METROPOLITAN COAL

SIX MONTHLY REPORT




1 JULY TO 31 DECEMBER 2015

Peabody ENERGY

METROPOLITAN COAL

METROPOLITAN COAL

SIX MONTHLY REPORT

1 JULY TO 31 DECEMBER 2015

Project No. MET-08-08
Document No. 00724501

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF CHARTS

1 INTRODUCTION

Metropolitan Coal is wholly owned by Peabody Energy Australia Pty Ltd (Peabody), and is located adjacent to the township of Helensburgh and approximately 30 kilometres north of Wollongong in New South Wales (NSW) (Figure 1).

Metropolitan Coal was granted approval for the Metropolitan Coal Project (the Project) by the Minister for Planning under Section 75J of the NSW *Environmental Planning and Assessment Act, 1979* on 22 June 2009. A copy of the Project Approval is available on the Peabody website (http://www.peabodyenergy.com.au).

The Project comprises the continuation, upgrade and extension of underground coal mining operations and surface facilities at Metropolitan Coal. The underground mining longwall layout is shown on Figure 2.

The Metropolitan Coal Environmental Management Structure is shown on Figure 3. In accordance with Condition 6, Schedule 3 of the Project Approval, Metropolitan Coal prepares Extraction Plans for specific mining domains as mining progresses. In accordance with Condition 9(c), Schedule 3 of the Metropolitan Coal Longwalls 23-27 Extraction Plan Approval, this Six Monthly Report has been prepared to report on impacts and environmental monitoring results associated with the Longwalls 23-27 Extraction Plan.

Condition 9(c), Schedule 3 states:

Monitoring and Reporting Requirements

9. The Proponent shall implement a monitoring and reporting procedure that contains the following elements:

...

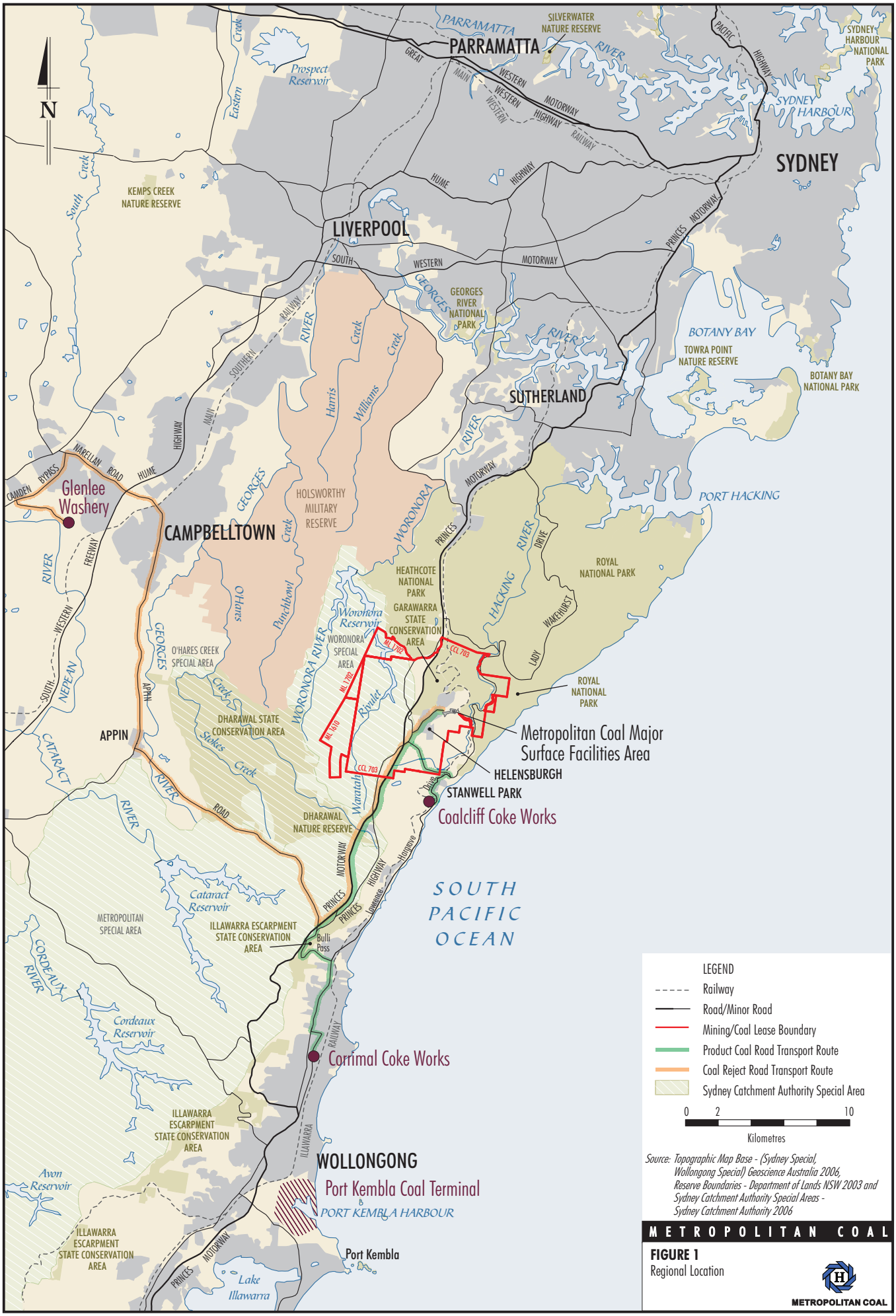
c) six-monthly reporting of all impacts and environmental monitoring results, including:

- *a comprehensive summary of all impacts, including a revised characterisation according to the relevant TARP(s);*
- *any proposed actions resulting from Triggers being met in the TARP, or other actions;*
- *assessment of compliance with all relevant performance measures and indicators;*
- *a comprehensive summary of all quantitative and qualitative environmental monitoring results, including landscape monitoring, water quality data, water flow and pool level data, piezometer readings, etc;*

...

Notes:

- *The Director-General may agree to a lesser frequency for the bi-monthly and six-monthly reporting set out above, if subsidence impacts and environmental consequences at the mine are relatively rare and benign in character.*
- *There is no need to include results of the monitoring of subsidence effects within bi-monthly and six-monthly reports to P&I. However, a summary of subsidence effects monitoring results should be included in the Annual Review.*
- *Other regular reports may be required by other agencies for their own purposes, such as reports to the Dams Safety Committee and regular reports assessing impacts of mining close to sensitive built features. P&I expects to receive copies of reports of these types.*



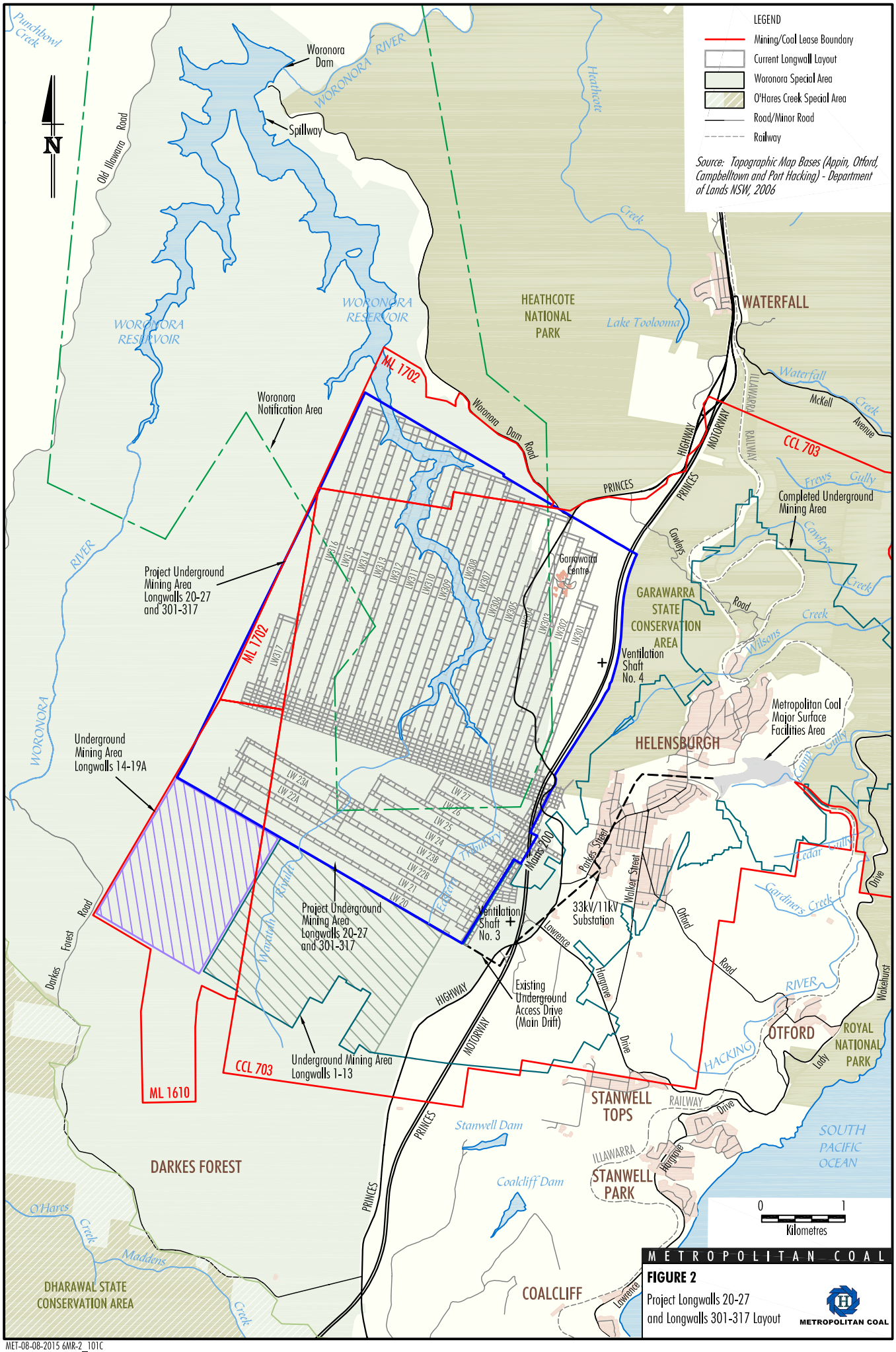
Source: Topographic Map Base - (Sydney Special, Wollongong Special) Geoscience Australia 2006, Reserve Boundaries - Department of Lands NSW 2003 and Sydney Catchment Authority Special Areas - Sydney Catchment Authority 2006

METROPOLITAN COAL

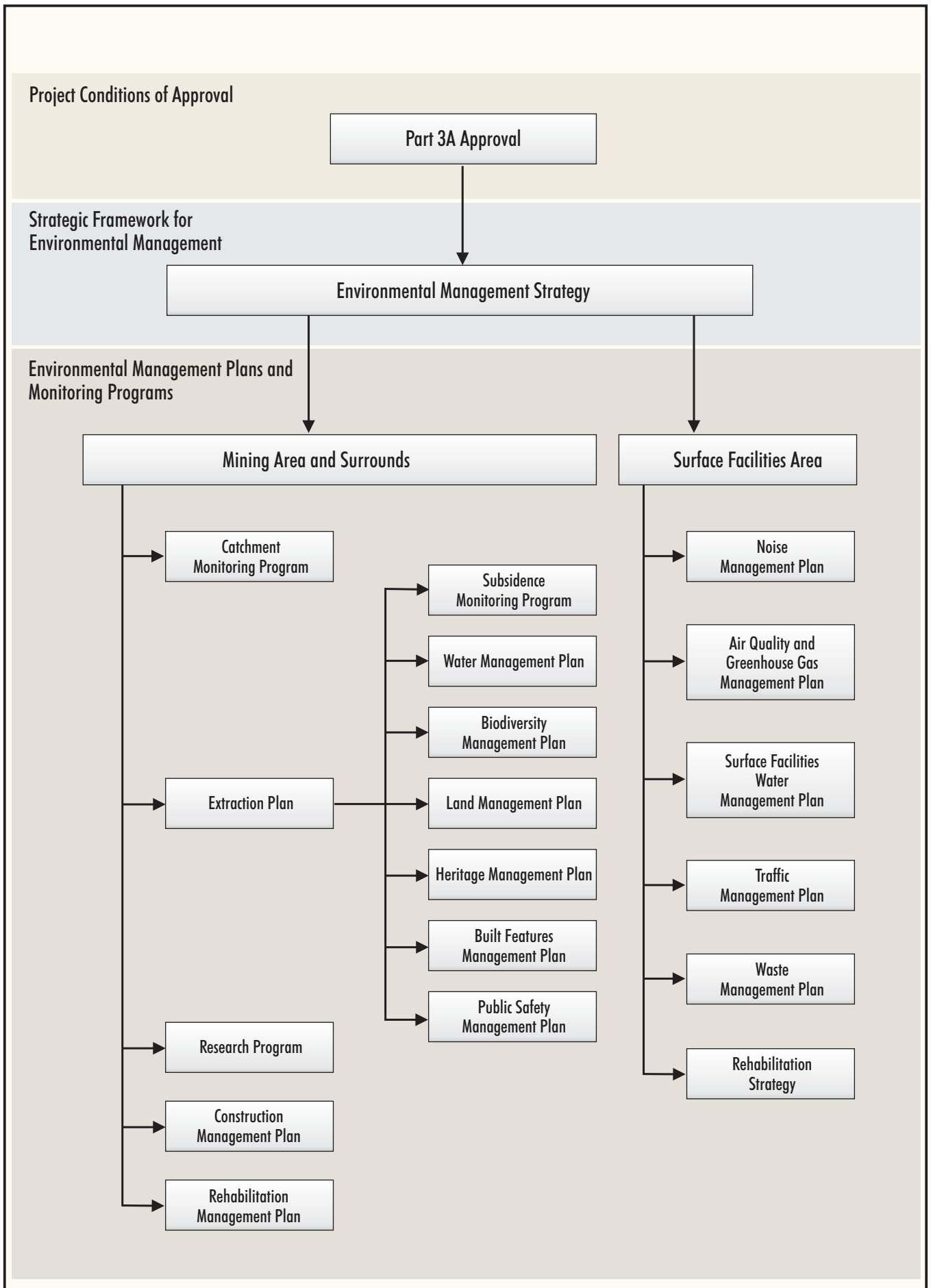
FIGURE 1
Regional Location

METROPOLITAN COAL

MET-08-08-2015 6MR-2_001A



MET-08-08-2015 6MR-2_101C



METROPOLITAN COAL

FIGURE 3
Environmental Management Structure

METROPOLITAN COAL

MET-08-08-2015 6MR-2_002A

While Condition 9(c), Schedule 3 of the Project Approval is specific to the Metropolitan Coal Longwalls 23-27 Extraction Plan, Metropolitan Coal has also included reporting of impacts and environmental monitoring results associated with Longwalls 20-22 in this Six Monthly Report.

This report presents data for the period 1 July to 31 December 2015. The status of longwall development at the end of the reporting period is shown on Figure 4. During the reporting period Longwall 24 extraction was completed in September 2015 and Longwall 25 extraction commenced in October 2015.

2 WATER MANAGEMENT

The Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Water Management Plans were prepared to manage the potential environmental consequences of the Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Extraction Plans on watercourses (including the Woronora Reservoir), aquifers and catchment yield in accordance with Condition 6, Schedule 3 of the Project Approval.

2.1 STREAM FEATURES

On the Waratah Rivulet, new surface cracking was observed at Pool G1 (widening of existing cracks), the Pool H rock bar (minor cracking at downstream end of rock bar H, some widening of existing cracks) and between Pools N and O (at the Pool N rock bar and in Pool O). On the Eastern Tributary, new surface cracking was observed at Pool ETZ (cracking at a step down in sandstone to the south of Pool ETZ1) and Pool ETAE (a crack on a sandstone shelf along the eastern bank). Additional surface cracking was also identified along Tributaries A and B during the reporting period, including a rock ledge collapse at the upstream end of Pool TB-M (described in Section 4).

Iron staining and water discolouration was noted at a number of rock bars and/or pools on Waratah Rivulet and Eastern Tributary. There was no evidence of changes in the extent or nature of iron staining observed between Pools P to W on the Waratah Rivulet, or downstream of the maingate of Longwall 26 on the Eastern Tributary, during the reporting period.

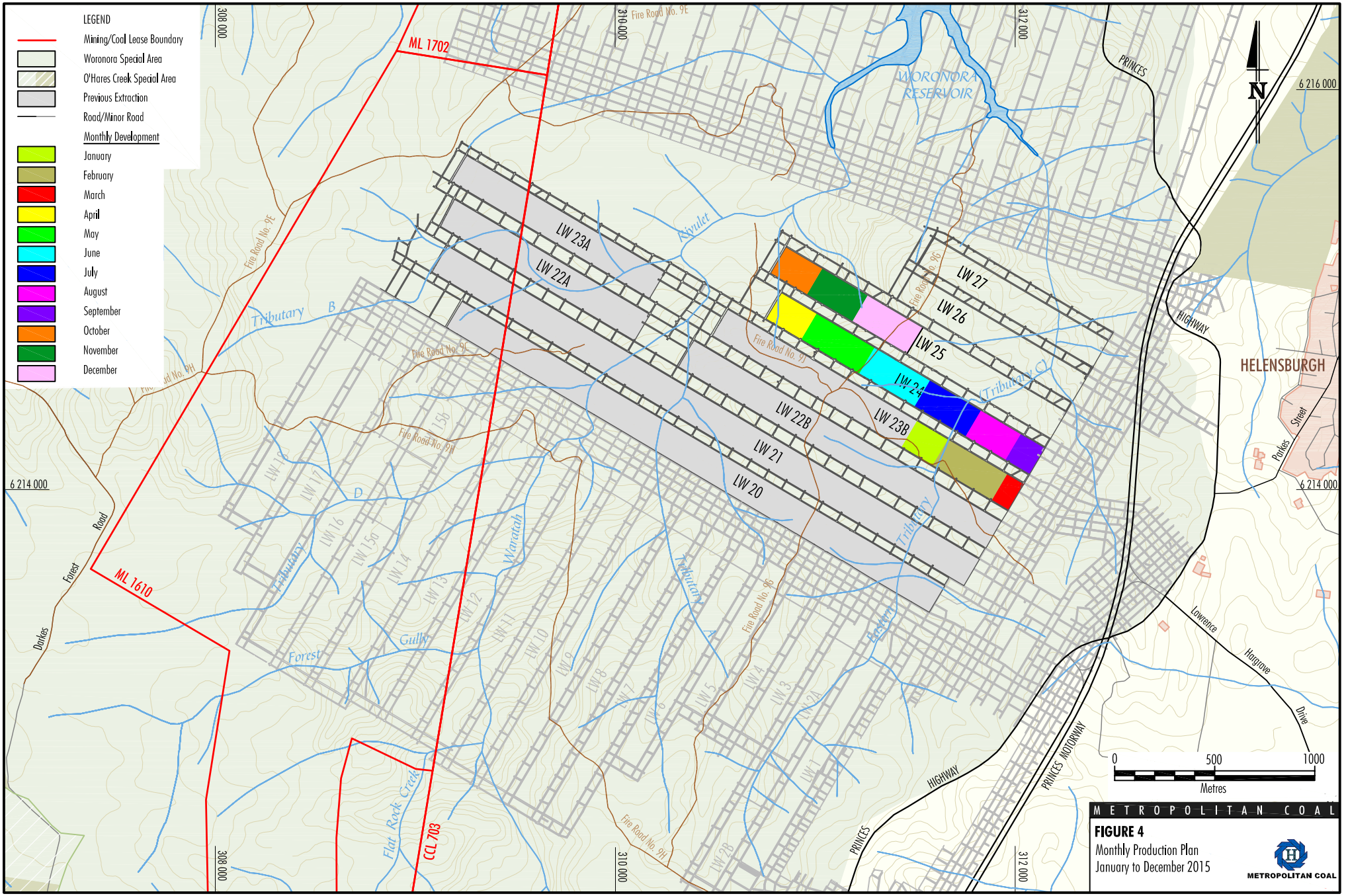
No gas releases have been observed on the Eastern Tributary. During the reporting period, gas releases in the Waratah Rivulet were observed in pools previously identified with gas releases (i.e. Pools K, L and P). Gas releases were observed sporadically at Pool K from October to December 2015. Gas releases continued to be observed in Pools L and P throughout the reporting period. The gas releases were predominantly comprised of methane and no environmental effects resulting from the gas releases (such as riparian vegetation dieback or dead fish) have been observed.

The visual and photographic surveys conducted within three months of the completion of each longwall provide a detailed photographic record of stream features. A detailed photographic record of the Waratah Rivulet, Eastern Tributary, Tributary A and Tributary B was conducted within three months of Longwall 24 completion.

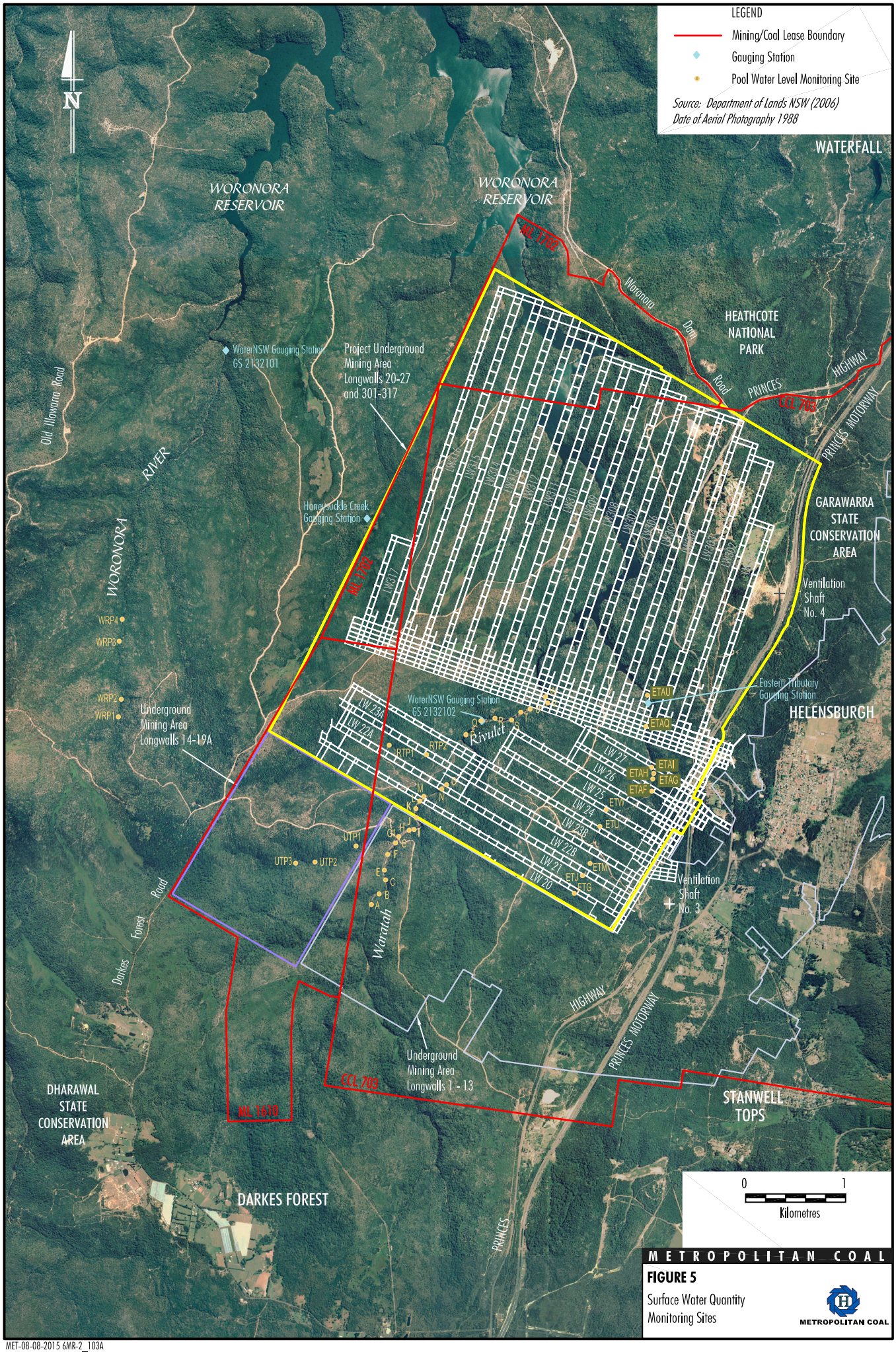
2.2 SURFACE WATER FLOW

Stream flow data is analysed to assess whether a statistically significant reduction in the quantity of water entering Woronora Reservoir in the post-mine period relative to the pre-mine period has occurred, that has not also occurred in the control catchment(s). Surface water flow monitoring at the Waratah Rivulet, Woronora River (Figure 5) and O'Hares Creek gauging stations indicates there has been a negligible reduction in the quantity of water resources reaching the Woronora Reservoir.

Catchment models were developed for the Metropolitan Coal-owned gauging stations on the Eastern Tributary and Honeysuckle Creek during the reporting period.



MET-08-08-2015 6MR-2_111D



MET-08-08-2015 6MR-2_103A

2.3 POOL WATER LEVELS

The water level in a number of pools on the Waratah Rivulet, Eastern Tributary, Tributary B and Woronora River (Figure 5) has been either manually monitored on a daily basis or monitored using a continuous water level sensor and logger. Further review of pool water level data and cease to flow levels has been conducted throughout the reporting period, resulting in a number of measures being implemented to improve the accuracy of monitoring and maintenance of monitoring equipment (e.g. the replacement of loggers lost during high flow).

During the reporting period, all pools on the Waratah Rivulet and Eastern Tributary remained above their cease to flow levels or exhibited natural behaviour (i.e. pools that do not have 'solid' rock-bar controls), with the exception of Pool G on the Waratah Rivulet and Pools ETG, ETJ and ETM on the Eastern Tributary (Figure 5). Pool RTP1 on Tributary B is typically dry with overflow events limited to significant, wet periods. Pool RTP2 on Tributary B has regularly fallen below its cease to flow level, however generally overflows during and following rainfall events.

2.4 STREAM WATER QUALITY

Surface water quality sampling has been conducted monthly at the following sites on Waratah Rivulet (sites WRWQ2, WRWQ6, WRWQ8, WRWQ9, WRWQM, WRWQN, WRWQP, WRWQR, WRWQT, WRWQW), Eastern Tributary (sites ETWQF, ETWQJ, ETWQN, ETWQU, ETWQW, ETWQAF, ETWQAH, ETWQAQ, ETWQAU), Tributary B (site RTWQ1), Tributary D (site UTWQ1), Far Eastern Tributary (site FEWQ1), Honeysuckle Creek (site HCWQ1), Bee Creek (site BCWQ1) and the Woronora River (WOWQ1 and WOWQ2) in accordance with the Longwalls 20-22 and 23-27 Water Management Plans (Figure 6).

Water quality patterns at the abovementioned monitoring sites over the reporting period have generally been consistent with earlier data. The results for key parameters (pH, electrical conductivity, dissolved iron, dissolved manganese and dissolved aluminium) for the reporting period are summarised in Table 1.

Assessment of the water quality monitoring data indicates there has been a negligible reduction to the quality of water resources reaching the Woronora Reservoir.

2.5 WORONORA RESERVOIR WATER QUALITY

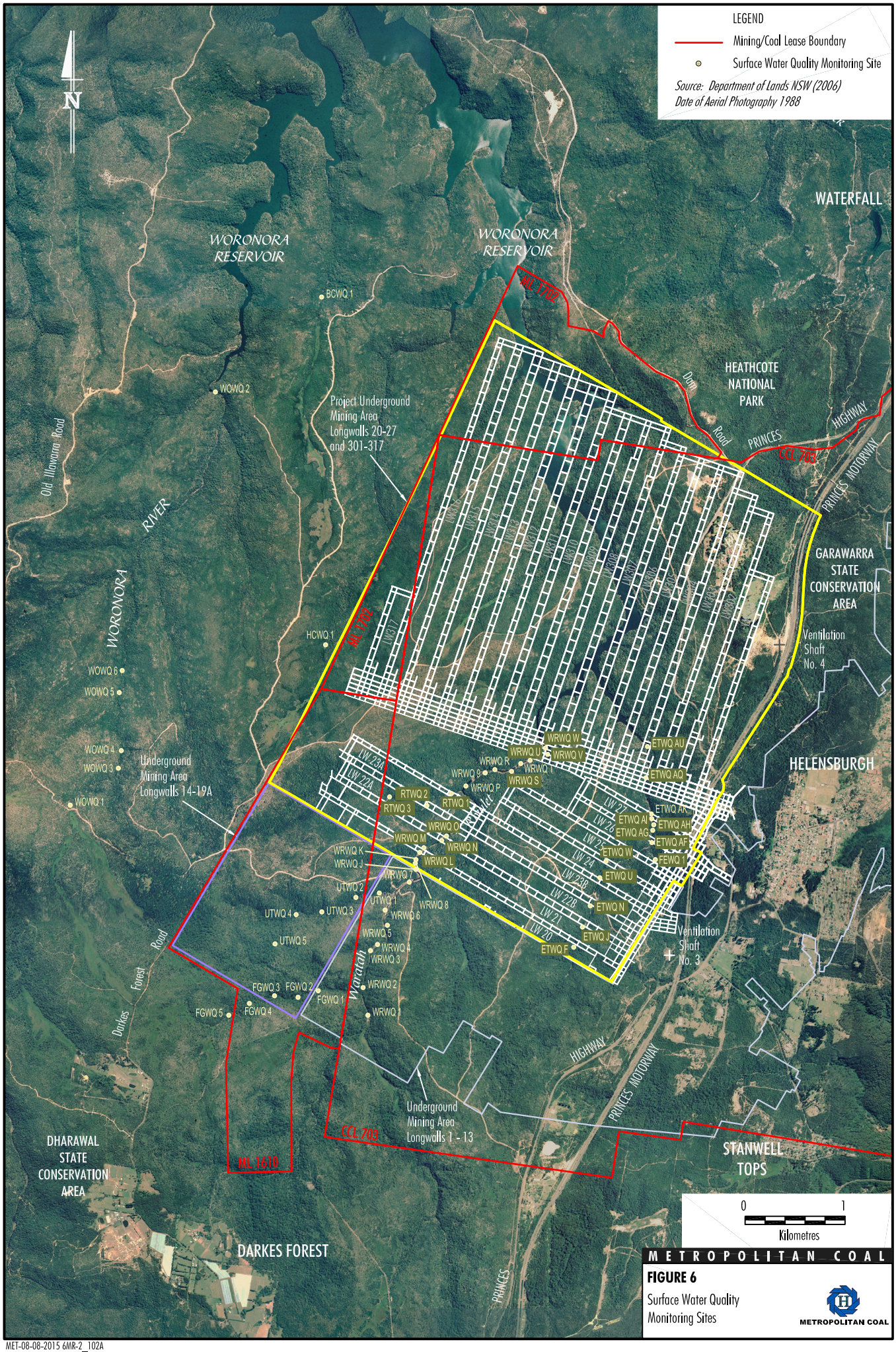
Metropolitan Coal has sourced water quality data for the Woronora Reservoir from WaterNSW in accordance with a data exchange agreement. Assessment of the water quality monitoring data indicates there has been a negligible reduction in the water quality of Woronora Reservoir.

2.6 SWAMP GROUNDWATER LEVELS

Groundwater monitoring of upland swamps (Figure 7) involves the use, where practicable, of paired piezometers, one in the swamp substrate and one sandstone piezometer.

Drops in sandstone piezometer water levels were identified at Swamps 28 and 33 during the reporting period as a result of mining. At Swamp 30, the groundwater level in the sandstone declined rapidly by 1.25 m in December 2015. The decline corresponds with the passage of Longwall 25 past Swamp 30, making it possible that it is also associated with mine subsidence.

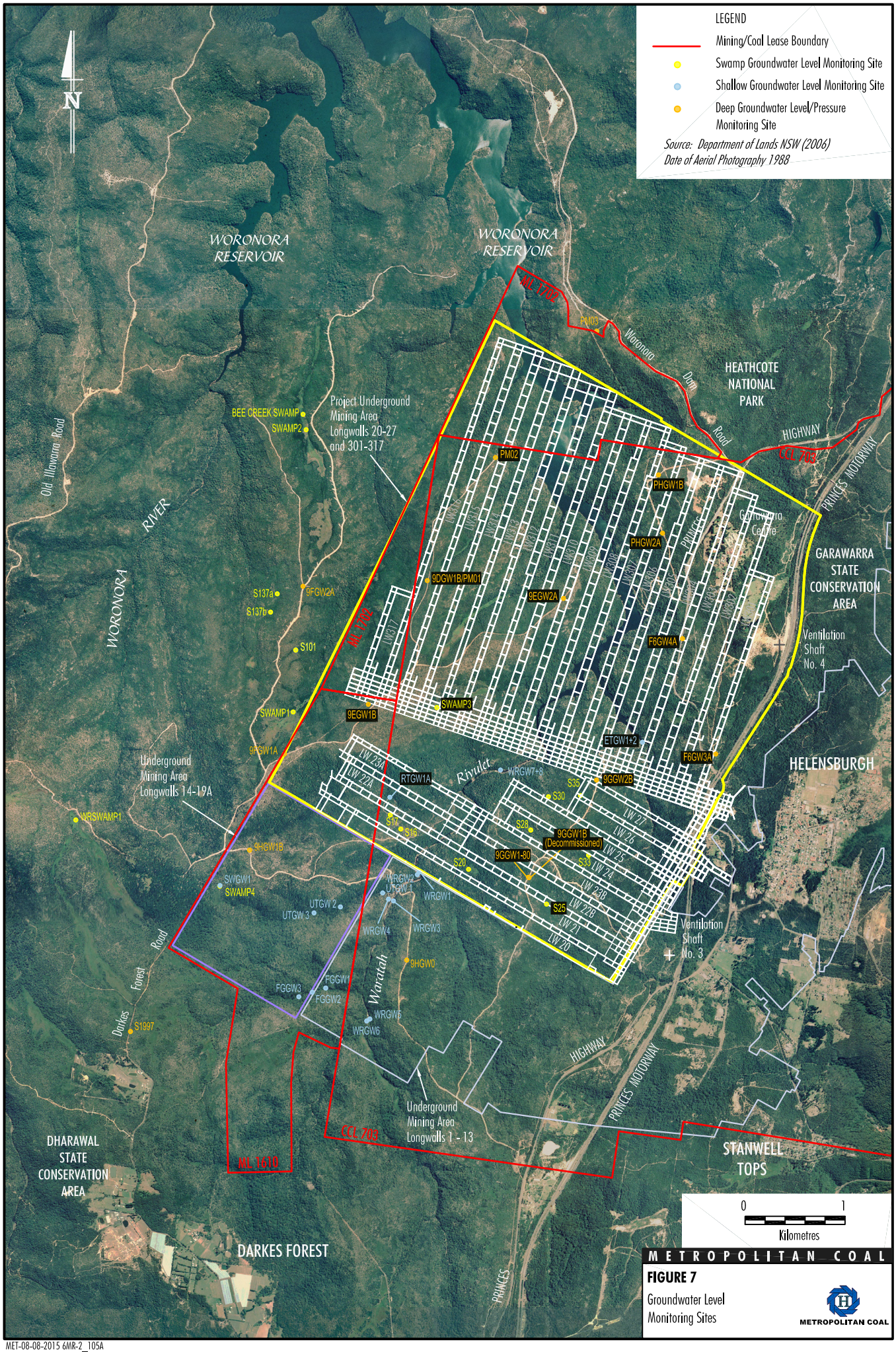
The swamp substrate water levels of Swamps 25, 28, 30, 33 and 35 (Figure 7) remained perched during the reporting period. Swamp 20 substrate water levels previously changed from being permanently waterlogged to being periodically waterlogged as a result of the passing of Longwall 21. This trend continued to be observed throughout the reporting period (Chart 1).



MET-08-08-2015 6MR-2_102A

Table 1
Summary of Results for Key Water Quality Parameters

Stream(s)	pH	Electrical Conductivity	Dissolved Iron	Dissolved Manganese	Dissolved Aluminium
Waratah Rivulet (sites WRWQ2, WRWQ6, WRWQ8, WRWQ9, WRWQM, WRWQN, WRWQP, WRWQR, WRWQT and WRWQW)	• Upstream sites (e.g. sites WRWQ2 and WRWQ6) - slightly acidic to near neutral pH values. • Downstream sites (e.g. sites WRWQR and WRWQT) - higher (slightly alkaline) pH values.	• Consistently low.	• Typically higher at the most upstream sites (e.g. site WRWQ2). • Concentrations at all sites were lower during the reporting period compared to the previous reporting period.	• Elevated values (highest for the period of record) recorded at three upstream sites in November 2015. In December 2015 the concentrations returned to values similar to earlier data. • Elevated values recorded at two downstream sites in December 2015.	• Consistent from upstream to downstream. • Low concentrations. • Values during the reporting period at or close to the laboratory limit of detection at most sites.
Woronora River (sites WOWQ1 and WOWQ2, control stream)	• High variability in pH, typically slightly acidic.	• Consistently low. • Similar to values recorded on Waratah Rivulet.	• Values returned to typical levels after a period of slightly elevated dissolved iron was recorded at site WOWQ2 (downstream) early in the year.	• Typically low, with more elevated concentrations occurring in the summer months.	• Typically low concentrations. • Typically higher concentrations at WOWQ1 (upstream) than at WOWQ2 (downstream).
Eastern Tributary (sites ETWQF, ETWQJ, ETWQN, ETWQU, ETWQW, ETWQAF, ETWQAH, ETWQAQ and ETWQAU)	• Variable but typically near neutral pH values.	• Consistently low.	• Evidence of seasonal effects. • Some relatively elevated concentrations (e.g. 2.6 milligrams per litre [mg/L] at site ETWQU in August 2015). • Concentrations at other sites similar to previous years with most sites exhibiting low concentrations in the reporting period (at or near the laboratory limit of detection).	• Concentrations higher at four sites (ETWQU, ETWQW, ETWQAF and ETWQAH) compared with previous years.	• Typically low concentrations. • An exception in November 2015, with elevated values recorded at ETWQAU and at ETWQAQ. • In December 2015 values returned to low values (at or near laboratory limit of detection).
Bee Creek (site BCWQ1, control stream), Honeysuckle Creek (site HCWQ1, control stream) and Far Eastern Tributary (site FEWQ1)	• Bee Creek and Honeysuckle Creek - variable to slightly acidic pH levels. • Far Eastern Tributary - near neutral pH levels.	• Generally low.	• Generally low, with periodic small spikes recorded mostly during summer months.	• Generally low, with periodic small spikes recorded mostly during summer months.	• Bee Creek and Honeysuckle Creek - higher (in relation to other tributary sites) over the period of record. This trend has continued through 2015. • Far Eastern Tributary - low concentrations.
Tributary B (site RTWQ1) and Un-named Tributary (site UTWQ1)	• Tributary B - an upward trend in pH to near neutral values from mid-2012. • Un-named Tributary - variable and inconsistent pH levels, generally between pH 5 and 7.	• Un-named Tributary - generally low. • Tributary B - recorded values have typically been higher since late 2013.	• Generally low, with periodic small spikes recorded mostly during summer months.	• Generally low, with periodic small spikes recorded mostly during summer months. • Tributary B - an upward trend in concentrations recorded since mid-2012, however were reducing towards the end of the reporting period. [A similar trend was observed while mining occurred beneath the Un-named Tributary].	• Low concentrations.



MET-08-08-2015 6MR-2_105A

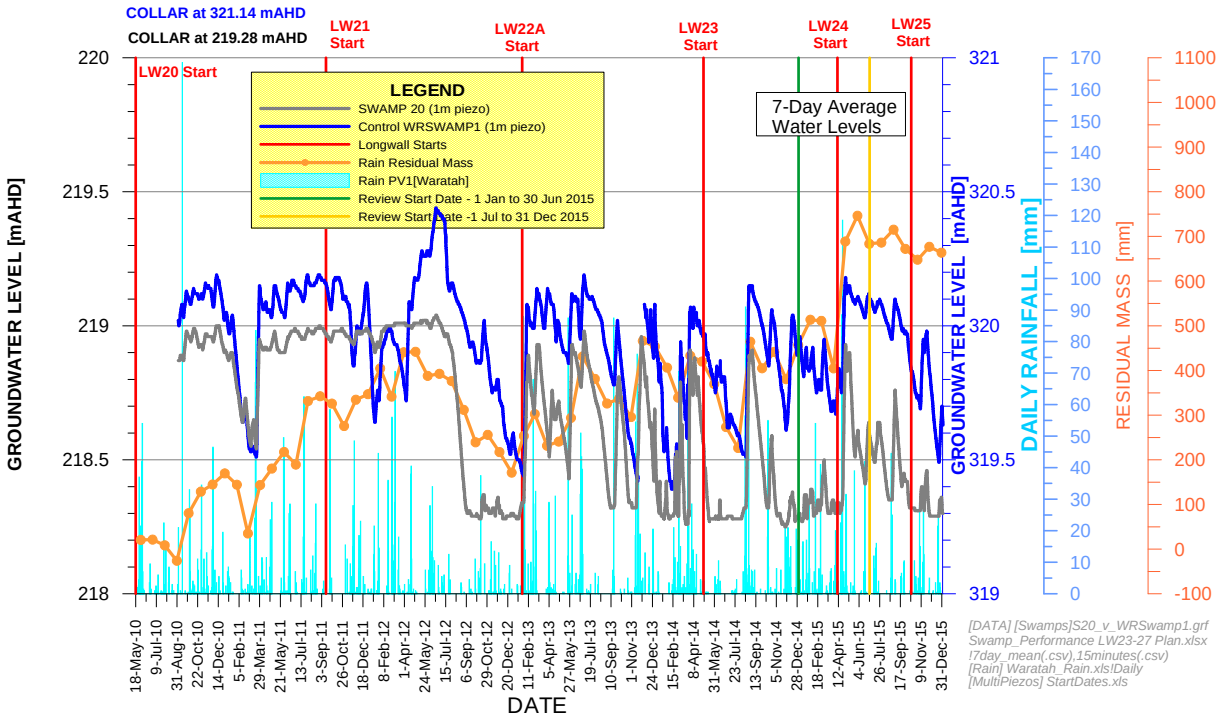


Chart 1 Comparison of Piezometer Responses at Swamp 20 and Woronora River 1 Control Swamp

2.7 SHALLOW GROUNDWATER LEVELS

Continuous water level monitoring of shallow groundwater levels has been conducted at sites WRGW1, WRGW2 and WRGW7 along Waratah Rivulet and sites ETGW1 and ETGW2 on the Eastern Tributary (Figure 7)[1].

At the time of passage of the Longwall 21 mining face past the piezometer sites WRGW1 and WRGW2 on the Waratah Rivulet (March 2012), the groundwater levels dropped by about 1 m. Since March 2012, groundwater levels recorded in WRGW1 and WRGW2 have fluctuated in response to seasonal rainfall variations with a seasonal (dry) minimum that is approximately 0.75 m below previous levels. Shallow groundwater levels at sites WRGW7, ETGW1 and ETGW2 correlate with rainfall trends and remained unaffected by mining during the reporting period.

[1] As previously reported, site WRGW8 is faulty and is not recording reliable data. Metropolitan Coal does not propose to replace the shallow groundwater bore at site WRGW8 given data is available at site WRGW7 on the opposite bank of the Waratah Rivulet. Due to bore failure as a result of subsidence, bore RTGW1A on Tributary B has not been able to be dipped since December 2013. The diver was able to be downloaded up until May 2014. Metropolitan Coal does not propose to install a new bore at site RTGW1A. It is considered that sufficient data has been obtained from this and previous bores on tributaries to understand the impacts of mine subsidence on the shallow groundwater.

2.8 DEEP GROUNDWATER LEVELS/PRESSURES

Continuous groundwater level/pressure monitoring has been conducted at bores 9HGW0 (Longwall 10 Goaf Hole), 9EGW1B, 9FGW1A, 9GGW1-80, 9GGW2B, 9HGW1B, PM02, PM01, 9EGW2A, PM03, PHGW1B, PHGW2A, F6GW3 and F6GW4 (Figure 7). The time-series head variations and vertical head differences for these bores have been examined with the following outcomes:

- very few installations are providing unreliable data;
- sites close to current mining show significant depressurisation with depth, consistent with the Project EA; and
- sites close to old workings at Helensburgh show substantial depressurisation with depth, consistent with the Project EA.

The monitoring results indicate that a hydraulic gradient is maintained between piezometers and the floor levels of the nearest streams and a hydraulic gradient exists from bores to the Woronora Reservoir. The monitoring results also support the assessment of no connective cracking of between the surface and the mine.

A three-dimensional numerical model of groundwater flow was developed for the mine and its surroundings prior to the commencement of Longwall 20. Since then, the model has been recalibrated and refined in the upper layers (Hawkesbury Sandstone) and extended from 13 to 15 layers. The groundwater model has been updated progressively as new multi-level piezometric data becomes available from the monitoring program.

Transient calibration has been undertaken during the reporting period to incorporate Metropolitan Coal updates to the geological model. The revised model includes an update of the topographical surface and geological interfaces, the addition of two model layers below the Bulli seam and updated estimates of the fractured zone height.

2.9 GROUNDWATER QUALITY

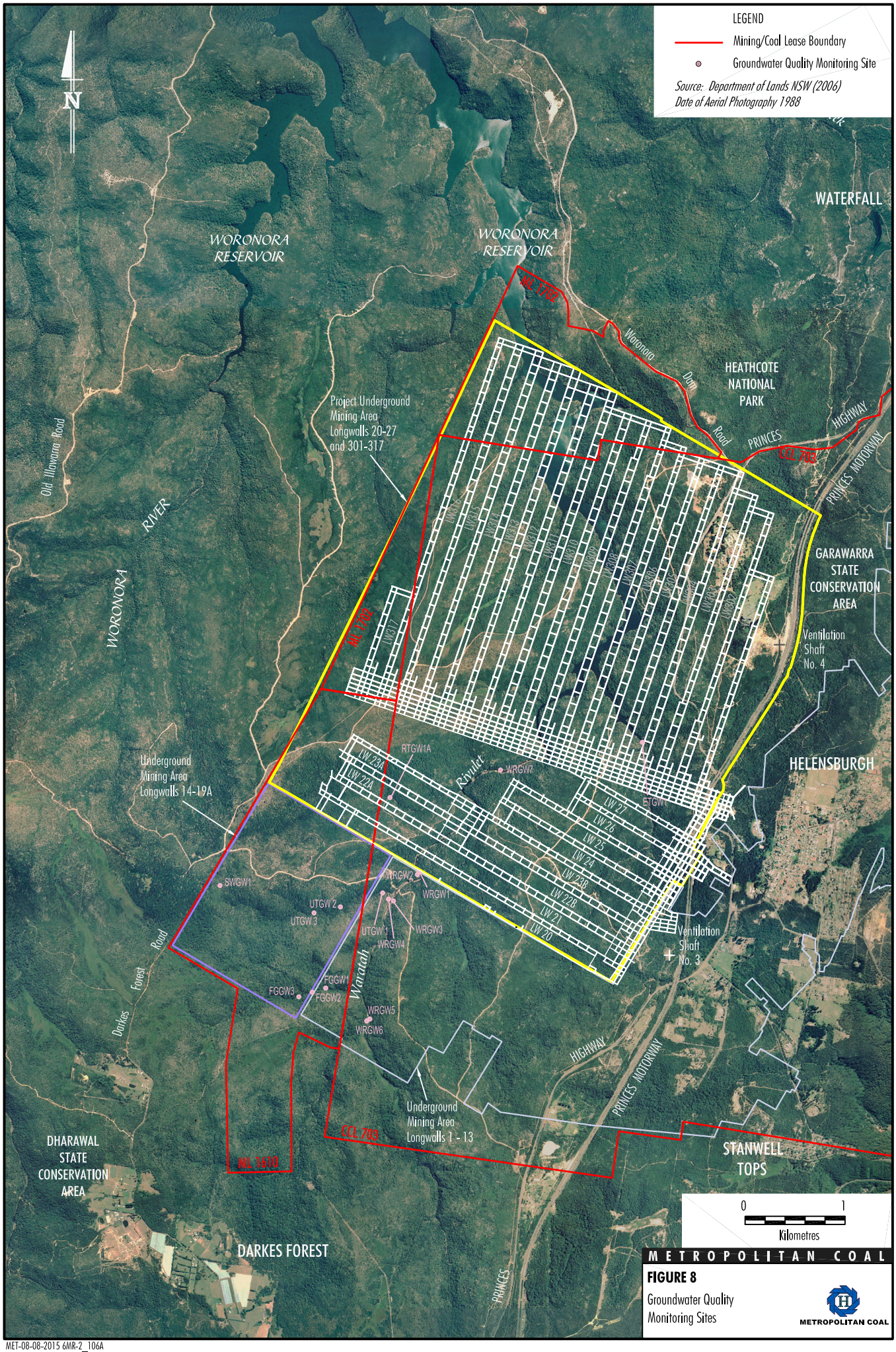
Groundwater quality monitoring on the Waratah Rivulet (at sites WRGW1 to WRGW7, Figure 8) and Eastern Tributary (at sites ETGW1 and ETGW2, Figure 8) during the reporting period indicates iron concentrations have remained below 10 mg/L at the Waratah Rivulet sites and below 12.1 mg/L at the Eastern Tributary sites. Manganese concentrations have typically been less than 1 mg/L, pH has been generally acidic and usually between pH 5.5 and 7, and aluminium concentrations have been low. The observations are consistent with those reported previously.

2.10 INSPECTIONS OF MINE WORKINGS

Mine inspections did not identify any abnormal water flows from the goaf, geological structure, or strata generally during the reporting period.

2.11 MINE WATER MAKE

The inferred water make (i.e. groundwater that has seeped into the mine from the strata) is calculated from the difference between total mine inflows and total mine outflows. Given the large fluctuations in daily water usage and the cycle period for water entering the mine, a 20 day average is used to provide a more reliable estimate of water make. On the basis of groundwater predictions, the 20 day average daily mine water make is assessed against a subsidence impact performance indicator for mine water make of no more than 2 megalitres per day (ML/day). The 20 day average mine water make was less than 2 ML/day during the reporting period.



MET-08-08-2015 6MR-2_106A

3 BIODIVERSITY MANAGEMENT

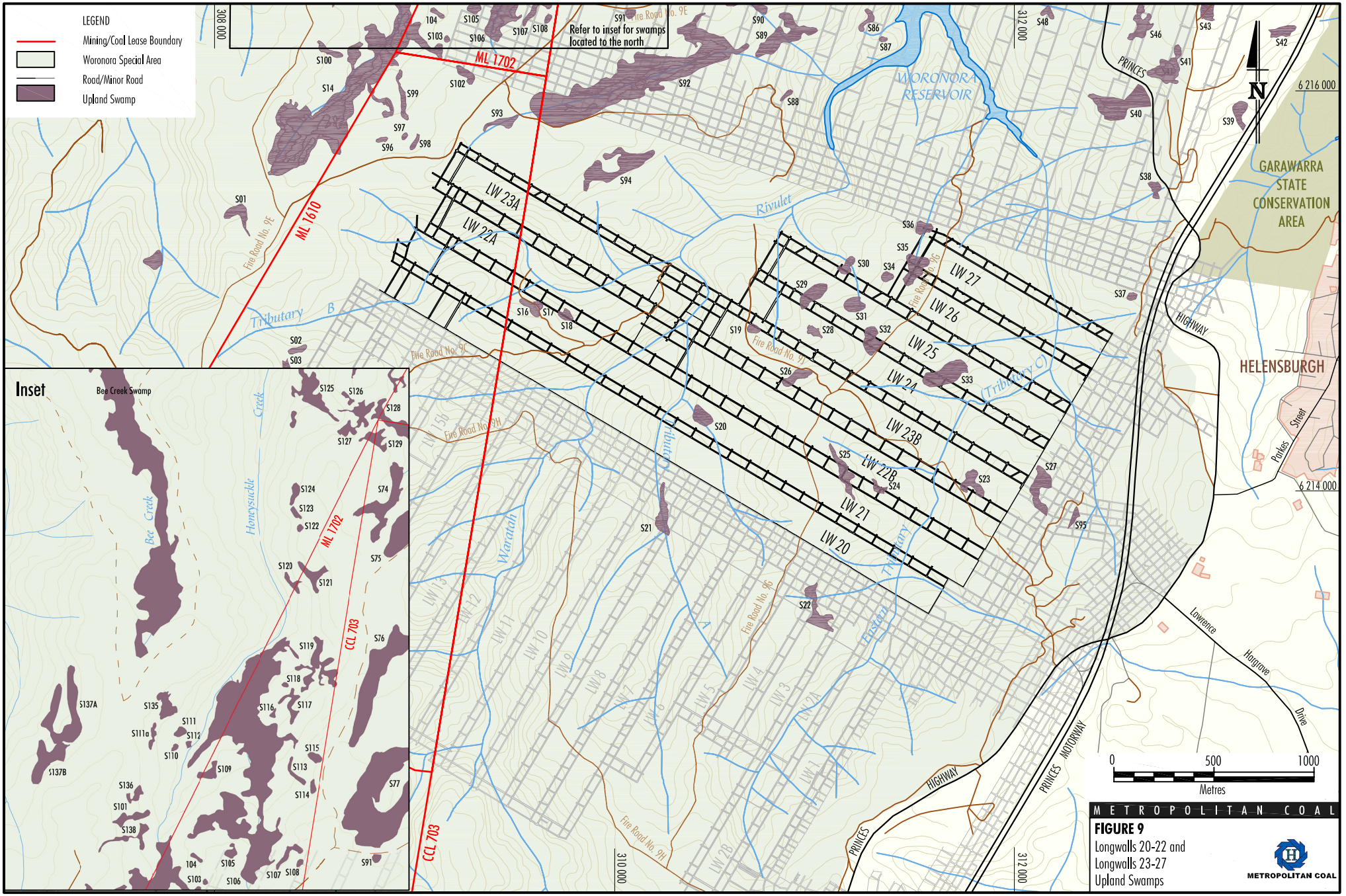
The Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Biodiversity Management Plans have been prepared to manage the potential environmental consequences of the Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Extraction Plans on aquatic and terrestrial flora and fauna, with a specific focus on swamps, in accordance with Condition 6, Schedule 3 of the Project Approval.

3.1 UPLAND SWAMP VEGETATION MONITORING

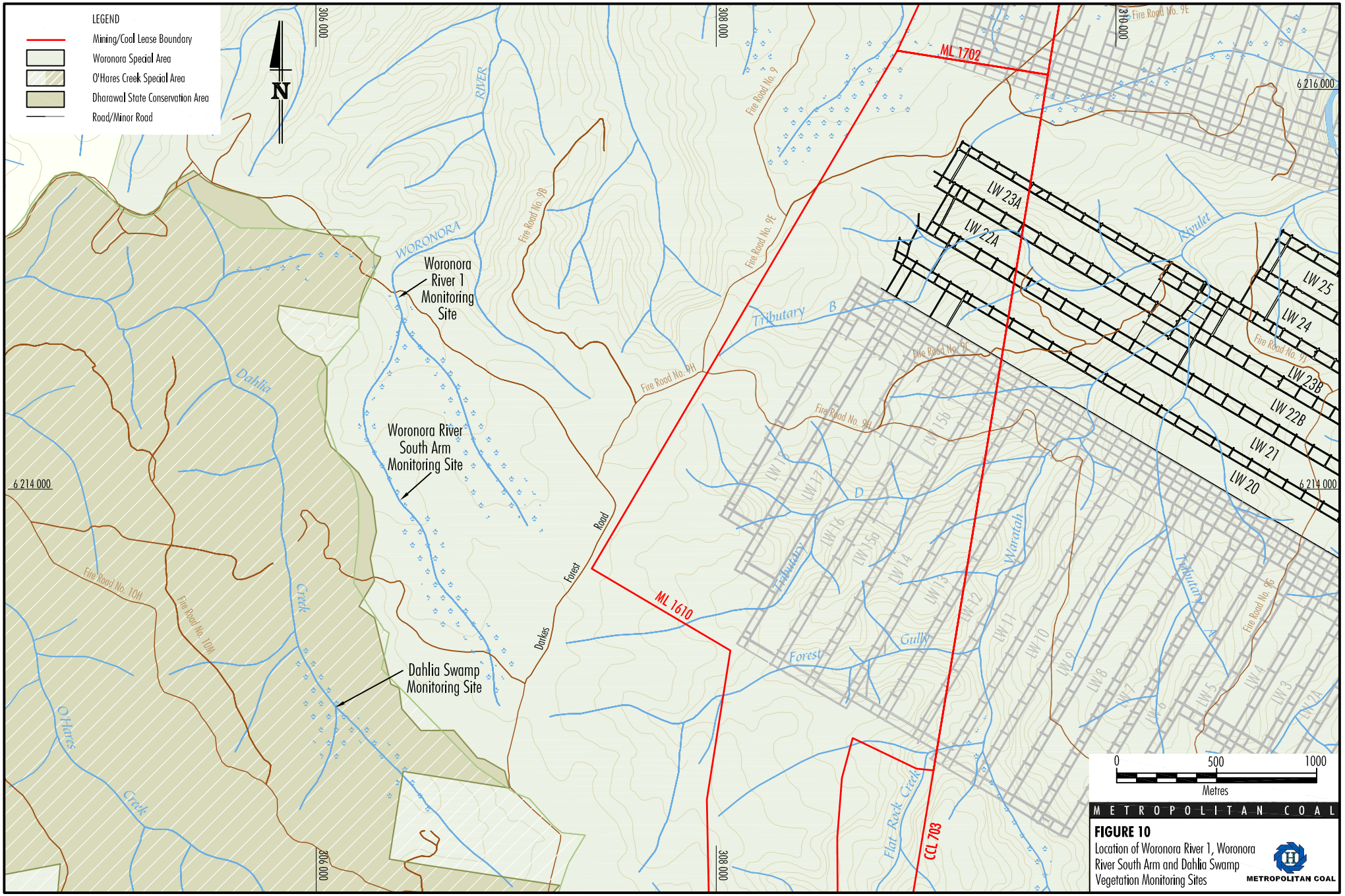
Upland swamp vegetation monitoring is conducted at a number of swamps overlying or adjacent to Longwalls 20-27 and at a number of control swamps (Figures 9 and 10).

The results of the Longwalls 20-22 and Longwalls 23-27 upland swamp vegetation monitoring programs (up to and including the autumn 2015 survey) can be summarised as follows:

- No cracking of exposed bedrock areas or swamp sediments was observed in either longwall or control swamps, other than those recorded during the baseline surveys. Areas in which active erosion was observed were all minor and limited to access tracks, drainage lines and areas of bare earth without vegetation cover. At Swamp 20, iron-stained groundwater seepage has been observed since spring 2012 on the terminal rocky step and a small rocky step.
- The vegetation structure, dominant species and estimated cover abundance for each stratum has been variable across all seasons with variations recorded between sites, seasons and strata. Within the variability of this dataset, a general trend towards increasing height and cover abundance of vegetation structural layers has occurred across all seasons particularly within the tallest structural layer and is a recognised pattern as a consequence of time since fire. No notable changes in vegetation structure, dominant species or estimated cover/abundance which could be attributed to impacts associated with the mining have been recorded within longwall or control swamps.
- Fluctuations in species cover/abundance have been recorded across all sites. No patterns of increasing or decreasing cover/abundance have been identified in relation to individual species across sites or groups of species (i.e. swamp indicator species, generalist species, shrubs, ground covers) within sites.
- Fluctuations in vegetation condition have also been recorded across sites. Generally, vegetation within Restioid Heath/Banksia Thicket swamps has been in a healthy condition with observations of dieback limited to isolated individuals within swamps. For the Tea Tree Thickets, vegetation has been observed to be in a healthy to variable condition in both longwall and control swamps.
- Species richness within Restioid Heath/Banksia Thicket sites in autumn 2015 was within the range of previous seasons. Analysis of species richness within Restioid Heath/Banksia Thicket sites using analysis of variance did not detect significant differences between longwall and control sites in any season including autumn 2015.
- Species richness within Tea Tree Thicket sites has been relatively stable at control sites across all seasons including autumn 2015, with small decreases and increases observed from season to season. At the single longwall swamp over Longwalls 20-22, Swamp 20, decreases in species richness have been recorded in autumn 2012 and spring 2013, with species richness increasing each subsequent season up to and including autumn 2015. Since spring 2013, species richness within Swamp 20 has continued to increase including the current autumn 2015 season with species richness in autumn 2015 only outside the range for the period spring 2009 to spring 2011 by a single species.
- Analysis of quadrat/transect data indicates that the vegetation in upland swamps overlying longwall mining has not experienced changes significantly different to changes in control swamps.



MET-08-08-2015 6MR-2_108A



MET-08-08-2015 6MR-2_109B

- Monitoring of the indicator species for Longwalls 20-22 identified that for all Restioid Heath/Banksia Thicket swamps the mean vegetation condition in autumn 2015 was similar between longwall and control sites. For the Tea Tree Thicket swamps the mean vegetation condition was similar at both longwall and control sites with the exception of *Leptospermum juniperinum* where vegetation condition at Swamp 20 was greater than at control sites. The mortality rates for each indicator species was also similar between longwall and control swamps.
- Monitoring of indicator species for Longwalls 23-27 identified higher mortality rates within longwall sites compared to control sites for *Epacris obtusifolia, Pultenaea aristata* and *Banksia robur* in autumn 2015. However, similar differences were observed during the baseline monitoring period, indicating that the observed differences do not appear to be related to the mining of Longwalls 23-27.
- The upland swamp vegetation performance indicator, *The vegetation in upland swamps is not expected to experience changes significantly different to changes in control swamps*, has not been exceeded.

3.2 UPLAND SWAMP GROUNDWATER MONITORING

As described in Section 2.6, the swamp substrate water levels of Swamps 25, 28, 30, 33 and 35 remained perched during the reporting period. Swamp 20 substrate water levels previously changed from being permanently waterlogged to being periodically waterlogged as a result of the passing of Longwall 21.

As a result the upland swamp groundwater performance indicator, *Surface cracking within upland swamps resulting from mine subsidence is not expected to result in measurable changes to swamp groundwater levels when compared to control swamps or seasonal variations in water levels experienced by upland swamps prior to mining*, continued to be exceeded at Swamp 20 (overlying Longwall 21) during the reporting period.

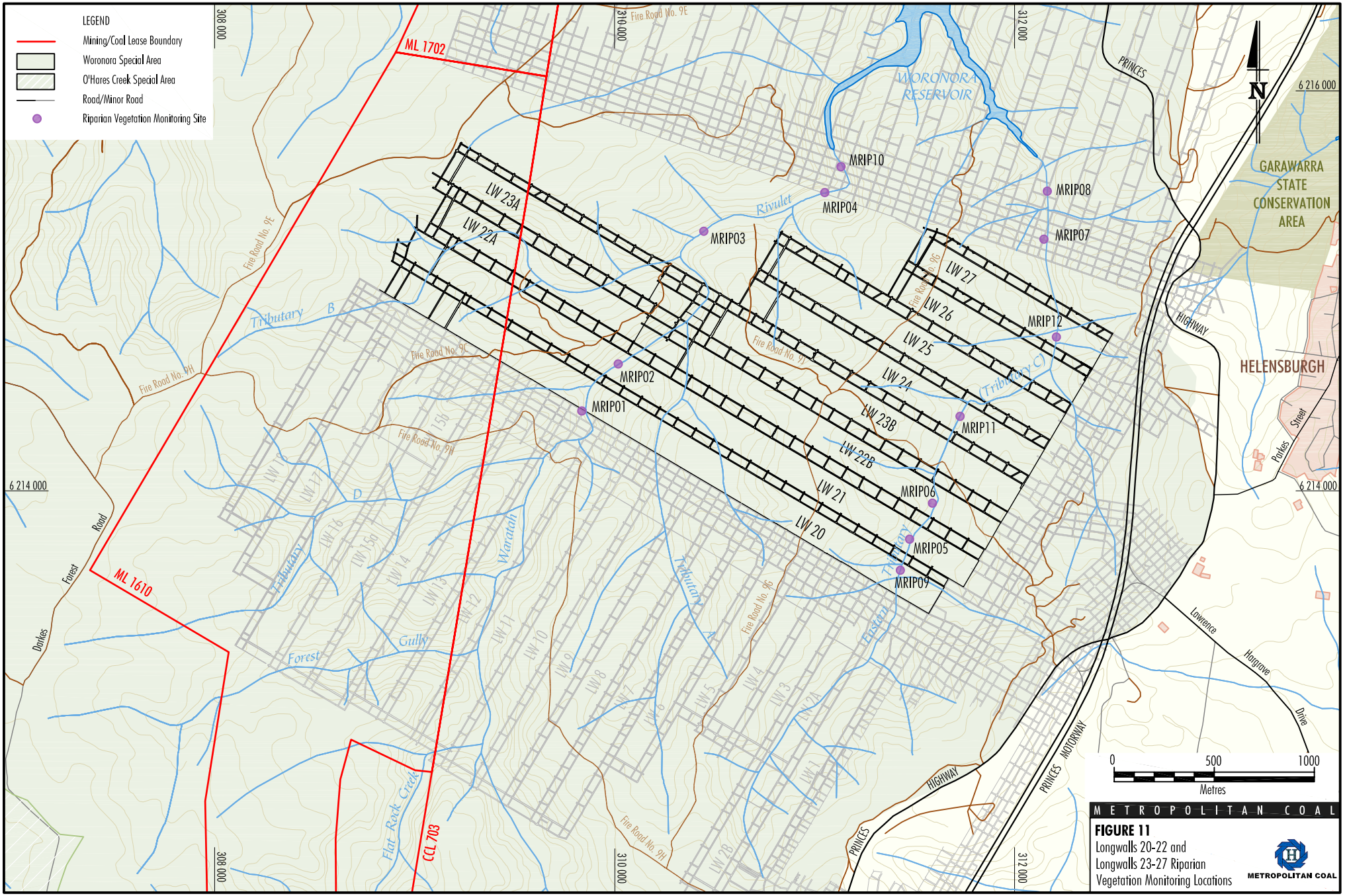
Continued exceedance of the performance indicator at Swamp 20 triggered an assessment against the performance measure, *Negligible impact on threatened species and populations*. Assessments conducted by Dr. Colin Bower (FloraSearch) and Dr. David Goldney (Cenwest Environmental Services) for threatened flora or threatened fauna species, respectively, concluded that the subsidence impact performance measure had not been exceeded.

3.3 RIPARIAN VEGETATION MONITORING

Riparian vegetation monitoring is conducted at a number of sites on the Waratah Rivulet and Eastern Tributary, overlying Longwalls 20-27 and downstream of Longwalls 20-27 (Figure 11).

The results of the Longwalls 20-22 and Longwalls 23-27 riparian vegetation monitoring programs (up to and including the autumn 2015 survey) can be summarised as follows:

- Vegetation at riparian monitoring sites was generally observed in good condition, with the exception of sites MRIP02 on Waratah Rivulet and between sites MRIP05 and MRIP09 on the Eastern Tributary. Within the riparian sites (i.e. excluding sites MRIP02, MRIP05 and MRIP09), dieback was limited to isolated and scattered individuals observed with dieback, and flood impacts (e.g. flood-swept and prone vegetation).
- Increased ponding at site MRIP02 on the Waratah Rivulet and between sites MRIP05 and MRIP09 on the Eastern Tributary from subsidence has resulted in prolonged inundation of streamside vegetation causing vegetation dieback. Vegetation dieback was first observed at site MRIP02 in spring 2012 and between sites MRIP09 and MRIP05 in autumn 2014.



MET-08-08-2015 6MR-2_116A

- The riparian vegetation performance indicator, *Impacts to riparian vegetation are expected to be localised and limited in extent, similar to the impacts previously experienced at Metropolitan Coal*, continued to be exceeded at site MRIP02 on Waratah Rivulet and between sites MRIP09 and MRIP05 on the Eastern Tributary, with vegetation dieback observed greater than 50 centimetres from the Waratah Rivulet/Eastern Tributary.
- Continued exceedance of the performance indicator triggered an assessment against the performance measure, *Negligible impact on threatened species and populations*. Assessments conducted by Dr. Colin Bower (FloraSearch) and Dr. David Goldney (Cenwest Environmental Services) for threatened flora or threatened fauna species, respectively, concluded that the impact performance measure had not been exceeded.

3.4 AQUATIC BIOTA AND THEIR HABITATS

The aquatic ecology monitoring programs for Longwalls 20-22 and Longwalls 23-27 have been designed to monitor subsidence-induced impacts on aquatic ecology (referred to as stream monitoring) and the response of aquatic ecosystems to the implementation of potential future stream remediation works (referred to as pool monitoring). The locations of the monitoring sites are shown on Figure 12.

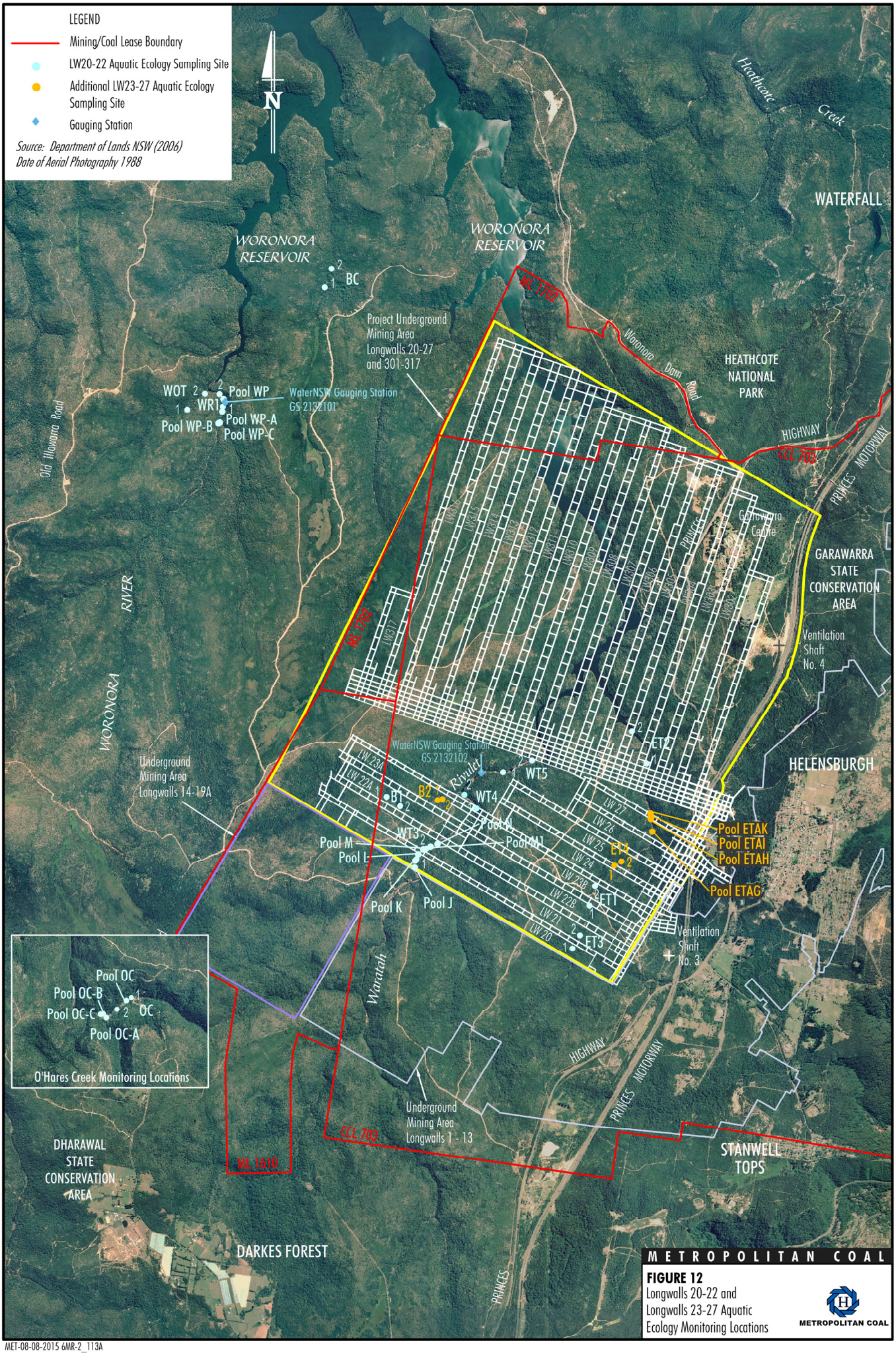
3.4.1 Stream Monitoring Program

Multivariate analyses of the Longwalls 20-22 and Longwalls 23-27 stream monitoring data compared before versus after mining indicates that any effect of longwall mining on assemblages of aquatic macroinvertebrates and macrophytes at Locations C1, C2, C3 and C4 on the Eastern Tributary and at Locations WT3, WT4 and WT5 on the Waratah Rivulet to date (to autumn 2015) are within the range of natural variability in these assemblages as measured by the control locations.

Assemblages of macroinvertebrates at Location C3 on the Eastern Tributary have grouped separately from prior sampling occasions since spring 2012. The spring 2012 survey coincided with observed inundation of the stream bank as a result of subsidence and riparian vegetation dieback was noted at Location C3 in the following season (i.e. autumn 2013). The riparian vegetation dieback has not affected emergent species of macrophyte at the location. Rather, emergent species have colonised sections of the inundated area.

Temporal patterns in the structure of assemblages of aquatic macroinvertebrates at Location B1 on Tributary B have been more variable and grouped separately from prior sampling occasions since spring 2012. Mean diversity of macroinvertebrates and numbers of the freshwater shrimp, Atyidae, have declined significantly at Location B1 since spring 2012 in relation to the control locations. Since spring 2012, the study reach at Location B1 has been mostly dry and there has been no surface flow. A decrease in the fern, *Gleichenia dicarpa* at Location B1 has also occurred since spring 2012.

The structure of assemblages of aquatic macroinvertebrates at Location B2 on Tributary B have differed significantly from before-to-after the commencement of Longwalls 23-27 in comparison to the control locations since spring 2014. However, there were no spatial and/or temporal patterns of aquatic macrophytes at Location B2 on Tributary B related to the commencement of mining of Longwalls 23-27.



MET-08-08-2015 6MR-2_113A

3.4.2 Pool Monitoring Program

To date, multivariate analyses comparing temporal and spatial patterns of change in assemblages of aquatic macroinvertebrates in large and small pools sampled on the Waratah Rivulet with the control pools have not detected significant differences in the structure of assemblages of macroinvertebrates or their main components (i.e. Leptophlebiidae and Atyidae) when comparing the before-to-after mining periods. Mean diversity of macroinvertebrates in Pools J and M1 has increased significantly in relation to control pools since the commencement of Longwalls 20-22.

In autumn 2015, the structure of aquatic macroinvertebrates at large pool ETAH sampled on the Eastern Tributary was found to differ significantly from before-to-after mining, largely due to changes in the contribution that the families Atyidae, Leptophlebiidae and Leptoceridae made to the structure of the assemblage. Analyses of macroinvertebrate data collected in small pools on the Eastern Tributary indicate that to date, changes before-to-after mining Longwall 23 are within the range of natural variability as measured by the control locations.

Macrophyte assemblages at the large and small pools on the Waratah Rivulet and the Eastern Tributary have been distinctive among streams since the commencement of sampling. Differences among streams are mostly due to the different species that dominate the assemblages. Assemblages of macrophytes in Pool N on Waratah Rivulet appear to have changed since spring 2012 compared to prior sampling occasions. Analyses examining changes in aquatic macrophytes in small pools on Waratah Rivulet and Eastern Tributary found no evidence of impacts related to mining activities.

3.5 AMPHIBIAN SURVEYS

Monitoring programs have been developed for Longwalls 20-22 and Longwalls 23-27 to monitor amphibian species, with a focus on the habitats of the Giant Burrowing Frog (*Heleiporus australiiacus*) and Red-crowned Toadlet (*Pseudophryne australis*) associated with tributaries. The locations of the monitoring sites are shown on Figure 13.

A Poisson regression analysis has been used to analyse the amphibian survey results obtained to date (i.e. to spring/summer 2014). No adverse impact from mining has been detected for any frog species including the Giant Burrowing Frog and Red-crowned Toadlet, at the 95% confidence level.

The amphibian species diversity and abundance data are consistent with population variations and cycles in response to seasonal variations. There are no significant differences between the longwall and control sites.

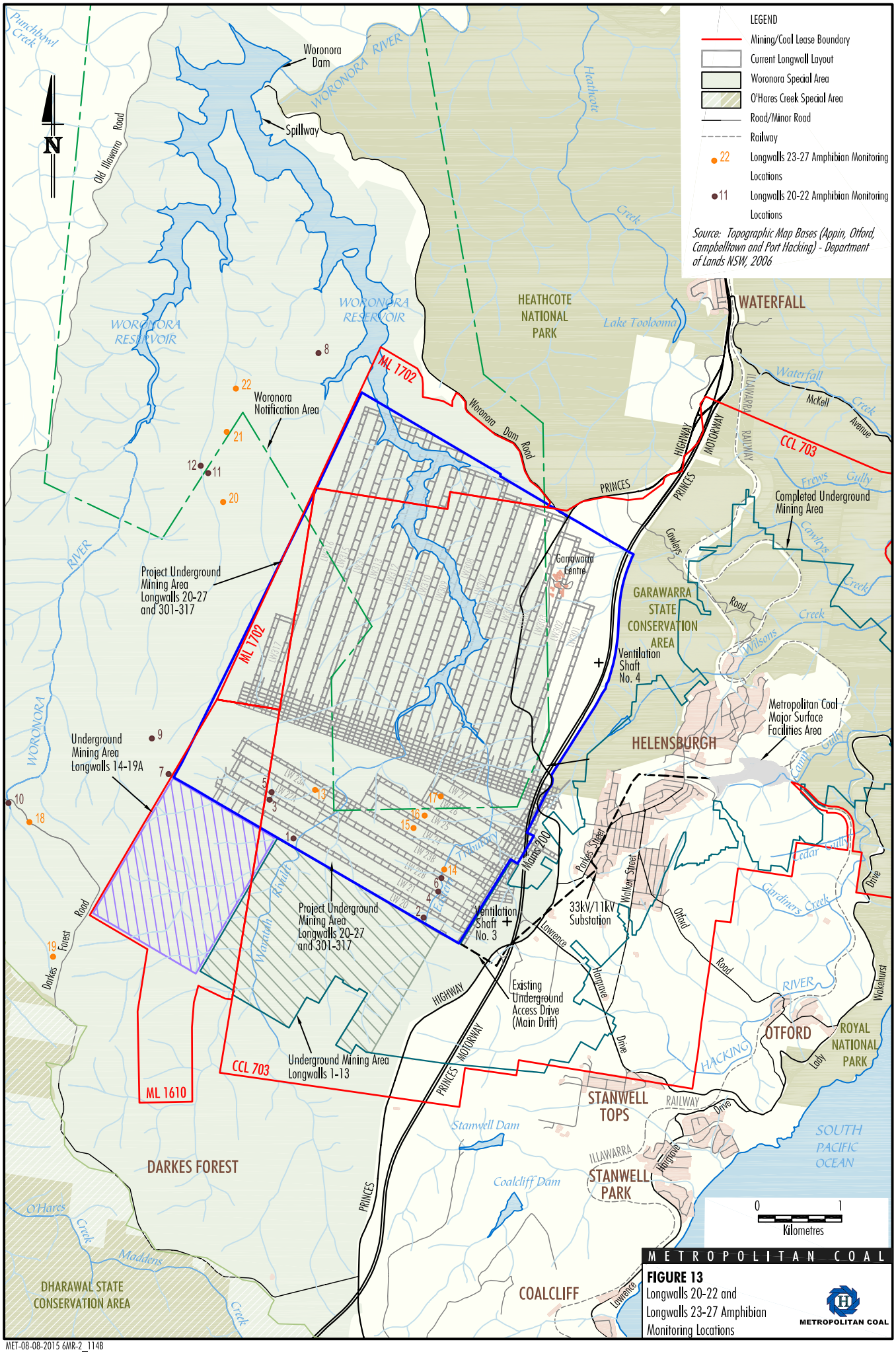
4 LAND MANAGEMENT

The Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Land Management Plans were prepared to manage the potential environmental consequences of the Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Extraction Plans on cliffs, overhangs, steep slopes and land in general, in accordance with Condition 6, Schedule 3 of the Project Approval.

4.1 STEEP SLOPES AND LAND IN GENERAL

Opportunistic visual inspections for subsidence impacts on steep slopes and land in general are conducted by Metropolitan Coal and its contractors as part of routine works conducted in the catchment.

No additional surface tension cracks to those reported previously were observed during the reporting period.



MET-08-08-2015 6MR-2_114B

Visual inspections and photographic surveys conducted along Tributary B following the completion of Longwall 23 identified a collapsed rock ledge at the upstream end of Pool TB-M. The dimensions of the rock ledge was approximately 0.4 – 0.7 m (thick) by 6 m (wide) by 2 – 3 m (deep). The potential for environmental consequences or safety hazard were assessed and documented in the Land Management Plan – Subsidence Impact Register. No management measures were required to be implemented. The subsidence impact is consistent with the potential subsidence impacts described in the Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Extraction Plans.

4.2 CLIFFS AND OVERHANGS

Visual inspections have been conducted monthly for the period of time Longwalls 23-27 extraction has been within 400 m of sites COH2, COH3, COH4, COH5, COH6, COH6a, COH7, COH8, COH9, COH10, COH14, COH15 and COH16 (Figure 14) and following the completion of each longwall to record evidence of subsidence impacts.

Previously, a small rock fall was recorded in December 2013 at site COH2 (Figure 14). No additional rock falls at the cliff or overhang sites were recorded during the reporting period.

5 HERITAGE MANAGEMENT

The Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Heritage Management Plans were prepared to manage the potential environmental consequences of the Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Extraction Plans on Aboriginal heritage sites or values in accordance with Condition 6, Schedule 3 of the Project Approval.

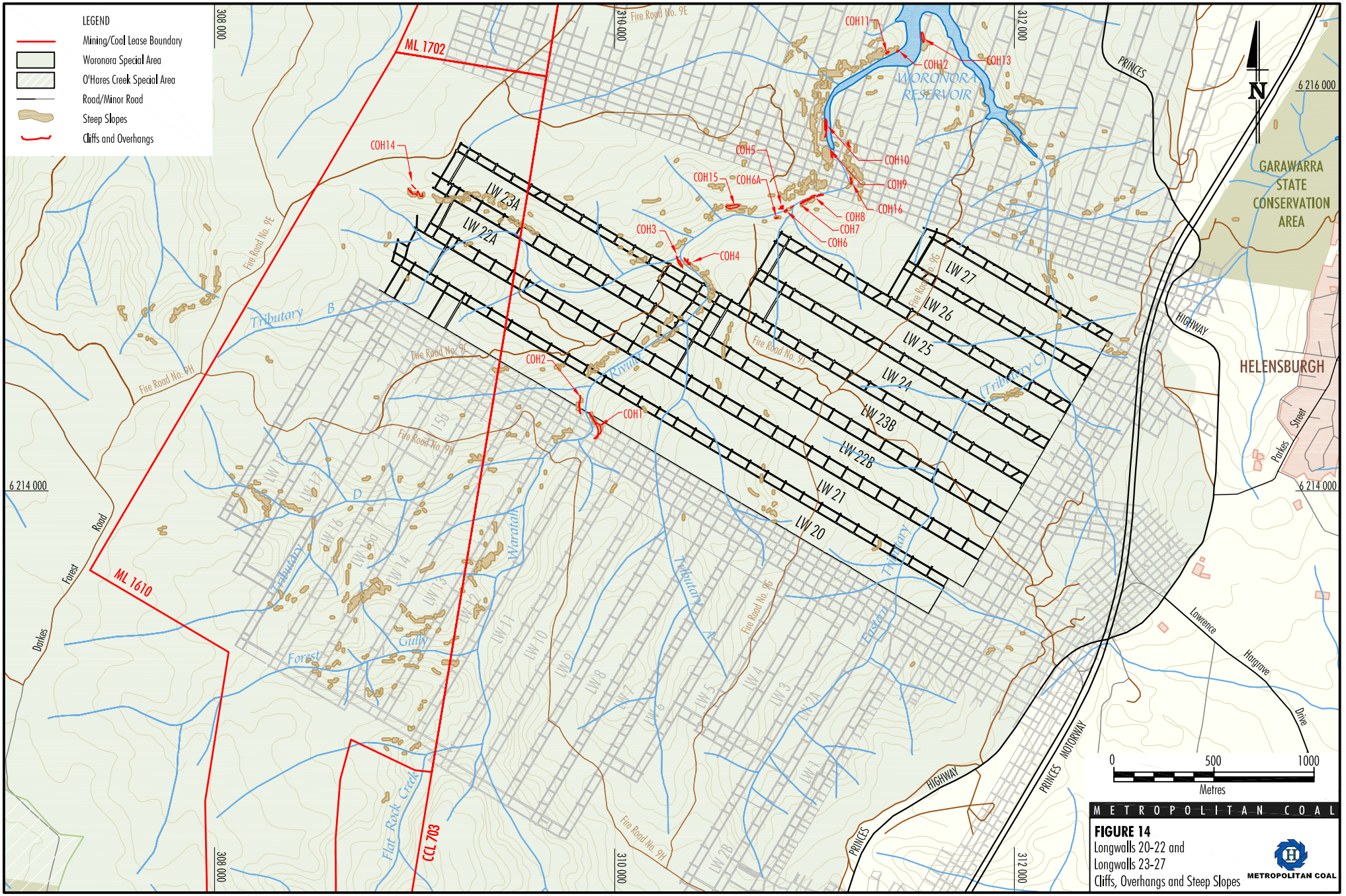
The Metropolitan Coal Longwalls 23-27 Heritage Management Plan was revised during the reporting period in accordance with Condition 4, Schedule 7 of the Project Approval.

A monitoring program has been implemented to monitor the impacts and consequences of mine related subsidence on Aboriginal heritage sites located within the 35^{o} angle of draw of Longwalls 20-22 and Longwalls 23-27 (Figure 15). The Aboriginal heritage sites monitoring program is carried out by an archaeologist (with experience in rock art recording and management) and Aboriginal stakeholder representatives.

Five heritage sites (FRC 15, FRC 281, FRC 283, FRC 284 and MET 1) were determined by the Longwalls 20-22 Rounds 1, 2 and 3 Aboriginal heritage surveys to have changes due to mining induced subsidence from Longwalls 20-22 (as reported in the Metropolitan Coal 2014 Annual Review and AEMR/Rehabilitation Report). The first round of monitoring for Longwalls 23-27 (Round 1) was conducted in September and October 2015 following the completion of Longwall 23. One Aboriginal heritage site (FRC 176) was observed during the Round 1 monitoring to have changes due to mining induced subsidence, specifically, vertical cracking along the northern and southern ends of the shelter. The art panel was not affected by this cracking.

In accordance with the Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Heritage Management Plans, Aboriginal heritage site monitoring results are used to assess the Project against the Aboriginal heritage subsidence impact performance measure:

> *Less than 10% of Aboriginal heritage sites within the mining area are affected by subsidence impacts.*



MET-08-08-2015 6MR-2_115A

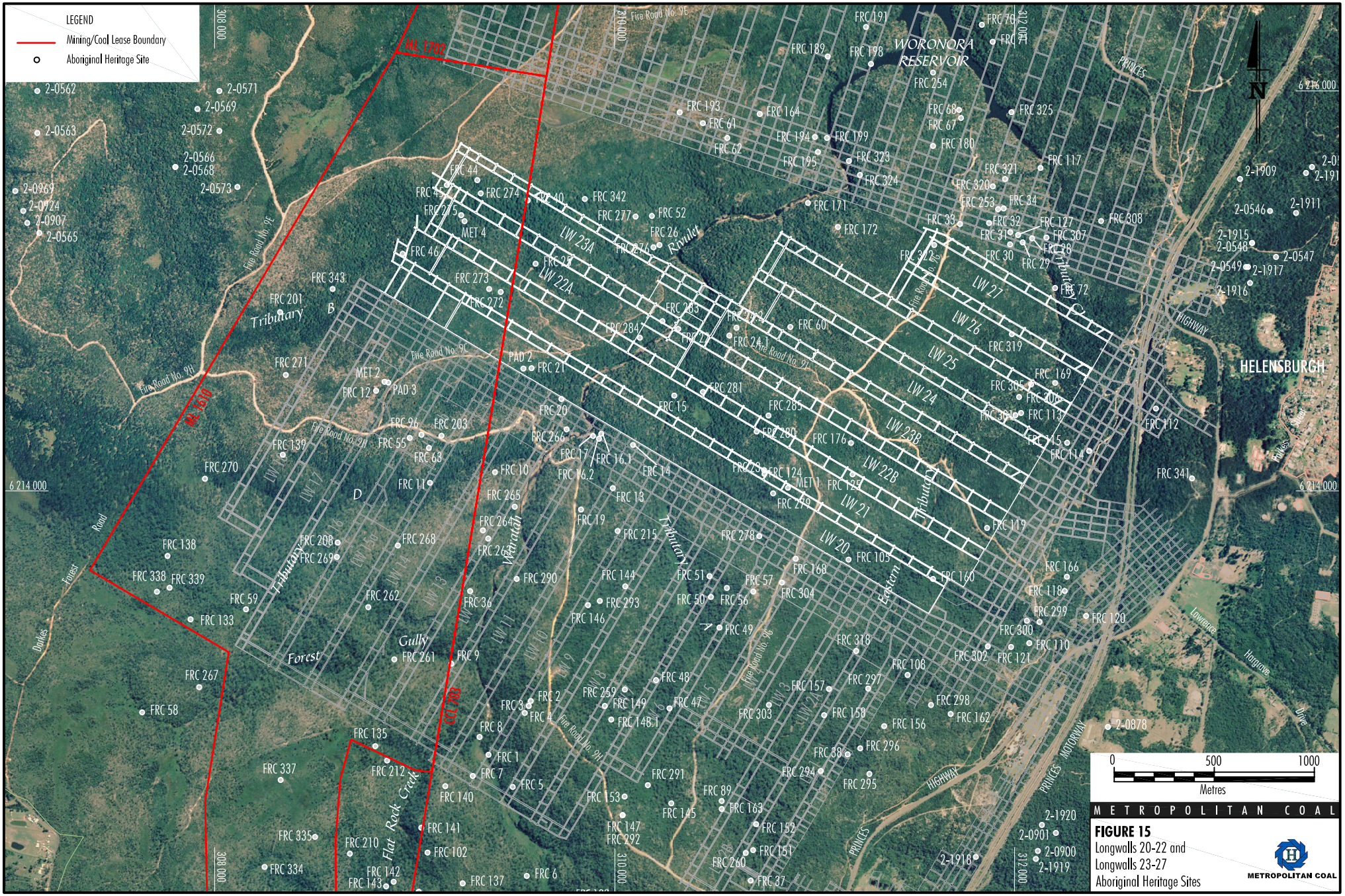


FIGURE 15
Longwalls 20-22 and
Longwalls 23-27
Aboriginal Heritage Sites

MET-08-08-2015 6MR-2_117B

For the purpose of measuring performance against the Aboriginal heritage subsidence impact performance measure, sites are considered to be "affected by subsidence impacts" if they exhibit one or more of the following consequences that cannot be attributed to natural weathering or deterioration:

- overhang collapse;
- cracking of sandstone that coincides with Aboriginal art or grinding grooves; and
- rock fall that damages Aboriginal art.

The mining area is defined by the Project Approval and is shown on Figure 2 of this report (labelled Project Underground Mining Area Longwalls 20-27 and 301-317). Of the sites at which changes due to mining induced subsidence have occurred, site FRC 281 has been affected by subsidence impacts as a result of cracking of sandstone that coincides with Aboriginal art. This means that less than 1% of sites within the mining area have been affected, which is within the approved performance measure.

Round 2 of the Longwalls 23-27 monitoring program has been conducted between three to six months following the completion of Longwall 24 and Round 3 of the Longwalls 23-27 monitoring program will be undertaken within three to six months following the completion of Longwall 25. The results of these surveys will be reported in future Six Monthly Reports.

6 BUILT FEATURES MANAGEMENT

The Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Built Features Management Plans were developed to manage the potential environmental consequences of the Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Extraction Plans on built features in accordance with Condition 6, Schedule 3 of the Project Approval.

As indicated in previous reports, the Metropolitan Coal Longwalls 20-22 Built Features Management Plan has effectively been discontinued as the appropriate monitoring for built features has been incorporated into the Metropolitan Coal Longwalls 23-27 Built Features Management Plan.

A monitoring program has been implemented to monitor subsidence impacts on infrastructure owned by Endeavour Energy, Nextgen, TransGrid, Optus, Telstra, Roads and Maritime Services, RailCorp, Sydney Water and Wollongong City Council. Analysis of measured subsidence was conducted at the end of Longwalls 23 and 24 by Mine Subsidence Engineering Consultants (MSEC). MSEC concluded that subsidence measurements for built features were similar to or less than those predicted. No subsidence impact to any built feature was evident over the reporting period.

The Project Approval requires Metropolitan Coal not to exceed the following built features subsidence impact performance measure:

> *Safe, serviceable and repairable, unless the owner and the MSB agree otherwise in writing.*

The built features subsidence impact performance measure was not exceeded during the reporting period.

The Project Approval also requires Metropolitan Coal not to exceed the heritage subsidence impact performance measure for items of heritage or historical significance at the Garrawarra Centre. The Garrawarra Complex is located more than 2.5 km from Longwalls 23-27 and at this distance no measurable systematic or non-systematic subsidence movements were indicated.

7 PUBLIC SAFETY MANAGEMENT

The Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Public Safety Management Plans were prepared to manage the potential consequences of the Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Extraction Plans on public safety within the underground mining areas in accordance with Condition 6, Schedule 3 of the Project Approval.

Monitoring of cliffs and overhangs, steep slopes and land in general has been conducted for subsidence impacts in accordance with the Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Land Management Plans, and of infrastructure items in accordance with the Metropolitan Coal Longwalls 20-22 and Longwalls 23-27 Built Features Management Plans. No subsidence impacts were identified during the reporting period that were considered to pose a risk to public safety.

Further, no safety incidents were reported by visitors, personnel or contractors to Metropolitan Coal in the underground mining area during the reporting period.

8 ASSESSMENT OF ENVIRONMENTAL PERFORMANCE

No Project-related exceedances of performance measures associated with underground mining of Longwalls 20-22 or Longwalls 23-27 occurred during the reporting period. During the reporting period, three performance indicators were exceeded, as summarised in Table 2.

Table 2
Assessment of Environmental Performance – Underground Mining Area and Surrounds

Monitoring Components	Subsidence Impact Performance Indicator(s)	Longwalls 20-22 Extraction Plan*	Longwalls 23-27 Extraction Plan#	Subsidence Impact Performance Indicator Exceeded?	Resulting Actions	Subsidence Impact Performance Measure	Subsidence Impact Performance Measure Exceeded?
WATER MANAGEMENT							
Surface Water Flow	*Changes in the quantity of water entering Woronora Reservoir is not significantly different post-mining compared to pre-mining, that is not also occurring in the control catchment(s)*	✓	✓	No	Continue monitoring	*Negligible reduction to the quantity of water resources reaching the Woronora Reservoir*	No
Water Quality Reaching Woronora Reservoir	*Changes in the quality of water entering Woronora Reservoir are not significantly different post-mining compared to pre-mining concentrations that are not also occurring at control site WOWQ2*	✓	✓	Yes	Assessment against the performance measure conducted by Hydro Engineering & Consulting Continue monitoring	*Negligible reduction to the quality of water resources reaching the Woronora Reservoir*	No. Assessment to be subject to peer review
Connective Cracking	*Visual inspection does not identify abnormal water flow from the goaf, geological structure, or the strata generally*	✓	✓	No	Continue monitoring	*No connective cracking between the surface and the mine*	No
	The 20-day average mine water make does not exceed 2 ML/day	✓	✓	No	Continue monitoring		No
	Significant departures from the predicted envelope of vertical potentiometric head profiles at Bores 9GGW2B and 9FGW1A do not occur	✓	×	No	Continue monitoring		No
	Significant departure from the predicted envelope of the vertical potentiometric head profile at Bore 9GGW2B does not occur	×	✓	No	Continue monitoring		No
	The water tables measured at Bores 9FGW1A and 9GGW1-80 are higher than the water levels of streams crossed by a transect along Longwall 22 (i.e. a hydraulic gradient exists from each bore to the nearest watercourse)	✓	✓	No	Continue monitoring		No

Table 2 (Continued)
Assessment of Environmental Performance – Underground Mining Area and Surrounds

Monitoring Components	Subsidence Impact Performance Indicator(s)	Longwalls 20-22 Extraction Plan*	Longwalls 23-27 Extraction Plan#	Subsidence Impact Performance Indicator Exceeded?	Resulting Actions	Subsidence Impact Performance Measure	Subsidence Impact Performance Measure Exceeded?
WATER MANAGEMENT (Continued)							
Leakage from the Woronora Reservoir	*The groundwater head of Bores 9GGW2B and PM02 is higher than the water level of Woronora Reservoir (i.e. a hydraulic gradient exists from the bores to the Woronora Reservoir)*	✓	✓	No	Continue monitoring	*Negligible leakage from the Woronora Reservoir*	No
Water Quality of Woronora Reservoir	*Changes in the quality of water in the Woronora Reservoir are not significantly different post-mining compared to pre-mining concentrations*	✓	✓	No	Continue monitoring	*Negligible reduction in the water quality of Woronora Reservoir*	No
Waratah Rivulet Environmental Consequences	*No change to the natural drainage behaviour of Pool P. Specific indicators include: no new cracking in the stream bed of Pool P or rock bar; continual flow through/below the rock bar of Pool P such that water is ponded upstream; and continual surface water flow along the length of Pool P*	✓	×	No	Continue monitoring	*Negligible environmental consequences (that is, no diversion of flows, no change in the natural drainage behaviour of pools, minimal iron staining, and minimal gas releases) on the Waratah Rivulet between the full supply level of the Woronora Reservoir and the maingate of Longwall 23 (upstream of Pool P)*	No
	No change to the natural drainage behaviour of Pools P, Q, R, S, T, U, V and W. Specific indicators include: no new cracking in the stream bed of pools or rock bars (where relevant); continual flow over/ through/below the rock bars/terminal boulder fields of pools such that water is ponded upstream; and continual surface water flow along the length of the pools	×	✓	No	Continue monitoring		No
	Analysis of water depth data for Pool P (when mining is within 400 m of Pool P) indicates the water depth is at or above the pool's previous minimum (i.e. when mining is beyond 400 m of Pool P)	✓	×	No	Continue monitoring		No

Table 2 (Continued)
Assessment of Environmental Performance – Underground Mining Area and Surrounds

Monitoring Components	Subsidence Impact Performance Indicator(s)	Longwalls 20-22 Extraction Plan*	Longwalls 23-27 Extraction Plan#	Subsidence Impact Performance Indicator Exceeded?	Resulting Actions	Subsidence Impact Performance Measure	Subsidence Impact Performance Measure Exceeded?
WATER MANAGEMENT (Continued)							
Waratah Rivulet Environmental Consequences (Continued)	*Analysis of water depth data for Pools P, T and V (when mining is within 400 m of the pools) indicates the water depth is at or above the pool's previous minimum (i.e. when mining is beyond 400 m of the pools)*	✗	✓	No	Continue monitoring	*Negligible environmental consequences (that is, no diversion of flows, no change in the natural drainage behaviour of pools, minimal iron staining, and minimal gas releases) on the Waratah Rivulet between the full supply level of the Woronora Reservoir and the maingate of Longwall 23 (upstream of Pool P)*	No
	Analysis of water depth data for Pools Q, R and S on Waratah Rivulet indicates the water depths are above that required to maintain water over the downstream rock bar	✓	✓	No	Continue monitoring		No
	Visual inspection of the Waratah Rivulet between the full supply level of the Woronora Reservoir and Pool P does not show significant changes in the extent or nature of iron staining that isn't also occurring in the Woronora River (control site)	✗	✓	No	Continue monitoring		No
	Visual observations of gas releases in Pool P on the Waratah Rivulet indicate the gas releases have increased beyond those observed up to 17 April 2014	✓	✓	No	Continue monitoring		No
	No gas releases observed at Pools Q to W on the Waratah Rivulet	✗	✓	No	Continue monitoring		No

Table 2 (Continued)
Assessment of Environmental Performance – Underground Mining Area and Surrounds

Monitoring Components	Subsidence Impact Performance Indicator(s)	Longwalls 20-22 Extraction Plan*	Longwalls 23-27 Extraction Plan#	Subsidence Impact Performance Indicator Exceeded?	Resulting Actions	Subsidence Impact Performance Measure	Subsidence Impact Performance Measure Exceeded?
WATER MANAGEMENT (Continued)							
Eastern Tributary Environmental Consequences	*No change to the natural drainage behaviour of at least 70% of the stream reach (from Pools ETAF to ETAU). Specific indicators include: no new cracking in the stream bed of pools or rock bars (where relevant); continual flow over/through/below the rock bar of pools/terminal boulder fields such that water is ponded upstream; and continual surface water flow along the length of pools*	×	✓	No	Continue monitoring	*Negligible environmental consequences over at least 70% of the stream length (that is, no diversion of flows, no change in the natural drainage behaviour of pools, minimal iron staining, and minimal gas releases) on the Eastern Tributary between the full supply level of the Woronora Reservoir and the maingate of Longwall 26*	No
	Analysis of water depth data for Pool ETAI on the Eastern Tributary (when mining is within 400 m of the pool) indicates the water depth is at or above the pool's previous minimum (i.e. when mining is beyond 400 m of the pool)	×	✓	No	Continue monitoring		No
	No significant change to the extent or nature of iron staining over more than 30% of the Eastern Tributary between maingate 26 and full supply level	×	✓	No	Continue monitoring		No
	Gas releases observed over less than 30% of the Eastern Tributary between maingate 26 and full supply level, that is not also occurring in the Woronora River (control site)	×	✓	No	Continue monitoring		No
BIODIVERSITY MANAGEMENT							
Upland Swamps Vegetation Monitoring	*The vegetation in upland swamps is not expected to experience changes significantly different to vegetation in control swamps*	✓	✓	No	Continue monitoring	*Negligible impact on threatened species and populations*	No

Table 2 (Continued)
Assessment of Environmental Performance – Underground Mining Area and Surrounds

Monitoring Components	Subsidence Impact Performance Indicator(s)	Longwalls 20-22 Extraction Plan*	Longwalls 23-27 Extraction Plan#	Subsidence Impact Performance Indicator Exceeded?	Resulting Actions	Subsidence Impact Performance Measure	Subsidence Impact Performance Measure Exceeded?
BIODIVERSITY MANAGEMENT (Continued)							
Upland Swamps Groundwater Monitoring	*Surface cracking within upland swamps resulting from mine subsidence is not expected to result in measurable changes to swamp groundwater levels when compared to control swamps or seasonal variations in water levels experienced by upland swamps prior to mining*	✓	✓	Yes – performance indicator exceeded for Swamp 20 overlying Longwall 21 (Longwalls 20-22 upland swamps) No (Longwalls 23-27 upland swamps)	Assessment against the performance measure conducted by FloraSearch (threatened flora) and Cenwest Environmental Services (threatened fauna) in relation to Swamp 20. Continue monitoring	*Negligible impact on threatened species and populations*	No
Riparian Vegetation	*Impacts to riparian vegetation are expected to be localised and limited in extent, similar to the impacts previously experienced at Metropolitan Coal*[1]	✓	✓	Yes – performance indicator exceeded at site MRIP02 on the Waratah Rivulet and between sites MRIP09 and MRIP05 on the Eastern Tributary	Assessment against the performance measure conducted by FloraSearch (threatened flora) and Cenwest Environmental Services (threatened fauna). Continue monitoring		No
Southern Sydney Sheltered Forest on Transitional Sandstone Soils in the Sydney Basin Bioregion EEC	*Subsidence effects at the occurrences of the Southern Sydney Sheltered Forest on Transitional Sandstone Soils in the Sydney Basin Bioregion EEC situated approximately 400 m to the east of Longwalls 20-22 are expected to be negligible*	✓	×	No	Continue monitoring		No
	Subsidence effects at the occurrences of the Southern Sydney Sheltered Forest on Transitional Sandstone Soils in the Sydney Basin Bioregion EEC situated approximately 300 to 500 m to the east of Longwalls 23-27 are expected to be negligible	×	✓	No	Continue monitoring		No

Table 2 (Continued)
Assessment of Environmental Performance – Underground Mining Area and Surrounds

Monitoring Components	Subsidence Impact Performance Indicator(s)	Longwalls 20-22 Extraction Plan*	Longwalls 23-27 Extraction Plan#	Subsidence Impact Performance Indicator Exceeded?	Resulting Actions	Subsidence Impact Performance Measure	Subsidence Impact Performance Measure Exceeded?
BIODIVERSITY MANAGEMENT (Continued)							
Aquatic Biota	*The aquatic macroinvertebrate and macrophyte assemblages in streams and pools are not expected to experience long-term impacts as a result of mine subsidence*	✓	✓	No[2]	Continue monitoring	*Negligible impact on threatened species and populations*	No
Amphibian Monitoring	*The amphibian assemblage is not expected to experience changes significantly different to the amphibian assemblage at control sites*	✓	✓	No	Continue monitoring		No
LAND MANAGEMENT							
Steep Slopes and Land in General	*Steep slopes and land in general are expected to experience surface tension cracking no greater than 0.1 m wide and 25 m in length*	✓	✓	No	Continue monitoring	-	-
Cliffs and Overhangs	-	✓	✓	-	-	*Less than 3% of the total length of cliffs (and associated overhangs) within the mining area experience mining-induced rock fall*	No
HERITAGE MANAGEMENT							
Aboriginal Heritage Sites	-	✓	✓	-	-	*Less than 10% of Aboriginal heritage sites within the mining area are affected by subsidence impacts*	No
BUILT FEATURES MANAGEMENT							
Built Features	-	✓	✓	-	-	*Safe, serviceable and repairable, unless the owner and the MSB agree otherwise in writing*	No

Table 2 (Continued)
Assessment of Environmental Performance – Underground Mining Area and Surrounds

Monitoring Components	Subsidence Impact Performance Indicator(s)	Longwalls 20-22 Extraction Plan*	Longwalls 23-27 Extraction Plan#	Subsidence Impact Performance Indicator Exceeded?	Resulting Actions	Subsidence Impact Performance Measure	Subsidence Impact Performance Measure Exceeded?
BUILT FEATURES MANAGEMENT (Continued)							
Built Features (Continued)	-	✓	✓	-	-	*Negligible damage (fine or hairline cracks that do not require repair), unless the owner of the item and the appropriate heritage authority agree otherwise in writing*	No
PUBLIC SAFETY MANAGEMENT							
Public Safety	*Public safety will be ensured in the event that any hazard to the general public arising from subsidence effects becomes evident*	✓	✓	No	Continue monitoring	*Safe, serviceable and repairable, unless the owner and the MSB agree otherwise in writing*	No

* Performance indicator applicable to Longwalls 20-22 (✓) Yes; (✗) No.

\# Performance indicator applicable to Longwalls 23-27 (✓) Yes; (✗) No.

[1] This indicator is exceeded if visual inspections identify vegetation dieback greater than 50 cm from the stream.

[2] This performance indicator will be assessed after the completion of Longwall 26 (for Longwalls 20-22) and after the completion of Longwall 303 (for Longwalls 23-27), and after one year of the completion of stream remediation (for relevant pools).