METROPOLITAN COAL

AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN




Peabody

METROPOLITAN COAL

Peabody

METROPOLITAN COAL

METROPOLITAN COAL

AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN

Revision Status Register

Section/Page/ Annexure	Revision Number	Amendment/Addition	Distribution	DoP Approval Date
All	AQMP-R01-A	Original	DECCW and DoP	-
All	AQMP-R01-B	Edits and additions to address comments from DECCW	DoP	-
All	AQMP-R01-C	Edits and additions to address comments from DoP	DoP	-
All	AQMP-R01-D	Revised to incorporate additional monitoring and management measures	DoP	14 April 2011

December 2010

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1 INTRODUCTION

Metropolitan Coal is a wholly owned subsidiary of Peabody Energy Australia Pty Ltd. Metropolitan Coal was granted approval for the Metropolitan Coal Project (the Project) under Section 75J of the New South Wales (NSW) *Environmental Planning and Assessment Act, 1979* (EP&A Act) on 22 June 2009 (the Approval). A copy of the Project Approval is available on the Peabody website (http:/www.peabodyenergy.com.au).

The Project comprises continuation, upgrade and extension of underground coal mining operations and surface facilities at Metropolitan Coal. The Approved underground mining Project layout is shown on Figure 1. The general arrangement and extent of the major surface facilities area is shown on Figure 2.

1.1 PURPOSE AND SCOPE

This Air Quality and Greenhouse Gas Management Plan (AQMP) has been prepared for the Project in accordance with Condition 13, Schedule 4 of the Project Approval.

The relationship of this AQMP to the Metropolitan Coal Environmental Management Structure is shown on Figure 3.

This AQMP has been prepared by PAEHolmes Pty Ltd and Metropolitan Coal.

1.2 STRUCTURE OF THE AQMP

The remainder of the AQMP is structured as follows:

Section 2: Describes the review and update of the AQMP.

Section 3: Outlines the statutory requirements applicable to the AQMP.

Section 4: Details the air quality criteria and performance indicators that will be used to assess the Project.

Section 5: Provides the detailed baseline data.

Section 6: Describes the monitoring program.

Section 7: Describes the Greenhouse Gas Management Plan.

Section 8: Describes the assessment against quality criteria and performance indicators.

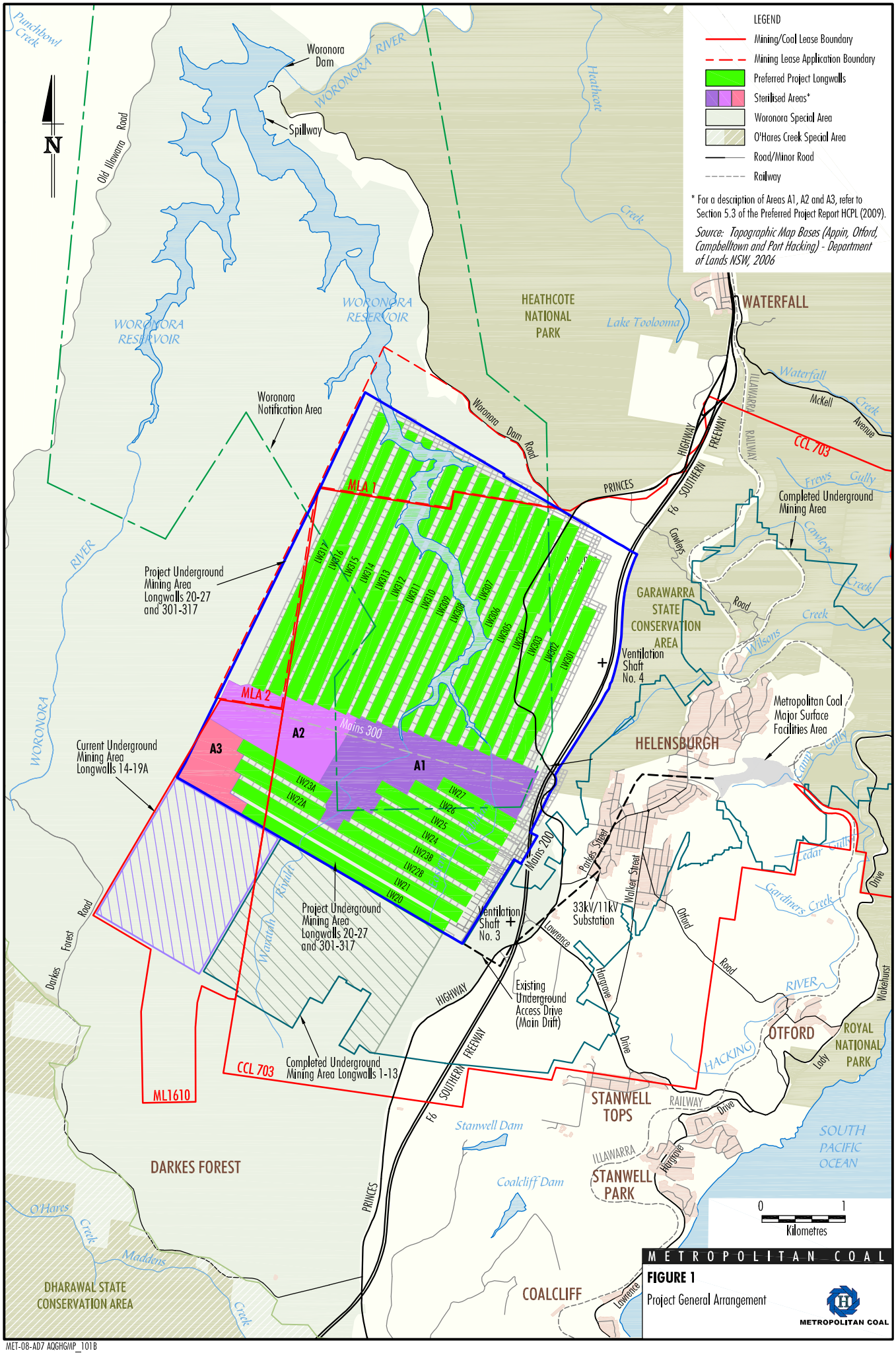
Section 9: Describes the air quality management measures.

Section 10: Provides a Contingency Plan to manage any unpredicted impacts and their consequences.

Section 11: Describes the annual review and improvement of environmental performance.

Section 12: Describes the management and reporting of incidents, complaints, and non-compliances.

Section 13: Lists the references cited.



MET-08-AD7 AQGHGMP_101B

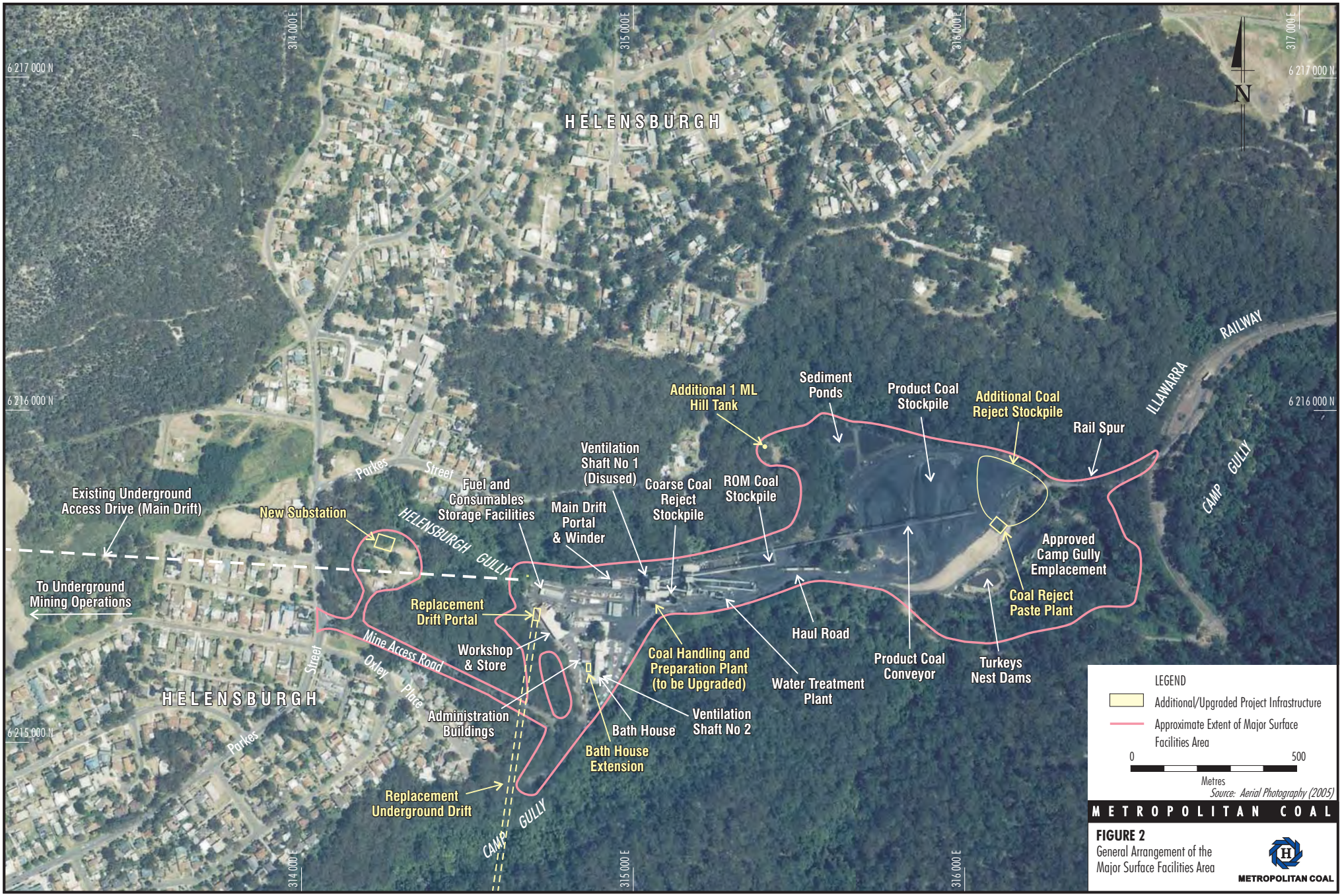
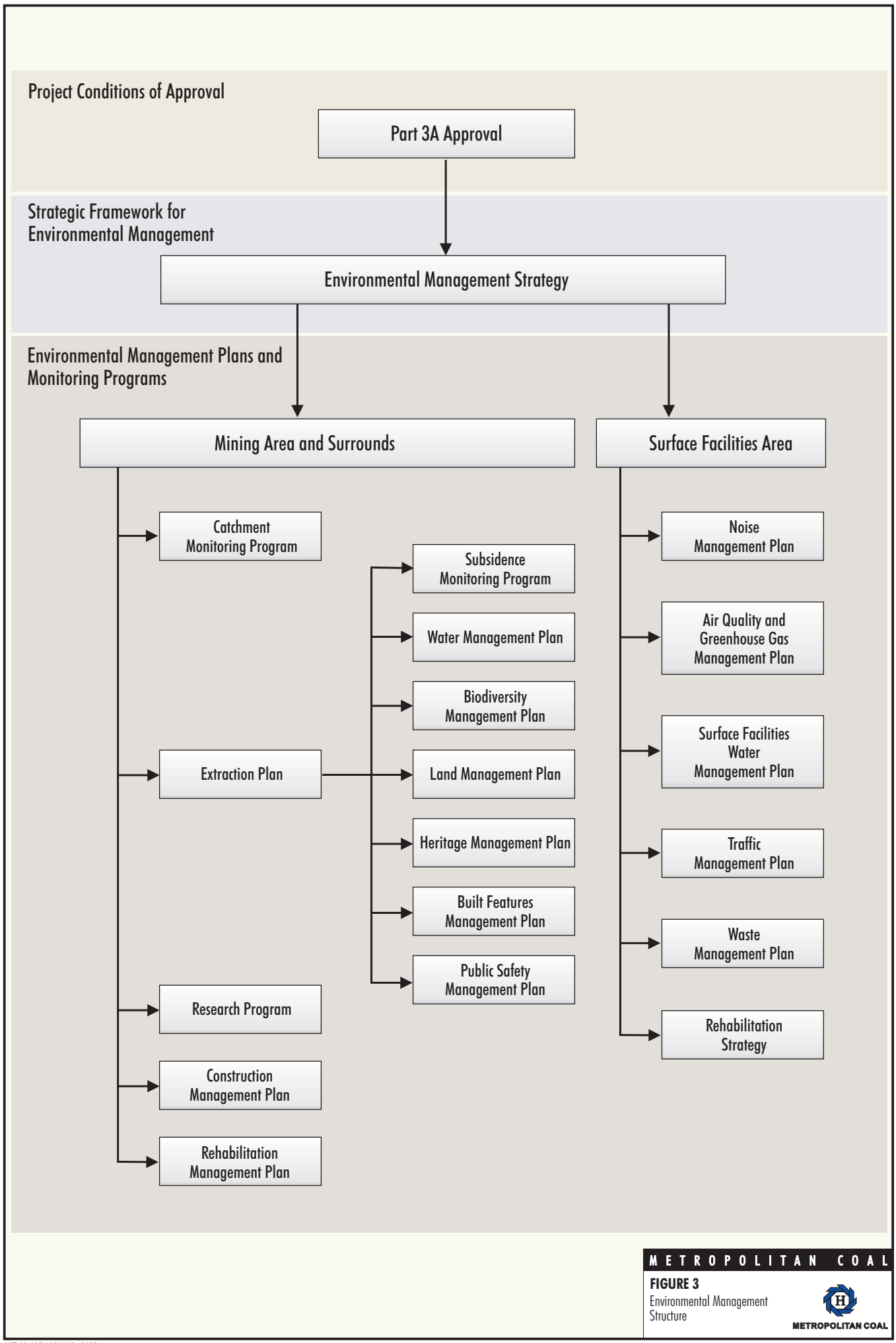


FIGURE 2
General Arrangement of the Major Surface Facilities Area

METROPOLITAN COAL

MET-08-AD7 AQGHGMP_003D



METROPOLITAN COAL

FIGURE 3
Environmental Management Structure

METROPOLITAN COAL

MET-08-AD7 AQGHGMP_002B

2 AQMP REVIEW AND UPDATE

In accordance with Condition 4, Schedule 7 of the Project Approval, this AQMP will be reviewed within three months of the submission of:

- an audit under Condition 8 of Schedule 7;
- an incident report under Condition 6 of Schedule 7;
- an annual review under Condition 3 of Schedule 7; and

if necessary, revised to the satisfaction of the Director-General of the Department of Planning (DoP), to ensure the plan is updated on a regular basis and to incorporate any recommended measures to improve environmental performance.

The AQMP will also be reviewed within three months of approval of any Project modification and if necessary, revised to the satisfaction of the DoP.

The revision status of this plan is indicated on each copy of the AQMP. The distribution register for controlled copies of the AQMP is described in Section 2.1.

2.1 DISTRIBUTION REGISTER

In accordance with Condition 10, Schedule 7 'Access to Information', Metropolitan Coal will make the AQMP publicly available on the Peabody website. A hard copy of the AQMP will also be maintained at the Metropolitan Coal site.

Metropolitan Coal recognises that various regulators have different distribution requirements, both in relation to whom documents should be sent and in what format. An Environmental Management Plan and Monitoring Program Distribution Register will be established in consultation with the relevant agencies and infrastructure owners that indicates:

- to whom the Metropolitan Coal plans and programs, such as the AQMP, will be distributed;
- the format (i.e. electronic or hard copy) of distribution; and
- the format of revision notification.

Metropolitan Coal will make the Distribution Register publicly available on the Peabody website.

Metropolitan Coal is responsible for maintaining the Distribution Register and for ensuring that the notification of revisions is sent by email or post as appropriate.

In addition, Metropolitan Coal employees with local computer network access will be able to view the controlled electronic version of this AQMP on the Metropolitan Coal local area network. Metropolitan Coal will not be responsible for maintaining uncontrolled copies beyond ensuring the most recent version is maintained on Metropolitan Coal's computer system and the Peabody website.

3 STATUTORY REQUIREMENTS

Metropolitan Coal's statutory obligations are contained in:

(i) the conditions of the Project Approval;

(ii) relevant licences and permits, including conditions attached to mining leases; and

(iii) other relevant legislation.

These are described below.

3.1 EP&A ACT APPROVAL

Condition 13 of Schedule 4 of the Project Approval requires the preparation of an AQMP for the Project. Approval Condition 13 states:

Air Quality & Greenhouse Gas Management Plan

13. The Proponent shall prepare and implement an Air Quality & Greenhouse Gas Management Plan for the project to the satisfaction of the Director-General. This plan must be prepared in consultation with DECC by a suitably qualified expert whose appointment has been approved by the Director-General, and submitted to the Director-General for approval by the end of June 2010. It must also provide for real-time air quality monitoring.

In addition, Condition 2 of Schedule 7 outlines management plan requirements that are applicable to the preparation of the AQMP. Table 1 indicates where each component of the conditions is addressed within this AQMP.

3.2 LICENCES, PERMITS AND LEASES

In addition to the Project Approval, all activities at or in association with Metropolitan Coal will be conducted in accordance with the following licences, permits and leases which have been issued or are pending issue.

- The conditions of mining leases issued by the NSW Department of Primary Industries – Mineral Resources (now NSW Industry and Investment [NSW I&I]), under the NSW *Mining Act, 1992* (e.g. Consolidated Coal Lease [CCL] 703, Mining Lease 1610, Coal Lease 379, Mining Purpose Lease 320 and Authorisation 200).
- The *Mining Operations Plan 2005 – 2012* approved by NSW I&I.
- The conditions of Environment Protection Licence (EPL) No. 767 issued by the NSW Department of Environment and Climate Change (now the Department of Environment, Climate Change and Water [DECCW]) under the NSW *Protection of the Environment Operations Act, 1997*. Revision of the EPL will be required prior to the commencement of Metropolitan Coal activities that differ from those currently licensed.
- The prescribed conditions of new mining leases issued by NSW I&I, under the NSW *Mining Act, 1992* for the two Mining Lease Application areas to the west of CCL 703 and specific surface access leases within CCL 703 for the installation of surface facilities as required. An application for the mining leases has been lodged and their grant is pending.

Table 1
Management Plan Requirements

Project Approval Condition	AQMP Section
Condition 2 of Schedule 7	
2. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
a) detailed baseline data;	Section 5
b) a description of:	
• the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 3
• any relevant limits or performance measures/criteria;	Section 4
• 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;	Section 4
c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Sections 6, 7 9, and 10
d) a program to monitor and report on the:	Sections 6, 7 9, and 12
• impacts and environmental performance of the project;	
• effectiveness of any management measures (see c above);	
e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 10
f) a program to investigate and implement ways to improve the environmental performance of the project over time;	Section 11
g) a protocol for managing and reporting any;	
• incidents;	Section 12
• complaints;	Section 12
• non-compliances with statutory requirements; and	Section 12
• exceedances of the impact assessment criteria and/or performance criteria; and	Section 10
h) a protocol for periodic review of the plan.	Section 2

- Water extraction licences issued by the NSW Department of Water and Energy (now part of the DECCW) under the NSW *Water Act, 1912*.
- Mining and occupational health and safety related approvals granted by NSW I&I and WorkCover NSW.
- Supplementary approvals obtained from the Sydney Catchment Authority (SCA) for surface activities within the Woronora Special Area (e.g. existing stream remediation approvals).

3.3 OTHER LEGISLATION

Metropolitan Coal will conduct the Project consistent with the Project Approval and any other legislation that is applicable to an approved Part 3A Project under the EP&A Act.

The following Acts may be applicable to the conduct of the Project (Helensburgh Coal Pty Ltd [HCPL], 2008):

- *Contaminated Land Management Act, 1997;*
- *Dangerous Goods (Road and Rail Transport) Act, 2008;*
- *Mining Act, 1992;*
- *Noxious Weeds Act, 1993;*
- *Rail Safety Act, 2008;*
- *Roads Act, 1993;*
- *Protection of the Environment Operations Act, 1997;*
- *Threatened Species Conservation Act, 1995;*
- *Sydney Water Catchment Management Act, 1998;*
- *Coal Mine Health and Safety Act, 2002;*
- *Crown Lands Act, 1989;*
- *Dams Safety Act, 1978;*
- *Energy and Utilities Administration Act, 1987;*
- *Fisheries Management Act, 1994;*
- *Water Act, 1912;* and
- *Water Management Act, 2000.*

Relevant licences or approvals required under these Acts will be obtained as required.

4 AIR QUALITY CRITERIA AND PERFORMANCE INDICATORS

4.1 AIR QUALITY CRITERIA

The Project Approval requires Metropolitan Coal to ensure that dust generated by the Project does not cause additional exceedances of the air quality impact assessment criteria listed in Tables 5, 6 and 7 of Condition 11, Schedule 4 at any residence on privately-owned land, or on more than 25 percent (%) of any privately-owned land.

Table 5: Long term impact assessment criteria for particulate matter

Pollutant	***Averaging period***	***Criterion***
Total suspended particulate (TSP) matter	Annual	90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	30 µg/m^3

Table 6: Short term impact assessment criterion for particulate matter

Pollutant	***Averaging period***	***Criterion***
Particulate matter < 10 µm (PM_{10})	24 hour	50 µg/m^3

Table 7: Long term impact assessment criteria for deposited dust

Pollutant	***Averaging period***	***Maximum increase in deposited dust level***	***Maximum total deposited dust level***
Deposited dust	Annual	2 g/m^2/month	4 g/m^2/month

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter – Deposited Matter - Gravimetric Method, or its latest version.

If the dust generated by the Project exceeds the criteria in Tables 8, 9 and 10 of Condition 12, Schedule 4 at any residence on privately-owned land, or on more than 25% of any privately-owned land, Metropolitan Coal will, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in Conditions 5 to 7 of Schedule 5.

Table 8: Long term land acquisition criteria for particulate matter

Pollutant	***Averaging period***	***Criterion***
Total suspended particulate (TSP) matter	Annual	90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	30 µg/m^3

Table 9: Short term land acquisition criteria for particulate matter

Pollutant	***Averaging period***	***Criterion***	***Percentile[1]***	***Basis***
Particulate matter < 10 µm (PM_{10})	24 hour	150 µg/m^3	99[2]	Total[3]
Particulate matter < 10 µm (PM_{10})	24 hour	50 µg/m^3	98.6	Increment[4]

[1] *Based on the number of block 24 hour averages in an annual period.*

[2] *Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Director-General in consultation with DECC.*

[3] *Background PM_{10} concentrations due to all other sources plus the incremental increase in PM_{10} concentrations due to the mine alone.*

[4] *Incremental increase in PM_{10} concentrations due to the mine alone.*

Table 10: Long term land acquisition criteria for deposited dust

Pollutant	***Averaging period***	***Maximum increase in deposited dust level***	***Maximum total deposited dust level***
Deposited dust	Annual	2 g/m^2/month	4 g/m^2/month

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter – Deposited Matter - Gravimetric Method.

4.2 PERFORMANCE INDICATORS

4.2.1 Monitoring Performance Indicators

In addition to the statutory air quality criteria, Metropolitan Coal will also assess the Project against internal air quality performance indicators (Table 2).

Table 2
Internal Air Quality Performance Indicators

Pollutant	Averaging Period	Monitoring Point	Performance Indicator[1, 2]
PM_{10}	24 hour	HVAS1[3]	37.5 µg/m^3
	Annual		25 µg/m^3
	10 minute	TEOM1[4]	150 µg/m^{3*}
	24 hour		37.5 µg/m^{3*}
Deposited Dust	Annual	Metropolitan Coal Dust Gauges excluding DG4	3 g/m^2/month

1 Total measured level excluding extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities.

2 Background PM_{10} concentrations due to all other sources plus the incremental increase in PM_{10} concentrations due to the mine alone.

3 HVAS1 = High Volume Air Sampler 1 (Section 5.1).

4 TEOM1 = Tapered Element Oscillating Microbalance 1 (Section 6.1).

µg/m^3 = micrograms per cubic metre.

g/m^2/month = grams per square metre per month.

5 BASELINE DATA

The following describes the baseline data available up to the date of last revision of the AQMP. The data is to be updated upon each significant review of the AQMP.

5.1 PM_{10} MONITORING DATA

Table 3 presents a summary of the PM_{10} monitoring by the high volume air sampler (HVAS) HVAS1 at Helensburgh. The full dataset is presented in Appendix A.

The monitor is located within the residential area of Helensburgh and measures the contribution from a range of particulate matter sources, including local traffic, lawn mowing activities, as well as local industry and the dust sources associated with existing Project operations. Data have been collected on every sixth day since 5 May 2007. It should be noted that HVAS1 was not operational from the end of May 2009 until the beginning of 2010.

Table 3
HVAS1 24 Hour Average PM_{10} Concentrations at Helensburgh

Year	Maximum 24 Hour Average PM_{10} ($\mu g/m^3$) (DECCW Criterion = 50 $\mu g/m^3$)	Annual Average PM_{10} ($\mu g/m^3$) (DECCW Criterion = 30 $\mu g/m^3$)
2007 (May to December)	36	15
2008	30	15
2009 (January to May)	35	18
2010 (January to March)[1]	66	32
2010 (January to March) excluding elevated values	38	23

[1] It is noted that since the start of 2010 the HVAS has been operating every seventh day, and as such all samples have been taken on Thursday. The HVAS is located on a large grassed double block and a maintenance contractor uses a small tractor to mow the lawn and a weed eater to trim back along fence lines. It is suspected this activity takes place bi-monthly on a Thursday as Appendix A shows high PM_{10} concentrations on both Thursday 28 January 2010, and Thursday 25 March 2010, whereas all the other data are significantly below the criteria.

The PM_{10} monitoring shows that 24 hour average concentrations have generally been well below the DECCW's 24 hour assessment criterion of 50 $\mu g/m^3$. With the exception of the two elevated values measured in 2010, the highest 24 hour PM_{10} concentration recorded to date was 36 $\mu g/m^3$, measured on 20 October 2007**.**

In NSW, it is quite common to measure 24 hour average concentrations above the DECCW criterion of 50 $\mu g/m^3$ on occasions. Events such as bushfires or dust storms are often the cause of elevated PM_{10} concentrations, which can normally be observed over large geographical areas.

The average PM_{10} concentrations are also below the DECCW's annual average criterion of 30 $\mu g/m^3$.

Annual average TSP concentrations can be estimated from the PM_{10} measurements by assuming that 40% of the TSP is PM_{10}. This relationship was obtained from data collected by co-located TSP and PM_{10} monitors operated for reasonably long periods of time in the Hunter Valley (NSW Minerals Council, 2000). Use of this relationship indicates that the annual average TSP concentration is approximately 37 $\mu g/m^3$ which is below the DECCW assessment criterion of 90 $\mu g/m^3$.

5.2 DUST DEPOSITION DATA

Monthly dust deposition rates have been measured at twelve sites since 2003, with ten sites currently active (Table 4).

Data collected from the dust deposition gauges from 2003 to 2010 are presented in Table 4. Annual average dust deposition (insoluble solids) rates for all sites have been in the range of 0.6 to 3.9 g/m^2/month. There are two exceptions to this in 2009:

- DG3 (located at the mine entrance), which recorded an annual average of 5.0 g/m^2/month; and
- DG6 (located at 55 Parkes Street), which recorded an annual average of 4.4 g/m^2/month.

Although there is some variability in the data, there is no clear evidence that any of the sites that are potentially affected by emissions from the Project have recorded deposition levels that are significantly higher than the dust deposition levels recorded at the background station (DG4 – Golf Course). In 2009 (the last complete year for which data are available), the average dust deposition from all gauges was 2.6 g/m^2/month.

Table 4
Measured Dust Deposition around Helensburgh

Year	Annual average dust deposition (insoluble solids) (g/m^2/month) (DECCW criterion = 4 g/m^2/month)											
	136 The Crescent[2]	**28 Old Station Road**	**Mine Entrance**	**Helensburgh Golf Course**	**83 Parkes Street**	**55 Parkes Street**	**32 Old Station Road**	**88 Parkes Street**	**Helensburgh Public School**	**Helensburgh Private School**	**67 Parkes Street**	**15 Old Station Road**
	DG1 EPA ID No. 1/H5	**DG2 (EPA ID No. 2)**	**DG 3 (EPA ID No. 3)**	**DG 4 (EPA ID No. 4)**	**DG5 (EPA ID No. 5)**	**DG6**	**DG7**	**DG8 H1**	**DG9 H7**	**DG10 H6**	**H4**	**EPA ID No. 1**
2003	-	1.4	2.1	2.1	-	-	-	-	-	-	-	2.4
2004	-	1.1	2.2	2.5	-	-	-	-	-	-	-	2.6
2005	-	1.6	2.1	2.4	-	-	-	-	-	-	-	1.9
2006	-	1.7	2.2	2.0	-	-	-	-	-	-	-	2.9
2007	-	1.3	1.2	2.6	1.3	1.4	-	-	-	-	-	2.8
2008	1.4	1.0	2.7	2.5	1.2	1.3	1.1	2.8	-	-	1.6	1.5
2009	1.7	1.2	**5.0**	3.9	2.8	**4.4**	1.3	2.4	3.3	1.4	1.7	Replaced with EPA ID No. 1/H5
2010[1]	2.1	1.0	2.9	1.7	1.0	0.6	0.6	1.9	1.1	1.1	Sampling discontinued	

[1] Only two samples for 2010 to date.

[2] Replaced EPA ID No. 1.

6 MONITORING

Air quality monitoring will be conducted and the results used for:

- evaluating and reporting project compliance;
- assessing and reporting project performance; and
- active project management, including incident and complaint management and investigation.

This will require dust and meteorological equipment to be correctly installed and operated in the vicinity of the site.

6.1 MONITORING NETWORK

The Metropolitan Coal air quality monitoring network will consist of the following components:

- one TEOM (or alternative monitoring unit such as a Dustrak) to measure PM_{10} in real-time;
- one HVAS to measure 24 hour average PM_{10} concentrations on a 6-day cycle;
- ten dust deposition gauges to monitor monthly dust fall out; and
- one Automatic Weather Station (AWS).

In addition to the above static monitoring items, Metropolitan Coal will acquire a mobile or portable particulate monitoring device (e.g. a Dustrak) for use as a supplementary real-time monitoring tool for responding to specific dust complaints as required. The portable particulate monitor may also be used periodically to monitor particulate levels upwind and downwind of the site to review the effectiveness of on-site controls.

Modelling of the potential air quality emissions of the Metropolitan Coal Project completed by Holmes Air Sciences (2008) indicated compliance with all applicable cumulative and Project only air quality criteria over the life of the mine. One nearby residence on Parkes Street (P50) and to the north of the Coal Handling and Preparation Plant (CHPP) was predicted to experience PM_{10} values approaching the applicable 24 hour criteria during peak operations in Year 15 (Holmes Air Sciences, 2008). The locations of all air quality monitors and the AWS are illustrated on Figure 4 and detailed in Table 5.

Table 5
Location of Monitoring Sites

ID No.	Location	Instrument [EPL ID]*	Parameters	Sampling Frequency
DG1	136 The Crescent	Dust deposition gauge [EPA ID 1/H]	Dust deposition	Monthly
DG2	28 Old Station Road	Dust deposition gauge [EPA ID 2]	Dust deposition	Monthly
DG3	Mine Entrance	Dust deposition gauge [EPA ID 3]	Dust deposition	Monthly
DG4	Helensburgh Golf Course	Dust deposition gauge [EPA ID 4]	Dust deposition	Monthly
DG5	83 Parkes Street	Dust deposition gauge [EPA ID 5]	Dust deposition	Monthly
DG6	55 Parkes Street	Dust deposition gauge	Dust deposition	Monthly
DG7	32 Old Station Road	Dust deposition gauge	Dust deposition	Monthly
DG8	88 Parkes Street	Dust deposition gauge	Dust deposition	Monthly
DG9	Helensburgh Public School	Dust deposition gauge	Dust deposition	Monthly
DG10	Helensburgh Private School	Dust deposition gauge	Dust deposition	Monthly
HVAS1	12 Robertson Street	HVAS	PM_{10}	24 hour average every sixth day
TEOM1	12 Robertson Street.	TEOM	Real-time PM_{10}	10 minutes and 24 hour average
WS1	12 Robertson Street	Automatic Weather station	Full meteorological compliment**	10 minutes

* EPA ID per Environment Protection Licence EPL 767 – as archived 02 Oct 2009.

** Full meteorological compliment consists of:

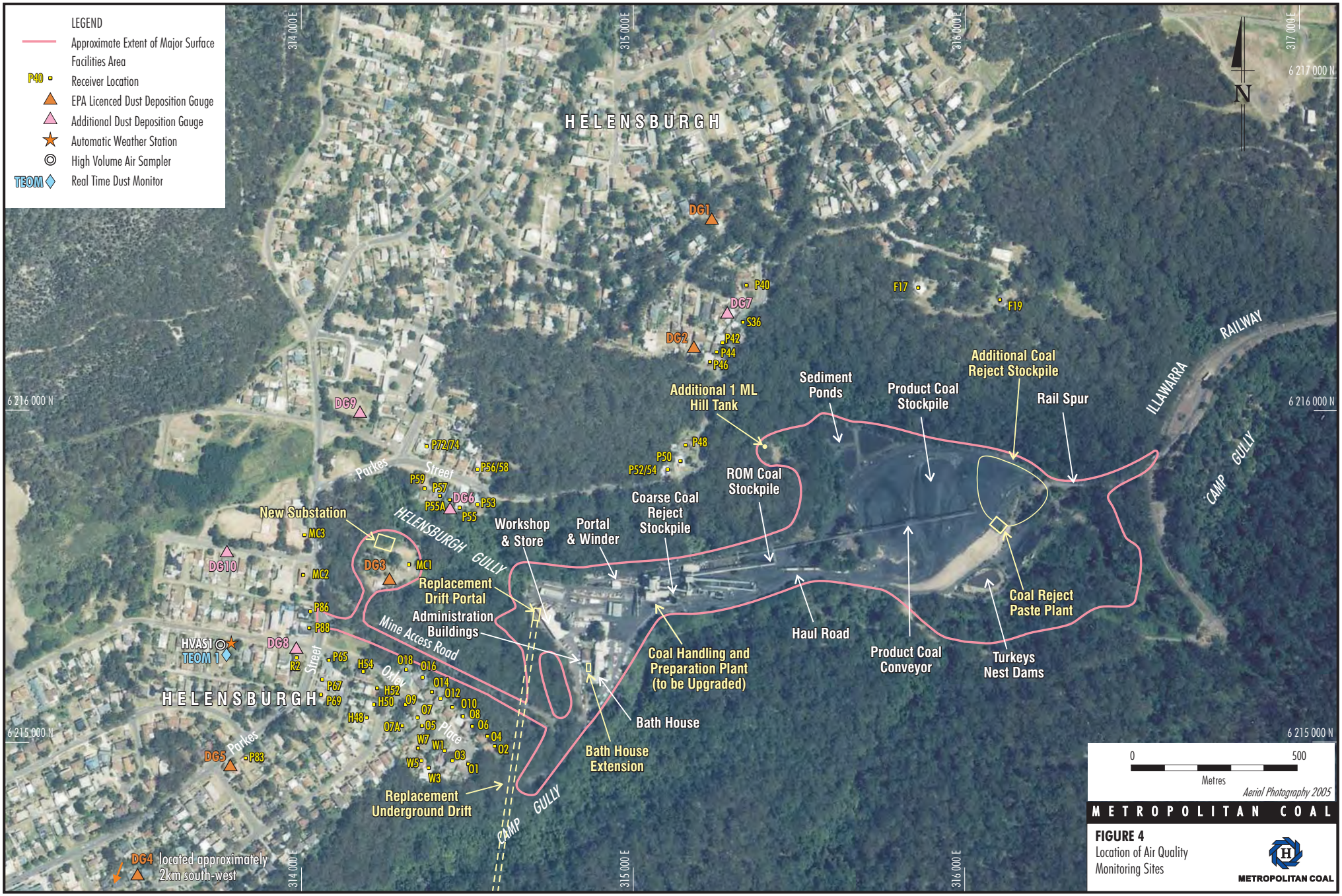
- wind speed at 10 metres (m);
- wind direction at 10 m;
- standard deviation of wind direction (sigma-theta) at 10 m;
- temperature at 2 m and 10 m;
- relative humidity at 2 m; and
- rainfall (gauge at ground-level).

6.2 MONITORING STANDARDS

6.2.1 Meteorological Monitoring

A meteorological station will be operated in accordance with the:

- NSW DECCW *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (DECC, 2005);
- Australian Standard and New Zealand Standard (AS/NZS) 3580.1.1:2007 *Methods for Sampling and Analysis of Ambient Air - Guide to Siting Air Monitoring Equipment*;
- AS 2923:1987 *Ambient Air - Guide for Measurement of Horizontal Wind for Air Quality Applications*; and
- USEPA (2000) EPA 454/R-99-005 *Meteorological Monitoring Guidance for Regulatory Modelling Applications*.



MET-08-AD7 AQGHGMP_005F

A wind speed and direction monitor has also recently been installed adjacent to the product stockpile and is wirelessly linked to the existing weather station. Data from this monitor can be reviewed in real-time to refine the use of stockpile water spays to manage dust emissions. In the future, it is anticipated that the stockpile sprays will be operated automatically on the basis of wind speed and direction data from the new stockpile monitoring station and the meteorological station.

6.2.2 Dust Deposition Monitoring

Dust deposition gauges will be operated in accordance with the following:

- The dust deposition gauges are located and installed by a qualified professional in accordance with AS 2922:1987 *Ambient Air - Guide for the Siting of Sampling Units (NSW DECCW Method AM-1)*, and the NSW DECCW *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (DECC, 2005).
- The dust deposition gauges are sampled in accordance with AS/NZS 3580.10.1:2003 *Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method*.

6.2.3 PM_{10} Monitoring

HVAS Monitoring

HVAS units will be operated in accordance with the following:

- The HVAS station is located and installed by a qualified professional in accordance with AS 29221987 *Ambient Air - Guide for the Siting of Sampling Units (NSW DECCW Method AM-1*), and the NSW DECCW *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (DECC, 2005).
- The HVAS Station is sampled in accordance with AS/NZS 3580.9.6:2003 *Methods for Sampling and Analysis of Ambient Air - Determination of Suspended Particulate Matter - PM_{10} High Volume Sampler with Size-Selective Inlet - Gravimetric Method*.

TEOM Monitoring

The TEOM unit will be operated in accordance with AS 3580.9.8:2008 *Methods for Sampling and Analysis of Ambient Air - Determination of Suspended Particulate Matter - PM_{10} Continuous Direct Mass Method Using a Tapered Element Oscillating Microbalance Analyser*.

6.3 EQUIPMENT CALIBRATION AND MAINTENANCE

A summary of required equipment calibration and maintenance is provided in Table 6.

Table 6
Summary of Equipment Calibration and Maintenance

Management/Control Actions	Timing
Dust Deposition Gauges • The funnel of the dust deposition gauge is 2 ± 0.2 m above the ground and horizontal. • Inspection of vegetation and obstacles to ensure 5 m buffer and angle to top of obstacle less than 30 degrees. • Presence of local activity and site condition that may generate dust. • Replacement of bottle/jar 30 ± 2 days. • Integrity of dust deposition gauge container and funnel.	Monthly (30 ± 2 days).
HVAS – PM_{10} • Calibration.	• Intervals not exceeding two months; or • following significant maintenance or repair.
HVAS – PM_{10} • Filter change. • Presence of local activity and site condition that may generate dust.	Every 6 days.
TEOM • System calibration: – flow controller software; – flow audit; – flow controller hardware; – ambient pressure and temperature; – mass calibration verification; – check zero air noise level; and – analogue input/output. • Routine maintenance: – leak check and pump test; – clean inlet heads; – check bypass and inline filters; – clean air inlet system; – replace flow controller components (e.g. filter, orifice, seals); and – pump re-conditioning.	 • 6 months. • 6 months. • 1 year. • 1 year. • 1 year. • 1 year. • 1-2 years. • 3 months. • 3 months. • 3 months. • 1 year. • 1 year or as required. • 1 to 2 years or as required.

6.4 MONITORING PROCEDURES

Monitoring procedures are provided in Appendix B.

7 GREENHOUSE GAS MANAGEMENT PLAN

7.1 INTRODUCTION

In addition to Condition 13, Schedule 4 of the Project Approval requiring the completion of the AQMP, Condition 10 of Schedule 4, requires that Metropolitan Coal implement all reasonable and feasible measures to minimise:

a) energy use on site; and

b) the scope 1, 2 and 3 greenhouse gas emissions produced on site:

to the satisfaction of the Director-General of the DoP.

Scope 1 and Scope 2 greenhouse gas emissions are emissions due to the actual operation of the Project and Scope 3 greenhouse gas emissions are emissions that will result from the off-site transport and burning of the coal produced by the Project, plus emissions associated with the production of diesel that is used on-site.

7.2 METROPOLITAN MINE AND ENERGY USAGE

Energy is an important resource at the Metropolitan Coal and Key Performance Indicators (KPIs) of energy use per tonne of coal produced are routinely maintained. Documentation of energy supply and site infrastructure is comprehensively monitored and modelled to plan future upgrades and improve electricity utilisation.

Trend graph information of most equipment is monitored and some logging is stored in the site's System Control and Data Acquisition (SCADA) system. Production is electronically recorded, maintained, monitored and reported to head office against budgeted quantities. Energy utilisation is evaluated at site level on a monthly basis.

The major focus of energy saving efforts in recent times has been the optimisation of site electrical capacity and the identified projects in the Energy Savings Action Plan (ESAP) are a reflection of this approach to managing energy on site (Section 7.4).

Section 7.3 summarises the sources of greenhouse gases at Metropolitan Coal and Section 7.4 discusses the status of the ESAP and energy saving opportunities that have been identified and their status.

7.3 SOURCES OF GREENHOUSE GAS EMISSIONS AT METROPOLITAN COAL

Greenhouse gas inventories are calculated according to a number of different methods. The procedures specified under the *Kyoto Protocol United Nations Framework Convention on Climate Change* are the most common.

The protocol nominates the following GHGs:

- carbon dioxide (CO_2);
- methane (CH_4);
- nitrous oxide (NO_2);
- hydrofluorocarbons; and
- perfluorocarbons.

CO_2 and NO_2 are formed and released during the combustion of gaseous, liquid and solid fuels. The most significant gases for the Project are CO_2 and CH_4, which are liberated when fuel is burnt in diesel engines, through electricity consumption and from the flaring or venting of coal seam gas.

Inventories of greenhouse gas emissions can be calculated using published emission factors. Different gases have different greenhouse warming effects (referred to as warming potentials) and emission factors take into account the global warming potentials of the gases created during combustion.

The global warming potentials assumed in the Department of Climate Change National Greenhouse Accounts Factors (DCC, 2009) are as follows.

- CO_2 – 1;
- CH_4 – 21; and
- NO_2 – 310.

When the global warming potentials are applied to the estimated emissions then the resulting estimate is referred to in terms of CO_2-equivalent emissions (CO_2-e).

Table 7 below outlines the key CO_2-e emission sources at the Project and the respective scope of emissions.

Table 7
Summary of Project CO_2-e Emission Sources

Project Component	Direct Emissions (Scope 1)	Indirect Emissions (Scope 2)	Indirect Emissions (Scope 3)
Consumption of diesel fuel to power on-site equipment.	Emissions from the combustion of diesel during operations.	N/A	Emissions attributable to the extraction of diesel fuel.
Electricity consumption.	N/A	Emissions resulting from generation of the electricity consumed during operations.	Emissions attributable to the extraction of fuel used in electricity generators.
Coal extraction (gas flaring and ventilation).	Emissions resulting from venting or burning CH_4 and venting CO_2.	N/A	N/A
Transporting product and reject coal by truck.	N/A	N/A	Emissions from the combustion of diesel from third-party truck operators.
Transporting product coal by train.	N/A	N/A	Emissions from the combustion of diesel from third-party train operators.
Steelmaking.	N/A	N/A	Emissions generated from off-site coke usage for steel and iron production.

7.4 ENERGY SAVINGS ACTION PLAN, ENERGY PERFORMANCE AND ENERGY SAVINGS MEASURES

Under the NSW Government's Energy Efficiency Action Strategy, high energy users will be required to implement *cost effective* energy saving measures identified in their ESAPs.

The ESAP for Metropolitan Coal was formally accepted in January 2008. Annual Reports are required and the ESAP is to be reviewed and updated every four years.

The first Annual Report for Metropolitan Coal was released in March 2010 (Helensburgh Coal Pty Ltd, 2010) as a composite report for 2008 and 2009.

7.4.1 Annual Energy Performance

The baseline KPI chosen for the initial ESAP for monitoring purposes was kilowatt hours (kWh) per tonne Run of Mine (ROM) coal. The base energy year was based on the 2005-2006 fiscal year, and only included electricity usage. However, as diesel is also used on-site, the 2005-2006 base year energy was recalculated to include diesel usage.

Table 8 presents a summary of the annual energy performance between 2005-2006 and 2008-2009.

Table 8
Annual Energy Performance 2005-2006 to 2008-2009

Indicator		2005-2006	2006-2007	2007-2008	2008-2009
Megajoules per tonne ROM	Electricity usage	67.8	77.1	81.8	73.6
	Diesel usage	13.9	14.8	22.2	16.9
	Total	81.7	91.9	104.0	90.5
kg CO_2-e/tonne ROM		19.7	24.1	25.8	23.2

Source: Helensburgh Coal Pty Ltd (2010).

The change in the energy performance is a reflection of the operating conditions of the mine over the last three years; deeper and longer drifts for coal recovery have required increased ventilation requirements, and hence greater electricity use.

Table 9 identifies energy saving measures that have been undertaken over the previous five years.

Table 9
Completed Energy Savings Actions over Previous Five Years

Description	Annual Savings (gigajoules [GJ])	Annual Greenhouse Gas Savings (tonnes CO_2-e)	Status
Increased conveyor maintenance frequency to reduce friction losses and wear.	Not estimated[1]		Completed
High efficiency motor replacement policy.	Not estimated[1]		Completed
Installation of Current Transformer on hot water system to monitor load on SCADA and detect failures.	Not Applicable[2]		Completed
Low impendence transformer purchasing policy.	Not estimated[1]		Completed
Redundant equipment disconnection policy.	> 360	> 100	Completed
Replace existing heat coil ducting with heat pumps.	Abandoned as not technically feasible		
Compressed air receiver installation.	359	98	Completed
Compressed air review and ongoing 10% leakage reduction.	35	10	Completed
Surface lighting optimisation.	35	10	60% complete

1 Annual savings not estimated as these are measures that will provide minor efficiency gains over an extended period (e.g. gains of approximately 0.5% to 4% on power demand from these components). Minor ongoing efficiency savings will continue as a result of these policies.

2 This is a monitoring system to evaluate the load on, and efficiency of, the hot water system.

Energy savings are seen as an important component of Peabody Energy Australia's commitment to sustainable development. The energy savings measures that have been put into place have resulted in energy savings of more than 1,430 GJ per annum, decreasing $CO_{2\text{-}e}$ by more than 890 tonnes and a reduction in the electricity demand of more than 50 kilovolt amps.

7.4.2 CH_4 Generation

Metropolitan Coal will continue to assess the feasibility of flaring and similar projects to reduce CH_4 generation from the underground mining operations. This is dependent on a number of factors including the relative methane content of coal seam gas liberated in the underground workings and provision of suitable land access for a surface flaring installation.

7.4.3 Further Energy Saving Opportunities

The increasing ROM coal production at the Metropolitan Colliery will increase electricity demand as the throughput of coal handling and processing systems increases. Approved construction activities (e.g. construction of the Replacement Drift) are also likely to increase site electricity demand in the short term.

However, upgrades to the major surface facilities, materials handling systems and ventilation will provide significant opportunities to improve the energy efficiency of the operations (i.e. energy demand per tonne of coal produced).

The following Project upgrades are expected to provide opportunities to improve energy efficiency:

- The Replacement Drift will include new underground conveyor systems equipped with variable voltage, variable frequency drives and a reduced number of conveyors.
- Upgrade to the mine ventilation system is expected to improve energy performance per unit of ventilation air.

- Upgrade to the CHPP is expected to improve energy performance per tonne of coal processed (including installation of some key variable voltage, variable frequency drives).
- Upgrades to current bath-house heating/cooling systems.
- Installation of insulation in key replacement buildings or building upgrades.
- Progressive implementation of underground paste disposal of coal reject material (i.e. on-site disposal rather than trucking the coal reject off-site via a 122 km round trip to Glenlee for disposal).

Metropolitan Coal is also continuing to progressively replace old fluorescent lighting with modern high efficiency lighting.

Reporting on additional actions to improve the energy efficiency of the site will be provided in ESAP Annual Reports and also in the Annual Reviews completed under the Project Approval (Section 11).

8 ASSESSMENT AGAINST AIR QUALITY CRITERIA AND PERFORMANCE INDICATORS

The air quality monitoring results will be used to assess the Project against the performance indicators and performance criteria outlined in Section 4.

Figure 5 illustrates the monitoring and performance indicators and criteria assessment process. If data analysis indicates a performance indicator has been exceeded or is likely to be exceeded, an assessment will be made against the performance criteria. If the data analysis indicates that the performance indicator is likely to be exceeded if management measures are not implemented, Metropolitan Coal will implement suitable management measures (Section 9) and continue to monitor. If an air quality criterion is considered likely to have been exceeded or is likely to be exceeded, the Contingency Plan will be implemented (Section 10). Metropolitan Coal will implement suitable contingency measures (Section 10) and continue to monitor (Section 6).

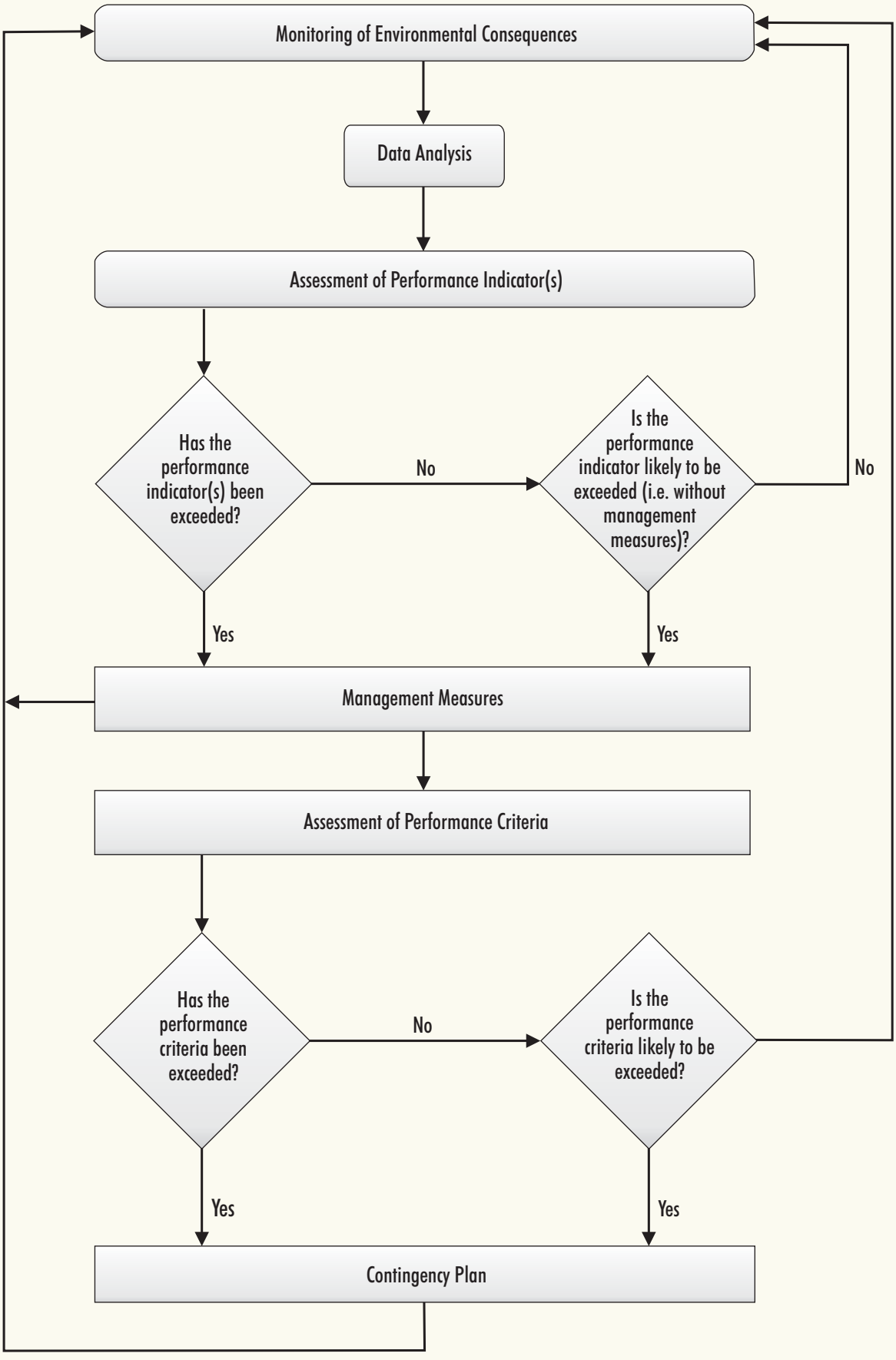
Section 8.1 describes the methods that will be used to assess the performance of the Project against the performance indicators and air quality criteria.

8.1 COMPARISON WITH AIR QUALITY CRITERIA

Monitoring results above the Project Approval criteria are not exceedances of the assessment criteria until the data has been verified and checked/assessed.

Dust deposition gauge and HVAS data will be assessed monthly.

Data from the TEOM will be used as an operational air quality management tool (i.e. not for compliance purposes) with trigger levels being used to notify relevant personnel (including the Environment and Community Manager) of when dust levels are approaching the relevant performance indicator.



METROPOLITAN COAL

FIGURE 5
Monitoring of Environmental Consequences against Performance Indicators and Criteria

METROPOLITAN COAL

8.1.1 Assessment of Data Validity

Where monitoring indicates a potential non-compliance against Project Approval criteria it is necessary to assess the potential for the influence of the following factors:

- Extreme events such as:
  - bushfires;
  - prescribed burning;
  - dust storms;
  - fire incidents;
  - illegal activities; and
  - other activities agreed by the Director-General of the Department of Planning and the DECCW.
- Irregular activities near monitoring sites such as:
  - exposed areas of soil around the monitoring site;
  - adjacent land use activities;
  - contamination from bird droppings, insects, etc.; and
  - adjacent residential activities (i.e. mowing lawns).
- Reasonableness of data (e.g. is the equipment operating properly, providing reliable data and in calibration?).

Where exceedances of air quality criteria are recorded and Metropolitan Coal has identified that the source of the exceedance may have been the mine, microscopic examination of individual samples will be undertaken to evaluate the proportions of differing material within the sample.

Table 10 summarises the performance indicators and performance criteria and associated management and control measures.

9 MANAGEMENT MEASURES

Management measures to control potential dust impacts include the following:

- measures inherent in the design of the mine, such as site layout, stockpile orientation, remediation of disused areas and any *in situ* controls such as sealed roads, screens and bunds;
- routine operational management measures including physical measures, such as watering of roads and stockpiles in accordance with the prevailing conditions, and also including procedural measures, such as operation of monitoring protocols that verify the adequacy of the physical measures, (or trigger appropriate contingency action); and
- contingency dust management measures that are invoked via the monitoring protocols to manage unforseen or suspected potential dust incidents. These measures are outlined in Section 10.

Inherent design measures are generally static and are applied when the Project is developed as designed. Where the developed Project may differ significantly from the original design, and there is also reason to believe this difference may increase dust emissions, a review of the issues will be conducted and measures implemented to reduce dust emissions where practicable.

Table 10
Monitoring of Environmental Consequences against Performance Indicators and Criteria

Parameter	Monitoring of Environmental Consequences		Data Analysis to Assess against Performance Indicator(s)	Performance Indicator(s)	Assessment of Performance Indicator(s)	Performance Criteria	Assessment of Performance Criteria	Relevant Management and Contingency Measures
	Sites	Frequency						
Deposited Dust	DG1 - 136 The Crescent [EPA ID 1/H] DG2 - 28 Old Station Road [EPA ID 2] DG3 - Mine Entrance [EPA ID 3] DG4 - Helensburgh Golf Course [EPA ID 4] DG5 - 83 Parkes Street [EPA ID 5] DG6 - 55 Parkes Street [EPA ID 6] DG7 - 32 Old Station Road DG8 - 88 Parkes Street DG9 - Helensburgh Public School DG10 - Helensburgh Private School	Monthly	Annual average of monthly data	3 g/m^2/month (excluding site DG4)	Review potential Metropolitan Coal dust contributions if results > 3 g/m^2/month on average.	-	-	Review wind data, adjacent dust gauge and PM_{10} records and adjacent land use factors to identify whether the source of the elevated levels is likely to be the mine or other local or regional dust generating factors. If Project related – review existing air quality controls and implement feasible additional dust management measures as described in Section 9.
				-	-	4 g/m^2/month	The performance criteria will be considered to be exceeded if the source of dust is Metropolitan Coal activities rather than local or regional factors.	Review existing air quality controls and implement additional applicable dust management measures as described in Section 9. Notify relevant landholders and tenants of the exceedance in accordance with Condition 2 of Schedule 5 of the Project Approval.
PM_{10} HVAS	HVAS1: 12 Robertson Street	Every sixth day (as per DECCW schedule)	24 hour average	37.5 $\mu g/m^3$	Review potential Metropolitan Coal dust contributions if results > 37.5 $\mu g/m^3$.	-	-	Review wind data, adjacent dust gauge and PM_{10} records and adjacent land use factors to identify whether the source of the elevated levels is likely to be the mine or other local or regional dust generating factors. If Project related – review existing air quality controls and implement feasible additional dust management measures as described in Section 9.
				-	-	50 $\mu g/m^3$	The performance criteria will be considered to be exceeded if the source of dust is Metropolitan Coal activities rather than local or regional factors.	Review existing air quality controls and implement additional applicable dust management measures as described in Section 9. Notify relevant landholders and tenants of the exceedance in accordance with Condition 2 of Schedule 5 of the Project Approval.
			Annual average	25 $\mu g/m^3$	Review potential Metropolitan Coal dust contributions if results > 25 $\mu g/m^3$ on average.	-	-	Review wind data, adjacent dust gauge and PM_{10} records and adjacent land use factors to identify whether the source of the elevated levels is likely to be the mine or other local or regional dust generating factors. If Project related – review existing air quality controls and implement feasible additional dust management measures as described in Section 9.
				-	-	30 $\mu g/m^3$	The performance criteria will be considered to be exceeded if the source of dust is Metropolitan Coal activities rather than local or regional factors.	Review existing air quality controls and implement additional applicable dust management measures as described in Section 9. Notify relevant landholders and tenants of the exceedance in accordance with Condition 2 of Schedule 5 of the Project Approval. .
TSP	Calculated from PM_{10} monitoring at: • HVAS1: 12 Robertson Street	Every sixth day (as per DECCW schedule)	Annual average	-	-	90 $\mu g/m^3$	The performance criteria will be considered to be exceeded if the source of dust is Metropolitan Coal activities rather than local or regional factors.	Review existing air quality controls and implement additional applicable dust management measures as described in Section 9. Notify relevant landholders and tenants of the exceedance in accordance with Condition 2 of Schedule 5 of the Project Approval.

Table 10 (Continued)
Monitoring of Environmental Consequences against Performance Indicators and Criteria

Parameter	Monitoring of Environmental Consequences		Data Analysis to Assess against Performance Indicator(s)	Performance Indicator(s)	Assessment of Performance Indicator(s)	Performance Criteria	Assessment of Performance Criteria	Relevant Management and Contingency Measures
PM_{10} TEOM	TEOM1: 12 Robertson Street.	10-minute average	Real-time 10 minute average	150 µg/m^{3*}	Interim real-time alert trigger as described in Section 9.	-	-	Implement real-time trigger response protocol (Section 9).
		24-hour average	Real-time rolling 24-hour average	37.5 µg/m^{3*}	Interim real-time alert trigger as described in Section 9.	-	-	

* Indicative performance criteria only – to be reviewed and updated with ongoing monitoring results.

Metropolitan Coal will implement dust suppression and management measures where applicable at the surface facilities (Sections 9.1 and 9.2).

9.1 PHYSICAL MEASURES

Potential physical management measures include:

- watering of unsealed haul roads and hardstand areas;
- enclosure of crushing and screening processes;
- enclosure of transfer conveyors;
- fixed water sprays located on conveyors and stockpiles (sprays can be operated manually or automatically by interface with a wind speed and direction sensor);
- truck wash for all heavy vehicles travelling off-site;
- progressive sealing of car parks and yard areas; and
- fixed speed limits for all roads around the surface facilities.

A revegetation program has commenced at the major surface facilities area to stabilise exposed areas and minimise wind blown dust emissions.

9.2 PROCEDURAL MEASURES

The Environment and Community Manager, or their delegate, will regularly review the results of the real-time dust and climate monitoring, and will operate a real-time (TEOM) Trigger Level Response Protocol. This is described in further detail below.

9.2.1 Real-Time PM_{10} Trigger Level Response Protocol

A real-time TEOM PM_{10} monitoring and SMS alert system has been established at the mine. The initial trigger levels are outlined in Table 11, however these will be refined and updated once sufficient real-time data have been gathered to refine the trigger levels.

Table 11
Initial Real-Time (TEOM) Air Quality Trigger Control Response Measures

Level	Monitoring Response Trigger	Management/Control Actions
Alert	• Prevailing winds between east and south vectors; and • preceding (rolling 24 hour average PM_{10} at current 10 minute interval) reaches 37.5 µg/m^3; or, • preceding 10 minute PM_{10} reaches 150 µg/m^3.	• Review current activities (what activities are happening). • Onsite review of performance activities. • Review weather patterns for proceeding hour. • Review weather predictions. • Ensure standard mitigation measures in place. • Implement additional air quality controls (e.g. additional exposed area watering) if required. • Monitor changes and trends in PM_{10}.
Action	• Prevailing winds between east and south vectors. • Preceding 24 hour PM_{10} at the TEOM reaches 50 µg/m^3.	• Reschedule or suspend key dust generating activities.

The trigger levels will be linked to the wind direction, to limit alerts to when the wind direction is relevant to potential Metropolitan Coal impacts at the TEOM monitor location. The trigger level (and/or wind directions) may be set at different levels, say in different seasons or for different operating regimes and it is expected that some trial and error is likely to occur in the first 12 months or more until optimal levels are established.

In the event that an SMS trigger notification is received, the Environment and Community Manager will investigate the source of the dust emissions. If it is determined that the source of the dust emissions is Project-related, measures will be implemented to reduce those dust emissions. These measures may include the following:

- Applying additional dust control measures such as watering or sprays on stockpiles to particular sections of the operations within the site.
- Modifying or ceasing particular activities within the site.

Proposed initial real-time response measures are detailed in Table 11. The proposed real-time response measures will evolve as a result of gaining a greater understanding of the local weather patterns and measured dust levels under various weather conditions.

10 CONTINGENCY PLAN

In the event an air quality criteria detailed in Section 4.1 is exceeded, Metropolitan Coal will implement the following Contingency Plan:

- The exceedance of the air quality criteria will be reported to the Technical Services Manager and/or the Environment and Community Manager:
  - for 24 hour average PM_{10} - upon discovery, including reasonable confirmation that a potential exceedance is likely to be valid; and
  - for annual average PM_{10}, deposited dust or TSP - upon detailed assessment.
- The Technical Services Manager or the Environment and Community Manager will report the likely exceedance to the General Manager as soon as practicable after becoming aware of the exceedance.
- Metropolitan Coal will report the exceedance of the air quality criteria to the DECCW and DoP as soon as practicable after Metropolitan Coal becomes aware of the exceedance.
- Metropolitan Coal will implement measures to manage annual average air quality exceedances that include:
  - identification of an appropriate course of action with respect to the identified exceedance, in consultation with specialists and DECCW, as necessary. For example:
    - proposed physical contingency measures; and
    - a program to review the effectiveness of the contingency measures.

  Contingency measures will be developed in consideration of the specific circumstances of the exceedance and the assessment of environmental consequences. Potential contingency measures include the management measures described in Section 9 of this AQMP.
- Metropolitan Coal will submit the proposed course of action to the DoP for approval.
- Metropolitan Coal will implement the approved course of action to the satisfaction of the DoP.

10.1 CONTINGENCY MEASURES

Metropolitan Coal will implement contingency measures to ameliorate Project dust impacts:

- as soon as practical, for potential 24 hour PM_{10} impacts or 24 hour PM_{10} exceedances; and
- after appropriate evaluation, planning and design for annual average exceedances.

Potential air quality management measures are described in Section 9.

10.1.1 Performance Criteria Exceedance Procedures

In the event that Metropolitan Coal exceeds the applicable air quality impact assessment criteria or land acquisition criteria described in Section 4.1 (i.e. the exceedance has not been attributed to other local or regional factors), in accordance with Condition 1, Schedule 5 of the Project Approval Metropolitan Coal will:

- notify the affected landowner/tenants of the exceedance and provide them with a copy of the NSW Health fact sheet entitled “Mine Dust and You”; and
- provide the affected landowner/tenants quarterly air quality monitoring results, until the results show that the project is complying with the criteria.

Landowners are entitled to request in writing that Metropolitan Coal acquire their property if the levels exceed the land acquisition criteria detailed in Section 4.1. Land acquisition protocols are detailed in Conditions 5, 6 and 7 of Schedule 5 of the Project Approval.

Alternatively the affected landowner may wish to enter into a negotiated agreement with Metropolitan Coal, whereby they agree to accept specified exceedances of environmental criteria and in return receive negotiated compensation and/or ameliorative actions. The outcomes of any such negotiation will be forwarded to the DoP for its records.

11 ANNUAL REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

In accordance with Condition 3, Schedule 7 of the Project Approval, Metropolitan Coal will conduct an Annual Review of the environmental performance of the Project by the end of October 2010, and annually thereafter.

The Annual Review will specifically address the environmental performance of the AQMP and will:

- describe the works carried out in the past year, and the works proposed to be carried out over the next year;
- include a comprehensive review of the monitoring results and complaints records of the Project over the past year, including a comparison of these results against the:
  - relevant statutory requirements, limits or performance measures/criteria;
  - monitoring results of previous years; and
  - relevant predictions in the EA, Preferred Project Report and Extraction Plan;
- identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;

- identify any trends in the monitoring data over the life of the Project;
- identify any discrepancies between the predicted and actual impacts of the Project, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next year to improve the environmental performance of the Project.

As described in Section 2, this AQMP will be reviewed within three months of the submission of an Annual Review, and revised where appropriate.

Metropolitan Coal will periodically employ an independent expert consultant (e.g. at intervals of 3 years) to review the air quality monitoring network including consideration of:

- the level of compliance with applicable criteria;
- the proportion of coal in dust gauge samples;
- dust related complaints records; and
- comparative background dust levels at control sites.

12 REPORTING

12.1 INCIDENTS

An incident is defined as a set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits or performance measures/criteria in the Project Approval.

The reporting of incidents will be conducted in accordance with Condition 6, Schedule 7 of the Project Approval. Metropolitan Coal will notify the Director-General of the DoP and any other relevant agencies of any incident associated with the Project as soon as practicable after Metropolitan Coal becomes aware of the incident. Within seven days of the date of the incident, Metropolitan Coal will provide the Director-General of the DoP and any relevant agencies with a detailed report on the incident.

12.2 COMPLAINTS

A protocol for the managing and reporting of complaints has been developed as a component of Metropolitan Coal's Environmental Management Strategy and is described below.

The Environment and Community Manager is responsible for maintaining a system for recording complaints.

Metropolitan Coal will maintain public signage advertising the telephone number on which environmental complaints can be made. The Environment and Community Manager is responsible for ensuring that the currency and effectiveness of the service is maintained. Notifications of complaints received are to be provided as quickly as practicable to the Environment and Community Manager.

Complaints and enquiries do not have to be received via the telephone line and may be received in any other form. Any complaint or enquiry relating to environmental management or performance is to be relayed to the Environment and Community Manager as soon as practicable. All employees are responsible for ensuring the prompt relaying of complaints. All complaints will be recorded in a complaints register.

For each complaint, the following information will be recorded in the complaints register:

- date and time of complaint;
- method by which the complaint was made;
- personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- nature of the complaint;
- the action(s) taken by Metropolitan Coal in relation to the complaint, including any follow-up contact with the complainant; and
- if no action was taken by Metropolitan Coal, the reason why no action was taken.

The Environment and Community Manager is responsible for ensuring that all complaints are appropriately investigated, actioned and that information is fed back to the complainant, unless requested to the contrary.

In accordance with Condition 10, Schedule 7 of the Project Approval, the complaints register will be made publicly available on the website and updated on a monthly basis. A summary of complaints received and actions taken will be presented to the Community Consultative Committee as part of the operational performance review.

12.3 NON-COMPLIANCES WITH STATUATORY REQUIREMENTS

A protocol for the managing and reporting of non-compliances with statutory requirements has been developed as a component of Metropolitan Coal's Environmental Management Strategy and is described below.

Compliance with all approvals, plans and procedures will be the responsibility of all personnel (staff and contractors) employed on or in association with Metropolitan Coal, and will be developed through promotion of Metropolitan Coal ownership under the direction of the General Manager.

The Technical Services Manager and/or Environment and Community Manager will undertake regular inspections, internal audits and initiate directions identifying any remediation/rectification work required, and areas of actual or potential non-compliance.

As described in Section 12.1, Metropolitan Coal will notify the Director-General of the DoP and any other relevant agencies of any incident associated with Metropolitan Coal as soon as practicable after Metropolitan Coal becomes aware of the incident. Within seven days of the date of the incident, Metropolitan Coal will provide the Director-General of the DoP and any relevant agencies with a detailed report on the incident.

A review of Metropolitan Coal's compliance with all conditions of the Project Approval, mining leases and all other approvals and licences will be conducted prior to (and included within) each Annual Review. The Annual Review will be made publicly available on the Peabody website.

Additionally, in accordance with Condition 8, Schedule 7 of the Project Approval, an independent environmental audit will be conducted by the end of December 2011, and a minimum of once every three years thereafter. A copy of the audit report will be submitted to the Director-General of the DoP and made publicly available on the Peabody website. The independent audit will be conducted by an appropriately qualified, experienced and independent team of experts whose appointment has been endorsed by the Director-General of the DoP.

13 REFERENCES

Department of Climate Change (2009) *National Greenhouse Accounts (NGA) Factors*.

Department of Environment and Climate Change (2005) *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales.*

Helensburgh Coal Pty Ltd (2010) *Energy Savings Action Plan. First Annual Report*. Prepared for Helensburgh Coal Pty Ltd by Denis Cooke & Associates Pty Ltd.

Holmes Air Sciences (2008) *Air Quality Impact Assessment: Metropolitan Coal Project*. Prepared for Helensburgh Coal Pty Ltd.

New South Wales Minerals Council (2000) *Technical Paper – Particulate Matter and Mining Interim Report*.

United States Environmental Protection Authority (2000) *Meteorological monitoring guidance for regulatory modelling applications*. EPA 454/R-99-005.

APPENDIX A

HVAS1 PM_{10} MONITORING DATA

Table A-1
HVAS1 PM_{10} data

Day	Date	24 Hour Average PM_{10} Concentration ($\mu g/m^3$)
Saturday	5/05/2007	28
Friday	11/05/2007	15
Thursday	17/05/2007	20
Wednesday	23/05/2007	10
Tuesday	29/05/2007	19
Monday	4/06/2007	12
Sunday	10/06/2007	13
Saturday	16/06/2007	8
Friday	22/06/2007	12
Thursday	28/06/2007	11
Wednesday	4/07/2007	12
Tuesday	10/07/2007	7
Monday	16/07/2007	9
Sunday	22/07/2007	14
Saturday	28/07/2007	5
Friday	3/08/2007	12
Thursday	9/08/2007	16
Wednesday	15/08/2007	10
Tuesday	21/08/2007	14
Monday	27/08/2007	10
Sunday	2/09/2007	20
Saturday	8/09/2007	8
Friday	14/09/2007	16
Thursday	20/09/2007	16
Wednesday	26/09/2007	16
Tuesday	2/10/2007	20
Monday	8/10/2007	13
Sunday	14/10/2007	15
Saturday	20/10/2007	36
Friday	26/10/2007	10
Thursday	1/11/2007	21
Wednesday	7/11/2007	7
Tuesday	13/11/2007	14
Monday	19/11/2007	19
Sunday	25/11/2007	11
Saturday	15/12/2007	23
Tuesday	18/12/2007	14
Thursday	20/12/2007	17
Tuesday	25/12/2007	14
Thursday	27/12/2007	18
Sunday	30/12/2007	16
Sunday	06/01/2008	13
Saturday	12/01/2008	24
Friday	18/01/2008	15
Thursday	24/01/2008	14
Wednesday	30/01/2008	16
Tuesday	05/02/2008	4

Table A-1 (Continued)
HVAS1 PM_{10} data

Day	Date	24 Hour Average PM_{10} Concentration ($\mu g/m^3$)
Monday	11/02/2008	7
Sunday	17/02/2008	7
Saturday	23/02/2008	24
Friday	29/02/2008	12
Thursday	06/03/2008	20
Wednesday	12/03/2008	12
Tuesday	18/03/2008	22.6
Monday	24/03/2008	9.1
Sunday	30/03/2008	11.2
Saturday	05/04/2008	7.7
Friday	11/04/2008	9.7
Thursday	17/04/2008	16.5
Wednesday	23/04/2008	11.2
Tuesday	29/04/2008	16
Monday	05/05/2008	20.6
Sunday	11/05/2008	16.1
Saturday	17/05/2008	16.2
Friday	23/05/2008	21.8
Thursday	29/05/2008	17.4
Wednesday	04/06/2008	10
Tuesday	10/06/2008	26.3
Monday	16/06/2008	13.7
Sunday	22/06/2008	10.9
Saturday	28/06/2008	15.5
Friday	04/07/2008	12.4
Thursday	10/07/2008	9.5
Wednesday	16/07/2008	14.5
Tuesday	22/07/2008	18.1
Monday	28/07/2008	4.6
Sunday	03/08/2008	10
Saturday	09/08/2008	9.7
Friday	15/08/2008	6.3
Thursday	21/08/2008	20.5
Wednesday	27/08/2008	14.1
Tuesday	02/09/2008	13
Monday	08/09/2008	12.4
Sunday	14/09/2008	12.9
Saturday	20/09/2008	30.3
Friday	26/09/2008	19.1
Thursday	02/10/2008	24.4
Wednesday	08/10/2008	9.6
Tuesday	14/10/2008	10
Monday	20/10/2008	15.8
Sunday	26/10/2008	29.4
Saturday	01/11/2008	13.5
Friday	07/11/2008	12.1
Thursday	13/11/2008	17.8
Thursday	20/11/2008	9.7

Table A-1 (Continued)
HVAS1 PM_{10} data

Day	Date	24 Hour Average PM_{10} Concentration ($\mu g/m^3$)
Tuesday	25/11/2008	20.1
Monday	01/12/2008	18.6
Sunday	07/12/2008	18.4
Saturday	13/12/2008	10.6
Friday	19/12/2008	16.5
Thursday	25/12/2008	14.5
Wednesday	31/12/2008	25.8
Tuesday	06/01/2009	34.7
Monday	12/01/2009	13.6
Sunday	18/01/2009	14.9
Saturday	24/01/2009	25.9
Friday	30/01/2009	19.8
Thursday	05/02/2009	22.4
Wednesday	11/02/2009	18.4
Tuesday	17/02/2009	10.6
Monday	06/04/2009	16.2
Sunday	12/04/2009	13.7
Saturday	18/04/2009	19.2
Friday	24/04/2009	13.7
Thursday	30/04/2009	3.9
Wednesday	06/05/2009	14.5
Tuesday	12/05/2009	16.5
Monday	18/05/2009	26.5
Sunday	24/05/2009	22.1
Unit not operational between May 2009 and January 2010		
Thursday	28/01/2010	53.19
Thursday	4/02/2010	37.48
Thursday	11/02/2010	38.49
Thursday	18/02/2010	NR
Thursday	25/02/2010	14.24
Thursday	4/03/2010	12.2
Thursday	11/03/2010	2.2
Thursday	18/03/2010	34.3
Thursday	25/03/2010	66.3

APPENDIX B

MONITORING PROCEDURES

Dust Deposition Monitoring Procedures

Dust deposition will be measured and reported on a monthly basis. Exposed gauges will be replaced on a monthly basis with analysis conducted at a National Association of Testing Authorities (NATA) accredited laboratory for insoluble solids and ash residue.

Dust deposition samples are to be collected monthly as follows:

1. Remove the sample bottle and funnel from the sample holder.
2. The inside surface of the funnel and spout should be cleaned and washed down into the sample bottle with a “rubber policeman” using the minimum amount of distilled water necessary (approximately 50 millilitres).
3. The stopper and funnel should be removed from the sample bottle and a cap immediately placed on the sample bottle.
4. Complete the labelling of the bottle with the sampling period by placing the date of collection on the bottle (see example below).

   Metropolitan Coal Operations
   Sampling Site Identifier (e.g. DG2)
   Sampling Period
   01/04/10 - 01/05/10.

5. Note any additional information such as overflow of the sample bottle, ground disturbance or dusty activities around the dust deposition gauge or extraneous matter such as bird droppings within the gauge on a field sheet.
6. Ensure that the sample bottle is properly numbered and the first date of the sampling period is recorded on the new bottle (see example below).

   Metropolitan Coal Operations
   Sampling Site Identifier (e.g. DG2)
   Sampling Period
   01/05/10.

7. Ensure an appropriate preservative is present in the sample bottle (e.g. copper sulfate solution).
8. Ensure the funnel is clean before fitting to the bottle.
9. Replace the sample bottle and funnel in the sample holder.

Deposited Dust Sample Despatch

The deposited dust sample bottles used to capture the deposited dust will be sent upon collection to a NATA accredited laboratory for analysis.

HVAS PM_{10} Monitoring Procedures

Monitoring will be conducted on the one-day-in-six EPA/DECCW run cycle for a continuous sample period of 24 hours (see Appendix C for the 2010-11 schedule). Filter papers will be returned to a NATA accredited laboratory for analysis, following exposure. Routine operation and regular calibration of the HVAS will be conducted in accordance with AS 3580.9.6:2003.

The following provides the procedures for the collection of PM_{10} and replacement of filters within the HVAS unit:

1. Switch the HVAS unit on and allow five minutes for the machine to stabilise and then note the flow reading from the flow controller (the reading ideally should be 70 cubic metres per hour).
2. Record the flow reading and other information specified on the HVAS field sheet.
3. Switch the machine off using the appropriate button on the electronic timer and unlock and lift up the HVAS lid. Loosen the clips that hold down the filter cassette.
4. Carefully lift off the top of the cassette, ensuring no paper has adhered to it. Scrape off any adhered paper and place onto filter paper.
5. Carefully remove the filter from the filter holder, touching only the outer edges. Reject the sample if there is evidence of filter misalignment, blockage or breakthrough.
6. Scrape off any paper adhered on the lower portion of the filter cassette and place onto filter paper.
7. If large debris or insects are trapped on the filter paper, carefully remove.
8. Fold the filter so that only the surfaces with collected particulate matter are in contact and place into a filter bag.
9. Ensure that all details specified on the field sheet have been recorded (see example below).

Metropolitan Coal Operations
Sampling Site Identifier e.g. HVAS1
Sampling Period
27/03/10 (24 hours)

10. Verify that the indicated instrument time is correct to within 15 minutes of actual time (local standard time), and that the HVAS time clock was in the correct sample sequence.
11. Clean the filter cassette including the rubber seal and the top of the HVAS.
12. Place new filter allocated squarely onto cassette and replace cassette lid. Confirm the filter has been pre-weighed.
13. Place filter cassette into position and clamp cassette down firmly.
14. Repeat steps (1) and (2).
15. Switch the machine off and ensure that the HVAS has been pre-programmed according to the manufacturer's specifications to sample one-day-in-six, for a period of 24 hours (from midnight to midnight).
16. Ensure that a flow calibration is conducted on the unit at two month intervals by an appropriately qualified technician.

HVAS Sample Despatch

The pre-weighed filters collected every six days from the HVAS units will be sent to a NATA accredited laboratory for analysis generally in monthly batches. Filters can be sent upon collection if a faster result is required (this may incur additional laboratory costs).

Real-time (TEOM) PM10 Monitoring Procedures

The TEOM unit will have a minimum reporting interval of 10 minutes, a local storage of two months and a telemetry system connected to a computer for data storage and display of results.

The unit will provide an indication of PM_{10} dust concentrations in real-time (i.e. 10 minute intervals) via a wireless data link to a control point within the Metropolitan Coal offices or other appropriate location.

Metropolitan Coal will electronically store data, including records of all 10 minute and 24 hour average results, and will periodically obtain and store hard copies of summarised data.

Metropolitan Coal will review the data daily to ensure it is reliable, however the unit will be physically operated via a qualified technician who will service and calibrate the unit regularly per the manufacturer's recommended service intervals, and otherwise if and as needed to maintain continuous availability of reliable data.

APPENDIX C

DECCW MONITORING SCHEDULE 2010-2011

DECCW HVAS Monitoring Schedule 2010-2011

2010

January	February	March	April	May	June
1 January (Friday)	6 February (Saturday)	2 March (Tuesdays)	1 April (Thursday)	1 May (Saturday)	6 June (Sunday)
7 January (Thursday)	12 February (Friday)	8 March (Monday)	7 April (Wednesday)	7 May (Friday)	12 June (Saturday)
13 January (Wednesday)	18 February (Thursday)	14 March (Sunday)	13 April (Tuesday)	13 May (Thursday)	18 June (Friday)
19 January (Tuesday)	24 February (Wednesday)	20 March (Saturday)	19 April (Monday)	19 May (Wednesday)	24 June (Thursday)
25 January (Monday)		26 March (Friday)	25 April (Sunday)	25 May (Tuesday)	30 June (Wednesday)
31 January (Sunday)				31 May (Monday)	
July	**August**	**September**	**October**	**November**	**December**
6 July (Tuesday)	5 August (Thursday)	4 September (Saturday)	4 October (Monday)	3 November (Wednesday)	3 December (Friday)
12 July (Monday)	11 August (Wednesday)	10 September (Friday)	10 October (Sunday)	9 November (Tuesday)	9 December (Thursday)
18 July (Sunday)	17 August (Tuesday)	16 September (Thursday)	16 October (Saturday)	15 November (Monday)	15 December (Wednesday)
24 July (Saturday)	23 August (Monday)	22 September (Wednesday)	22 October (Friday)	21 November (Sunday)	21 December (Tuesday)
30 July (Friday)	29 August (Sunday)	28 September (Tuesday)	28 October (Thursday)	27 November (Saturday)	27 December (Monday)

2011

January	February	March	April	May	June
2 January (Sunday)	1 February (Tuesday)	3 March (Thursday)	2 April (Saturday)	2 May (Monday)	1 June (Wednesday)
8 January (Saturday)	7 February (Monday)	9 March (Wednesday)	8 April (Friday)	8 May (Sunday)	7 June (Tuesday)
14 January (Friday)	13 February (Sunday)	15 March (Tuesday)	14 April (Thursday)	14 May (Saturday)	13 June (Monday)
20 January (Thursday)	19 February (Saturday)	21 March (Monday)	20 April (Wednesday)	20 May (Friday)	19 June (Sunday)
26 January (Wednesday)	25 February (Friday)	27 March (Sunday)	26 April (Tuesday)	26 May (Thursday)	25 June (Saturday)
July	**August**	**September**	**October**	**November**	**December**
1 July (Friday)	6 August (Saturday)	5 September (Monday)	5 October (Wednesday)	4 November (Friday)	4 December (Sunday)
7 July (Thursday)	12 August (Friday)	11 September (Sunday)	11 October (Tuesday)	10 November (Thursday)	10 December (Saturday)
13 July (Wednesday)	18 August (Thursday)	17 September (Saturday)	17 October (Monday)	16 November (Wednesday)	16 December (Friday)
19 July (Tuesday)	24 August (Wednesday)	23 September (Friday)	23 October (Sunday)	22 November (Tuesday)	22 December (Thursday)
25 July (Monday)	30 August (Tuesday)	29 September (Thursday)	29 October (Saturday)	28 November (Monday)	28 December (Wednesday)
31 July (Sunday)					