IPC Project Briefing

United Wambo Open Cut Coal Mine Project

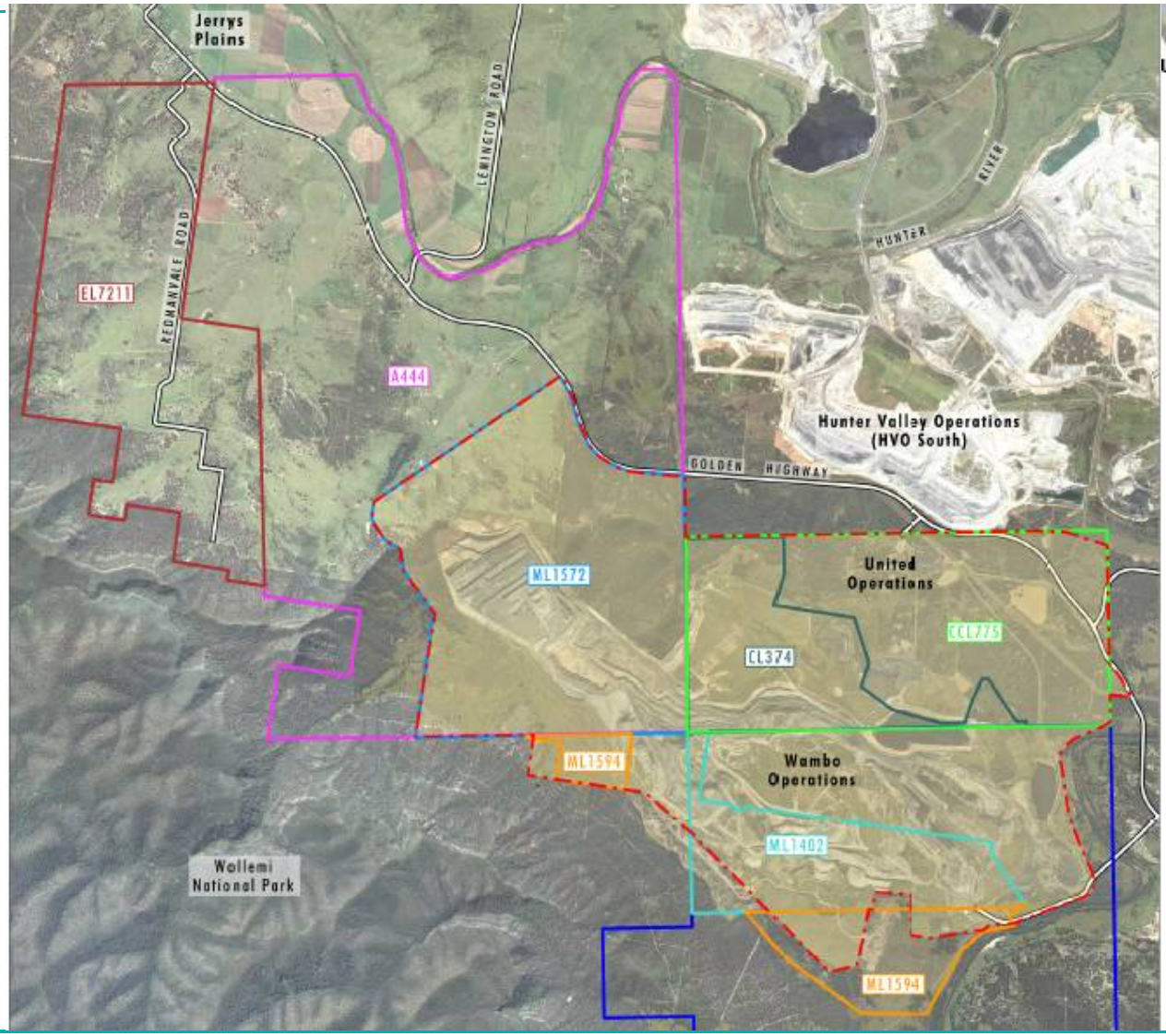
Agenda

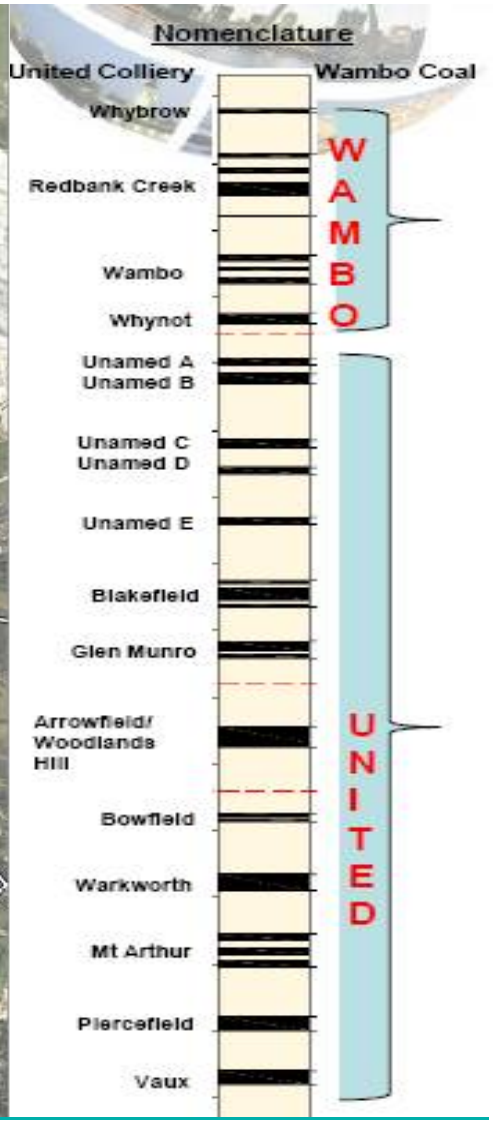
- Joint Venture and Project Overview
- Response to Commission Review Report
  - Noise, vibration and transition to Joint Venture
  - Air Quality and Blasting
  - Biodiversity
  - Rehabilitation
  - Final Landform
  - Water Resources
  - Visual Mitigation
- VPA with Singleton Council
- Conditions of Consent

Joint Venture

- 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

Joint Venture Leases





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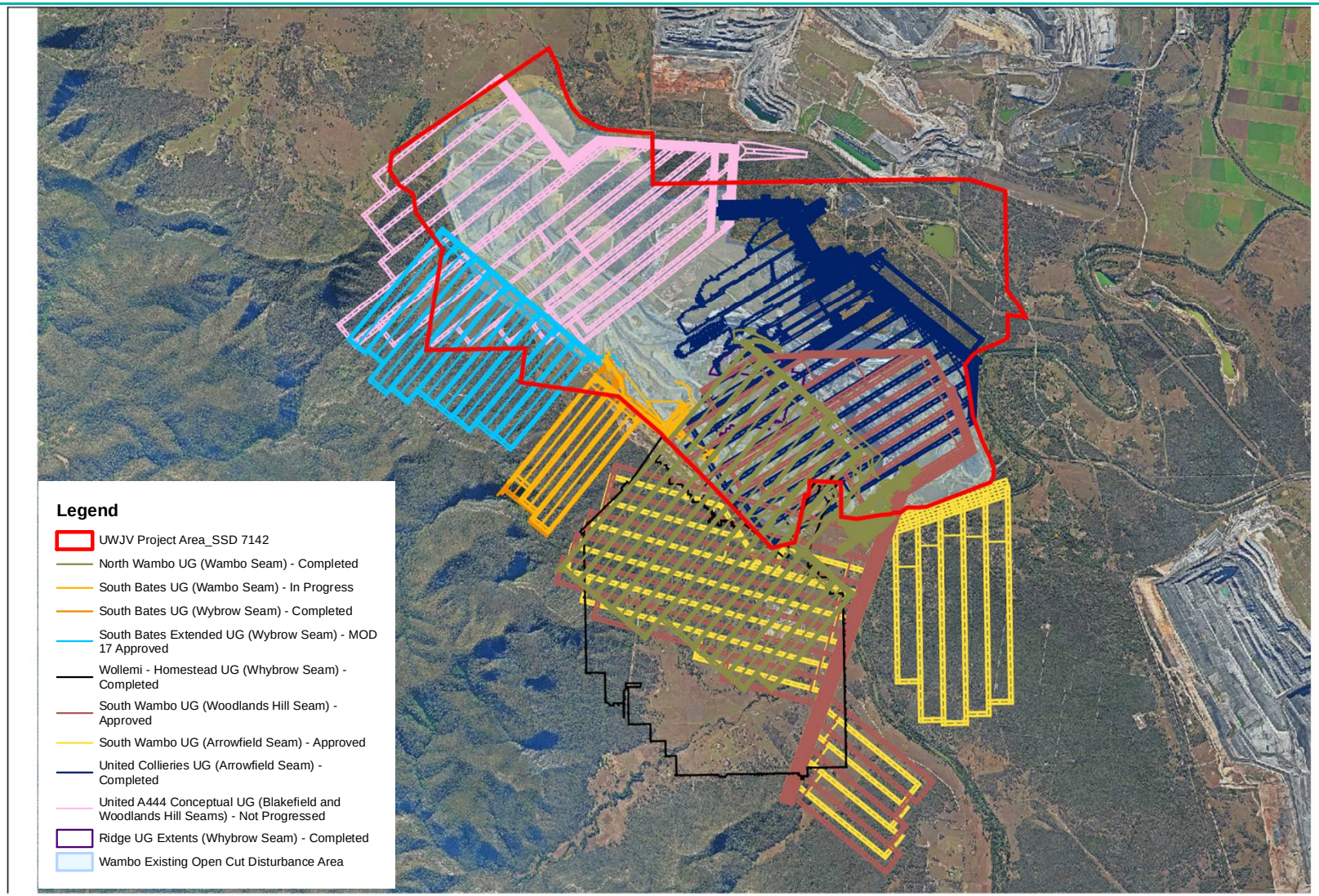
History of Operations

- Mining has occurred at Wambo and United since **1969** and **1989** respectively
- United commenced with open cut and auger mining operations moving to underground in **1992** after a lease swap with Wambo
- Wambo has been operating open cut and underground operations since inception with multiple underground targets extracted
- United ceased underground mining in **2010** and has been on care and maintenance since whilst working on the Joint Venture Project
- United and Wambo have unique neighbour interactions with both surface and stratigraphic boundaries impacting/restricting operations

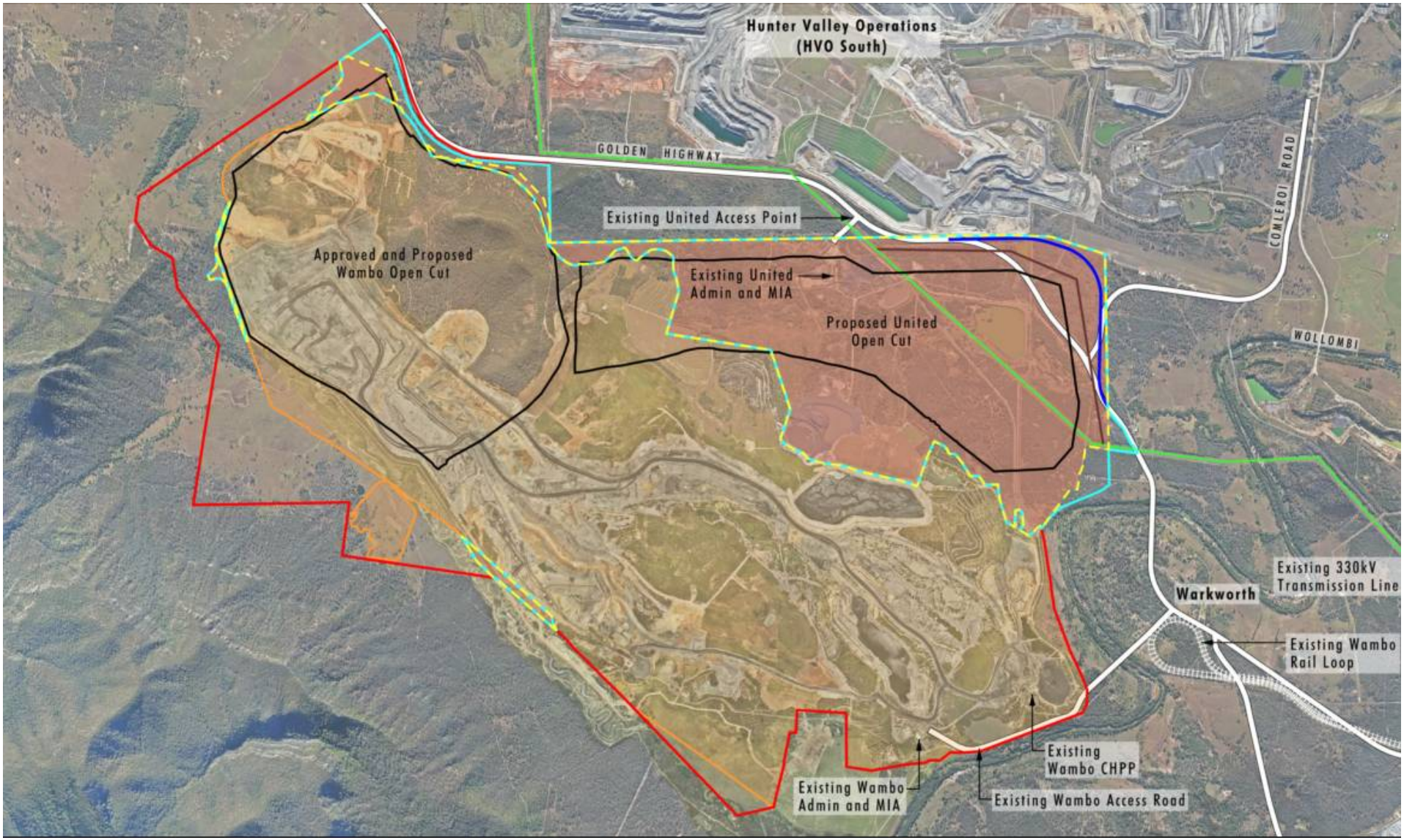
History of Mining Operations since 1969



Justification for the Project

- Brownfields extension recovering an additional **150M** ROMt, generating additional royalties estimated at **$370 million**, with a resource recovery to disturbance ratio of **221Kt/ha**
- Continued employment for **250** Wambo employees, creation of additional 250 mining jobs with a further **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 final landform sympathetic with surrounding topography with the same number of voids as already approved
- Contemporary approval and considered mine design resulting in better outcomes for the community
- Predicted impacts will be managed through mitigation, licencing, leading practice management and biodiversity offsets
- Extensive consultation conducted with community and other stakeholders, resulting in changes being made where possible to mine design throughout various phases of the Project development

Project Overview



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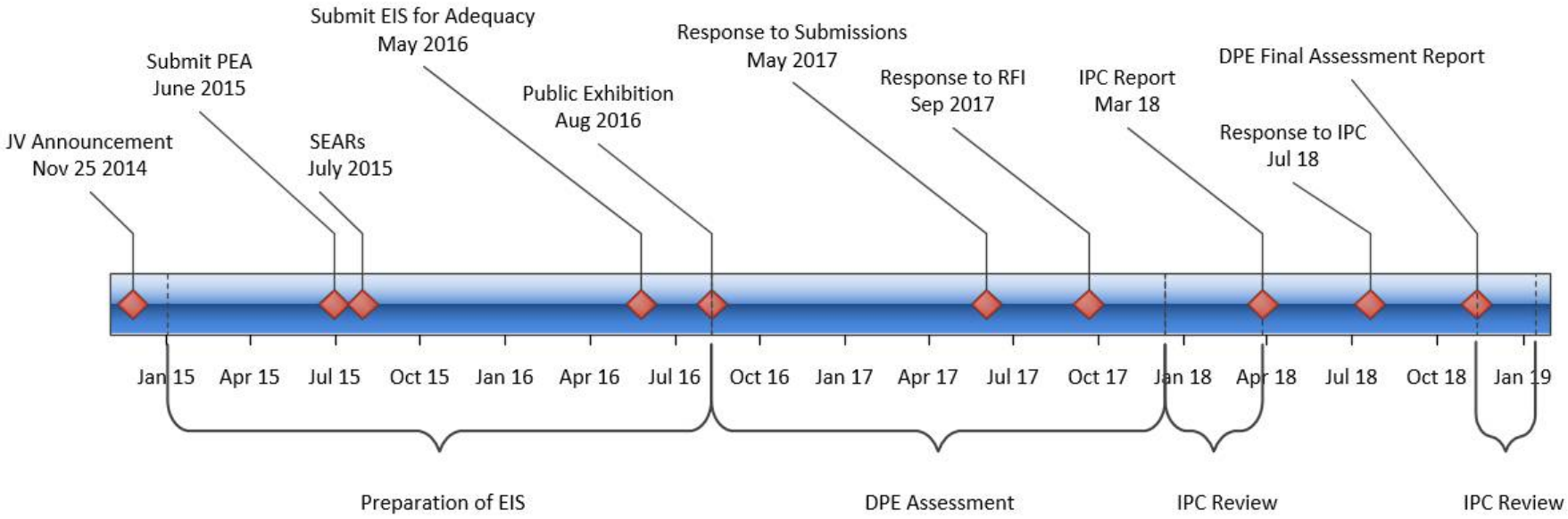
Key Project Components	Proposed Operations
Key Feature of the Project	Multi-seam open cut mining operation integrating the existing and approved Wambo Open Cut under a modified mine plan and the proposed United Open Cut
Total Economically Recoverable Reserve	Approximately 176 Mt of ROM coal, additional 150 Mt
Extraction Rates	Up to 10 Mtpa ROM coal; **Wambo approved to 8 Mtpa**
Life of Mine	Approximately 23 years from granting of approval
Operating Hours	24 hours per day, 7 days per week
Number of Employees	Up to 500 total operations employees
Mining Method	Open cut mining using a truck and excavator fleet
External Coal Transport	Product coal will continue to be transported off site via rail from the existing Wambo train loading facility
MIA Upgrade	Workshops, bathhouse, offices, fuelbay, washpad
Road Relocation	2km section of Golden Highway and intersection of Comleroi Road
Power Infrastructure	330kV, 66kV and 11kV powerline relocations

Project Refinements since EIS

- Project Disturbance Area reduced by **36.5 ha** including **19.2 ha** CEEC (RTS phase); further reduced by **4.3 ha** since RTS phase
- Extensive revision of the mine plan to **reduce noise impacts** in the Redmanvale and Maison Dieu areas (EIS phase – numerous iterations)
- Extension of one local and addition of two local biodiversity offset areas included in the Offset Package: (RTS Phase & Ongoing)
  - Wambo Offset increased from **56 ha** to **338 ha** providing **198 ha** of CEEC
  - Jerrys Plains Offset provides **215.1 ha** of CEEC
  - Brosi Offset provides **171.5 ha** of CEEC
- Final landform design refined to provide **greater detail on micro relief** and incorporation of drainage lines more consistent with topography and natural drainage (EIS and RTS phase)
- Further refinement of the **design on final void batters** to provide increased high wall and low wall stability (RTS phase)
- Detailed mine planning conducted for the **cost of filling final voids,** inclusive of material movement, rehabilitation, drainage infrastructure, production/maintenance staff and overheads
- **Additional commitments have been made in response to the recommendations by the IPC**

Project Timeline



- Timing of determination

The Department of Planning and Environment completed its Final Assessment Report and referred the Project to the IPC on 12 November 2018

- **Department focused on the Project's response to the 47 recommendations from the Independent Planning Commission Review Report**

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

Agency comments on Draft Conditions of Consent for SSD 7142, DA 305-7-2003 and DA 177-8-2004:

All matters have been addressed by consent conditions

- Agency Consultation - No Further Comment:
  - Department of Industry – Lands and Water
  - Rural Fire Service
  - Transport for NSW
  - Division of Resources and Geoscience and Resource Regulator
  - Subsidence Advisory NSW
- Agency Consultation - Further Comments:
  - Heritage Council – requested further detail on assessment methodology
  - Roads and Maritime Service – requirements for realignment of Golden Highway
  - Environmental Protection Authority – noise methodology, diesel emissions
  - Singleton Council – VPA, final land use opportunities
  - Office of Environment and Heritage – biodiversity, cultural heritage, historic heritage, flooding

IPC Review

Response to Recommendations

United Wambo Open Cut Coal Mine Project

GLENCORE

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.

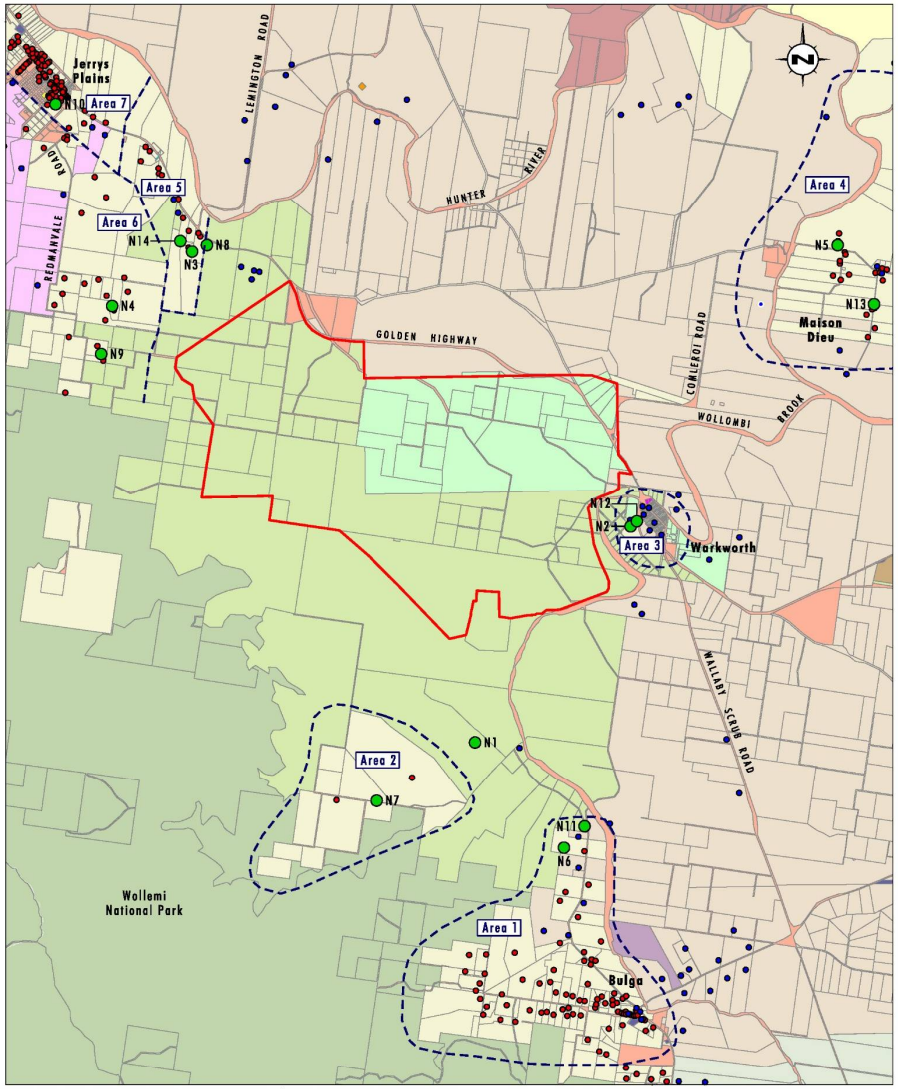
Noise Impacts and Monitoring

- 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	-	-	-



Data Source: LPMA (2009), Department of Natural Resources (2005)

Legend

- Project Area
- Noise Monitoring Location
- Receiver Area
- Mine Owned (Ashton)
- Mine Owned (Bulga)
- Mine Owned (Coal and Allied)
- Mine Owned (Doyles Creek)
- Mine Owned (Glencore)
- Mine Owned (Integra)
- Mine Owned (Peabody)
- Mine Owned (Ravensworth)
- Mine Owned (Wambo)
- AGL Energy
- Ausgrid
- Bulga Community Centre
- Government Authority (Federal, State or Local)
- Department of Education and Communities
- Diocese of Newcastle
- National Parks and Wildlife Service
- Private
- Redbank Energy
- Singleton Council
- Telstra
- Wanaruah Local Aboriginal Land Council
- Private Residence
- Mine Owned Residence

FIGURE 6.8

Location of Background Noise Monitoring Sites and Receiver Areas

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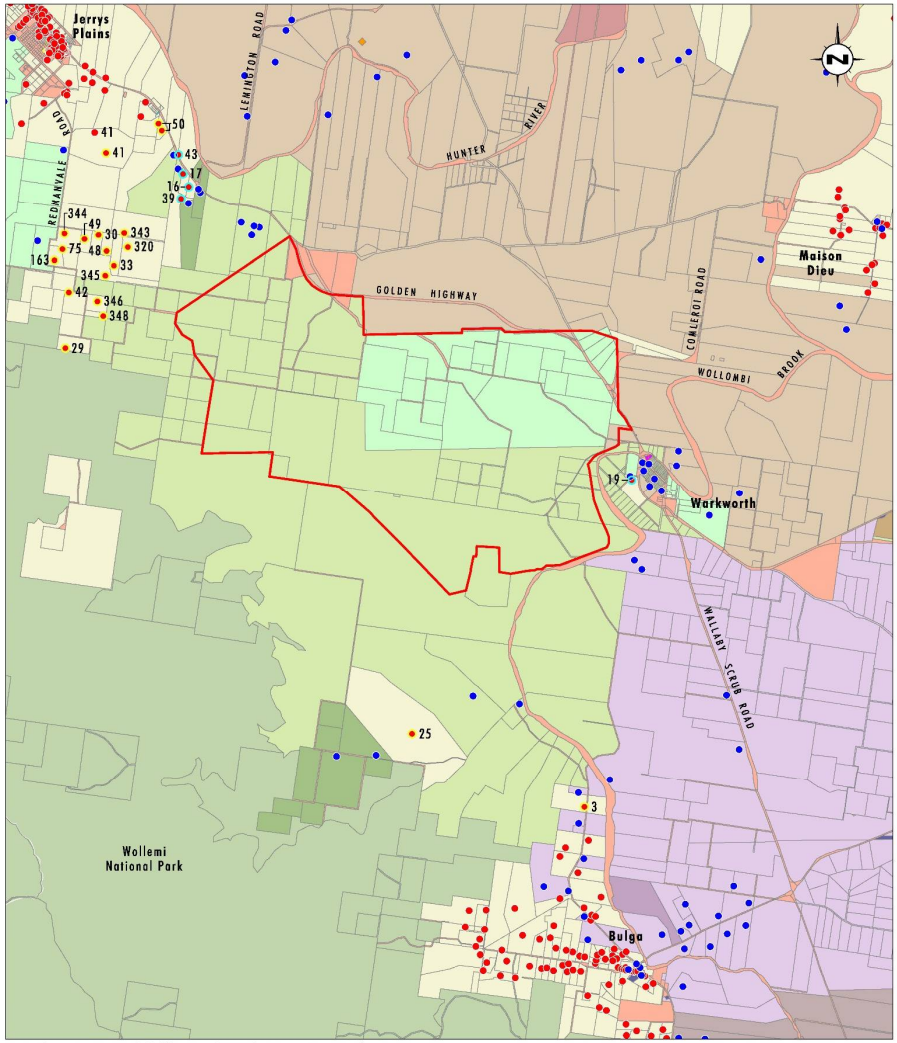

Data Source: United Collieries (2018), Department of Finance, Services & Innovation (2017)

Legend

- Project Area
- Mine Owned (Bulga)
- Mine Owned (HVO)
- Mine Owned (Glencore)
- Mine Owned (Ravensworth)
- Mine Owned (Wambo)
- Mine Owned (Yancoal)
- Mine Owned (United Wambo Joint Venture)
- AGL Energy
- Ausgrid
- Bulga Community Centre
- Government Authority (Federal, State or Local)
- Department of Education and Communities
- Diocese of Newcastle
- National Parks and Wildlife Service
- Private
- Redbank Energy
- Singleton Council
- Telstra
- Wanaruah Local Aboriginal Land Council
- Private Residence
- Mine Owned Residence
- Aquisition Rights
- Mitigation Rights

Aquisition and Management Rights

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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 **United open cut**	Commencement of open cut mining operations **United open cut**	Integration of **United and Wambo open cut operations**	Mine closure (decommissioning and rehabilitation)
Wambo Coal Mine DA 305-7-2003	Continuation of approved **Wambo open cut mine**			
	Continuation of approved **Wambo underground mine**			Mine closure (decommissioning and rehabilitation)
	Continuation of approved use of **Wambo mine infrastructure** (including processing of Wambo ROM coal)		Additional processing of United ROM coal	
Wambo Train Loading Facility DA 177-8-2004	Continuation of approved **rail loading** (including despatch of Wambo product coal)		Additional despatch of United product coal	Mine closure (decommissioning and rehabilitation)

Phase 1A	Phase 1B
• Cultural heritage salvage and clearing • Erosion and sediment control • Construction of temporary mining and construction infrastructure area • Realignment of power lines and Golden Highway • Construction water management system • Extraction from borrow pit • Construction haul roads and access roads	• Continued development of water management system, power line and Golden Highway realignment • Commencement of mining operations at United • Wambo continue operating open cut, underground and coal processing facilities

umwelt

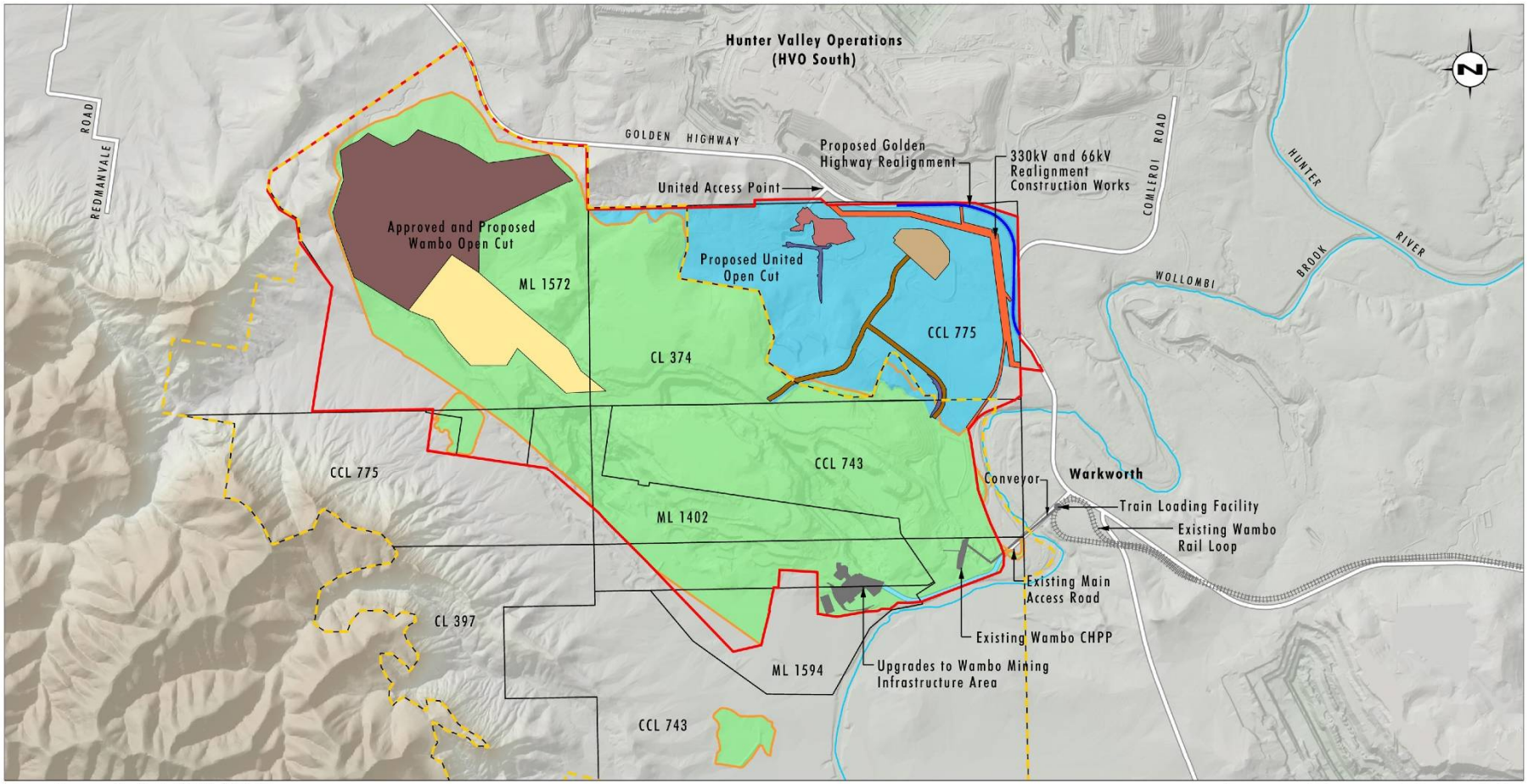

Image Source: United LiDAR (2015)
Data Source: Glencore (2015)

0 1.0 2.0 3.0km
1:60 000

Legend

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

Phase 1A Development Layout

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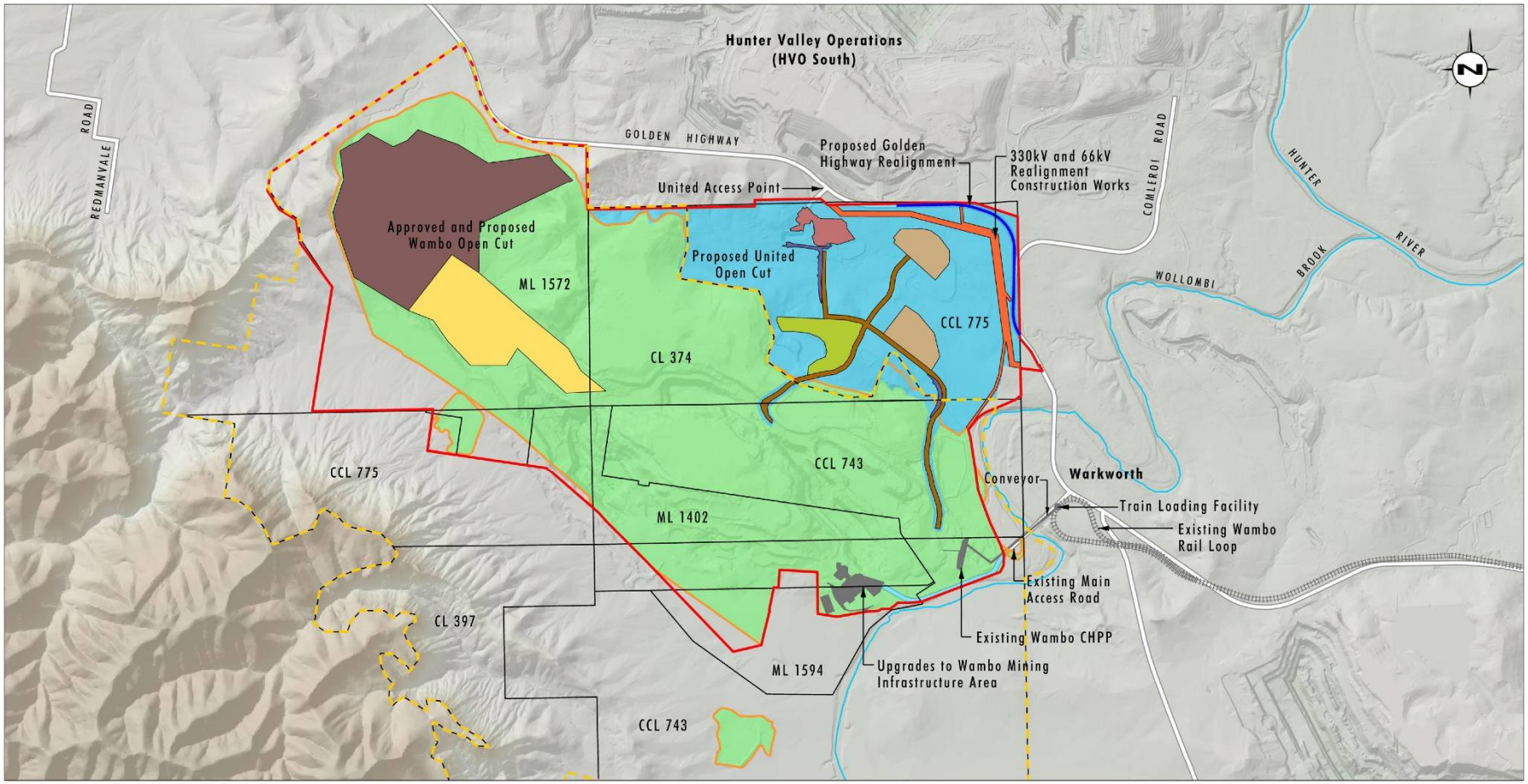

Image Source: United LiDAR (2015)
Data Source: Glencore (2015)

0 1.0 2.0 3.0km
1:60 000

Legend

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

Phase 1B Development Layout

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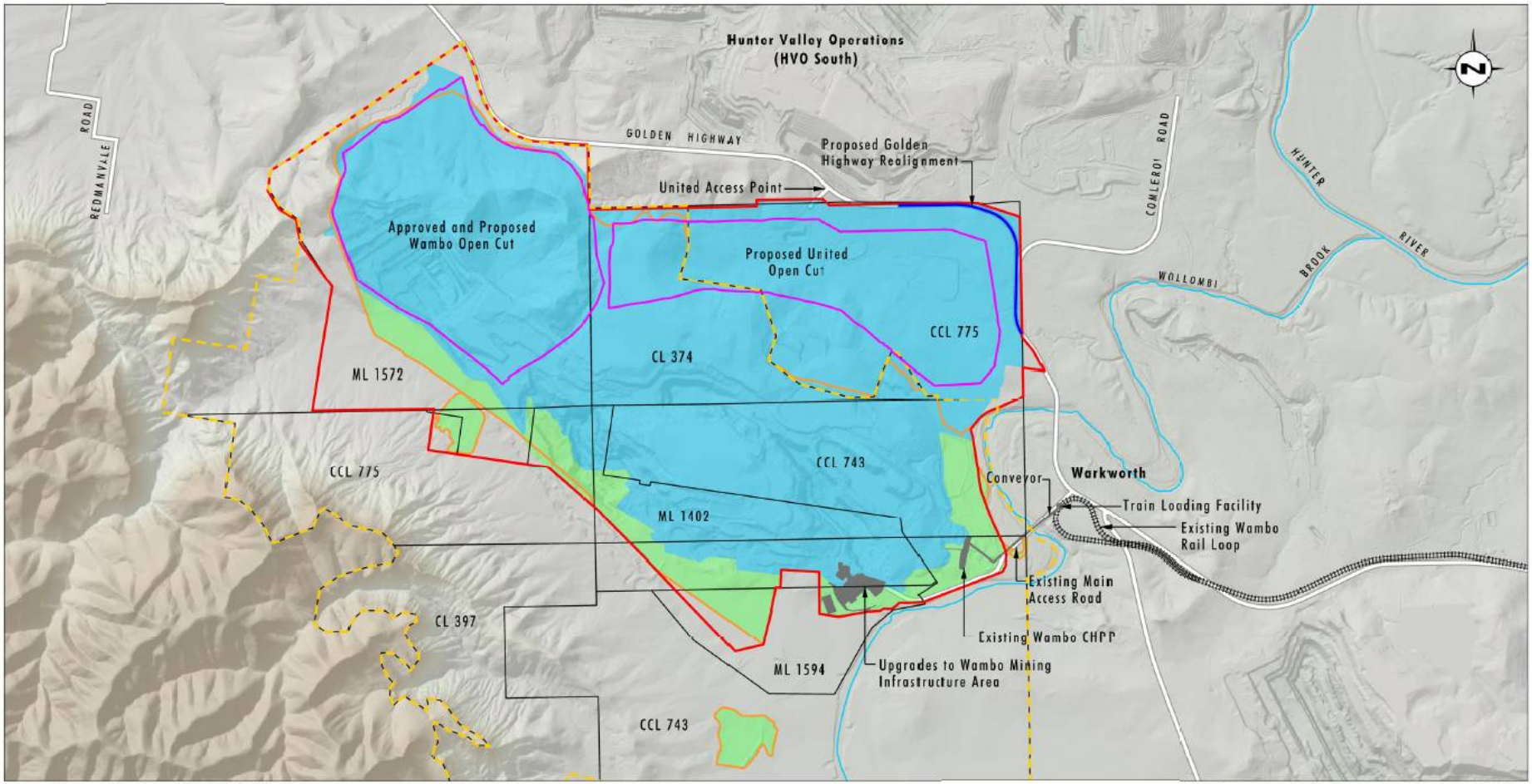

Legend

- 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

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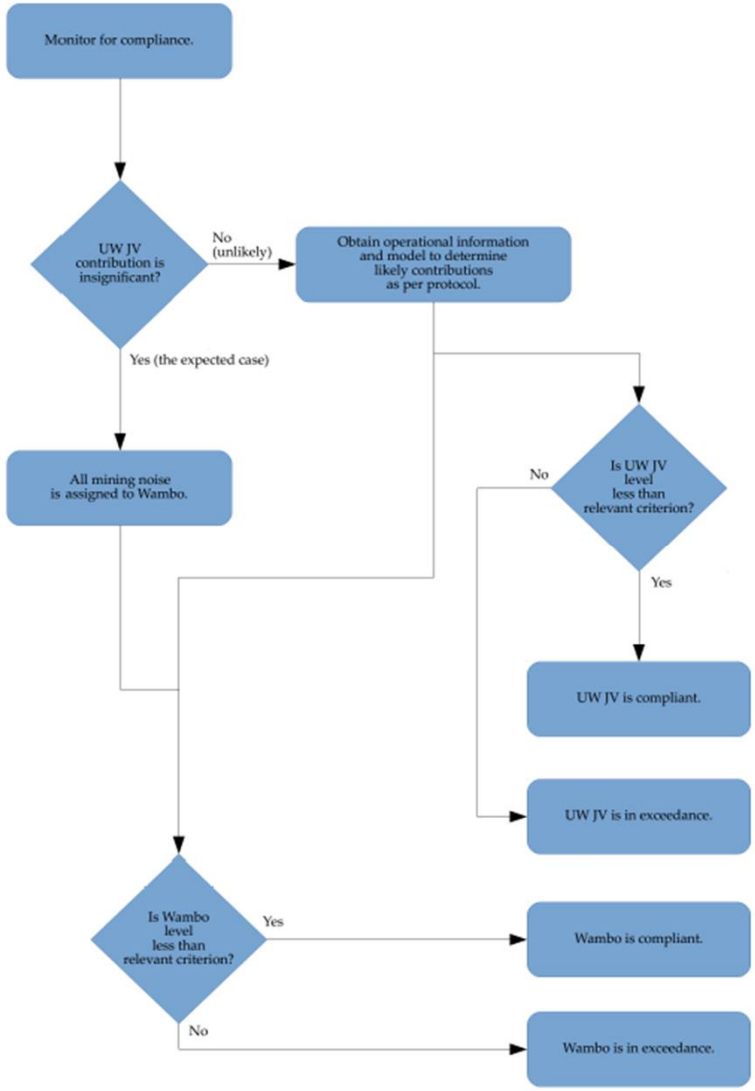
Noise Monitoring During Transition

- **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 also has existing acquisition rights under Wambo, Warkworth and HVO South consents
- 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 $PM_{2.5}$ monitoring** to provide local (Warkworth & Redmanvale) data to confirm that the predictions of $PM_{2.5}$ 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

- Total Project Area is **3,032 ha**
- Project Additional Disturbance Area is **673 ha** of which **146 ha** has been impacted by previous mining activities - Brownfields Project
- **527 ha** (17.5% of PA) of vegetation will be disturbed and includes **247 ha** of Central Hunter Valley Eucalypt Forest and Woodland CEEC (EPBC Act)
- **1,515 ha** of land based offsets secured, including **631 ha** of CEEC
- **878 ha** of ecological rehabilitation proposed, including **505 ha** of CEEC
- **3.8 : 1** or 15,935 v 4,230 land based offsets v rehabilitation credits
- **1,136 ha** CEEC offsets, **4.6 : 1** offset v impact
  - Note – credit yield for mine rehab much lower than land based offsets

The Project has secured **100%** of the required offsets for Stage 1 development of the Project

- Establishment of **5 land based offset sites**; Highfields, Mangrove, Wambo, Jerrys Plains and Brosi properties
- Land offsets and rehabilitation provide **100%** of the CEEC biodiversity offsets and **94%** of the overall biodiversity offsets required for Stage 1
- **6% credit shortfall** for Stage 1 will be retired through either acquisition of further land based offsets and/or payments into the **Biodiversity Offsets Scheme** and/or other supplementary measures
- Progressive retirement of credits in **three stages**, accepted by DPE and OEH

Biodiversity Offsets

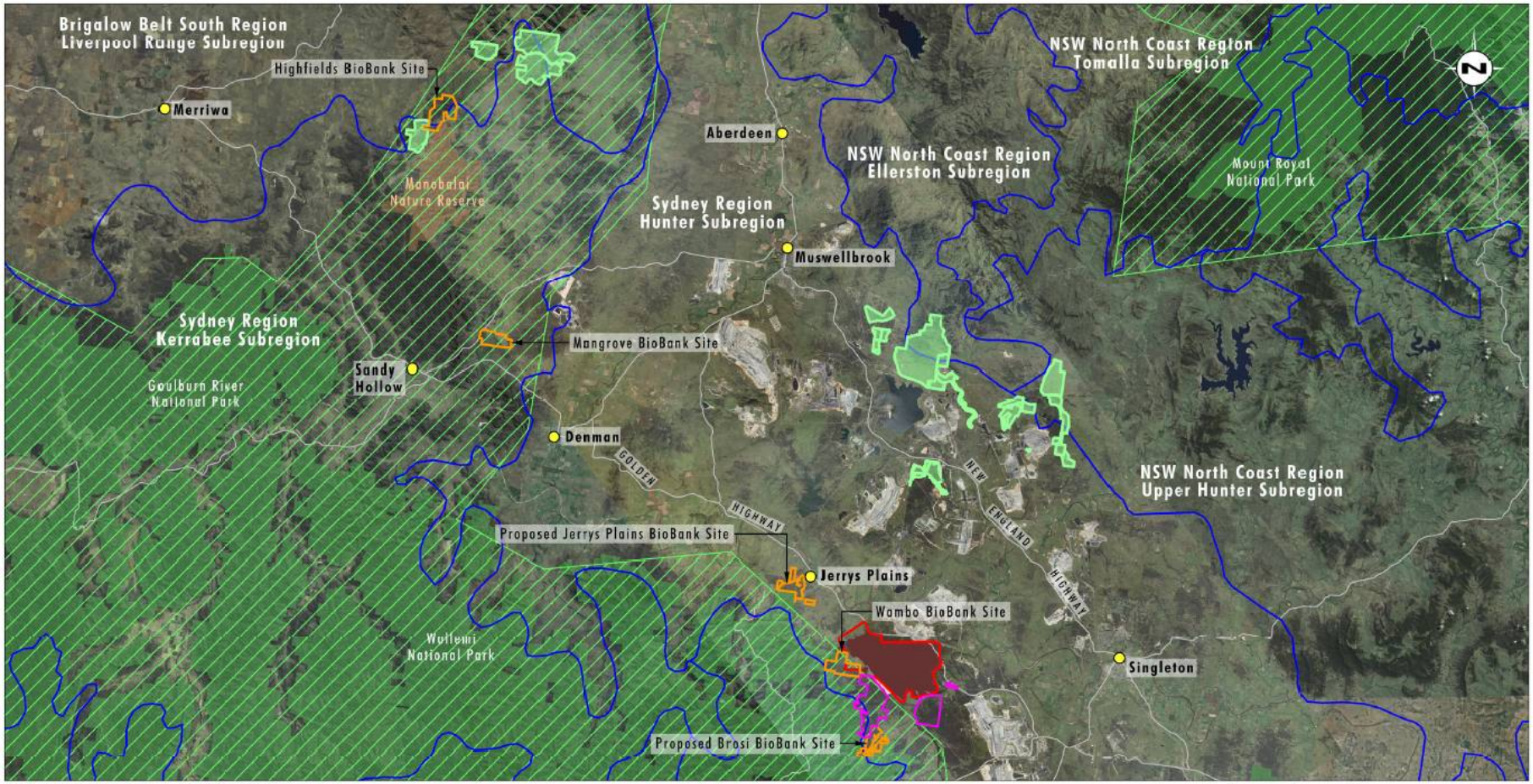


FIGURE 1.2

Location of Proposed Biodiversity Offset Sites

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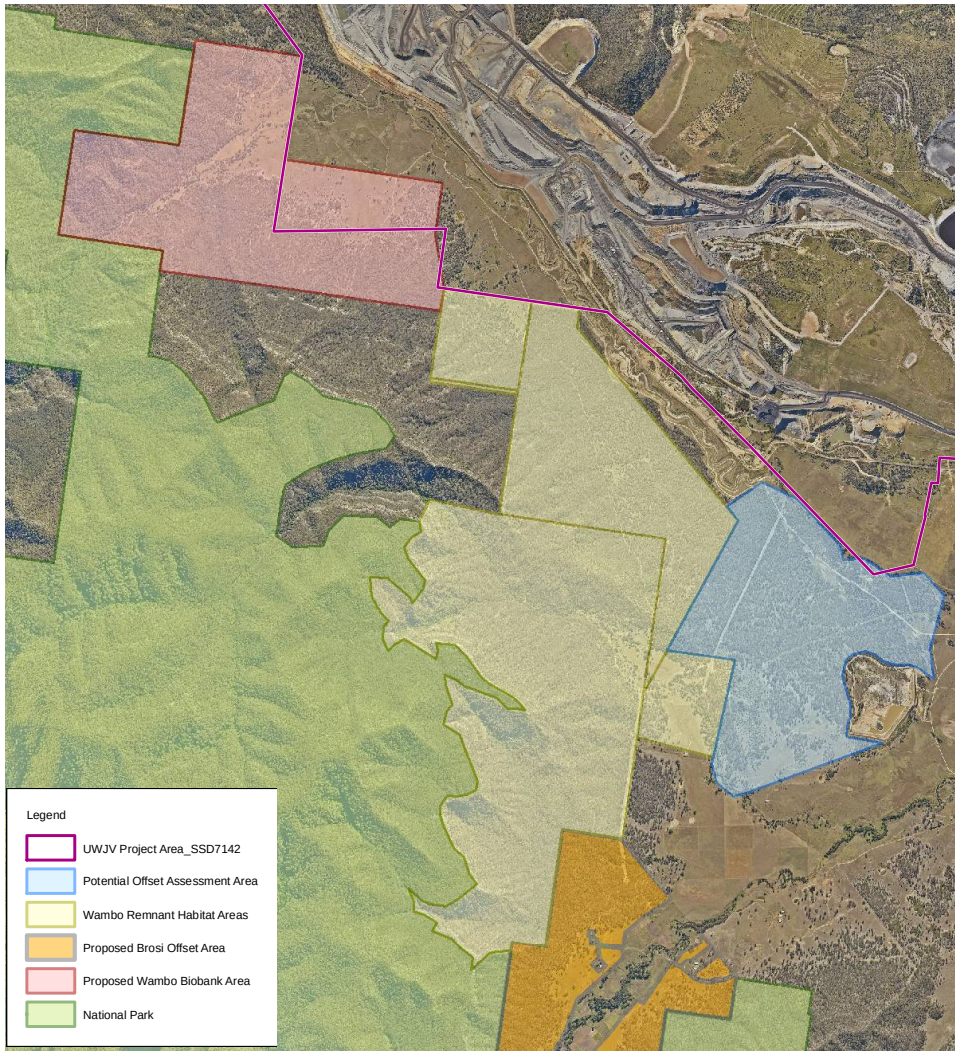
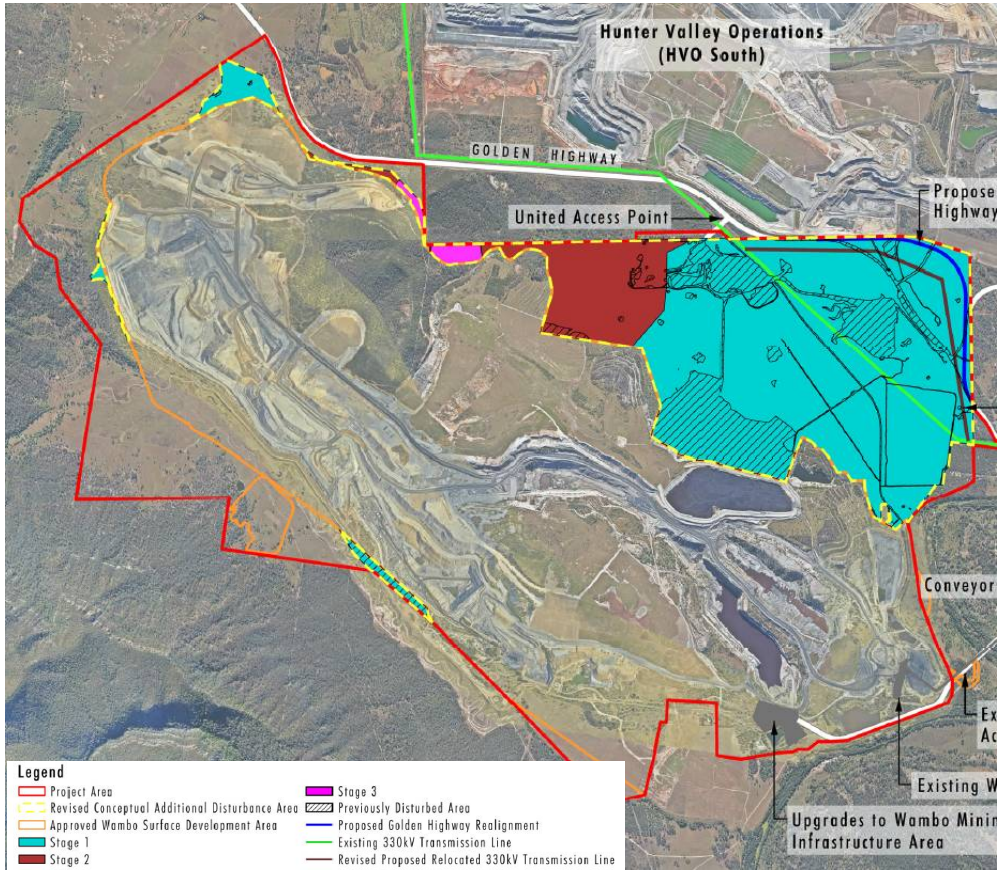
Potential New Offset Area

- 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



IPC Review Report – Recommendations
Biodiversity Offset Strategy

- 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	**100%**	78%	3,190
Hunter Floodplain Red Gum Woodland EEC under the BC Act	0	20	0	20	0	**100%**	0%	20
Central Hunter Ironbark - Spotted Gum - Grey Box Forest EEC under the BC Act	1,424	0	0	1,424	1,424	**100%**	100%	0
Central Hunter Grey Box - Ironbark Woodland EEC under the BC Act	356	101	0	457	326	**92%**	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	**77%**	56%	2,148
HU906 - Bull Oak Grassy Woodland of the Central Hunter Valley	2,973	0	0	2,973	2,815	**95%**	95%	158
HU945 - Swamp Oak - Weeping Grass Grassy Riparian Forest of the Hunter Valley	1,844	281	0	2,125	1,555	**84%**	73%	570
southern myotis (Myotis macropus)	15	547	0	562	21	**100%**	4%	541
TOTAL ECOSYSTEM CREDITS	21,446	4,316	621	26,383	20,165	**94%**	76%	6,218
TOTAL SPECIES CREDITS	15	547	0	562	21	**100%**	4%	541

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EPBC Offset Obligations

- 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 additional land based offsets

EPBC Offset Obligations

- 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

Ecological Rehabilitation

- **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

Ecological Rehabilitation – Case Studies

- The rehabilitation strategy for United has been developed based on **Glencore's experiences** at other operations, including Mt Owen and Mangoola
- Rehabilitation monitoring results **demonstrate that there is a strong trend** towards the re-establishment of self-sustaining woodland communities within mine site rehabilitation
- As of January 2018, Glencore operations have rehabilitated **more than 12,600ha** of mined land to native vegetation or grazing pastures
- Two Glencore mines, Newlands and Rolleston, have **achieved certification from Queensland Government** for rehabilitation of mined land
  - Newlands received certification for **73ha** of native woodland rehab in 2017, a first for the State's coal industry
  - Rolleston achieved certification for **220ha** of grazing land rehabilitation in 2018

Mt Owen Mine – regrowing a forest

- Ravensworth State Forest is one of the largest areas of **remnant woodland** in the Hunter Valley of NSW.
- Mt Owen has been working with Government agencies and the University of Newcastle since 1993 to **reconstruct forest and woodlands** in areas disturbed by mining, and in surrounding areas previously cleared for grazing.
- Since 1995, 78 bird species, 25 non-flying mammals, 13 bat species, 9 reptile and 8 amphibian species and threatened fauna, including the squirrel glider and grey-crowned babbler, have been recorded.
- The rehabilitation work has been **highly-commended by the *Global Restoration Network of the Society of Ecosystem Restoration***, *International*.
- The work has also been used as the basis for an industry-leading publication – *Establishing Native Vegetation* – which provides key principles for re-establishing native vegetation on disturbed land.

With nearby land purchases, Mt Owen's rehabilitation work is creating an area five times larger than the original remnant Ravensworth State Forest woodland.

Mangoola Natural Landform Rehabilitation

- Believed to be the largest project of its type in the region: the mine's entire pit disturbance area – 1300 hectares – being returned to landform and vegetation consistent with surrounding undisturbed land,
- At end 2017 - 55% disturbance
- Also believed to be the first Geofluv™ based landform constructed in Australia: landform design similar to surrounding areas that can convey runoff water the same way that a natural landform would.
- Potential environmental benefits of this project include:
  - Better water quality through stability of landform
  - Reduced erosion potential
  - Reduced maintenance due to lack of specific water management structures
  - More visual appeal in landform which, over time, should not look like mine rehabilitation
  - Increased biodiversity due to a range of topographic relief, appropriate planning for vegetation communities and habitat augmentation, which creates a more familiar terrain for fauna species.




Rehabilitation Certification

- Newlands and Rolleston mines have achieved certification from Queensland Government for rehabilitation of mined land
- Newlands received certification for **73ha** of mine overburden rehab in 2017, a first for the State's coal industry
- Newlands has created habitat suitable for flora and fauna that is safe, stable, non-polluting and sustainable
- Rolleston achieved certification for **220ha** of rehabilitation in 2018
- The rehabilitation complies with conditions for sustainable post-mining use and in coming years will be used for grazing cattle

Certified rehabilitation at Newlands (above) and Rolleston (below)

umwelt

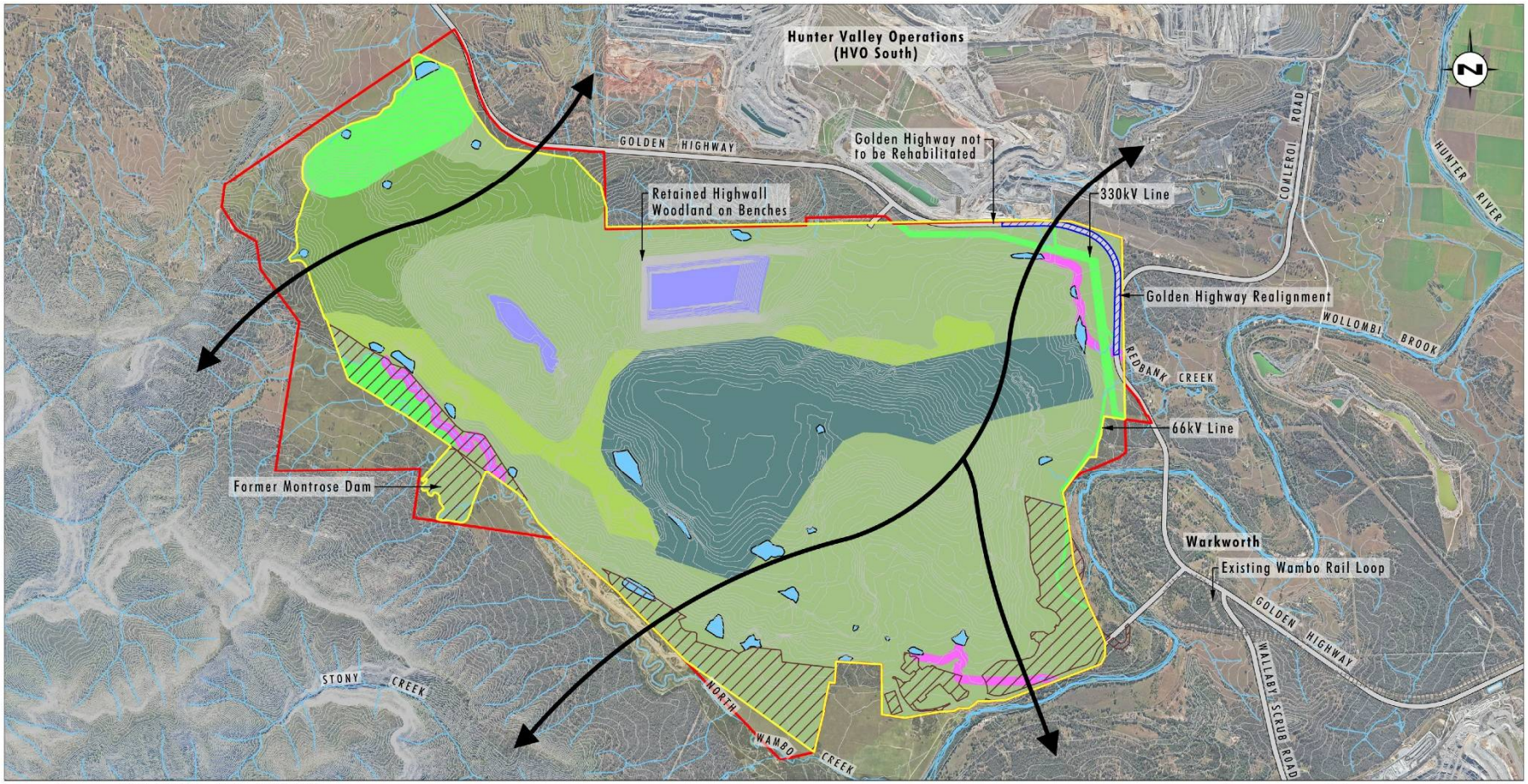

Image Source: AAM (2012), United (2015)
Base Data Source: Glencore (2015), LPI (2009)
Note: Contour Interval 10m

0 1.0 2.0 2.5km
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

File Name (A4): 3509_708.dgn
20180914 14.11

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

Singleton Council VPA

- Project offered 8 Feb 18 - **$1.2 million**, Singleton Council rejected the offer on the basis it required 1% CIV
- Project **revised CIV** to $207 million by removing costs for equipment currently being used at Wambo; this was found to be generally aligned with the 2010 Planning Circular PS10-008 and accepted by DPE
- DPE proposed a resolution to the VPA issue on 22 Oct and engaged Greg New from GLN Planning to undertake an **Independent Review** of the VPA offer for adequacey
- GLN Planning completed a comparison to 12 other VPAs, 4 in LGA, 7 other and 1 Singleton/Muswellbrook - recommended a VPA of **$2.65 million**
- **United Wambo do not agree with the methodology of comparison to other VPAs as opposed to assessing the impact of the specific Project**
- 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

Social Impact Management Plan (Condition B96)

- Bulga is located adjacent to two large mining operations – MTW and Bulga Coal
- Impacts from the Project are predicted to not be significant
- The SIOA should be focused on the nearest communities (Jerrys Plains, Warkworth and Maison Dieu) with Bulga removed from the communities to be consulted

Aboriginal Heritage (Conditions B64 and B65)

- The requirements to cease work and immediately notify OEH upon discovery of a previously unknown site is too restrictive and could cause unnecessary delays
- The ACHMP will have a process to manage newly discovered objects, these conditions should be removed or replaced with a requirement to manage in accordance with the ACHMP


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Questions?