

METROPOLITAN COAL LONGWALLS 301-303

EXTRACTION PLAN



ATTACHMENT 3

PROGRAM TO COLLECT BASELINE DATA FOR FUTURE EXTRACTION PLANS

Attachment 3
Program to Collect Baseline Data for Future Extraction Plans

Longwalls 301-303 (the subject of this Extraction Plan) form the first block of longwalls within the 300 longwall series. Longwalls 304 to 317 are located to the west of Longwalls 301-303. The current layout of Longwalls 304-317 is shown on Figure 1 in the Extraction Plan Main Text. The number of longwalls proposed to be included in the next Extraction Plan has not yet been determined by Metropolitan Coal.

The program proposed to be undertaken to collect baseline data for the next Extraction Plan (i.e. Longwall 304 on) is summarised in Table A3-1 and described in detail in Appendices A to F of the Longwalls 301-303 Extraction Plan.

As described in Appendices A to F, the layout for Longwalls 301-303 (i.e. 163 m panel widths [void] and 45 m pillars [solid]) will be trialled to build on the experience and dataset obtained from Longwalls 20 to 27. The outcomes of the trial will be used to inform the potential for a similar mine layout to be applied to the next Extraction Plan (i.e. Longwall 304 onwards).

Metropolitan Coal Longwalls 301-303 Extraction Plan		
Revision No. EP-R01-A		Page A3-1
Document ID: Longwalls 301-303 Extraction Plan Attachment 3		

**Table A3-1
Program to Collect Baseline Data for the Next Extraction Plan (i.e. Longwall 304 on)**

Aspect of Next Extraction Plan	Proposed Data Collection
Surface Water	<p>Metropolitan Coal will collect surface water baseline data for the next Extraction Plan (i.e. Longwall 304 on) in accordance with Section 12.1 of the Longwalls 301-303 Water Management Plan (WMP) (Appendix A of the Longwalls 301-303 Extraction Plan). In summary:</p> <ul style="list-style-type: none"> • Meteorological data for the next Extraction Plan is available from the existing pluviometers, pan evaporimeter and climate stations (described in Section 8.1 of the Longwalls 301-303 WMP). • Streams relevant to the next Extraction Plan include the Waratah Rivulet, Eastern Tributary and first and second order streams to the west of Longwalls 301-303 that flow into the Woronora Reservoir (locations shown on Figure 8 in the Extraction Plan Main Text). The baseline visual and photographic surveys of Waratah Rivulet and Eastern Tributary conducted prior to the commencement of Longwall 20 are provided in Appendices 1 and 2 of the Longwalls 301-303 WMP. The results of the baseline visual and photographic survey of first and second order streams to the west of Longwalls 301-303 that flow into the Woronora Reservoir are provided in Appendix 5 of the Longwalls 301-303 WMP. Metropolitan Coal will consider the need for additional visual inspections and photographic surveys of streams based on the longwalls proposed to be included in the next Extraction Plan. This may include some additional first or second order streams. • Based on the streams detailed in Appendices 1 to 5 of the Longwalls 301-303 WMP, it is not anticipated that any additional pool water level or water quality monitoring sites would be required for the next Extraction Plan. The exception may be the larger first and second order streams that occur to the west of the Woronora Reservoir. Visual inspection and photographic survey of these larger first and second order streams will be conducted prior to the completion of Longwall 301 to investigate whether pool water level or water quality monitoring would be required in advance of future longwalls. • Consideration of the environmental performance and management of the Longwalls 301-303 WMP will also inform the appropriate type and frequency of monitoring of water resources and watercourses relevant to the next Extraction Plan. • Surface water quality data for the Woronora Reservoir (site DW01, measurements taken from 0 to 9 m below the water surface level), Nepean Reservoir and Cataract Reservoir will continue to be sourced from WaterNSW.
Groundwater	<p>Metropolitan Coal will collect groundwater baseline data for the next Extraction Plan (i.e. Longwall 304 on) in accordance with Section 12.2 of the Longwalls 301-303 WMP (Appendix A of the Longwalls 301-303 Extraction Plan). In summary:</p> <ul style="list-style-type: none"> • Paired swamp piezometers were installed in Swamp 50 (over Longwall 304) and Swamp 71a (over Longwall 305) (locations shown on Figure 18 in the Extraction Plan Main Text) in June 2016. Metropolitan Coal is in the process of confirming the upland swamp vegetation communities present and checking the swamp boundaries of upland swamps situated to the north-west of Longwalls 301-303. The results of these inspections will inform the proposed swamp groundwater baseline data collection for the next Extraction Plan. The swamps will also be inspected to determine the appropriate locations for proposed additional swamp groundwater piezometers in consideration of the NSW Government's <i>Draft Policy Framework for Biodiversity Offsets for Upland Swamps and Associated Threatened Species</i> (May 2015) (Draft Upland Swamp Offsets Policy) and the Independent Expert Scientific Committee's (IESC's) <i>Advice to decision maker on coal mining – Further advice on impacts to swamps</i> (24 July 2015) (IESC advice).

Table A3-1 (Continued)
Program to Collect Baseline Data for the Next Extraction Plan (i.e. Longwall 304 on)

Aspect of Next Extraction Plan	Proposed Data Collection
Groundwater (Cont.)	<ul style="list-style-type: none"> • Prior to the completion of Longwall 302, Metropolitan Coal will also investigate the potential use of swamp soil moisture meters/probes to trial the monitoring of soil moisture within a swamp. The majority of upland swamps to the immediate west of Longwall 303 are also small valley side swamps. However, further in the 300 series mine plan, larger swamps occur. • A shallow groundwater transect located between the Woronora Reservoir and the ridge to the east of the reservoir (sites T1, T2, T3, T4 and T5) (over Longwalls 305 and 306) has been installed (locations shown on Figure 17 in the Extraction Plan Main Text). A stage board will be installed at the water's edge of the Woronora Reservoir in consultation with WaterNSW. Monitoring data obtained from the transect will be used to develop a performance indicator associated with leakage of water from the Woronora Reservoir for the next Extraction Plan. A performance indicator for leakage will be developed by the completion of Longwall 302. • Metropolitan Coal does not anticipate that any additional groundwater monitoring sites will be required for the next Extraction Plan, however, consideration of the environmental performance and management of the Longwalls 301-303 WMP will inform the appropriate type and frequency of groundwater monitoring relevant to the next Extraction Plan, and additional groundwater bores may be installed on the basis of the monitoring and modelling results.
Cliffs and Overhangs, Steep Slopes and Land in General	<p>Metropolitan Coal will collect baseline data in relation to cliffs and overhangs, steep slopes and land in general for the next Extraction Plan (i.e. Longwall 304 on) in accordance with Section 11 of the Longwalls 301-303 Land Management Plan (LMP) (Appendix B of the Longwalls 301-303 Extraction Plan). In summary:</p> <ul style="list-style-type: none"> • Cliffs COH11, COH12 and COH13 (locations shown on Figure 8 in the Extraction Plan Main Text) have been identified by Mine Subsidence Engineering Consulting (2008) adjacent to the Woronora Reservoir over Longwalls 307 and 308. If Cliffs COH11, COH12 and COH13 are located within 600 m of the next Extraction Plan longwall layout, the following baseline data will be obtained for these cliffs and included in the Extraction Plan: <ul style="list-style-type: none"> - photographic records of each cliff and overhang; - sketches of overhangs; and - mapping of the approximate location of the cliff/overhang face and the rear extent of the overhang/undercut. • Baseline data collection for the next Extraction Plan will also include a description of steep slopes and land in general and a description of the recorded subsidence impacts within 600 m of the next Extraction Plan longwall layout (i.e. where mining of Longwalls 301-303 has resulted in subsidence impacts overlying the next Extraction Plan longwall layout [if any] at the time of Extraction Plan preparation). • Consideration of the environmental performance and management measures of the Longwalls 301-303 LMP will also inform the appropriate type and frequency of monitoring for land features relevant to the next Extraction Plan.

Table A3-1 (Continued)
Program to Collect Baseline Data for the Next Extraction Plan (i.e. Longwall 304 on)

Aspect of Next Extraction Plan	Proposed Data Collection
Upland Swamps	<p>Metropolitan Coal will collect baseline data in relation to upland swamps for the next Extraction Plan (i.e. Longwall 304 on) in accordance with Section 12.1 of the Longwalls 301-303 Biodiversity Management Plan (BMP) (Appendix C of the Longwalls 301-303 Extraction Plan). In summary:</p> <ul style="list-style-type: none"> • Metropolitan Coal is in the process of confirming the vegetation communities present and the extent of the upland swamps situated to the north-west of Longwalls 301-303 to inform the next Extraction Plan. To date, baseline transect and quadrat vegetation surveys for the next Extraction Plan have been conducted in spring 2015 and autumn 2016 in Swamps 48, 50 and 71a overlying Longwalls 304 and 305 (locations shown on Figure 18 in the Extraction Plan Main Text) consistent with the methods used for Longwalls 20-22, Longwalls 23-27 and Longwalls 301-303 upland swamp vegetation monitoring programs. Baseline data will continue to be collected in Swamps 48, 50 and 71a upland swamp transect/quadrat monitoring sites in spring and autumn for the next Extraction Plan. • As described for groundwater above, paired swamp piezometers were installed in Swamp 50 (over Longwall 304) and Swamp 71a (over Longwall 305) (locations shown on Figure 18 in the Extraction Plan Main Text) in June 2016. Metropolitan Coal is in the process of confirming the upland swamp vegetation communities present and checking the swamp boundaries of upland swamps situated to the north-west of Longwalls 301-303. The results of these inspections will inform the proposed swamp groundwater baseline data collection for the next Extraction Plan. The swamps will also be inspected to determine the appropriate locations for proposed additional swamp groundwater piezometers in consideration of the Draft Upland Swamps Policy and IESC advice. • The majority of upland swamps to the immediate west of Longwall 303 are also small valley side swamps. However, further in the 300 series mine plan, larger swamps occur. Prior to the completion of Longwall 302, Metropolitan Coal will, in consultation with relevant specialists: <ul style="list-style-type: none"> - Investigate swamp soil moisture meters/probes (to trial soil moisture monitoring in a swamp). - Obtain information on swamp types (e.g. headwater, valley side or in-valley). - Conduct a review of the current monitoring methods and investigate other potential swamp monitoring methods (including vegetation monitoring to measure physiological impacts). - Determine the swamp characterisation studies to be conducted.
Riparian Vegetation	<ul style="list-style-type: none"> • As described in Section 12.2 of the Longwalls 301-303 BMP (Appendix C of the Longwalls 301-303 Extraction Plan), no significant streams are located to the immediate west of Longwalls 301-303 with the exception of the Eastern Tributary. As such, no riparian vegetation monitoring will be required in this area. • The baseline riparian vegetation monitoring data that has already been obtained for the Eastern Tributary (as described in Section 7 of the Longwalls 301-303 BMP; locations shown on Figure 20 in the Extraction Plan Main Text) will be applicable to the next Extraction Plan.

Table A3-1 (Continued)
Program to Collect Baseline Data for the Next Extraction Plan (i.e. Longwall 304 on)

Aspect of Next Extraction Plan	Proposed Data Collection
Aquatic Biota and their Habitats	<ul style="list-style-type: none"> As described in Section 12.4 of the Longwalls 301-303 BMP (Appendix C of the Longwalls 301-303 Extraction Plan), no significant streams are located to the immediate west of Longwalls 301-303 with the exception of the Eastern Tributary. As such, no baseline data for aquatic biota or aquatic habitats (e.g. pool water levels and water quality) will be required to be collected in this area. The baseline aquatic macroinvertebrate and macrophyte monitoring data that has already been obtained for the Eastern Tributary (as described in Section 7 of the Longwalls 301-303 BMP; locations shown on Figure 21 in the Extraction Plan Main Text) will be applicable to the next Extraction Plan.
Terrestrial Fauna and their Habitats	<p>Metropolitan Coal will collect baseline data for terrestrial fauna and their habitats for the next Extraction Plan (i.e. Longwall 304 on) in accordance with Section 12.5 of the Longwalls 301-303 BMP (Appendix C of the Longwalls 301-303 Extraction Plan). In summary:</p> <ul style="list-style-type: none"> A total of 28 amphibian survey sites have been established for Longwalls 20-22, Longwalls 23-27 and Longwalls 301-303, including 17 test sites overlying or adjacent to longwalls to monitor amphibian species (locations shown on Figure 22 in the Extraction Plan Main Text), with a focus on the habitats of the Giant Burrowing Frog and Red-crowned Toadlet. No additional control sites are required to ensure a continuing robust experimental design with the addition of test sites for Longwalls 301-303. The number of additional test sites and control sites required to maintain a robust experimental design enabling assessment of whether or not a significant impact has occurred for the next Extraction Plan mining domain will be determined prior to the commencement of Longwall 301. Baseline data will be collected for terrestrial fauna habitats (i.e. upland swamps, riparian vegetation, slopes and ridgetops, and aquatic habitats), as described in Sections 12.1 to 12.4 of the Longwalls 301-303 BMP (Appendix C of the Longwalls 301-303 Extraction Plan).
Aboriginal Heritage	<p>Metropolitan Coal will collect baseline data for Aboriginal heritage sites for the next Extraction Plan (i.e. Longwall 304 on) in accordance with Section 13 of the Longwalls 301-303 Heritage Management Plan (HMP) (Appendix D of the Longwalls 301-303 Extraction Plan). The collection of baseline data will include photographic records, detailed scaled plans including physical characteristics and features, and detailed information regarding the dimensions, composition and features. In summary:</p> <ul style="list-style-type: none"> As described in Section 7 of the Longwalls 301-303 HMP, detailed baseline recording has been completed for a number of sites located to the west of Longwall 303, including sites FRC 70, FRC 71, FRC 76, FRC 77, FRC 78, FRC 85, FRC 86, FRC 87, FRC 90, FRC 91, FRC 93, FRC 309, FRC 310 and FRC 325 (locations shown on Figure 10 in the Extraction Plan Main Text). The baseline record for these sites is provided in Appendix 1 of the Longwalls 301-303 HMP. Prior to the commencement of secondary extraction associated with the next Extraction Plan (i.e. Longwall 304 onwards), baseline data will be obtained for Aboriginal heritage sites located within the relevant 35° angle of draw and/or predicted 20 mm subsidence contour of the Extraction Plan longwall layout. In addition to the baseline data collection, consideration of the environmental performance and management measures in accordance with the review(s) conducted as part of the Longwalls 301-303 HMP will inform the appropriate type and frequency of monitoring of Aboriginal heritage sites relevant to the next Extraction Plan.

Table A3-1 (Continued)
Program to Collect Baseline Data for the Next Extraction Plan (i.e. Longwall 304 on)

Aspect of Next Extraction Plan	Proposed Data Collection
Built Features	<ul style="list-style-type: none"> • Prior to the commencement of secondary extraction associated with the next Extraction Plan (i.e. Longwall 304 onwards), baseline data (e.g. pre-mining inspections) will be obtained for built features located within the relevant 35° angle of draw and/or predicted 20 mm subsidence contour of the Extraction Plan longwall layout. • Metropolitan Coal will also collect baseline data relevant to built features for the next Extraction Plan (i.e. Longwall 304 on) in accordance with each component plan of the Longwalls 301-303 Built Features Management Plan (BFMP) (Appendix E of the Longwalls 301-303 Extraction Plan). In general the baseline data that has been collected for Longwalls 301-303 will also be relevant to Longwall 304 onwards as longwall mining progressively moves further away from many of the built features. • In addition to baseline data collection, consideration of the environmental performance and management measures in accordance with the review(s) conducted as part of the Longwalls 301-303 BFMP will inform the appropriate type and frequency of monitoring of the assets relevant to the next Extraction Plan.