

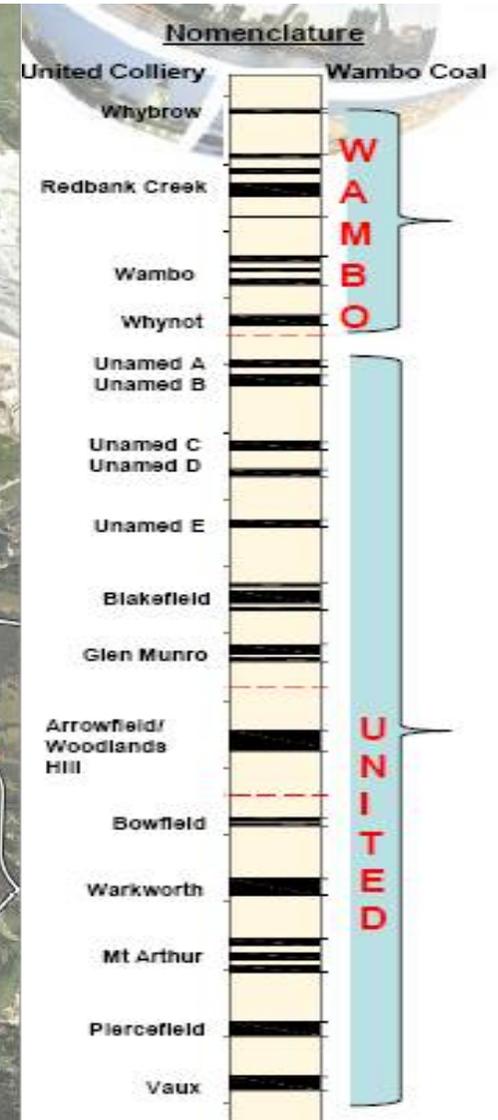
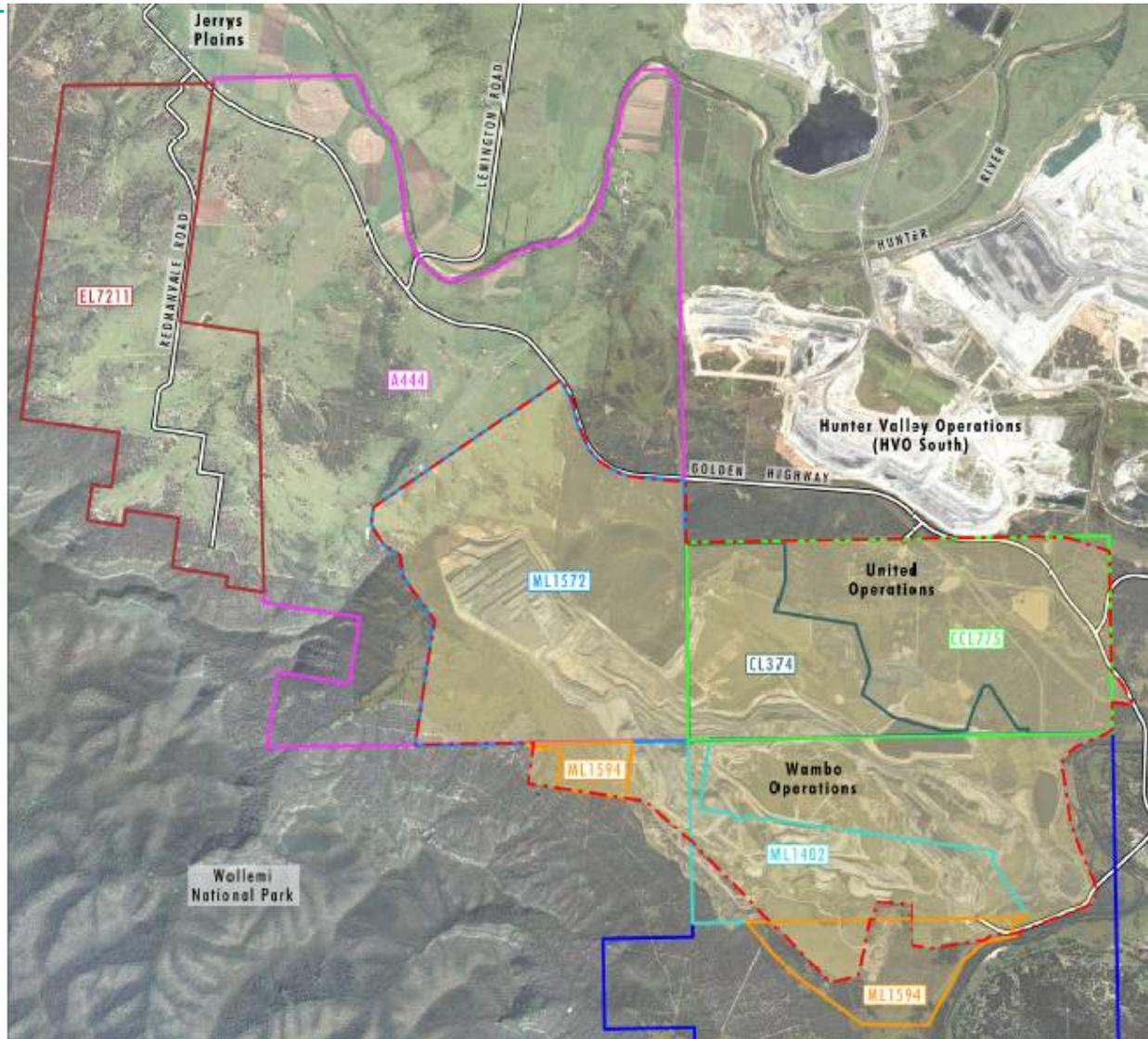


# IPC Project Briefing No. 2

## United Wambo Open Cut Coal Mine Project

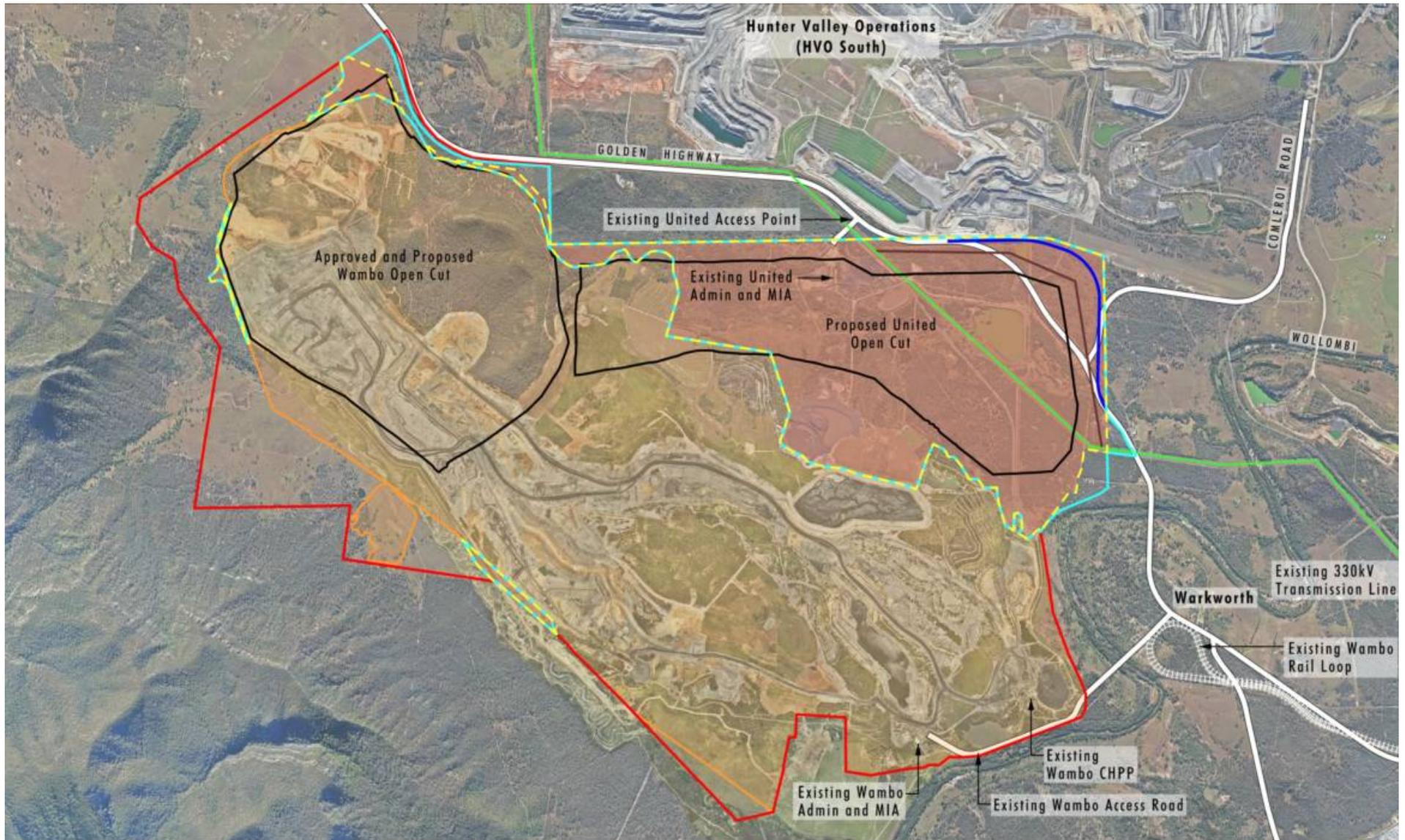
- 
- Joint Venture and Project Overview
  - Response to Commission Review Report
    - Noise, vibration and transition to Joint Venture
    - Air Quality and Blasting
    - Biodiversity
    - Rehabilitation
    - Final Landform
    - Water Resources
    - Visual Mitigation
  - VPA with Singleton Council
  - Conditions of Consent
  - Matters from the Meeting 6 December

- 
- 50:50 production Joint Venture between United & Wambo – 25 Nov 2014
    - Glencore manager of JV
  - Joint development of lease areas owned by Wambo and United
    - Excludes Wambo UG operations to the south of the JV tenement area
    - Maximises resource recovery by removing constraints from surface boundaries & stratified leases
  - Utilises spare capacity in Wambo owned CHPP & train loading facilities
    - Wambo remain owner and manager of CHPP, train loading and other Complex site facilities – JV access via toll wash arrangements



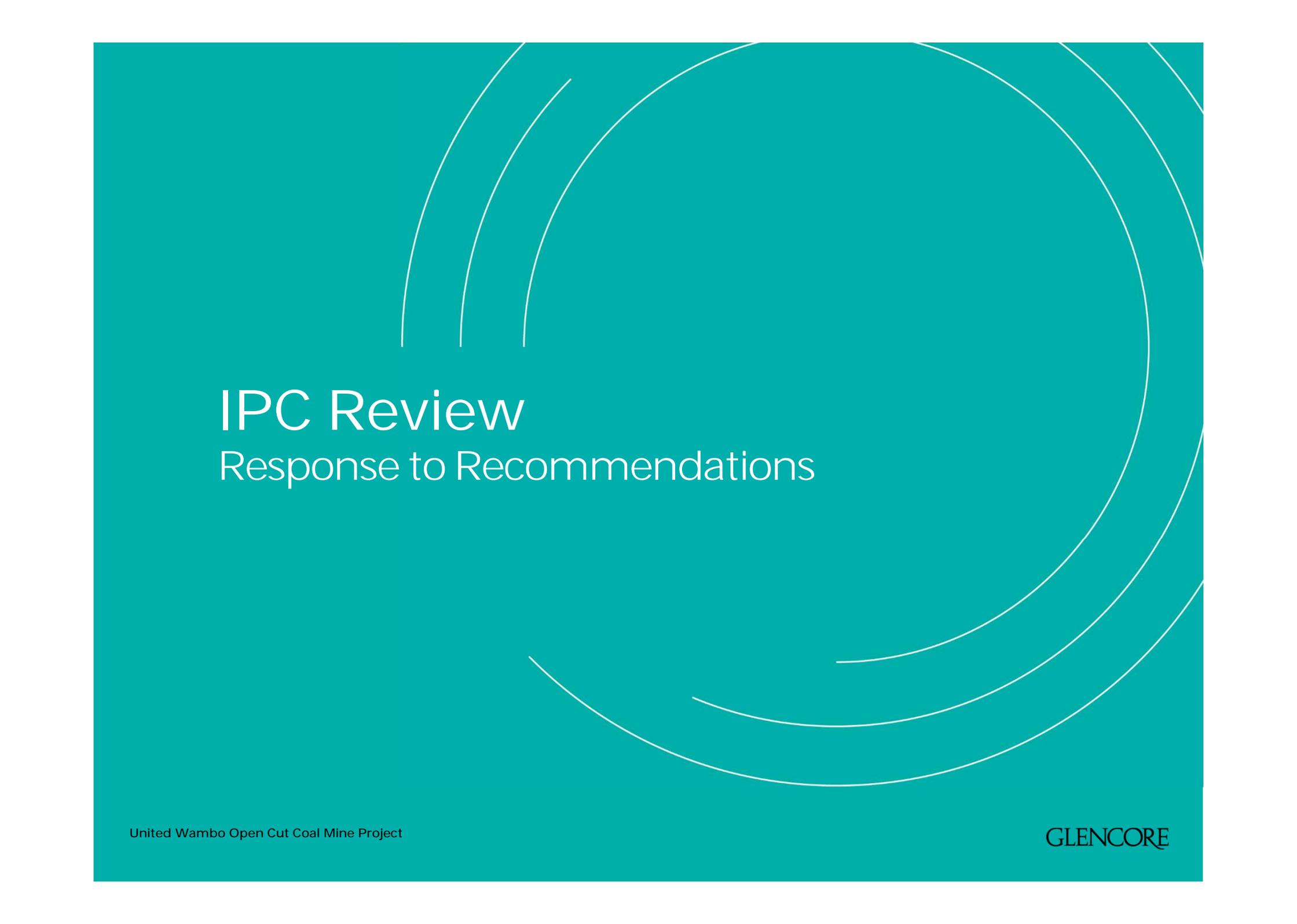
United Wambo Open Cut Coal Mine Project

- **Brownfields extension providing significant benefit for minimal additional disturbance**
  - recovering an additional **150M** ROMt,
  - generating additional royalties estimated of **\$370 million**
  - increased economic activity in NSW equal to \$2.1 billion Gross Regional Product and \$3 billion Gross State Product
- Continued employment for **250** Wambo employees, plus creating **250 additional mining jobs** and a **120** construction jobs during peak construction
- Utilisation of **existing** Wambo infrastructure with minimal additional disturbance and **no increase in approved annual throughput** of CHPP and rail loop
- Contiguous undulating final landform more in keeping with natural topography with **the same number of voids as already approved – two (2)**
- Considered mine design from inception of project with changes being made along the way as a result of the **extensive consultation conducted with community and other stakeholders**
- Predicted impacts will be managed through mitigation, licencing, leading practice management and biodiversity offsets
- ***'The Department is satisfied that the benefits of the Project outweigh its residual costs and considers that the Project is in the public interest, subject to strict conditions of consent'***



United Wambo Open Cut Coal Mine Project

- 
- Project Disturbance Area reduced by **40.8 ha** including **22.6 ha** CEEC
  - Continued to expand the Biodiversity Offset Package with recent addition
    - **South Wambo Offset - 264 ha providing a potential 198 ha of CEEC – 1,885 credits**
  - Final landform design refined to provide **greater detail on micro relief** with incorporation of drainage lines more consistent with natural topography
  - Detailed mine planning conducted for the **economic and environmental cost of filling final voids**, inclusive of material movement, rehabilitation, drainage infrastructure, employee costs and overheads
  - **Additional commitments have been made in response to the recommendations made by the IPC** – which have been incorporated into the draft consent conditions



# IPC Review

## Response to Recommendations

---

## **IPC Review Report found**

*'that the project has merit if it can satisfactorily and genuinely address the various recommendations contained within this review report'*

## **IPC Report provided 47 recommendations for further review by the Project and the Dept of Planning and Environment**

- 12 - noise, vibration and blasting
- 9 - air quality
- 9 - biodiversity
- 6 - final landform and rehabilitation
- 7 - water resources
- 1 - visual mitigation
- 3 - transition to Joint Venture

**Project provided a comprehensive response to each of the 47 recommendations and provided further information and clarification to DPE to enable completion of the Final Assessment Report and development of the Consent Conditions.**

### Noise Impacts and Monitoring

- Impact on Properties: 7 in Acquisition, 19 in Mitigation, 10 in Management
- No significant construction, road traffic or rail noise is predicted as part of the Project
- The Project has identified that the existing 4 Wambo noise monitors are **appropriate** to effectively monitor the impacts from the Project
- The Project has proposed **5 attended noise** monitoring locations to assess compliance with noise criteria
- Existing noise monitors will be used to provide **trigger alarms** as is currently in use at Wambo
- In the event of an alarm being received, **United will implement a noise TARP** and respond to the alarm by undertaking a review of the operations and modifying and suspending operations as required

**Mitigation and Acquisition rights**

- The original NIA has a PSNL of **41/40/37** for the Moses Crossing area, with R43 (Carmody) in acquisition
- DPE PAR adjusted the PSNLs to **40/35/35** based on short term monitoring presented in the NIA, change to PSNLs added **R50C** (Gee) into acquisition and **R44** (Murphy) into mitigation
- Additional background monitoring was completed in response to DPE’s adjustment of the background levels, DPE amended the final PSNLs in the AR for Moses Crossing to **41/40/38** – same as the original NIA except that the night has been revised from 37 up to **38**
- Noise Mitigation Property Inspections – 12 properties completed, 2 declined, 2 rescheduled, 3 temporary dwellings;
- Property 19

Property	Owner	EIS	DPE PAR	DPE FAR	SSD 7142
R43	Carmody	Acquisition	Acquisition	Mitigation	Acquisition
R44	Murphy	-	Mitigation	-	-
R50a (Shed)	Gee	Mitigation	Mitigation	Mitigation	Mitigation
R50b	Gee	Mitigation	Mitigation	Mitigation	Mitigation
R50c	Gee	Mitigation	Acquisition	Mitigation	Mitigation
R56	Skinner	Mitigation	-	-	-
R133 (Shed)	Skinner	Mitigation	-	-	-

# IPC Review Report – Recommendations Transition to Joint Venture

Development Consents	Phase 1		Phase 2	Phase 3
	Phase 1A	Phase 1B		
United Wambo Open Cut Coal Mine SSD 7142	Construction and preparatory works at <b>United open cut</b>	Commencement of open cut mining operations <b>United open cut</b>	Integration of <b>United and Wambo open cut operations</b>	Mine closure (decommissioning and rehabilitation)
Wambo Coal Mine DA 305-7-2003	Continuation of approved <b>Wambo open cut mine</b>			
	Continuation of approved <b>Wambo underground mine</b>		Additional processing of United ROM coal	Mine closure (decommissioning and rehabilitation)
	Continuation of approved use of <b>Wambo mine infrastructure</b> (including processing of Wambo ROM coal)			
Wambo Train Loading Facility DA 177-8-2004	Continuation of approved <b>rail loading</b> (including despatch of Wambo product coal)		Additional despatch of United product coal	Mine closure (decommissioning and rehabilitation)

Phase 1A	Phase 1B
<ul style="list-style-type: none"> <li>• Cultural heritage salvage and clearing</li> <li>• Erosion and sediment control</li> <li>• Construction of temporary mining and construction infrastructure area</li> <li>• Realignment of power lines and Golden Highway</li> <li>• Construction water management system</li> <li>• Extraction from borrow pit</li> <li>• Construction haul roads and access roads</li> </ul>	<ul style="list-style-type: none"> <li>• Continued development of water management system, power line and Golden Highway realignment</li> <li>• Commencement of mining operations at United</li> <li>• Wambo continue operating open cut, underground and coal processing facilities</li> </ul>

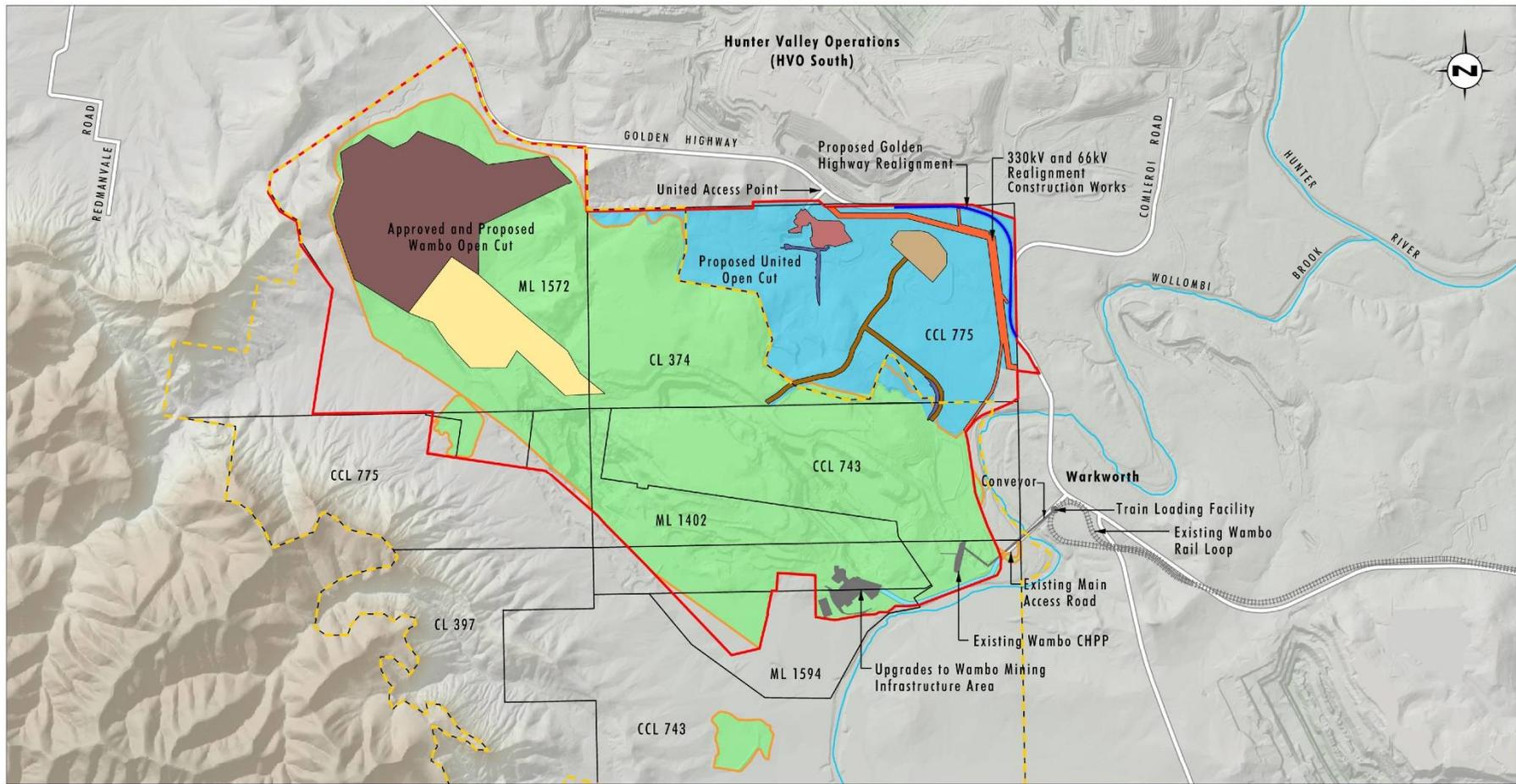
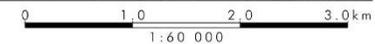


Image Source: United LiDAR (2015)  
 Data Source: Glencore (2015)



**Legend**

- |   |  |                                 |
|---|--|---------------------------------|
| United Wambo Project Area SSD 7142      | DA 305-7-2003 Operational Area - Surface Development | Infrastructure Construction     |
| Wambo DA 305-7-2003                     | SSD 7142 Extraction Area                             | United Mine Infrastructure Area |
| Approved Wambo Surface Development Area | DA 305-7-2003 Extraction Area                        | Water Management Construction   |
| Mining and Coal Lease Boundary          | DA 305-7-2003 Overburden Emplacement Area            |                                 |
| SSD 7142 Operational Area               | Haul Road Construction                               |                                 |

**Phase 1A Development Layout**

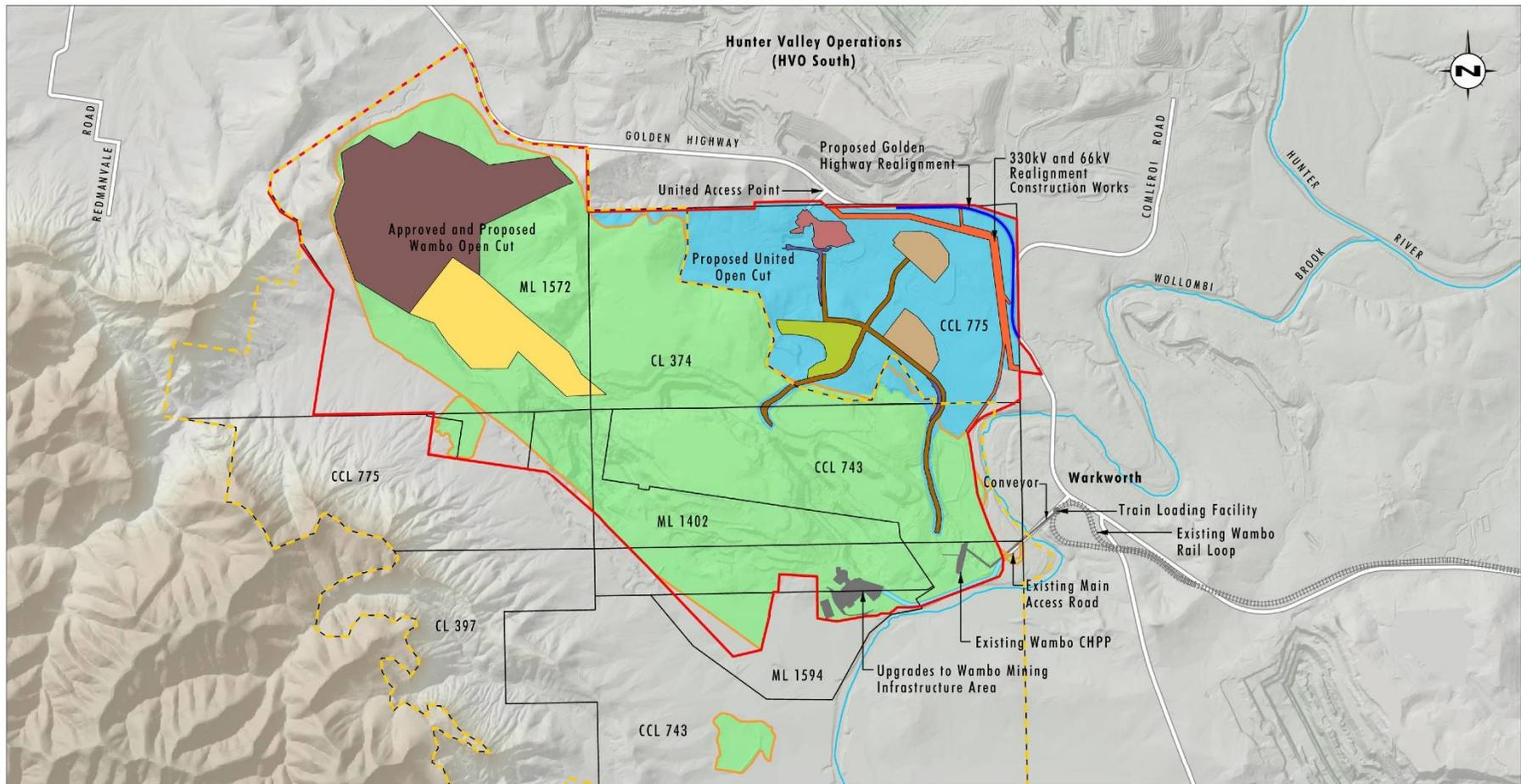
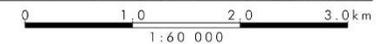


Image Source: United LiDAR (2015)  
Data Source: Glencore (2015)



**Legend**

- |   |  |                                 |
|---|--|---------------------------------|
| United Wambo Project Area SSD 7142      | DA 305-7-2003 Operational Area - Surface Development | Haul Road Construction          |
| Wambo DA 305-7-2003                     | SSD 7142 Extraction Area                             | Infrastructure Construction     |
| Approved Wambo Surface Development Area | DA 305-7-2003 Extraction Area                        | United Mine Infrastructure Area |
| Mining and Coal Lease Boundary          | SSD 7142 Overburden Emplacement Area                 | Water Management Construction   |
| SSD 7142 Operational Area               | DA 305-7-2003 Overburden Emplacement Area            |                                 |

**Phase 1B Development Layout**

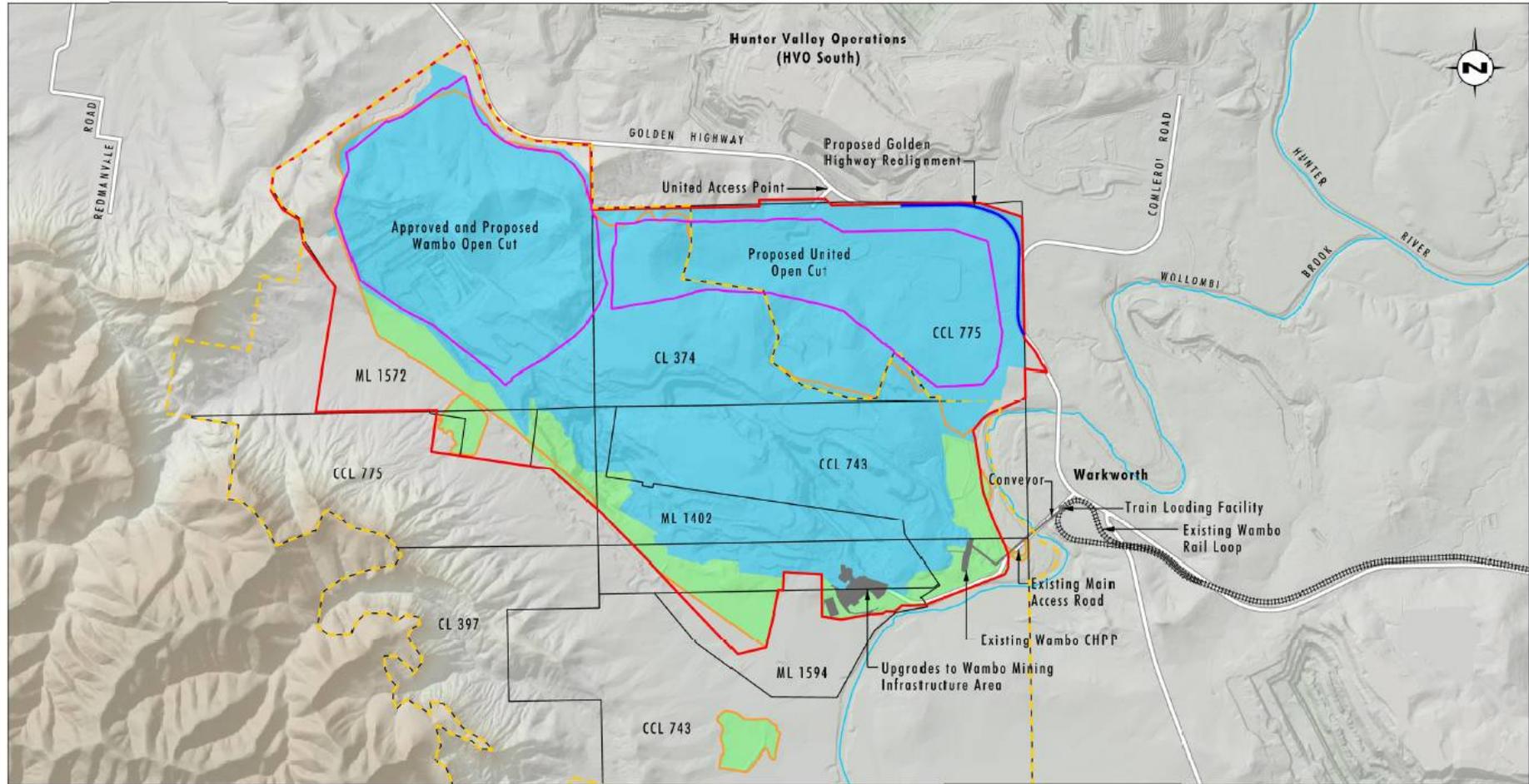
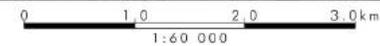


Image Source: United LiDAR (2015)  
 Data Source: Glencore (2015)



**Legend**

- United Wambo Project Area SSD 7142
- Wambo DA 305-7-2003
- Approved Wambo Surface Development Area
- Proposed Conceptual Extraction Area
- Mining and Coal Lease Boundary
- SSD 7142 Operational Area
- DA 305-7-2003 Operational Area - Surface Development

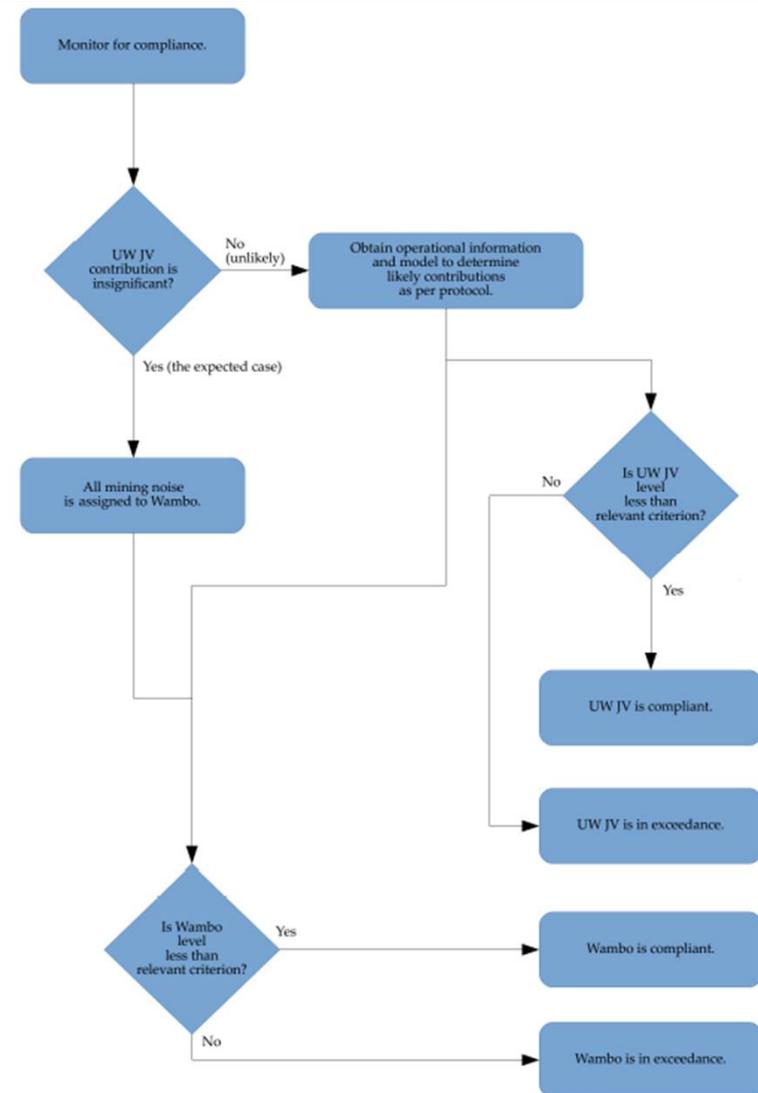
**Phase 2 Development Layout**

File Name (A4): 3509\_717.dgn  
 20181003 14:14  
 United Wambo Open Cut Coal Mine Project



## Noise Monitoring During Transition

- **Phase 1** – Wambo operate under existing criteria with updated daytime noise limits, United operate under Project noise limits **without the extra allowance for construction noise**
- **Noise Protocol** developed to assist in assessing compliance, especially in Phase 1
- **Phase 2** – Wambo UG and CHPP operate under revised (reduced) noise limits and United Wambo operate under Project noise limits
- In Phase 2, majority of noise will be open cut related, compliance will be assessed based on normal operations at Wambo UG, sound power testing and modelling if required



### **Air Quality Update**

- No air quality issues except at Property 19 which is currently in the process of being purchased by the Joint Venture
- Consolidation of all Air Quality assessments and reviews and update to the contemporary *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales 2016*, the SEARs specified the Approved Methods 2005 – **no material changes**
- United will undertake an assessment and trial of potential methods for **monitoring post blast fume**, including the use of fixed and mobile gas monitoring equipment
  - the assessment and trial will be completed within two years of the commencement of mining activities, any changes to the fume monitoring system will be implemented within this same timeframe
- United will provide tenants with the option to **vacate penalty free** at any time during the tenancy should they determine that mining impacts are unacceptable

### **Air Quality monitoring**

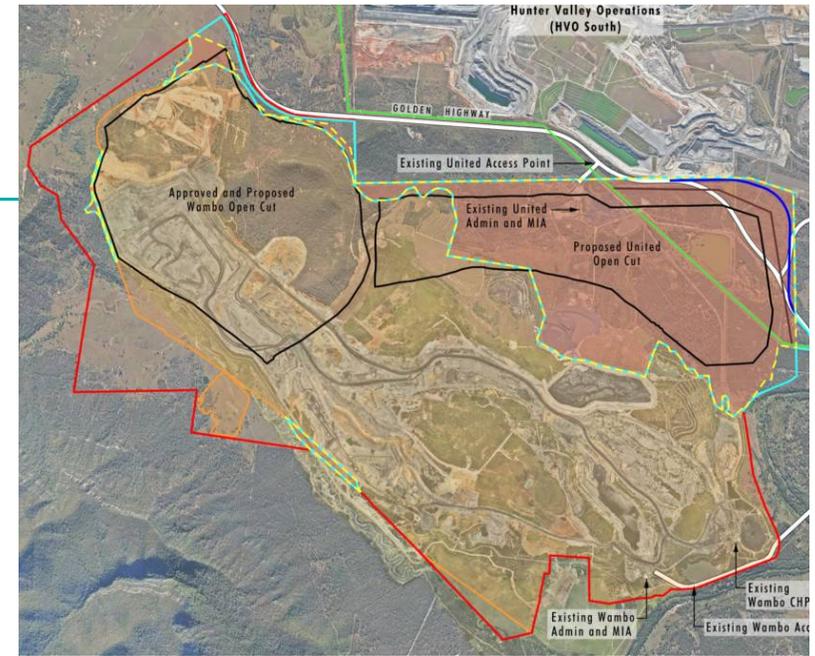
- The Project has identified that the existing Wambo monitors are **appropriate** to effectively monitor the impacts from the Project
- The Project has committed to a **campaign of PM<sub>2.5</sub> monitoring** to provide local (Warkworth & Redmanvale) data to confirm that the predictions of PM<sub>2.5</sub> in the AQIA are accurate
- Existing air quality monitors will be used to provide **trigger alarms** as is currently in use at Wambo
- In the event of an alarm being received, **United will implement a TARP** and respond to the alarm by undertaking a review of the operations and modifying and suspending operations as required

### Emission Reduction Measures

- The Project will ensure that any new 'non-road' mobile diesel equipment (with engines >30 litres) commissioned for the development includes **reasonable and feasible diesel emissions reduction** technology
- Currently, the best commercially available equipment in Australia is **US EPA Tier 2** equipment which the Project has already committed to purchasing
- **US EPA Tier 4** equipment is not currently commercially available in Australia and has not been tested and proven viable in Australian conditions
- Non-road diesel equipment must be **fit for purpose** for the Project's needs and there needs to be a **Cost Benefit Analysis** undertaken
- The Project will estimate the **baseline non-road mobile diesel** equipment fleet exhaust emissions for the first year of mining operations (i.e. post construction) to set a baseline for the mining operation, outcomes will be reported in the Annual Review

# Biodiversity Offset Strategy

- **Brownfields Extension** – Total Project Area is **3,032 ha**, Additional Disturbance of **673 ha**, of which **146 ha** has already been impacted by mining activities at United
- **17%** of the Total Project Area (**527 ha**) will be disturbed
  - include **247 ha** of Central Hunter Valley Eucalypt Forest and Woodland CEEC
- Progressive retirement of credits in **three stages**, Stage 1 accounts for 80% of total offsets
- Project has secured **100%** of the required offsets for **Stage 1** through a combination of five land based offsets, mine rehabilitation and contributions to the Biodiversity Offset Scheme
  - Total offsets of 2,393 ha, including 1,136 ha of CEEC - which provides 100% of the CEEC offsets for Stage 1 at a **4.6 : 1 ratio**
- **The new South Wambo Offset property will be used for CEEC offsets in Stage 2 or may be used to offset some of the payment to the Scheme from Stage 1**



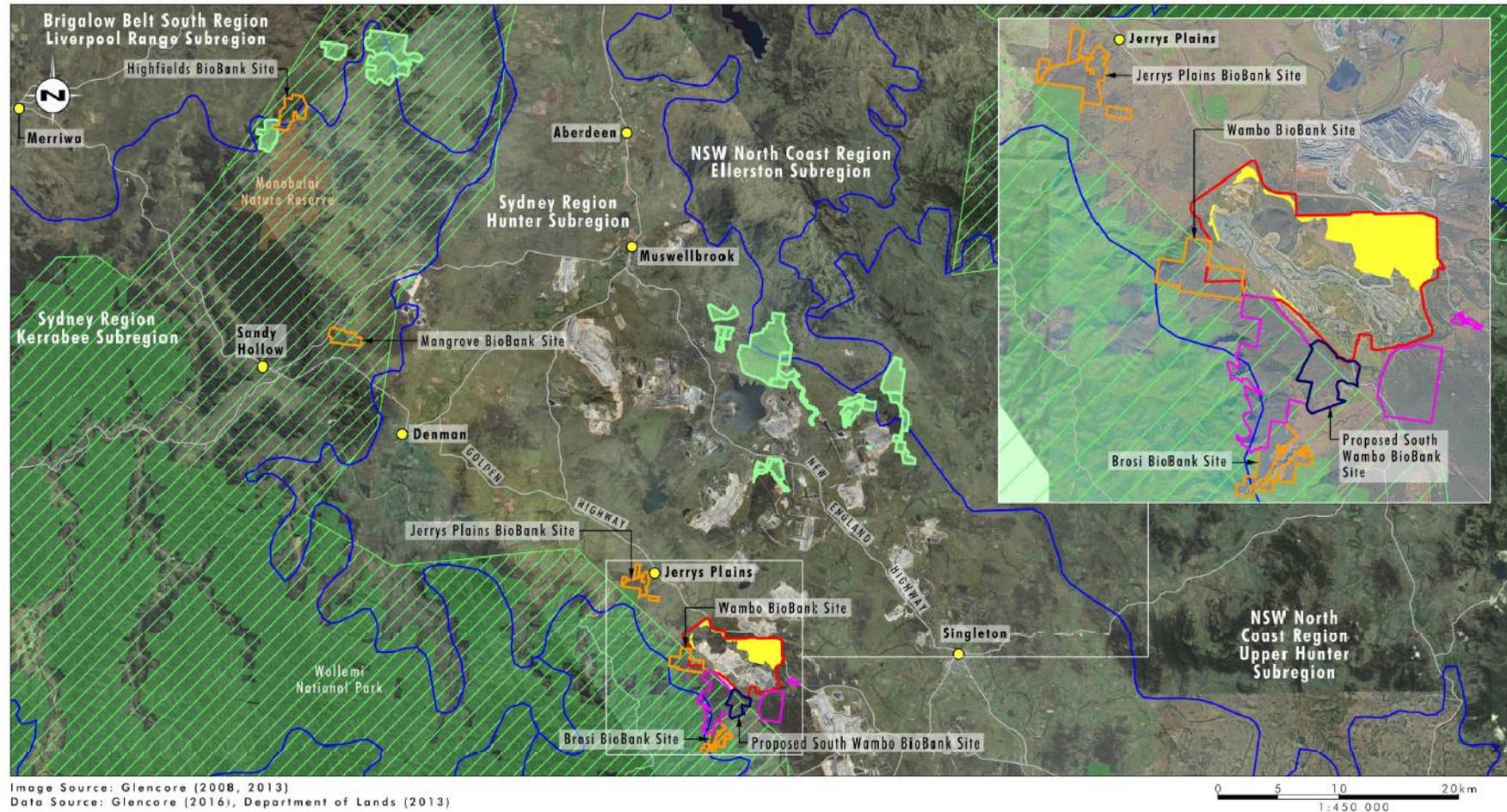


Image Source: Glencore (2008, 2013)  
 Data Source: Glencore (2016), Department of Lands (2013)

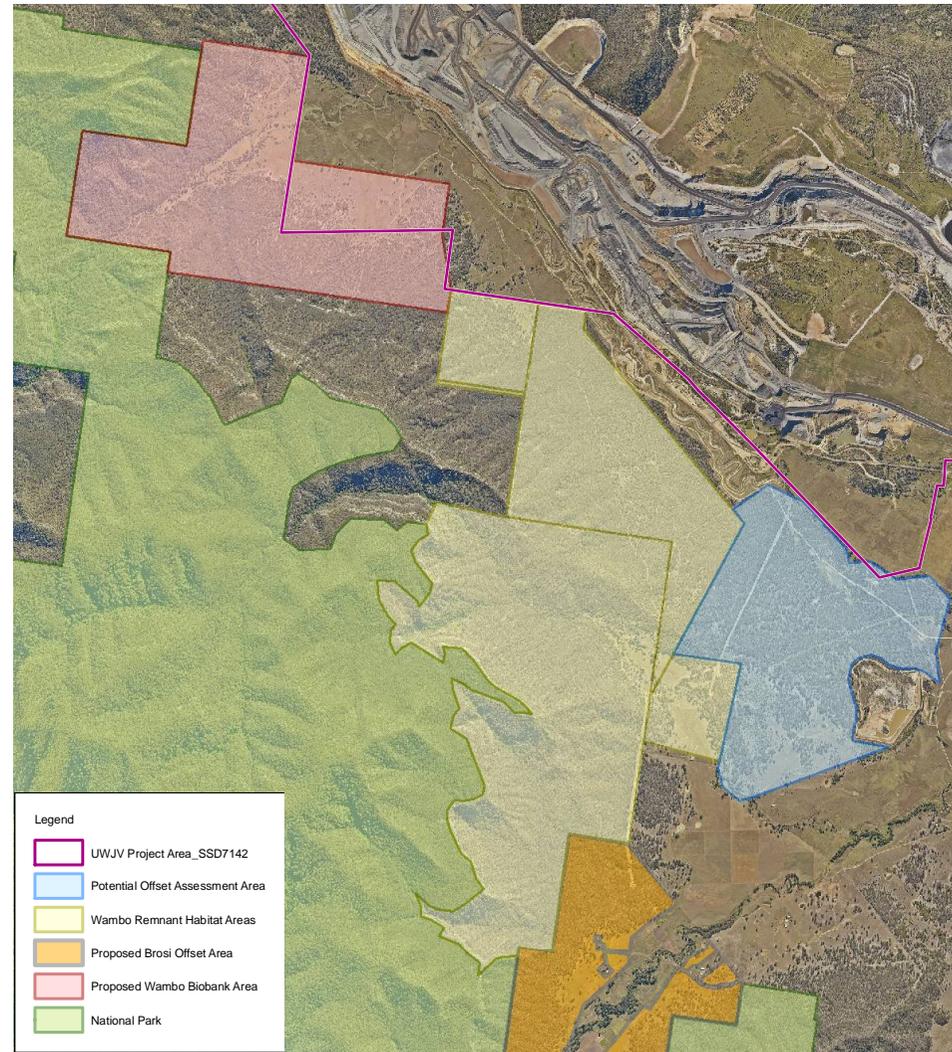
**Legend**

- Development Site
- Biobank Sites
- Conceptual Additional Disturbance Area
- Great Eastern Ranges Corridor Initiative
- Nature Reserve
- National Park
- IBRA V7 Region/Subregion
- Other Glencore Offsets
- Wambo Remnant Woodland Enhancement Program Areas
- Proposed South Wambo BioBank Site

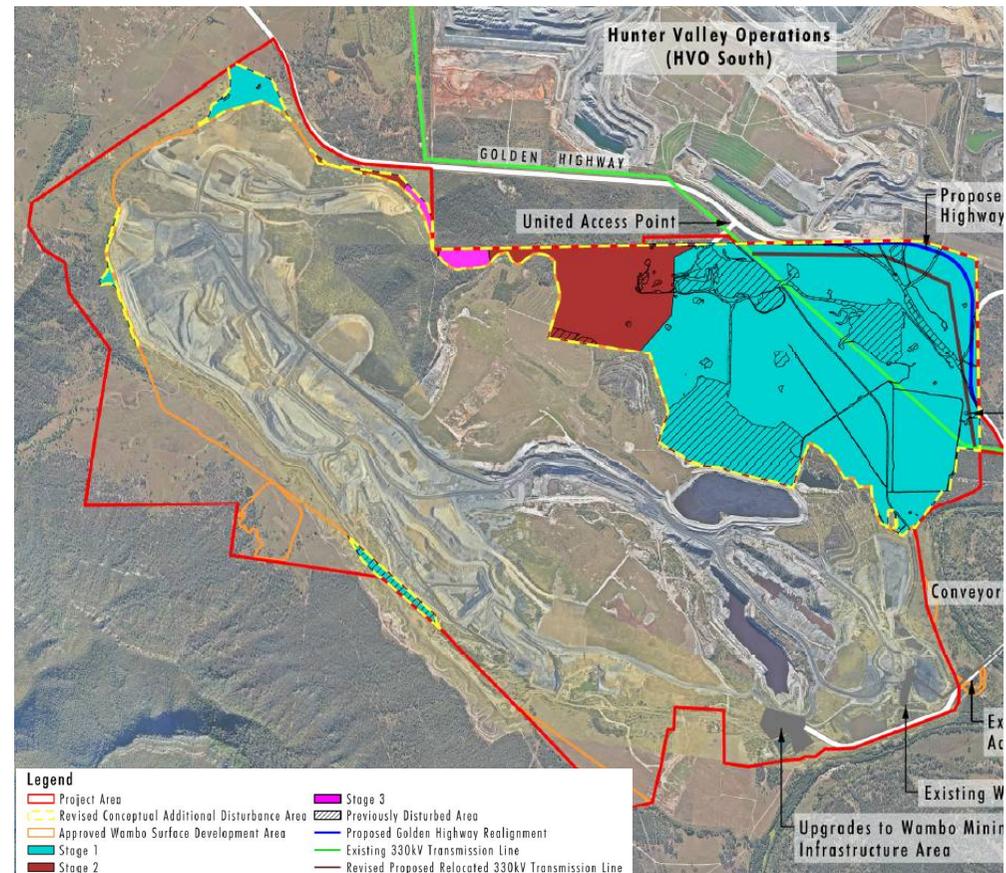
File Name (A4): 3509\_723.dgn  
 20181212 9.44

FIGURE 1.2  
 Location of Proposed  
 Biodiversity Offset Sites

- The Project is currently undertaking assessment on a **264 ha** area
- Area is located south of the Project Area and has connectivity with
  - Existing Wambo Remnant Habitat Areas
  - New Wambo and Brosi BioBank Areas
  - Wollemi National Park
- Desktop analysis has indicated that the vegetation could provide the following credits:
  - All remaining credits for Central Hunter Grey Box - Ironbark Woodland EEC , Bull Oak Grassy Woodland and Hunter Floodplain Red Gum Woodland EEC
  - Approximately 1500 CEEC credits for Stage 2 and 3



- Progressive retirement of credits in three stages, accepted by DPE and OEH with disturbance stages of approximately seven years
- Staged approach allows United to benefit from any reductions in disturbance area through a reduction in biodiversity credits that need to be retired, providing incentive to minimise disturbance throughout the life of the operation
- **All credits for Stage 1 will be retired within 12 months** of commencement of Phase 1A (currently 94% identified)
- All credits for Stages 2 and 3 will be retired **before commencing disturbance** within those areas



# Project Offset Credit Requirements

Impacted Feature	STAGE 1 Credits Required	STAGE 2 Credits Required	STAGE 3 Credits Required	ALL STAGES Credits Required	Total Credits Secured Through Current Land-based Offsets and Mine Rehabilitation	STAGE 1	ALL STAGES	
						Total % of Credits Secured by Existing Land- based and Mine Rehabilitation	Total % of Credits Secured by Existing Land- based and Mine Rehabilitation	Total Credits Secured Through Other Land- based Offsets or the BCF
Central Hunter Valley Eucalypt Forest and Woodland CEEC under the EPBC Act	11,287	2,570	620	14,477	11,287	<b>100%</b>	78%	3,190
Hunter Floodplain Red Gum Woodland EEC under the BC Act	0	20	0	20	0	<b>100%</b>	0%	20
Central Hunter Ironbark - Spotted Gum - Grey Box Forest EEC under the BC Act	1,424	0	0	1,424	1,424	<b>100%</b>	100%	0
Central Hunter Grey Box - Ironbark Woodland EEC under the BC Act	356	101	0	457	326	<b>92%</b>	71%	132
HU905 - Narrow-leaved Ironbark - Grey Box grassy Woodland of the Central and Upper Hunter	3,562	1,344	1	4,907	2,758	<b>77%</b>	56%	2,148
HU906 - Bull Oak Grassy Woodland of the Central Hunter Valley	2,973	0	0	2,973	2,815	<b>95%</b>	95%	158
HU945 - Swamp Oak - Weeping Grass Grassy Riparian Forest of the Hunter Valley	1,844	281	0	2,125	1,555	<b>84%</b>	73%	570
southern myotis (Myotis macropus)	15	547	0	562	21	<b>100%</b>	4%	541
TOTAL ECOSYSTEM CREDITS	21,446	4,316	621	26,383	20,165	<b>94%</b>	76%	6,218
TOTAL SPECIES CREDITS	15	547	0	562	21	<b>100%</b>	4%	541

United Wambo Open Cut Coal Mine Project

- 
- Project has been assessed under the bilateral agreement between NSW and the Commonwealth
  - DPE and OEH accept the staged offset approach and note that **the MNES offsetting requirements for the Project have been suitably addressed** through commitments and draft conditions of consent
  - DoEE has not raised any issues with **the staged offsetting approach** proposed for the Project
  - The Commonwealth Government does not currently accept the use of the BCF for offsetting impacts on MNES, hence **all of the offset credits required for MNES for Stage 1 have been secured using land based offsets**
  - Stage 2 and Stage 3 offsets will be based on the approved mechanisms at the time of retirement
  - While the FBA has no limit for the use of mine rehabilitation, United had proposed a limit to the contribution of mine rehabilitation in the offset strategy for the *CEEC* at **25%**. This has been **reduced to approximately 17%** due to the number of land based offsets in our portfolio

- DoEE provided advice that the CEEC should be included as potential habitat for the regent honeyeater. **The impact and offset strategy for the regent honeyeater is consistent** with this updated advice
- The Revised Offset Strategy for MNES under the EPBC is shown in the table below:

MNES	Impact Area (ha)	Proposed Offset Area (ha)	Offset Ratio of Updated Proposed Offsets
Central Hunter Valley Eucalypt Forest and Woodland CEEC	246.8 (known habitat)	1,135.6 (including areas of mine rehabilitation)	4.6:1
Regent honeyeater (Anthochaera phrygia)	203.7 (potential habitat only)	1,407.3 (excluding areas of mine rehabilitation)	6.9:1
Swift parrot (Lathamus discolor)	29.7 (potential habitat only)	473.9 (excluding areas of mine rehabilitation)	16:1
Spotted-tailed quoll (Dasyurus maculatus maculatus)	352.9 (known habitat)	1,507.3 (excluding areas of mine rehabilitation)	4.2:1

- **The Assessment of Mine Rehabilitation Against CHVEFW CEEC Report** (prepared by Umwelt, 2017) compared the specific key diagnostic characteristics and condition thresholds of the CEEC to existing rehabilitation at **4 Hunter Valley mine sites**, including United
- Assessment found that **some areas of mine rehabilitation** at all four sites are likely to conform to the CEEC, **despite the CEEC not being the targeted community**. This confirms that the CEEC can be re-established through mine rehab on the substrates within the Project Area
- The report supports that rehabilitation of mined land at United to areas of CEEC and other communities is expected to be achieved with appropriate planning and implementation of rehabilitation
- As per FBA policy and the draft Conditions of Consent, in the event that rehabilitation does not meet the completion criteria for the CEEC and other vegetation types, United will be required to **retire the deficient credits through other means**, such as additional land based offsets or payment into the BCF
- Note – credit yield for mine rehab much lower than land based offsets

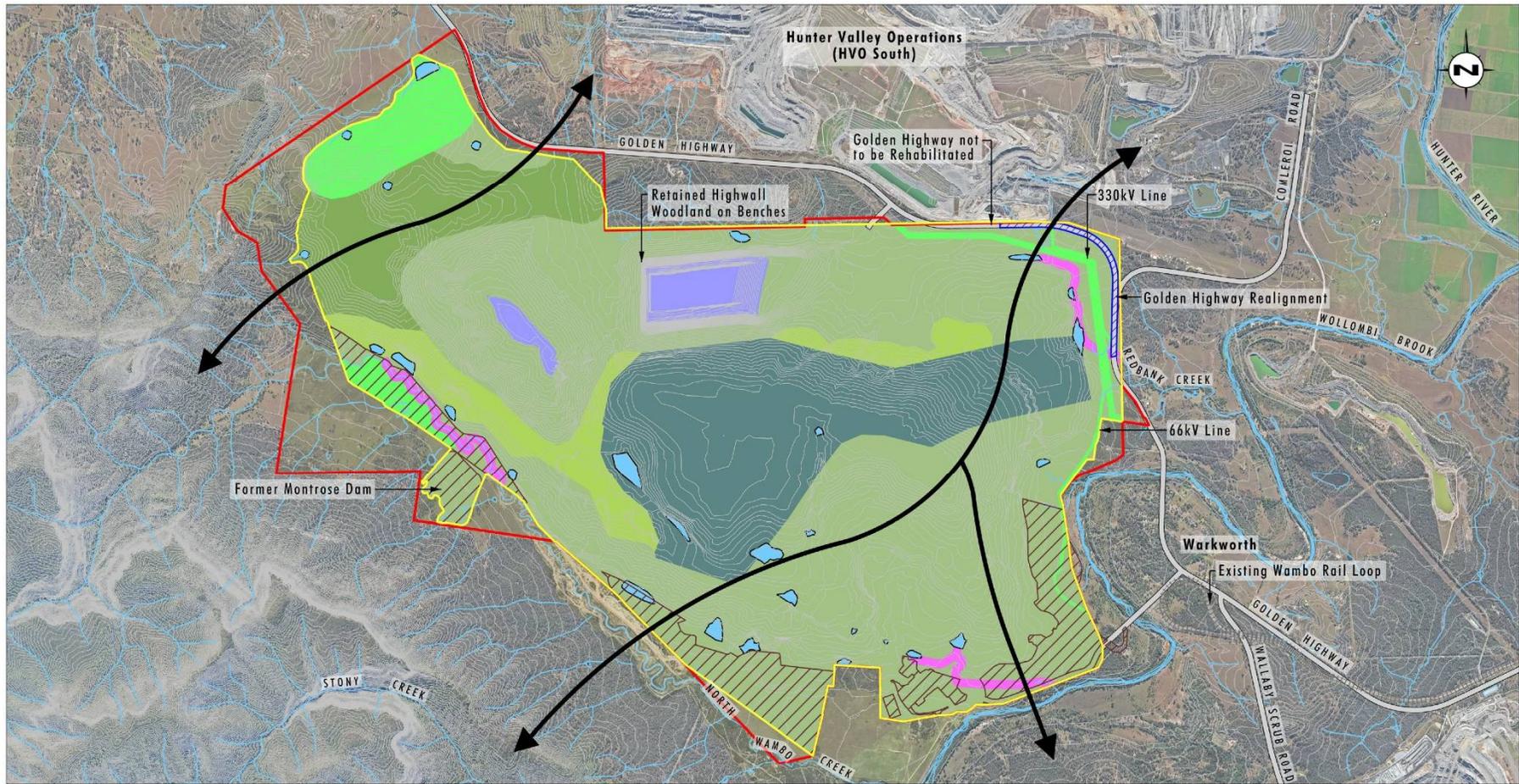


Image Source: AAM (2012), United (2015)  
 Base Data Source: Glencore (2015), LPI (2009)  
 Note: Contour Interval 10m

0 1.0 2.0 2.5 km  
 1:50 000

**Legend**

- Project Area
- Conceptual Rehabilitation Area
- Habitat Corridors (existing and proposed vegetation)
- Riparian Vegetation
- Grassland (Agricultural)
- HU816 - Spotted Gum - Narrow-leaved Ironbark shrub - grass open forest of the central and lower Hunter (conforming to *Central Hunter Ironbark - Spotted Gum - Grey Box Forest EEC* under the BC Act)
- HU905 - Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter (conforming to *Central Hunter Valley Eucalypt Forest and Woodland CEEC* under the EPBC Act)
- HU905 - Narrow-leaved Ironbark - Grey Box grassy woodland of the Central and Upper Hunter
- Woodland/Open Woodland
- DA 305-7-2003 Rehabilitation

**Conceptual Ecological  
 Mine Rehabilitation**

### **Economic cost of eliminating final voids - \$777 million**

- 7% discount rate is regarded the economy-wide opportunity cost of capital
- 4% was used as it more closely aligns with the expert consensus of the social discount rate
  - 7% discount includes risk, the rate recognizes the risk associated with return on investment (revenue risk)
  - Society does not discount future utility as heavily as business discounts costs
  - Survey of 192 academics suggest 92% were comfortable with a social discount rate of 1% to 3%

### **Significant volume of material**

- Approx. 150Mbcm of material needed to fill the voids to surrounding surface levels
- Fill material can only be sourced from adjacent overburden emplacements disturbing rehabilitated areas or delaying planned rehabilitation – additional **6 years** of mining activities

### **Very high cost**

- Detailed mine planning was undertaken to understand the cost of filling the voids, inclusive of material movement, rehandling, rehabilitation, drainage infrastructure, maintenance and production staff and overheads - **\$777 million** to return **111 ha** to useable land
- **\$7 million per ha**; 1400 times the cost of buying similar land

# IPC Review Report – Recommendations

## Final Void Option Analysis

Void Option	Three voids (two Wambo and one at United)	Two final voids with United void near Wollombi Brook	Directing North Wambo Ck flows into Wambo void, connecting the two voids with spill from the United void to Wollombi Brook	Two voids but connected to allow them to equilibrate	Project does not proceed option (two voids at Wambo, no Project)	One void	No voids (backfill voids post coal extraction)	Two voids, increasing catchment areas reporting to the final voids	Construction of a flood flow channel to direct flood flows from Wollombi Brook into United void	Two final voids, with United void at western end of proposed open cut
Reasonable & Feasible Mine Design?	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable & Feasible Engineering Design?	-	-	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Economically Feasible?	-	-	-	-	Yes but economic benefits of Project lost	No	No	Yes	Yes	Yes
Proposed	No	No	No	No	No	No	No	Feasible but not proposed	Possibly Feasible but not proposed	Yes
Comments	Not considered a reasonable mine design as a landform with two voids is achievable.	Not considered a reasonable mine design due to long-term geotechnical risks of final void near Wollombi Brook. Also less economic mining scenario.	Poor landform with steep slopes. Significant engineering feasibility risk for long-term tunnel or pipe connecting voids.	Significant engineering feasibility risk for long-term tunnel or pipe connecting voids.	Is a technically viable design, but benefits of the Project are lost and therefore not proposed.	Determined to not be economically feasible.	Determined to not be economically feasible due to cost of \$777M. Resulting land area gained comes at a \$7M/ha cost. Also significant water impacts.	Not proposed as would result in loss of additional surface water flows to voids without significant change to overall outcomes.	Results in significant take of water from Wollombi Brook during flood events. United has committed to further assessment of this option as part of closure planning.	Proposed case.

---

## Water

- **Cumulative impacts** – flow regimes, quality, drawdown on baseflow – **not significant**
- IESC satisfaction with assessment – Bi-lateral Agreement
- Discharge licences – number of credits held is sufficient and Glencore has a pool of credits
- Groundwater monitoring bores – no private bores impacted
- Stygofauna – proposed periodic monitoring program

## Visual Impacts

- **Additional mitigation measures at nearby sensitive viewpoints**
  - Moses Crossing, South Wambo and Hunter Valley Gliding Club

## Transition to Joint Venture

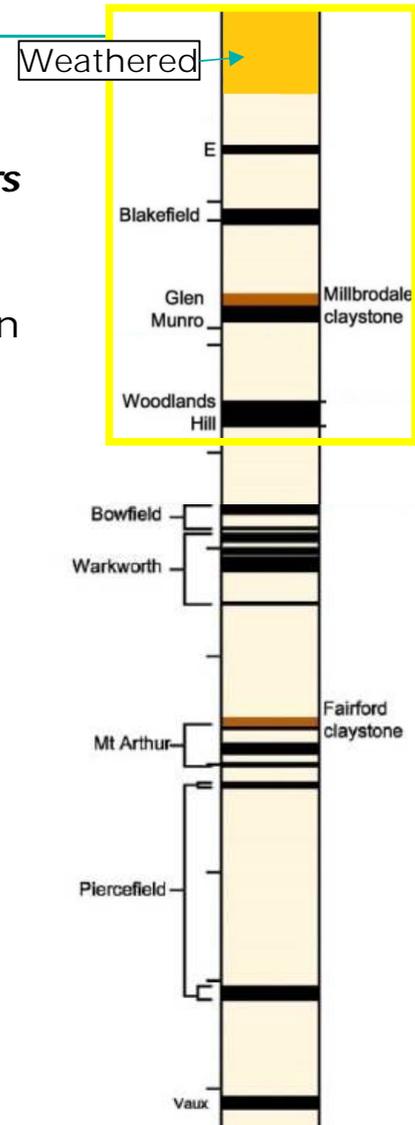
- Additional clarity around triggers, staging and transfer of responsibility
- Managing environmental compliance , licensing, community engagement

- 
- Updated offer of \$2.65 million made to Council after GLN Planning review
  - Letter sent to SC on 5 December with a VPA offer of \$2.65 million to be shared 50% with locally impacted areas and balance to the wider LGA
    - LGA component to be assigned to Council development fund
  - **United Wambo do not agree with the methodology of comparison to other VPAs as opposed to assessing the impact of the specific Project**

# Matters from Meeting of 6 December

***Confirm representativeness of rock characteristics during the two-year blast fume trial period with rock characteristics of the Project in later years***

- The initial two years of blasting in the United pit will intersect the oxidised zone of the strata where weathered material is present; weathering occurs in the top 5-15m of the mined profile
- The higher moisture content in the in the clay rich weathered material may result in higher fume generation in the trial period than in the subsequent years of mining
- The majority of the strata mined after the first few years will be rock as the mine progresses to a greater depth
- The purpose of the trial is to determine whether there is a benefit in the use of monitoring devices over the use of the AESIG visual scale for identifying potential impacts on the community



## Matters from Meeting 6 December

### R17 – Greenhouse Gas Emissions

Greenhouse Gas (GHG) reduction measures not ‘technically feasible and financially reasonable’ outlined below have or are used on other sites in the Hunter Valley, however they are not appropriate for United Wambo.

Potential Mitigation Measure	Planned for Project	Reason for Exclusion
Pre-draining and capturing coal mine waste gas for combustion	No	Significant lead times are required to develop, complete and decommission a pre-drainage program prior to open cut mining. Pre-drainage is a mitigation method better suited to underground mining, as the drainage program can be phased, and surface infrastructure can remain in place during mining operations. The planned commencement date of open cut operations does not practically allow a pre-drainage program.
Alternative fuels to reduce emissions associated with diesel use	No	Biodiesel will not be used due to issues with fuel use efficiency and engine warranties.
Replacing trucks with conveyors to improve the efficiency of moving materials	No	The use of conveyors is not feasible or cost effective given the short haul distances and constantly changing mining operations.
Electric drills and shovels to reduce diesel use	No	Electric drills or shovels will not be used at United Wambo due to the lack of availability of in-pit supply of electricity and small work areas requiring regular walking of the drills or relocations.

*Has a tenant, in the last five years, exercised its rights under an “air quality special condition*

Glencore have not been made aware of any tenant who has vacated a Glencore owned property for the reason of poor air quality at the residence

*How will the proposed rehabilitation work as an offset, including how would rehabilitation success be measured/ assessed and the transition between the three project stages, with regard to the differences between the State and Federal assessment regimes, and any contingency plans if the proposed rehabilitation is not successful*

- The ecological rehabilitation **credits are retired upfront as part of Stage 1**, as per NSW policy.
- **Ongoing monitoring of the rehabilitation** will be undertaken and assessed against performance criteria and reported annually to the NSW Government. Proposed criteria have been included in the BAR and will be included in the Rehabilitation Management Plan / MOP. If issues are identified, **work to improve the rehabilitation will be undertaken**.
- If the criteria is not able to be achieved, an equivalent number and type of biodiversity credits must be sourced. Credits can be sourced through additional land-based offsets, supplementary measures, or payment into a fund if available at that point in time (as per the relevant State and Federal policies).
- If all **2,437 credits** of proposed CEEC rehabilitation are not achieved, this would require an additional land based offset of approximately **173.5 hectares**

The NSW Biodiversity Offset Policy for Major Projects states the following in relation to the establishment of ecological mine rehabilitation as an offset under the FBA:

- Proponents will receive **upfront credits for a certain amount of rehabilitation**, at a rate of less than half the credits per hectare that can be generated at a typical biobank site (4.8 for rehab vs 14 for land based)
- The proponent will **commit to undertaking the amount of rehabilitation equivalent to those credits** which will be reflected in the MOP
- Under the MOP the proponent will also be required to **pay a bond equivalent to the cost of undertaking the rehabilitation** which is only returned once the proponent has achieved a level of rehabilitation representing the credits that were provided upfront
- Once rehabilitation is underway, if it becomes clear that the **ecological rehabilitation standard for which biodiversity credits have been generated is not able to be achieved**, the company must instead source and retire an equivalent number and type of biodiversity credits in order to meet its offset requirement
- Credits can be sought through additional land-based offsets, supplementary measures, or payment into a fund if available at that point in time

*How will offsetting obligations for Stages 2 and 3 be met in relation to impacts under the EPBC Act*

- United Wambo will provide appropriate offsets for Stage 2 and Stage 3 based on the approved mechanisms at the time of retirement
- This may be through additional land-based offsets, supplementary measures, or payment into a fund if available at that point in time
- **No disturbance** will be undertaken in Stages 2 or 3 without prior retirement of suitable offsets
- DoEE has not raised any issues with the staged offsetting approach proposed for the Project
- South Wambo Offset provides 1500 credits of our 2500 credit requirement for Stage 2 CEEC

*Provide further information in relation to its rehabilitation activities at other controlled sites, including rehabilitation that has been independently verified and/or successfully used as an offset*

- There have been two Glencore sites in QLD that have recently had rehabilitation certified by the QLD Government as meeting success criteria - **Newlands and Rolleston**:
  - Newlands - area of 73.48ha was certified in 2017
  - Rolleston - area of 220ha was certified in 2018
- In late 2018 an application was submitted by Glencore in NSW to have an area of 38ha of land located at the old Westside Mine in Lake Macquarie LGA certified as meeting completion criteria
- Glencore also have additional areas that may meet criteria and are likely to be the subject of future applications

*Provide further information in relation to its rehabilitation activities at other controlled sites, including rehabilitation that has been independently verified and/or successfully used as an offset*

- Glencore are currently participating in an ACARP Project titled **“Establishing Self-Sustaining Ecological Mine Rehabilitation that Achieves Recognised Ecological Communities”**
- This project aims to provide further demonstration that mine rehabilitation can support a recognisable and self-sustaining ecological community that meets the Conservation Advice for the CHVEFW CEEC and also relevant BC Act listed threatened ecological communities
- The project also aims to provide the mining industry with guidance on how to improve ecological rehabilitation establishment, monitoring and reporting techniques, building on work completed to date
- The findings of this Project will inform future rehabilitation practices at United Wambo

*Proponent's view on the most desirable environmental outcome in relation to the Wambo void, setting aside economic (and other) considerations*

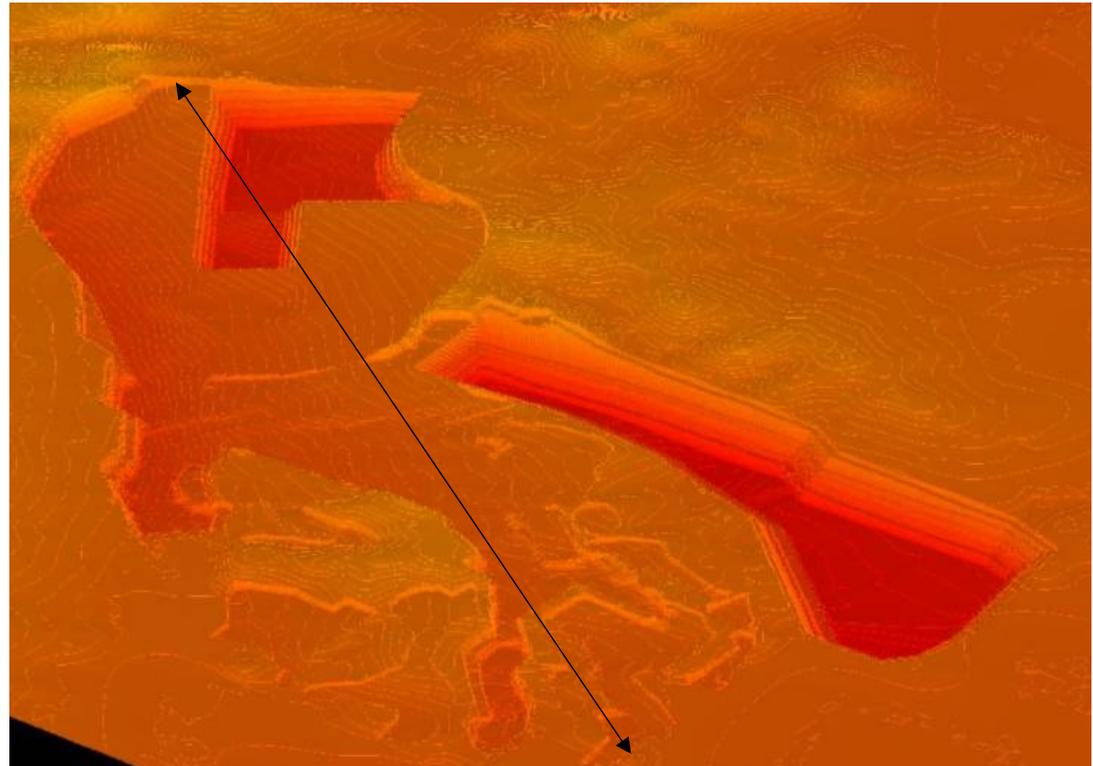
**It is the Proponents view that the most desirable environmental outcome to mitigate the risk of groundwater seepage from Wambo void is to retain the proposed Wambo void as a long term groundwater sink, this assists in managing long term groundwater levels below North Wambo Creek alluvium**

Modelling results show that if the Wambo Void is backfilled, it will result in groundwater surface expression in the North Wambo Creek alluvium in the long term, this is not a desirable outcome

- If Wambo void is backfilled the groundwater will recover to a higher level within the spoil as there is no evaporation and eventually the water from the spoil will discharge into North Wambo Creek alluvium
- In the proposed landform with Wambo void acting as a groundwater sink the groundwater recovers to a lower level due to evaporation and there is no discharge from the spoil into North Wambo Creek alluvium

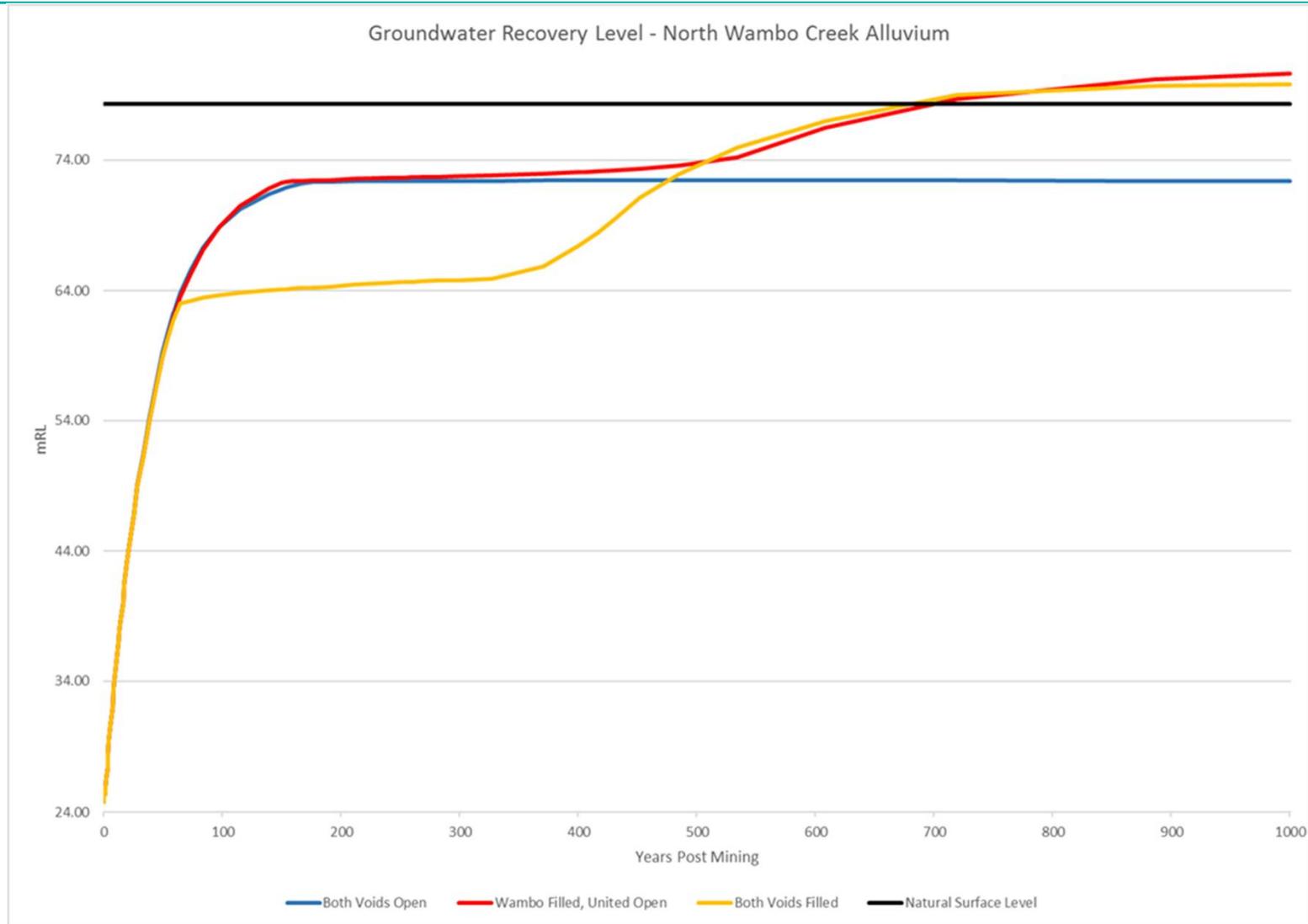
The Wambo void covers a large area that has been partially mined out and filled with spoil – the final void will extend from the edge of the proposed pit in the north west to the Homestead void in the south east

The United void will generally be a separate void, with only a small area of connectivity to Wambo in the west at approx. 85 RL



# Matters from Meeting 6 December

## R31 – Voids: Groundwater Recovery Level



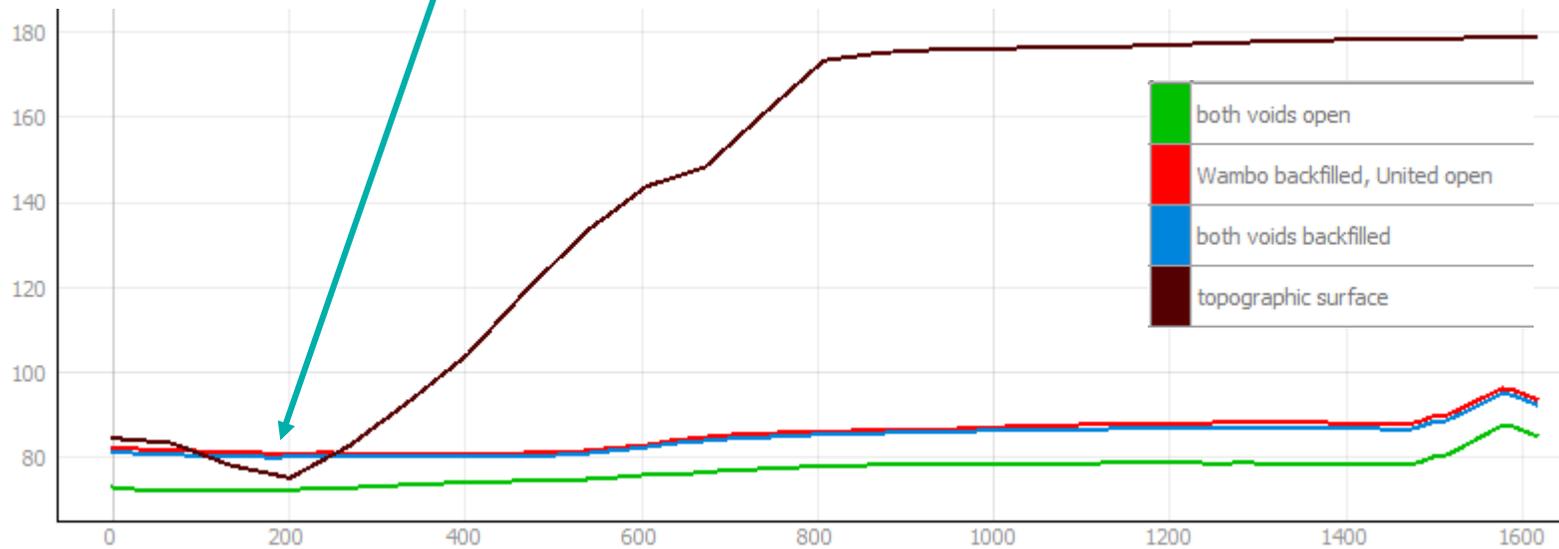
# Matters from Meeting 6 December

## R31 – Voids: Groundwater Recovery Level

The section indicates that water within the spoil adjacent to North Wambo Creek is likely to flow into the alluvium and/or express on the surface

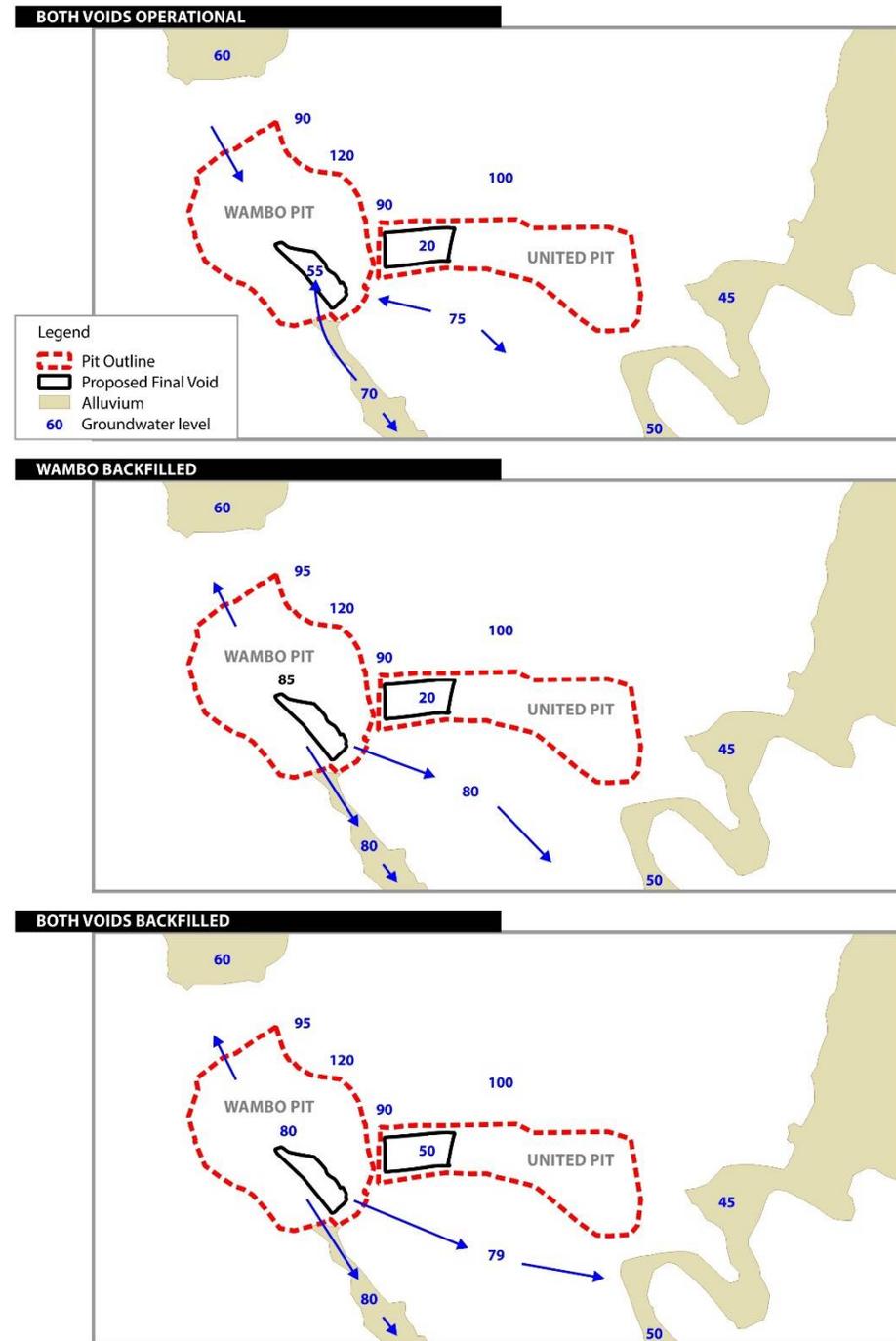


GW level above topo surface – showing areas of surface expression



## Matters from Meeting 6 December R31 – Voids: Groundwater Recovery Level

- Both voids operational – groundwater levels around Wambo void are higher, water flows towards the void and is managed by evaporation in the pit lake
- Wambo backfilled – groundwater levels recover in the area of the Wambo pit lake and reverses the hydraulic gradients so that water flows towards North Wambo Creek alluvium
- Both voids backfilled – groundwater levels at United have minimal impact on groundwater levels at Wambo, groundwater still moves through the spoil through to the North Wambo Creek alluvium



***Further information in relation to the impact on the financial viability of the project of filling the Wambo void***

- The cost of filling the Wambo Void is **\$178 M** (\$33 M NPV) and would take approximately 3 years beyond the end of mining to complete
- Additional useable land recovered by filling Wambo Void would be **24 ha**
- The cost per ha of useable land is \$7.3 M; land costs in the area are between \$3,500 and \$5,000, cost to recover Wambo Void land is approximately **1,400** times the value of the land
- Project NPV is **\$268 M**, cost of filling Wambo Void represent **>12%** of the Project NPV which is a material cost

**The Wambo final void is not proposed to be backfilled as the economic cost coupled with the environmental impacts especially saline water seeping from the void far outweighs any benefit of recovery of 24 ha of land**

R31 – Voids: Changes in cost estimates of filling final voids

*a breakdown reconciliation of the changes in the cost estimates of filling the voids*

Closure costs associated with filling of voids have been presented at different points in the assessment process. The full cost of filling the voids was calculated for the Response to the IPC Report, other numbers quoted were an estimate using only load and haul costs and rehab costs.

Document	Cost Estimate	Comment
Response to Submissions	\$450 million for both voids	Cost was calculated using Project average load and haul rate of \$3/bcm with 150M bcm of material required to fill in the voids in the final landform.
IPC Site Visit Presentation	\$630 million	Further detailed analysis showed the haul component cost to be higher than LOM average due to longer hauls associated with hauling material from ex-pit dumps down to pit bottom – the estimated cost is \$4.20/bcm  Costs associated with re-establishing existing rehab and rehabilitating of additional areas have been included in the revised rate
Response to IPC Report	\$777 million for both voids  (\$274 million present value terms with 4% discount rate)	Additional assessment was undertaken including the cost to backfill both voids inclusive of all costs associated with material movement, rehandling, rehabilitation, drainage infrastructure, maintenance and production staff and overheads.

*Provide further information in relation to the Joint Venture sunset clause, including the sunset clause date and any conditions*

There is a sunset date that will be relevant if the approvals are not granted by a certain time and the precise date is subject to confidentiality restrictions under the JVA that has been signed

The background is a solid teal color. Overlaid on this are several white, concentric circular lines that are partially cut off by the edges of the frame, creating a sense of depth and movement.

# Questions?