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
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

Legend

- UWJV Project Area, SSD 7142
- North Wambo UG (Wambo Seam) - Completed
- South Bates UG (Wambo Seam) - In Progress
- South Bates UG (Wybrow Seam) - Completed
- South Bates Extended UG (Wybrow Seam) - MOD 17 Approved
- Wollemi - Homestead UG (Wybrow Seam) - Completed
- South Wambo UG (Woodlands Hill Seam) - Approved
- South Wambo UG (Arrowfield Seam) - Approved
- United Colloines UG (Arrowfield Seam) - Completed
- United A44 Conceptual UG (Blakefield and Woodlands Hill Seams) - Not Progressed
- Ridge UG Extents (Wybrow Seam) - Completed
- Wambo Existing Open Cut Disturbance Area
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

### Key Project Components

<table>
<thead>
<tr>
<th>Key Feature of the Project</th>
<th>Proposed Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Feature of the Project</td>
<td>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</td>
</tr>
<tr>
<td>Total Economically Recoverable Reserve</td>
<td>Approximately 176 Mt of ROM coal, additional 150 Mt</td>
</tr>
<tr>
<td>Extraction Rates</td>
<td>Up to 10 Mtpa ROM coal; <strong>Wambo approved to 8 Mtpa</strong></td>
</tr>
<tr>
<td>Life of Mine</td>
<td>Approximately 23 years from granting of approval</td>
</tr>
<tr>
<td>Operating Hours</td>
<td>24 hours per day, 7 days per week</td>
</tr>
<tr>
<td>Number of Employees</td>
<td>Up to 500 total operations employees</td>
</tr>
<tr>
<td>Mining Method</td>
<td>Open cut mining using a truck and excavator fleet</td>
</tr>
<tr>
<td>External Coal Transport</td>
<td>Product coal will continue to be transported off site via rail from the existing Wambo train loading facility</td>
</tr>
<tr>
<td>MIA Upgrade</td>
<td>Workshops, bathhouse, offices, fuelbay, washpad</td>
</tr>
<tr>
<td>Road Relocation</td>
<td>2km section of Golden Highway and intersection of Comleroi Road</td>
</tr>
<tr>
<td>Power Infrastructure</td>
<td>330kV, 66kV and 11kV powerline relocations</td>
</tr>
</tbody>
</table>
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
• 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
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

<table>
<thead>
<tr>
<th>Property</th>
<th>Owner</th>
<th>EIS</th>
<th>DPE PAR</th>
<th>DPE FAR</th>
<th>SSD 7142</th>
</tr>
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<tbody>
<tr>
<td>R43</td>
<td>Carmody</td>
<td>Acquisition</td>
<td>Acquisition</td>
<td>Mitigation</td>
<td>Acquisition</td>
</tr>
<tr>
<td>R44</td>
<td>Murphy</td>
<td>-</td>
<td>Mitigation</td>
<td>-</td>
<td>-</td>
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<tr>
<td>R50a (Shed)</td>
<td>Gee</td>
<td>Mitigation</td>
<td>Mitigation</td>
<td>Mitigation</td>
<td>Mitigation</td>
</tr>
<tr>
<td>R50b</td>
<td>Gee</td>
<td>Mitigation</td>
<td>Mitigation</td>
<td>Mitigation</td>
<td>Mitigation</td>
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<tr>
<td>R50c</td>
<td>Gee</td>
<td>Mitigation</td>
<td>Acquisition</td>
<td>Mitigation</td>
<td>Mitigation</td>
</tr>
<tr>
<td>R56</td>
<td>Skinner</td>
<td>Mitigation</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>R133 (Shed)</td>
<td>Skinner</td>
<td>Mitigation</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Transition to Joint Venture

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

**Phase 1A**
- 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

**Phase 1B**
- 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
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.
• 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

United Wambo Open Cut Coal Mine Project
• 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 1,500 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.

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**United Wambo Open Cut Coal Mine Project**
# Project Offset Credit Requirements

<table>
<thead>
<tr>
<th>Impacted Feature</th>
<th>STAGE 1 Credits Required</th>
<th>STAGE 2 Credits Required</th>
<th>STAGE 3 Credits Required</th>
<th>ALL STAGES Credits Required</th>
<th>Total Credits Secured Through Current Land-based Offsets and Mine Rehabilitation</th>
<th>STAGE 1</th>
<th>ALL STAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Central Hunter Valley Eucalypt Forest and Woodland CEEC under the EPBC Act</strong></td>
<td>11287</td>
<td>2,570</td>
<td>620</td>
<td>14,477</td>
<td>11287</td>
<td>100%</td>
<td>78%</td>
</tr>
<tr>
<td><strong>Hunter Floodplain Red Gum Woodland EEC under the BC Act</strong></td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Central Hunter Ironbark - Spotted Gum - Grey Box Forest EEC under the BC Act</strong></td>
<td>1,424</td>
<td>0</td>
<td>0</td>
<td>1,424</td>
<td>1,424</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Central Hunter Grey Box - Ironbark Woodland EEC under the BC Act</strong></td>
<td>356</td>
<td>301</td>
<td>0</td>
<td>457</td>
<td>326</td>
<td>92%</td>
<td>72%</td>
</tr>
<tr>
<td><strong>HU905 - Narrow-leaved Ironbark - Grey Box grassy Woodland of the Central and Upper Hunter</strong></td>
<td>3,562</td>
<td>1,344</td>
<td>1</td>
<td>4,907</td>
<td>2,758</td>
<td>77%</td>
<td>56%</td>
</tr>
<tr>
<td><strong>HU906 - Bull Oak Grassy Woodland of the Central Hunter Valley</strong></td>
<td>2,973</td>
<td>0</td>
<td>0</td>
<td>2,973</td>
<td>2,815</td>
<td>95%</td>
<td>95%</td>
</tr>
<tr>
<td><strong>HU945 - Swamp Oak - Weeping Grass Grassy Riparian Forest of the Hunter Valley</strong></td>
<td>1,844</td>
<td>281</td>
<td>0</td>
<td>2,125</td>
<td>1,555</td>
<td>84%</td>
<td>73%</td>
</tr>
<tr>
<td><strong>southern myotis (Myotis macropus)</strong></td>
<td>15</td>
<td>547</td>
<td>0</td>
<td>562</td>
<td>21</td>
<td>100%</td>
<td>4%</td>
</tr>
<tr>
<td><strong>TOTAL ECOSYSTEM CREDITS</strong></td>
<td>21,446</td>
<td>4,316</td>
<td>621</td>
<td>26,383</td>
<td>20,365</td>
<td>94%</td>
<td>76%</td>
</tr>
<tr>
<td><strong>TOTAL SPECIES CREDITS</strong></td>
<td>15</td>
<td>547</td>
<td>0</td>
<td>562</td>
<td>21</td>
<td>100%</td>
<td>4%</td>
</tr>
</tbody>
</table>
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:

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

United Wambo Open Cut Coal Mine Project
• 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
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 111ha to useable land
- $7 million per ha; 1400 times the cost of buying similar land
### IPC Review Report - Recommendations

#### Final Void Option Analysis

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</thead>
<tbody>
<tr>
<td>Three voids (two Wambo and one at United)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Not considered a reasonable mine design as a landform with two voids is achievable.</td>
</tr>
<tr>
<td>Two final voids with United void near Wollombi Brook</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Not considered a reasonable mine design due to long-term geotechnical risks of final void near Wollombi Brook. Also less economic mining scenario.</td>
</tr>
<tr>
<td>Directing North Wambo Ck flows into Wambo void, connecting the two voids with spill from the United void to Wollombi Brook</td>
<td>No</td>
<td>No</td>
<td>Yes but economic benefits of Project lost</td>
<td>No</td>
<td>Poor landform with steep slopes. Significant engineering feasibility risk for long-term tunnel or pipe connecting voids.</td>
</tr>
<tr>
<td>Two voids but connected to allow them to equilibrate</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Significant engineering feasibility risk for long-term tunnel or pipe connecting voids.</td>
</tr>
<tr>
<td>Project does not proceed option (two voids at Wambo, no Project)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Is a technically viable design, but benefits of the Project are lost and therefore not proposed.</td>
</tr>
<tr>
<td>One void (backfill voids post coal extraction)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Determined to not be economically feasible.</td>
</tr>
<tr>
<td>Two voids, increasing catchment areas reporting to the final voids</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>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.</td>
</tr>
<tr>
<td>Construction of a flood flow channel to direct flood flows from Wollombi Brook into United void</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Not proposed as would result in loss of additional surface water flows to voids without significant change to overall outcomes.</td>
</tr>
<tr>
<td>Two final voids, with United void at western end of proposed open cut</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>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.</td>
</tr>
</tbody>
</table>

United Wambo Open Cut Coal Mine Project
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
• Project offered 8 Feb 18 - $12 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 adequacy

• 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
Questions?