WAMBO COAL PTY LIMITED

SOUTH BATES (WHYBROW SEAM) UNDERGROUND MINE

EXTRACTION PLAN LONGWALLS 11 TO 13

REPORT 4

FLORA ASSESSMENT REVIEW

Peabody ENERGY

FLORASEARCH

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Mr. Steven Peart
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Dear Steven,

SOUTH BATES (WHYBROW SEAM) UNDERGROUND MINE EXTRACTION PLAN - REVISED ASSESSMENT OF IMPACT ON FLORA

FloraSearch has been requested by Wambo Coal Pty Ltd (WCPL) to reassess the potential impact on flora of Longwalls 11 to 13 at the South Bates (Whybrow Seam) Underground Mine. Longwalls 11 to 13 at the South Bates (Whybrow Seam) Underground Mine were previously assessed and approved as part of the Wambo Development Project.

This revised assessment is being carried out to satisfy Condition 22D, Schedule 4 of the Development Consent (DA 305-7-2003) for the Wambo Development Project, which requires the Extraction Plan to include *"an assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this consent."*

This revised assessment considers new survey information obtained for the recently completed South Bates (Wambo Seam) Underground Mine Modification Flora Assessment (FloraSearch 2015). Proposed Longwalls 14 to 16 of the South Bates (Wambo Seam) Underground Mine Modification underlie Longwalls 11 to 13 and have a somewhat larger surface impact zone. The Study Area for the South Bates (Wambo Seam) Underground Mine Modification Flora Assessment (FloraSearch 2015) encompasses the predicted zone of surface influence from subsidence related to Longwalls 11 to 13 (the Extraction Plan Application Area) (Figure 1).
The aims of this assessment are to:

- Summarise the relevant findings of the South Bates (Wambo Seam) Underground Mine Modification Flora Assessment (FloraSearch 2015), which provides updated vegetation community mapping and additional flora survey data for the Extraction Plan Application Area.
- Summarise the likely impacts of subsidence on flora resulting from the extraction of Longwalls 11 to 13 (MSEC 2015) and assess its significance.
- Determine whether the extraction of Longwalls 11 to 13 meets the biodiversity performance measures in the Development Consent (DA 305-7-2003).

BACKGROUND

Since the Wambo Development Project Environmental Impact Statement (WCPL 2003) (EIS), the classification of Central Hunter Valley vegetation communities has been revised three times (Peake 2006, Somerville 2009, OEH 2015a) and the number of threatened ecological communities (TECs) listed in the region has increased. As a result of these changes, the vegetation community classification and mapping of the Extraction Plan Application Area in the 2003 EIS was updated in FloraSearch (2015) (Figure 2). By contrast with the 2003 EIS in which no TECs were identified on the Extraction Plan Application Area, one TEC listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and two TECs listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) were identified in June 2015, as follows:

- *Central Hunter Valley Eucalypt Forest and Woodland Critically Endangered Ecological Community* (CEEC) (EPBC Act). This community includes Community 3 on Figure 2; *Narrow-leaved Ironbark grassy woodland*.
- *Central Hunter Grey Box – Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions Endangered Ecological Community* (EEC) (TSC Act). This community is equivalent to Community 3 on Figure 2; *Narrow-leaved Ironbark grassy woodland*. Since Community 3 on the Extraction Plan Application Area represents both the Commonwealth listed *Central Hunter Valley Eucalypt Forest and Woodland CEEC* and the NSW listed *Central Hunter Grey Box – Ironbark Woodland EEC*, the community is referred to hereafter as the *Central Hunter Grey Box – Ironbark Woodland EEC/CEEC*.
- *Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion Vulnerable Ecological Community* (VEC) (TSC Act). This community is equivalent to Community 5 on Figure 2; *Slaty Box shrubby woodland*.

One threatened flora species listed in the schedules of the TSC Act, the Small-flower Grevillea, *Grevillea parviflora*, was found in targeted searches surrounding the area, but potential habitat for this species is absent within the Extraction Plan Application Area (FloraSearch 2015). No flora species listed as threatened under the EPBC Act were identified. The Illawarra Greenhood (*Pterostylis gibbosa*) and the White-flowered Wax Plant (*Cynanchum elegans*) listed as endangered under the TSC Act and the EPBC Act were considered to have the potential to occur in the Extraction Plan Application Area but were not identified by the surveys (FloraSearch 2015). No threatened populations or Critical Habitat listed under the TSC Act or the EPBC Act were identified within the Extraction Plan Application Area (FloraSearch 2015).

POTENTIAL IMPACTS ON FLORA

Surface Activities

Direct disturbance in the Extraction Plan Application Area would be limited to potential impacts associated with vehicle movements, subsidence monitoring and subsidence remediation works, if required. Vehicular movements (outside the open cut) would be limited to those required for monitoring, subsidence remediation works and general site maintenance activities.

Subsidence Impacts

In regard to potential environmental consequences on flora, Section 4.8.1 of the 2003 EIS stated (WCPL 2003):

> *Potential impacts of subsidence of relevance to flora include surface cracking, erosion and ponding of surface water in areas where isolated depressions form. Disturbance to the land surface and associated vegetation as a result of surface cracking, erosion and isolated ponding is however predicted to be minimal. Any such impacts are considered to be capable of repair through the implementation of appropriate mitigation measures.*
>
> *Increased areas of ponding are expected to occur along and adjacent to the lower reaches of North Wambo Creek and Wambo Creek (Figure 4-2). Some of these areas are likely to become wetlands over time. As a result, a change in flora species composition and structure would be expected to occur as the creation of wetland habitat provides greater opportunities for wetland species.*
>
> *There would be no subsidence of the adjoining Wollemi National Park escarpment or Wollombi Brook (Appendix O).*

The revised subsidence assessment for Longwalls 11 to 13 (MSEC 2015) predicts the following surface impacts relevant to flora:

- Fracturing of exposed bedrock may occur in Stony Creek with diverted surface water re-emerging further downstream. Dislodgement of boulders may occur in steeper sections of the creek.
- Ponding is predicted to be confined to the area of the North Wambo Creek Diversion (where native vegetation is absent). Extensive fracturing of surface soils is also expected in this area where depths of cover are low.
- Fracturing of soils would diminish as depths of cover increase with distance to the south from the North Wambo Creek Diversion.
- Rock falls and minor cliff collapse affecting less than 5 percent of the length of cliffs or 3 percent of their face area are predicted on the spur north of Stony Creek. Soil cracking is expected on steep slopes associated with this spur.

The above predicted impacts are similar to those actually experienced for the nearby North Wambo Underground Mine. Surface cracking was relatively frequent on low flat areas supporting the *Central Hunter Grey Box – Ironbark Woodland EEC/CEEC* (Plates 1 to 4). Inspection of the vegetation showed that its condition on undermined areas was not noticeably different from that on adjacent similar areas that had not been subject to undermining. Tree health in the EEC/CEEC was good with no signs of dieback. The naturally sparse shrub and ground layers were also in good health (Plates 5 to 7). Similarly, areas of *Melaleuca decora* Low Forest showed no signs of decline (Plate 8). The latter community might be expected to be susceptible to water loss through soil cracking, since it occurs on sites that may remain wet for long periods after heavy rain.

In addition, no scientific evidence of adverse surface effects on vegetation from minor soil cracking induced by subsidence is known from underground mining anywhere in Australia. By contrast, ponding is known to cause the death of native vegetation by drowning. However, no ponding is predicted to occur in areas of native vegetation on the Extraction Plan Application Area (MSEC 2015).

In the south of the Extraction Plan Application Area, there is potential for valley related movements within the gorge of Stony Creek and cracking of shallow soils or bedrock underlying the creek (MSEC 2015). Bedrock cracking may direct water flows in the creek to lower strata within the sedimentary rock. Although it is likely that diverted flows would reappear in the creek downstream, sections of the creek below any cracked area would receive less surface flows and this may impact on riparian vegetation within and beside the creek. WCPL has undertaken to repair any such bedrock cracking. Accordingly, any adverse impacts would be short term in nature.

In conclusion, it is considered unlikely that vegetation on the Extraction Plan Application Area would be adversely affected by soil cracking or surface ponding due to mine subsidence. Some minor effects to riparian vegetation may occur along Stony Creek.

Plate 1. Typical soil cracking

Plate 2. Typical soil cracking

Plate 3. Typical soil cracking

Plate 4. Typical soil cracking

Plate 5. Undermined Central Hunter Grey Box – Ironbark Woodland EEC/CEEC

Plate 6. Undermined Central Hunter Grey Box – Ironbark Woodland EEC/CEEC

Plate 7. Undermined Central Hunter Grey Box – Ironbark Woodland EEC/CEEC

Plate 8. Undermined *Melaleuca decora* low forest

ASSESSMENT OF IMPACTS ON FLORA

The likelihood of the Longwalls 11 to 13 significantly affecting threatened flora species, populations or ecological communities or their habitats listed under the EPBC Act and/or the TSC Act is assessed here in accordance with the former Part 3A of the NSW *Environmental Planning and Assessment Act, 1979* and the relevant *Guidelines for Threatened Species Assessment* (DEC and DPI, 2005).

The following questions are considered in order to determine the likelihood of a significant impact (DEC and DPI, 2005):

1. How is the proposal likely to affect the lifecycle of a threatened species and/or population?

2. How is the proposal likely to affect the habitat of a threatened species, population or ecological community?

3. Does the proposal affect any threatened species or populations that are at the limit of its known distribution?

4. How is the proposal likely to affect current disturbance regimes?

5. How is the proposal likely to affect habitat connectivity?

6. How is the proposal likely to affect critical habitat?

The assessment in this section is confined to the limit of potential subsidence impacts associated with the Extraction Plan for Longwalls 11 to 13 (the Extraction Plan Application Area).

THREATENED FLORA SPECIES

Only two threatened flora species, the Illawarra Greenhood (*Pterostylis gibbosa*) and the White-flowered Wax Plant (*Cynanchum elegans*), would, if present, have any potential to be adversely affected by Longwalls 11 to 13 (FloraSearch 2015). These two species are subjected to an impact assessment below.

Assessment of Impact

1. How is the proposal likely to affect the lifecycle of a threatened species or population?

Soil cracking as a result of subsidence is most likely to occur in the potential habitat of the Illawarra Greenhood in the lower lying terrain of the north and east of the Extraction Plan Application Area. It is possible that the underground tubers of individual plants may be exposed by soil cracking and subsequently desiccate, resulting in plant death. However, this is an unlikely scenario, since any potential surface cracks would be widely spaced and unlikely to impact on more than a very small part of the population, if it were present. Nor is there any plausible scenario in which subsidence could exert a significant adverse effect on Illawarra Greenhood pollinator populations.

Valley related movements and potential shallow soil or bedrock cracking in Stony Creek is considered unlikely to have a significant impact on White-flowered Wax Plant, if it were to occur. Stony Creek is an intermittent watercourse that only flows for relatively short periods after rain. Although these flows may be important for wetting the riparian zone, the riparian zone is very limited in the parts of the gorge where dry rainforest occurs. In general, the rainforest is on the footslopes beside the creek rather than in the riparian zone, so that impacts of reduced water flows in Stony Creek on the White-flowered Wax Plant would be minimal.

It is concluded that Longwalls 11 to 13 are unlikely to initiate or exacerbate any threatening processes that would significantly reduce the long term viability of populations of the Illawarra Greenhood or the White-flowered Wax Plant, if they were present.

2. How is the proposal likely to affect the habitat of a threatened species, population or ecological community?

Direct disturbance associated with Longwalls 11 to 13 would be limited to potential impacts associated with vehicle movements, subsidence monitoring and subsidence remediation works, if required. Should any minor surface disturbance be required, for monitoring and/or subsidence remediation activities for example, it would be undertaken in already disturbed areas, such as beside existing access tracks or in derived grassland. There would be no clearing of native vegetation associated with Longwalls 11 to 13.

In addition, subsidence impacts are unlikely to adversely affect surface habitats as demonstrated by the continued health of native vegetation on previously undermined areas on WCPL land at similar depths of cover.

It is concluded that significant adverse impacts on threatened flora habitats of the Illawarra Greenhood or the White-flowered Wax Plant are highly unlikely.

3. Does the proposal affect any threatened species or populations that are at the limit of its known distribution?

If the Illawarra Greenhood were to occur on the Extraction Plan Application Area, it would be at its known north western distributional limit; the nearest known population being at Milbrodale approximately 12 km south of the Extraction Plan Application Area (BioNet 2015). However, if the White-flowered Wax Plant were to occur, it would be well within its known distributional limits from the Illawarra region to the Queensland border and west to the Upper Hunter Valley and Liverpool Range (BioNet 2015). However, neither species has been found on the Extraction Plan Application Area or surrounds despite numerous surveys.

4. How is the proposal likely to affect current disturbance regimes?

Much of the Extraction Plan Application Area is set aside as a remnant woodland enhancement program area and grazing is also excluded from the rest. The proposal is not expected to influence the frequency or severity of wildfires. The presence of WCPL employees increases the likelihood of early detection and suppression of fires.

5. How is the proposal likely to affect habitat connectivity?

The proposal would not result in any clearance of native vegetation and therefore would not reduce habitat connectivity for the Illawarra Greenhood or White-flowered Wax Plant.

6. How is the proposal likely to affect critical habitat?

No Critical Habitat for either the Illawarra Greenhood or White-flowered Wax Plant has been declared under the TSC Act (OEH 2015b) or the EPBC Act (DotE 2015) on the Extraction Plan Application Area or surrounds.

Conclusion

It is concluded that the Longwalls 11 to 13 are unlikely to significantly impact on the Illawarra Greenhood or White-flowered Wax Plant, if they were to occur on the Extraction Plan Application Area.

ENDANGERED POPULATIONS

Two Endangered Populations (EPs) are considered to have potential to occur on the Extraction Plan Application Area (FloraSearch 2015);

- *Acacia pendula* population in the Hunter Catchment; and
- *Cymbidium canaliculatum* population in the Hunter Catchment.

Neither was detected by the flora surveys. Nevertheless, it remains possible that both species exist in small numbers on the Extraction Plan Application Area. Accordingly the potential impact of the Longwalls 11 to 13 on them, should they occur, is assessed below.

Assessment of Impact

1. How is the proposal likely to affect the lifecycle of a threatened species or population?

If they are present, neither *A. pendula* nor *C. canaliculatum* in the Extraction Plan Application Area would be threatened by vegetation clearance associated with Longwalls 11 to 13.

A relatively large occurrence of the *Acacia pendula in the Hunter Catchment EP* occurs on WCPL owned land to the east of the Extraction Plan Application Area. This occurrence has been undermined by Longwall 4 at the approved North Wambo Underground Mine with no obvious detrimental effects on *A. pendula* (RPS in WCPL 2012). Therefore, although there is potential for minor root damage caused by soil cracking, subsidence impacts are not expected to cause the deaths of any *A. pendula* plants.

The Tiger Orchid, *C. canaliculatum*, grows as an epiphyte in tree hollows of old growth eucalypts, angophoras and large acacias. It would only be impacted by subsidence if it caused trees to fall or tree trunks to split. There is no evidence that subsidence causes such effects on old growth trees. The largest impact is likely to be some damage to minor roots due to soil cracking, which is not known to result in tree fall, trunk splitting or tree death. The available evidence suggests that tree health is not significantly affected by minor soil cracking.

It is concluded that the Longwalls 11 to 13 are unlikely to initiate or exacerbate any threatening processes that would reduce the long term viability of the parts of the *Acacia pendula in the Hunter Catchment EP* or the *Cymbidium canaliculatum population in the Hunter Catchment EP* that may occur on the Extraction Plan Application Area.

2. How is the proposal likely to affect the habitat of a threatened species, population or ecological community?

Direct disturbance in the associated with Longwalls 11 to 13 would be limited to potential impacts associated with vehicle movements, subsidence monitoring and subsidence remediation works, if required. Should any minor surface disturbance be required, for monitoring and/or subsidence remediation activities for example, it would be undertaken on already disturbed areas, such as beside existing access tracks or in derived grassland. There would be no clearing of native vegetation associated with Longwalls 11 to 13, including *A. pendula* or potential host trees of *C. canaliculatum*. In addition, subsidence impacts are unlikely to adversely affect surface trees and shrubs as demonstrated by the continued health of native trees and shrubs on nearby undermined areas at similar depths of cover.

There are not expected to be any significant adverse impacts on the habitats of *A. pendula* or *C. canaliculatum*.

3. Does the proposal affect any threatened species or populations that are at the limit of its known distribution?

If *A. pendula* were to occur on the Extraction Plan Application Area it would not be at the known limits of the species distribution (BioNet 2015), which are near Branxton in the east, near Broke in the south, near Bylong in the west and near Scone in the north.

If *C. canaliculatum* were to occur on the Extraction Plan Application Area it would not be at the known limits of the species distribution (BioNet 2015), which are near Maitland in the east, near Cessnock in the south, near Bylong in the west and near Murrurundi in the north.

4. How is the proposal likely to affect current disturbance regimes?

Much of the Extraction Plan Application Area is set aside as a remnant woodland enhancement program area and grazing is also excluded from the rest. The proposal is not expected to influence the frequency or severity of wildfires. The presence of WCPL employees increases the likelihood of early detection and suppression of fires.

5. How is the proposal likely to affect habitat connectivity?

The proposal would not result in any clearance of native vegetation and therefore would not reduce habitat connectivity for *A. pendula* or *C. canaliculatum*.

6. How is the proposal likely to affect critical habitat?

No Critical Habitat for *A. pendula* or *C. canaliculatum* has been declared under the TSC Act (OEH 2015b) or the EPBC Act (DotE 2015) on the Extraction Plan Application Area or surrounds.

Conclusion

It is concluded that the Longwalls 11 to 13 are unlikely to significantly impact on the *Acacia pendula in the Hunter Catchment EP* or the *Cymbidium canaliculatum population in the Hunter Catchment EP*, if they were to occur on the Extraction Plan Application Area.

THREATENED ECOLOGICAL COMMUNITIES

Three Threatened Ecological Communities (TECs) are considered to occur on the Extraction Plan Application Area:

1. *Central Hunter Valley Eucalypt Forest and Woodland CEEC* (EPBC Act).

2. *Central Hunter Grey Box – Ironbark Woodland in the NSW North Coast and Sydney Basin Bioregions EEC* (TSC Act).

3. *Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion VEC* (TSC Act).

The TSC Act listed *Central Hunter Grey Box – Ironbark Woodland EEC* is part of the EPBC Act listed *Central Hunter Valley Eucalypt Forest and Woodland CEEC* and is collectively referred to as *Central Hunter Grey Box – Ironbark Woodland EEC/CEEC.* Both encompass Community 3 on the Extraction Plan Application Area, *Narrow-leaved Ironbark Grassy Woodland* and its variant Community 3a, *Narrow-leaved Ironbark – Coast Myall Shrubby Woodland* (Figure 2).

The TSC Act listed *Hunter Valley Footslopes Slaty Gum Woodland* VEC encompasses Community 5 on the Extraction Plan Application Area, *Slaty Box Shrubby Woodland* and its variants Community 5a,

Slaty Box Shrubby Woodland – disturbed and Community 5b, *Slaty Box – Coast Myall Shrubby Woodland* (Figure 2).

The potential impact of Longwalls 11 to 13 on these communities is assessed below.

Assessment of Impact

1. How is the proposal likely to affect the lifecycle of a threatened species and/or population?

Not applicable.

2. How is the proposal likely to affect the habitat of a threatened species, population or ecological community?

Direct disturbance associated with Longwalls 11 to 13 would be limited to potential impacts associated with vehicle movements, subsidence monitoring and subsidence remediation works, if required.

Should any minor surface disturbance be required, for monitoring and/or subsidence remediation activities for example, it would be undertaken on already disturbed areas, such as beside existing access tracks or in derived grassland. There would be no clearing of native vegetation associated with Longwalls 11 to 13, including the *Central Hunter Grey Box – Ironbark Woodland EEC/CEEC* and *Hunter Valley Footslopes Slaty Gum Woodland VEC*.

In addition, subsidence impacts are unlikely to adversely affect surface trees and shrubs as demonstrated by the continued health of native trees and shrubs on nearby undermined areas at similar depths of cover.

There are not expected to be any significant adverse impacts *Central Hunter Grey Box – Ironbark Woodland EEC/CEEC* or *Hunter Valley Footslopes Slaty Gum Woodland VEC*.

3. Does the proposal affect any threatened species or populations that are at the limit of its known distribution?

The *Central Hunter Grey Box – Ironbark Woodland EEC/CEEC* and *Hunter Valley Footslopes Slaty Gum Woodland VEC* occurrences on the Extraction Plan Application Area are not at the known limits of their distributions (BioNet 2015, Peake 2006).

4. How is the proposal likely to affect current disturbance regimes?

Much of the Extraction Plan Application Area is set aside as a remnant woodland enhancement program area and grazing is also excluded from the rest. The proposal is not expected to influence the frequency or severity of wildfires. The presence of WCPL employees increases the likelihood of early detection and suppression of fires.

5. How is the proposal likely to affect habitat connectivity?

The proposal would not result in any clearance of native vegetation and therefore would not reduce habitat connectivity for *Central Hunter Grey Box – Ironbark Woodland EEC/CEEC* and *Hunter Valley Footslopes Slaty Gum Woodland VEC*.

6. How is the proposal likely to affect critical habitat?

No Critical Habitat for *Central Hunter Grey Box – Ironbark Woodland EEC/CEEC* and *Hunter Valley Footslopes Slaty Gum Woodland VEC* has been declared under the TSC Act (OEH 2015b) or the EPBC Act (DotE 2015) on the Extraction Plan Application Area or surrounds.

Conclusion

It is concluded that Longwalls 11 to 13 are unlikely to significantly impact on the *Central Hunter Grey Box – Ironbark Woodland EEC/CEEC* and *Hunter Valley Footslopes Slaty Gum Woodland VEC*.

OVERALL CONCLUSION OF THE ASESSMENT

It is concluded from the above assessments that the Longwalls 11 to 13 would have no significant impact on threatened flora species, populations, ecological communities or critical habitat in consideration of recent, relevant information.

DEVELOPMENT CONSENT – BIODIVERSITY PERFORMANCE MEASURES

The Development Consent (DA 305-7-2003) for the Wambo Development Project (as modified) specifies performance measures for the impacts of subsidence on the biodiversity features in Table 1. The expected impacts in Table 1 relate to threatened flora.

It is concluded that the Longwalls 11 to 13 meet the performance criteria set out in the Development Consent.

Table 1. South Bates (Whybrow Seam) Underground Mine - Expected impacts of subsidence on threatened flora.

Natural Feature	Performance Measure	Expected Impact	Justification
Wollemi National Park	Negligible subsidence impacts. Negligible environmental consequences.	Nil	The MSEC (2015) subsidence assessment indicates no adverse impacts are expected on Wollemi National Park.
Warkworth Sands Woodland Community	Minor cracking and ponding of the land surface or other impact. Negligible environmental consequences.	Nil	This community does not occur within the Extraction Plan Application Area.
White Box, Yellow Box, Blakely's Red Gum Woodland / Grassy White Box Woodland Community	Minor cracking and ponding of the land surface or other impact. Negligible environmental consequences.	Nil	This community does not occur within the Extraction Plan Application Area.
Other threatened species, populations or communities	Minor cracking and ponding of the land surface or other impact. Negligible environmental consequences.	Negligible	Based on the best available knowledge, the above assessment indicates the impacts of subsidence on three listed TECs, that occur on the Extraction Plan Application Area, would be negligible.

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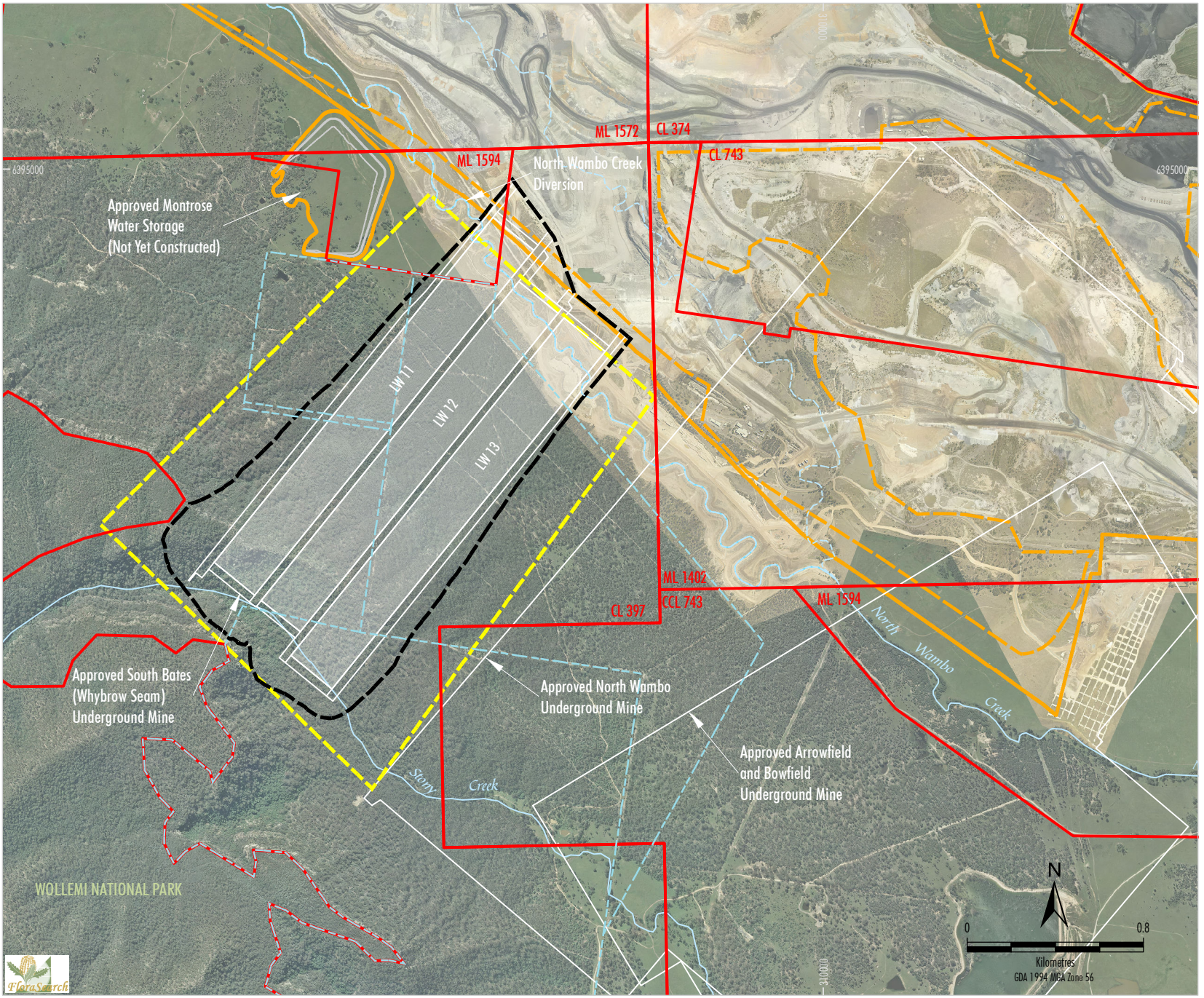
Signed:

Colin C Bower PhD
Principal



LEGEND

- Mining and Coal Lease Boundary
- Existing/Approved Surface Development Area
- Approved Open Cut Limit
- Approved Underground Development
- Remnant Woodland Enhancement Program (RWEP) Area
- Extraction Plan Application Area
- South Bates (Wambo Seam) Modification Study Area

Source: Department of Lands (July 2009); WCPL (2015); WCPL Orthophoto (Apr-Oct 2013) and RPS (2015)

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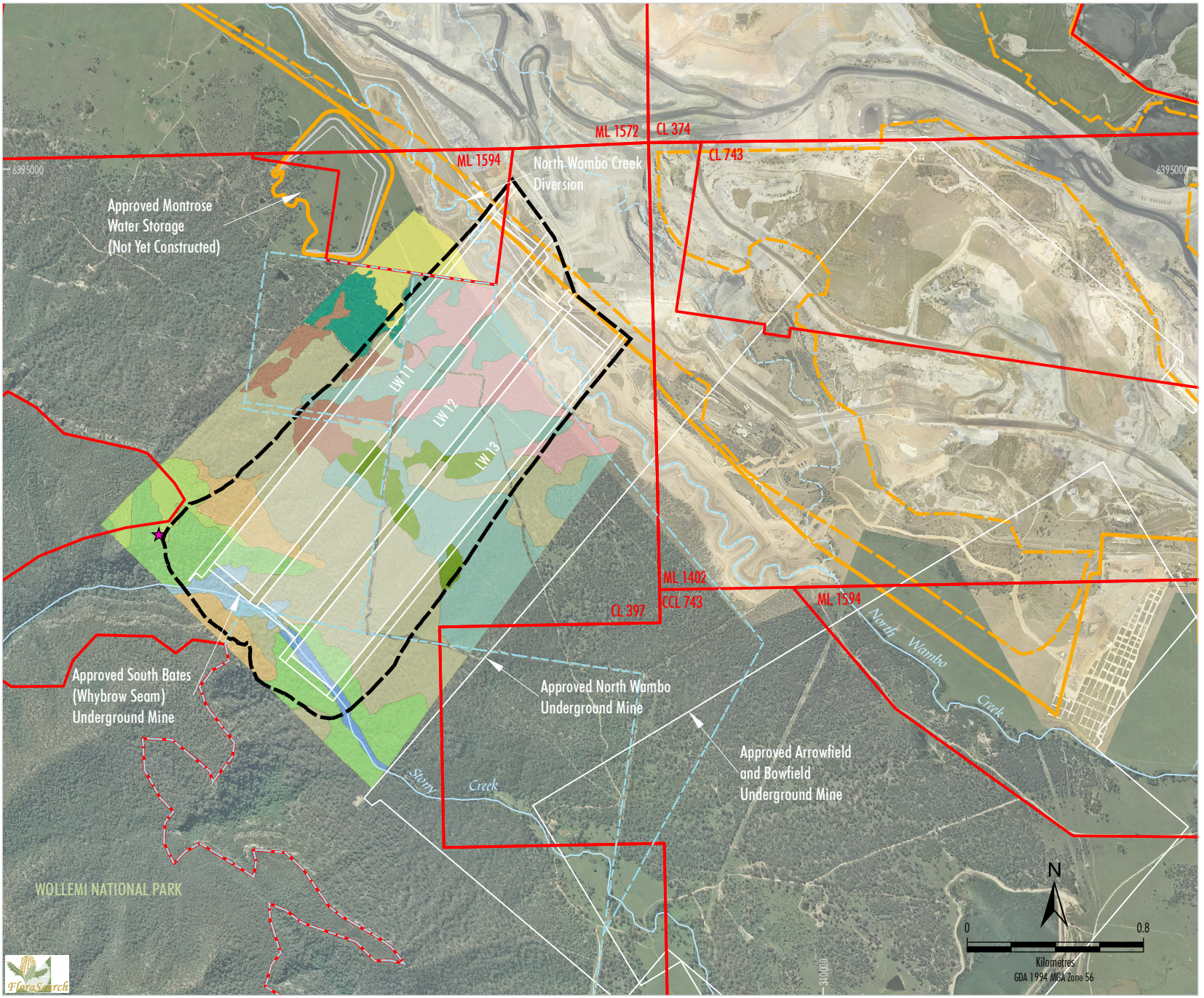
Aerial Photograph of Longwalls 11 to 13

Figure 1

WAM-09-15_EP Sth Bates_Whybrow_Seam_TRF_201B



LEGEND

- Mining and Coal Lease Boundary
- Existing/Approved Surface Development Area
- Approved Open Cut Limit
- Approved Underground Development
- Remnant Woodland Enhancement Program (RWEP) Area
- Extraction Plan Application Area

Vegetation Communities

- 1 White Cedar - Rusty Fig Dry Rainforest
- 2 Spotted Gum Sheltered Forest
- 2a White Mahogany - Rough-barked Apple Riparian Forest
- 3 Narrow-leaved Ironbark Grassy Woodland
- 3a Narrow-leaved Ironbark - Coast Myall Shrubby Woodland
- 4 Melaleuca decora Low Forest
- 5 Slaty Box Shrubby Woodland
- 5a Slaty Box Shrubby Woodland - disturbed
- 5b Slaty Box - Coast Myall Shrubby Woodland
- 6 Narrow-leaved Stringbark - Large-fruited Grey Gum Shrubby Open Forest
- 7 Coast Myall Shrubland
- 8 Derived Grassland

Threatened Flora

- ★ *Grevillea parviflora* subsp. *parviflora*

Source: Department of Lands (July 2009); WCPL (2015); WCPL Orthophoto (Apr-Oct 2013), RPS (2015) and FloraSearch (2015)

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Vegetation Communities in the Vicinity of Longwalls 11 to 13

Figure 2

WAM-09-15_EP Sth Bates_Whybrow_Seam_TRF_202B