER LOCATION (AS PER FIGURE 2)	NAME
"Eurunderee"	WCC
"Railway View" * <sup>1</sup>	WCC
"Tonsley Park"	L & V Patterson
"Cintra"	E.R. Windsor, P.R & A.H Windsor

\*<sup>1</sup> Also contains a Total Suspended Particulate (TSP) matter monitor.

### 3.0 DEPOSITED DUST MONITORING

#### 3.1 Applicable Standards

- AS/NZS 3580.10.1:2003 "Methods for Sampling and Analysis of Ambient Air – Determination of particulate matter – Deposited Dust – Gravimetric Method".
- AS 2922-1987 "Ambient Air – Guide for the Siting of Sampling Units".

#### 3.2 Monitor Components and Identification

Each deposited dust gauge comprises a glass funnel (150 ± 10 mm diameter) sitting over a sample bottle (approximately 4 L) housed within a PVC holder mounted 2.0 m ± 0.2 m above ground level on a star picket or similar support. The support will be sufficiently sturdy as to

prevent any noticeable sway and ensure that the funnel aperture is maintained in a horizontal position. A bird ring (350 mm diameter) may or may not be installed.

The appropriate site identifier, e.g. WCA1 and the name of the property will be marked on the PVC sample bottle holder and pre-marked on each bottle using a permanent marker.

### 3.3 Deposit Dust Gauge Site Selection

Sites for the deposited dust gauges are to be selected:

- To avoid restricted airflows;
- Such that the funnel has a minimum clear sky angle of 120°; and
- To avoid localized sources of pollution, e.g. unsealed roads.

Additionally, gauges will be positioned to avoid interference by stock.

### 3.4 Deposited Dust Sample Collection / Changeover Procedures

Sample collection, changeover and analysis is undertaken by a specialist contractor, Australian Laboratory Services (ALS) based in Gunnedah and involves the following steps:

- (i) Wash any deposited matter adhering to the inside of the funnel into the deposit gauge bottle.
- (ii) Remove the funnel and seal the bottle with a lid. Identify the date and time of removal on bottle on the laboratory supplied "Field Sheet" (see **Appendix 1**).
- (iii) Insert the clean funnel into a fresh bottle containing algaecide (added by supplying laboratory), mark date and time on the bottle and insert bottle into the holder for the next sampling period. Ensure the funnel aperture is horizontal.
- (iv) Following collection of the bottles from all sites, return the bottles removed from the holders to the laboratory for analysis following completion of all relevant details on the Field Sheet. "Sampled by" and "Released by" sections of the form are to be signed and dated by the relevant person(s).

**Notes:**

- During any storage period prior to transport to the laboratory, the bottles are to be kept in a cool, dark environment to prevent the growth of algae, fungi or other micro-organisms.
- Laboratories used for deposited dust analysis are to be NATA accredited for the tests performed.

**3.5 Changeover Frequency Timing**

The collection / changeover of sample bottles is to occur on the first day of each month or as near as possible to the first day of each month.

**4.0 PARTICULATE MATTER MONITORING****4.1 Applicable Standards**

- AS 2922-1987 “Ambient Air – Guide for the Siting of Sampling Units”.
- AS/NZS 3580.9.6:2003 “Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – PM<sub>10</sub> high volume sampler with size-selective inlet – Gravimetric Method”.
- AS 27243 – 1984 Ambient Air – Particulate Matter – Determination of Particulates (TSP) – High Volume Sampler Gravimetric Method.

**4.2 Monitor Components**

PM<sub>10</sub> and TSP sampling will be undertaken using a PM<sub>10</sub> size-selective inlet or TSP inlet respectively, fitted to an ECOTECH 3000 or equivalent high volume air sampling unit which complies with Australian and DECCW Standards which includes the following features.

- Automatic volumetric flow control to maintain a constant flow rate;
- Programmable sampling periods to enable multiple daily, weekly, 6 day or 1 in ‘x’ days sampling sequences.

### 4.3 Site Selection and Identification

High volume samplers will be sited with the base affixed to a concrete slab on ground, i.e. such that the filter would be positioned within the breathing zone (1 m to 2 m above ground level) and sited in accordance with AS 2922-1987.

The site identifier, e.g. WCHV1, will be clearly identified on the sampling unit.

### 4.4 Sampling Procedures

Sample collection, changeover and analysis are undertaken by a specialist contractor, Australian Laboratory Services (ALS) based in Gunnedah. Sampler set up, operation and filter installation / change out are undertaken in accordance with AS 3580.9.6:2003 as described below.

#### 4.4.1 Initial Set-up

- (i) Set up sampler in accordance with manufacturer's instruction. Note: set-up to be undertaken by supplier, including pre-programming of 6-day sampling cycle.
- (ii) Ensure filter holder and surrounding area are clean before installing filter.
- (iii) Remove pre-weighed (tared) filter from its container and place in filter holder, ensuring filter identification number is face down on the holder. Clamp down carefully.
- (iv) Replace size-selective inlet.
- (v) Set sampler flow rate, operate sampler until stable air flow occurs and record "start flow rate" from sampler flow rate indicator on field sheet.

#### 4.4.2 Sample Change out

Return to collect the exposed filter as soon as practicable after the sampling period is complete. Then:

- (i) Before removing the filter, operate the sampler until stable air flow occurs and record final flow rate on field sheet. Note: If final flow rate differs from initial flow rate by more than 10%, discard sample.
- (ii) Record all relevant details on field sheet for each site including:
  - (a) date sample taken (in “Date of Operation” column);
  - (b) date sample collected (and new filter installed) (in “Date of Record” column);
  - (c) filter paper number;
  - (d) site identification number;
  - (e) total run time, i.e. elapsed time;
  - (f) verification that sampler time is correct to within 15 minutes of actual time;
  - (g) verification that high volume sampler check time was in correct sample sequence;
  - (h) operator identification;
  - (i) relevant comments, e.g. meteorological conditions, local activities, fires / dust storms which may affect PM<sub>10</sub> or TSP.
- (iii) Remove filter from holder touching outer edges only. Note: Reject sample if there is evidence of misalignment, blockage or breakthrough.
- (iv) Remove large debris or insects carefully using clean tweezers.
- (v) Fold filter so that only surfaces with collected particulate matter are in contact.
- (vi) Place filters in labelled dust proof container.
- (vii) Install new filter in accordance with procedure identified in 4.4.1, steps (ii) to (vi) inclusive.
- (viii) Return removed filter to laboratory for analysis, together with completed “High Volume Sampler Field Recording Sheet” (**Appendix 2**).

- Note:** a) Avoid changing filters during windy or rainy conditions. If unavoidable, remove filter holder to protected location first.
- b) Laboratories used for PM<sub>10</sub> and TSP analyses must be NATA accredited for the tests performed.
- c) Prior to returning samples to laboratory, do not expose to extremes of temperature which could result in loss of semi-volatiles.

## 4.5 Sampler Maintenance and Calibration

### 4.5.1 Maintenance

Each sampler and inlet shall be maintained in accordance with the program identified in **Table 3**.

**TABLE 3**  
**High Volume Air Sampler Maintenance Program**

<b>Component</b>	<b>Timing</b>
• Inspect condition of rubber seals	Before each use
• Clean and regrease impaction shim / clean acceleration nozzle	Undertake as part of bi-monthly calibration work
• Clean inlet and sampler	Undertaken as part of bi-monthly calibration work

### 4.5.2 Calibration

High volume sampler units are to be calibrated each two months by the external specialist contractor, with a record of calibration retained for each sampler unit.

## 5.0 DATA MANAGEMENT AND COMPLIANCE EVALUATION PROTOCOL

On receipt of deposited dust, PM<sub>10</sub> or TSP results from the laboratory, the data will be examined, questions (if any) raised with the relevant laboratory, and the results, including the PM<sub>10</sub>/TSP%, transferred to an Excel spreadsheet.

The data will then be examined for compliance with the relevant criteria identified within DA 172-7-2004 as identified in **Table 4** and prior (historical) results.

**TABLE 4**  
**Air Quality Criteria – Werris Creek Coal Mine**

<b>Pollutant</b>	<b>Averaging Period</b>	<b>Criterion (DA 172-7-2004)</b>	<b>Percentile (DA 172-7-2004)</b>
TSP	Annual	90 µg/m <sup>3</sup>	
PM <sub>10</sub>	Annual	30 µg/m <sup>3</sup>	-
PM <sub>10</sub> (total)	24 hour	150 µg/m <sup>3</sup>	99
PM <sub>10</sub> (incremental)	24 hour	50 µg/m <sup>3</sup>	98.6
Deposited Dust (total)	Annual	3.6 g/m <sup>2</sup> /month	-
Deposited Dust (incremental)	Annual	2 g/m <sup>2</sup> /month	-

A copy of the results will be provided to Werris Creek Coal (WCC) nominated recipients and to any resident on whose property a monitor is positioned, if so requested.

In the event of an exceedance of the criteria identified in **Table 4**, WCC will report the incident to:

- The relevant departments, DECCW and DoP
- If required, initiate investigations into the cause; and
- In accordance with the requirements of DA-172-7-2004, provide a written response on the non-compliance to the department within 7 days of the receipt and confirmation of a non-compliant result.

Additionally, WCC will:

- Notify the affected landowner or tenant
- Notify members of the Community Consultative Committee; and
- Provide results in the Annual Environmental Management Report

## 6.0 AIR QUALITY COMPLAINT MANAGEMENT PROCEDURES

Any general complaint received relating to air quality issues will be managed in accordance with the complaints receipt and response procedures identified in the Werris Creek Coal Mine Environmental Management Strategy (Section 6.2) and summarized below.

- (i) Details of the complainant and complaint will be recorded in the complaints log.
- (ii) WCC representatives will liaise with the complainant to ascertain all details, to identify the nature and source of the complaint and provide supplementary information for the log.
- (iii) Investigations will be initiated to verify or otherwise the basis for the complaint.
- (iv) Results of the investigation will be provided to the complainant together with advice as to any changed management practices to be implemented as a consequence of the investigation.

If any landowner considers that the mine is exceeding the air quality criterion and such exceedances were not predicted in the EIS, he/she may request WCC in writing for an independent review of the air pollution impacts of the mine on his/her land. In the event of such a request, WCC will:

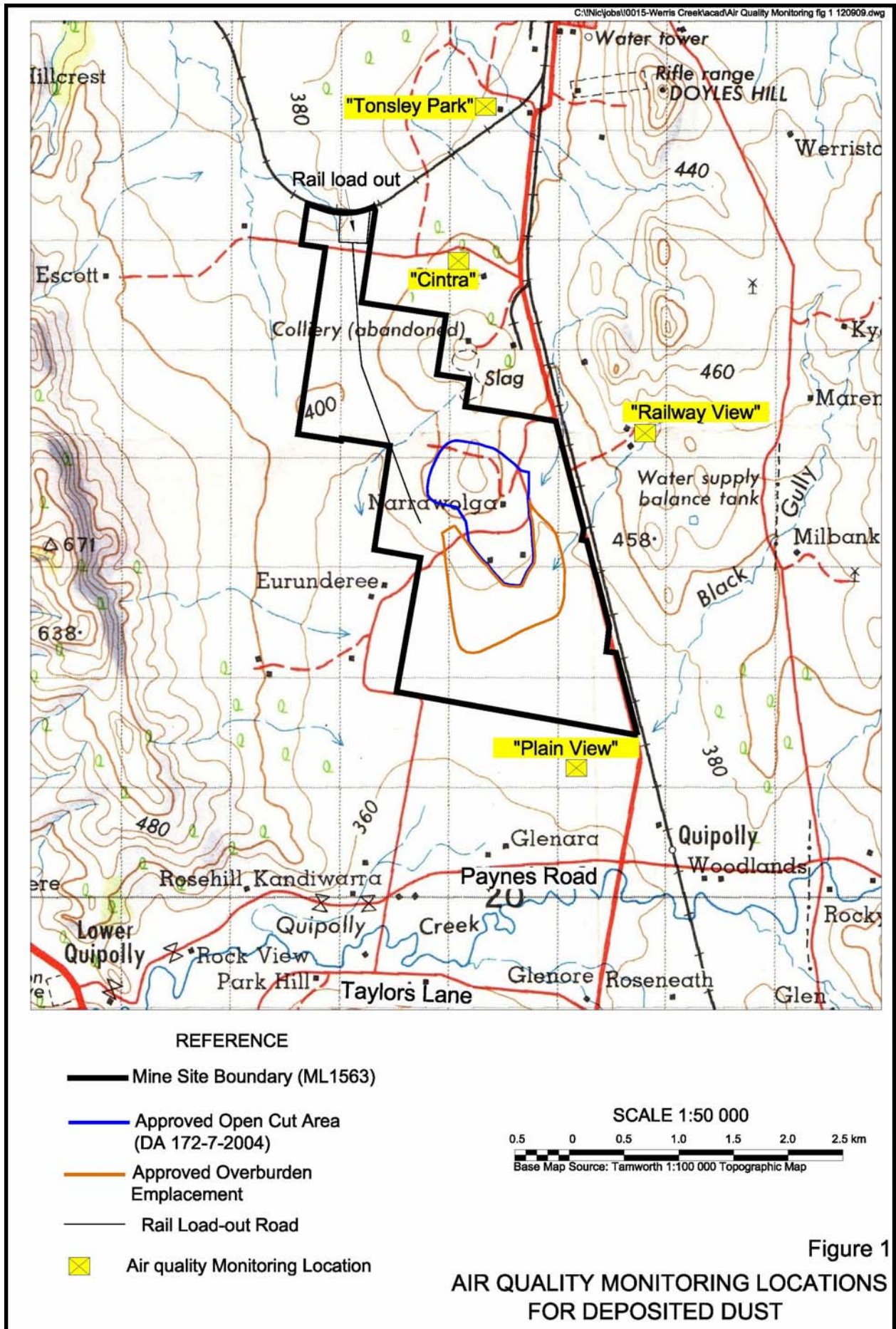
- (i) Advise the Director-General (DoP); and
- (ii) If so directed by the Director-General, initiate an independent review (and respond to the findings) in accordance with the procedures identified in Conditions 4 to 9 of Schedule 5 of DA 172-7-2004.

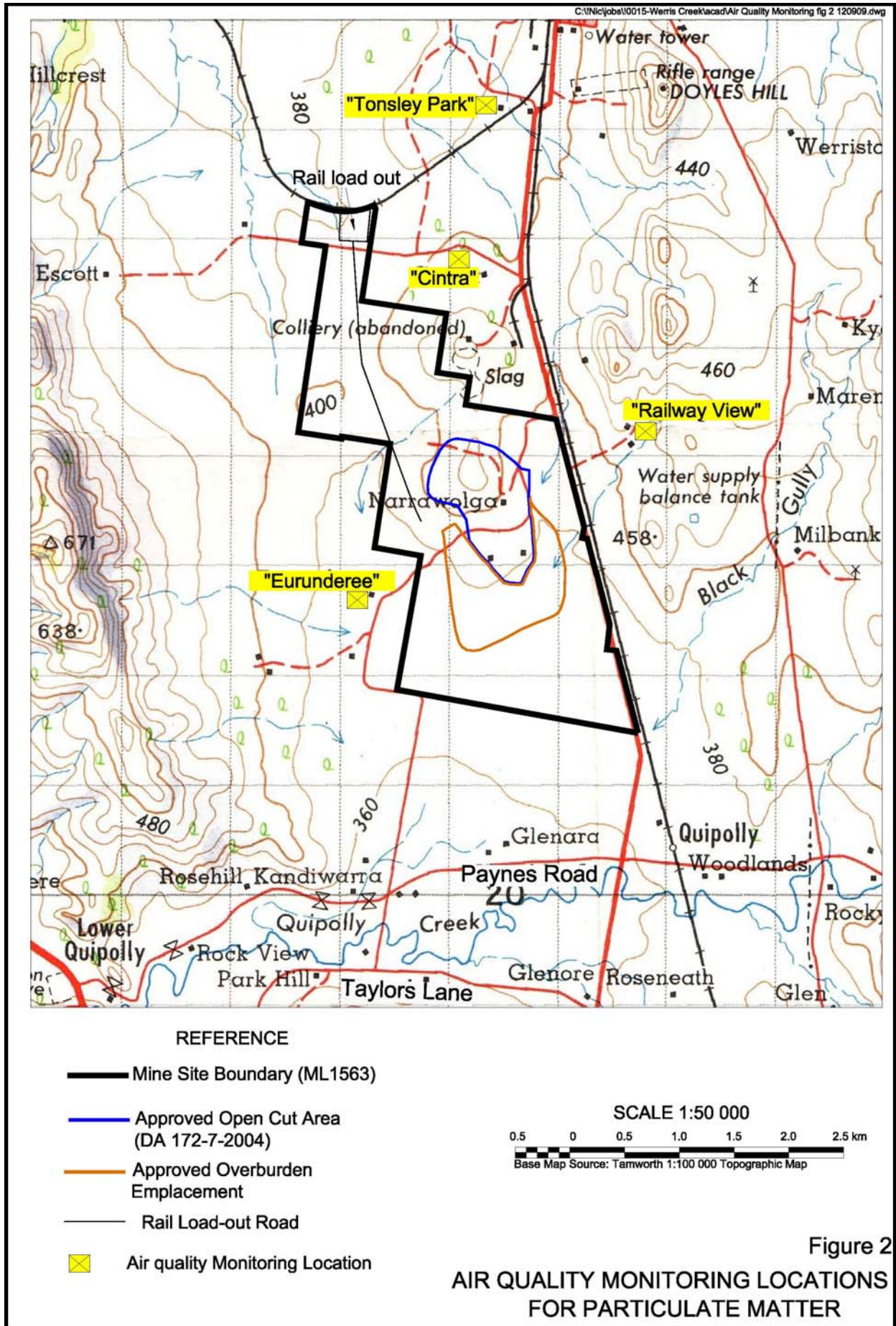
Land acquisition, if initiated, would be undertaken in accordance with Conditions 10 to 12 of Schedule 5.

## 7.0 REPORTING

In addition to any reporting requirements identified in Section 6.0, WCC will undertake the following.

1. Incorporate air quality monitoring results in each AEMR along with:
  - An analysis of the results against the relevant criteria with DA 172-7-2004, monitoring results for the previous years;
  - Identification of trends over the life of the development;
  - The identification and discussion of any non-compliances during the reporting period; and
  - A description of actions implemented to ensure compliance.
2. Make the results of the monitoring available for public examination.





# Appendix 1

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## Deposited Dust Field Sheet

## Appendix 2

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# High Volume Sampler Field Sheet