



GLENCORE

Visitor Induction PAC Site Visit 7 February 2018

General Visitor Requirements (cont)

- All visitors must follow instructions from Glencore contact
- Visitors are not permitted to leave the Admin building and its covered areas unless escorted by their Glencore Contact
- Visitors are not permitted to conduct any manual work whilst on site, e.g. operating equipment, isolating energy sources or using site work tools
- All visitors to the Admin building are required to wear covered footwear

Compulsory PPE for areas outside the Administration Building:

- Hard hat
- Safety boots (Steel capped)
- High visibility clothing / reflective vest
- Safety glasses
- Hearing protection (where signposted and around mobile machinery)
- Gloves (to be available to be worn at all times)



Emergency Evacuation

• If an Emergency Evacuation is required:

- Take the nearest Exit out of the building to the Muster Area at the main car park – shown on the Emergency Muster Plan
- The evacuation may be triggered via:
 - Fire Alarm
 - Personal Notification to Evacuate





Visitors shall remain with their site supervisor at all times throughout their visit.

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• Outside administration buildings in car park



Drug & Alcohol Policy

- Random drug and alcohol testing is conducted on site and visitors are not exempt from participating if required
- Types of tests:
 - Random
 - Challenge
 - Post incident
- Site alcohol level 0.00



 Safecoal Rule #6 - Never attend work under the influence of alcohol or illicit drugs

No Smoking Policy

- This site has a 'No Smoking' policy
- This policy applies from the time you enter the front gate of the operation
- All materials associated with smoking must remain inside your vehicle whilst on site





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Other Relevant Policies

Photography Policy:

 No photos or video may be taken on site without the permission of the Project Manager

Computer Policy

• No non-Glencore computers are to be connected to the Glencore system

Media Policy

 No visitor is to ever make a statement to the media on the behalf of United Collieries or Glencore







Environment & Community

- Glencore places great pride in its standing as a sustainable company
- The environment in general, archaeological and cultural sites are to be respected at all times
- Community relationships are highly valued. Procedures exist to receive, handle and respond to community complaints. Visitors must never make statements on Glencore's behalf
- All visitors shall abide by Glencore policies regarding the Environment & Community as they apply to them



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PAC Site Visit7 February 2018

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 an 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





Joint Venture

Maximising resource recovery by removing constraints and utilising existing infrastructure in an area that has been mined since 1969

- 50:50 production Joint Venture between United & Wambo 25 Nov 2014
 - Glencore manager of JV
 - JV commencement expected in 2018, subject to state and federal approvals
- 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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14

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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Project Overview – Key Statistics

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 Area
- Approved Wambo Surface Development Area 🔲 Temporary Rehabilitation
- Active Dumping Area
- Active Mining Area
- Proposed Rehabilitation

Existing Rehabilitation Temporary Rehabilitatio Tailings Emplacement Haul Road





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Legend

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Existing Rehabilitation Temporary Rehabilitatio Tailings Emplacement Haul Road





Project Stage Plan – End of Mining



Project Stage Plan – Conceptual Final Landform



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

Legend

Project Area

Conceptual Rehabilitation Area

ZZZ Riparian Vegetation

Grassland (Agricultural)

HU905 - Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter conforming to Central Hunter Valley Eucalypt Forest and Woodland CEEC - Habitat Corridors (existing and proposed vegetation) = HU906 - Bull Oak grassy woodland of the central Hunter Valley Woodland/Open Woodland

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3D Simulation





Option 1. United Standalone including RTCA land to north (75.2 Mt ROM; 15 years)

- Disturbance 860 ha verses 678.7 ha
- Coal 75.2 Mt versus 150 Mt , 87.4 Kt/ha disturbance (compared to 221.2 Kt/ha)
- Three final voids (2 at Wambo and 1 at United)
- Poorer final landform outcome as operations and landforms not integrated
- Required construction of a new CHPP, MIA and train loading facility
- Impacts on Wollombi Brook (required new rail line crossing over Brook)



Option 2. United Standalone – United lease area only (34 Mt ROM; 7 years)

- Disturbance 560 ha verses 678.7 ha
- Coal 34 Mt versus 150 Mt
- 60.7 Kt/ha disturbance (compared to 221.2 Kt/ha)
- Three final voids (2 at Wambo and 1 at United)
- Use of existing United CHPP, with upgrade to other facilities
- Sterilisation of coal resource due to need to maintain United CHPP, infrastructure area and out-ofpit emplacement areas over coal resources, **uneconomic return**



Option 3. United Standalone - No relocation of Golden Highway (90 Mt ROM; 21 years)

- Coal 90 Mt versus 150 Mt
- 132.7 Kt/ha disturbance (compared to 221.2 Kt/ha)
- Significant cost to develop bridge or tunnel required to cross the Golden Highway
- Poorer final landform outcome as operations and landforms not integrated
- Four final voids (2 at Wambo and 2 at United one void located on eastern side of highway)
- Required construction of a new CHPP, MIA and train loading facility



Option 4. More 'constructed looking' final landform (150 Mt ROM; 23 years incl Wambo) Preferred option incorporates micro relief and provides:

- 221.2 Kt/ha disturbance
- Improved final landform outcome with more natural appearance, reducing visual impacts
- More stable and hence sustainable design that allows for more natural drainage features to minimise ongoing maintenance of rehabilitated land



Project Timeline



Project Refinements

- Project Disturbance Area reduced by 36.5 ha including 19.2 ha CEEC (RTS phase)
- Extensive revision of the mine plan to reduce noise impacts in the Redmonvale and Maison Dieu areas (EIS phase numerous iterations)
- Noise limits for the separate UWJV Project and Wambo operations have been developed for inclusion in any future development approval and Environmental Protection Licence (RTS phase)
- Extension of one local and two additional local biodiversity offset areas have been 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)
- Final void water quality review and revision (RTS phase)

Questions from PAC

3

Justification for Mine Layout

 Project mine layout is the area required for optimum resource recovery when taking into account surrounding physical constraints such as location of neighbours, air and noise impacts, Golden Highway, power lines, neighbouring operations and old UG workings

Why two pits rather than one

- Wambo Pit is a stratigraphic extension of an existing mining operation, whilst the United Pit is targeting a new separate mining area, with lower strip ratios, which commences mining approx. 6km from the existing Wambo Pit
- Commencing the United Pit in the east ensures no final void near Wollombi Brook and moves the centroid of mining operations further away from Jerrys Plains/closer to CHPP
- Strip ratio in Wambo Pit is higher compared to United due to silled coal from intrusions from the Hunter Valley Dyke and wash out channels, along with increases in overburden thicknesses due to increases in topography
- Varying strip ratios in each mining area and the other considerations described above preclude the development of one large pit due to economic factors

Potential impact on underground resources?

- CCL775 tenement depth is to 5m above the Bayswater
- Seams below Vaux (United basal seam) are the Broonies only which are of insufficient thickness to support UG mining and the incremental strip ratio (SR), pit depth increase and working room issues make it not economic to pursue the Broonies with OC methods
- ELA lodged over for the Bayswater to -900AHD.
- Seams below Broonies will not be sterilised for UG mining.
- Depth of cover to the lower Bayswater is approx. 80m and Wambo has history of successfully mining under old workings at depths of cover less than this



Depth of mining in the proposed Wambo Pit

- Depth of mining is determined by economic strip ratio and physical pit depth taking into account incremental costs, geotechnical stability and mine safety
- The Warkworth (RL -105m yellow) seam was selected in the Wambo Pit due to best SR and acceptable pit depth cut-off
- The pit depth at the Vaux seam in the Wambo Pit is up to 370m deep (RL -195m red) compared to 280m (RL -155m) in the United Pit
- The depth in both pits is similar at approx. 280m deep. The different RL's for each seam horizon in each pit does not reflect the pit depth taking into account seam dip and natural topography



Mine Design and Sequence

Depth of mining in the proposed Wambo Pit





Future coal resources influencing mine design

- Formation of the JV influenced the mine design to maximise resource recovery compared to the stand alone options
- Project area focused on the area required for optimum resource recovery when taking into account surrounding physical constraints such as location of neighbours, air and noise impacts, Golden Highway, power lines, neighbouring operations and old UG workings
- Project is seeking consent to undertake highwall and auger mining within the mine plan areas commensurate with Wambo's existing consent
- Both the A444 lease and CCL775 lease contain additional resources that at this stage are either not deemed to be economic given physical lease constraints or insufficient resource knowledge is available

Transitional Arrangements



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To what extent can the air quality monitoring equipment identify particular sources of dust emissions and how is this managed from a compliance perspective (i.e. which mining operation dust originates from)?

Identifying particular sources of dust

- JV air quality monitoring equipment will consist of a minimum of four TEOM units measuring real-time PM₁₀ concentrations and a dust camera network
- TEOM units are, and will be strategically located around the JV Operation to allow determination of the site contribution to off-site air quality
- JV will use the data for proactive management of site contributions to off-site air quality
- Short term (eg:15 min) trigger levels will be set for the calculated site contribution or ambient levels at monitors, then identifying the actions to occur in response to any alert that may be generated
- Exact location of monitors will be discussed with the EPA as a part of the EPL



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38

To what extent can the air quality monitoring equipment identify particular sources of dust emissions and how is this managed from a compliance perspective (i.e. which mining operation dust originates from)?

Compliance

- To assist with confirming the air quality monitoring network of TEOMs is appropriate, Jacobs was engaged to undertake an analysis of 4 years of hourly PM₁₀ monitoring data
- The analysis confirmed that the monitoring arrangements will allow the JV to calculate the site contribution to off-site air quality, without ambiguity, using an upwind and downwind approach in conjunction with met data



Noting that mine owned properties are not subject to set dust criteria, how does the applicant propose to manage potential health impacts on tenants (mine workers + families /others) of these properties as a result of exceedances to air quality criterion/dust emissions?

Tenants in mine owned properties

- Residents of Warkworth Village were informed via a letter in 2017 regarding the predicted air quality impacts and were provided the factsheet 'Mine Dust and You'
- If Project is approved, all tenants in mine owned properties would be informed of the Project approval, provided the dust factsheet and informed of the predicted air quality impacts
- The Project will work with their tenants to manage air quality impacts with relocation being a viable option including no penalty for early termination of Contract
- The Project has consulted with and will continue to work with other mining companies who own properties in Warkworth Village to manage air quality impacts upon their tenants
- There are 11 residences in Warkworth, 10 mine owned and 1 privately owned



Biodiversity

The Project has secured 114% of the CEEC biodiversity offsets and 89% of the overall biodiversity offsets required for Stage 1

- Total Project Area is **3,036** ha
- Project Additional Disturbance Area is 679 ha of which 147 ha has been impacted by previous mining activities
- 532 ha (17.5% of PA) of vegetation will be disturbed and includes 250 ha of Central Hunter Valley Eucalypt Forest and Woodland CEEC (EPBC Act)
- The proposed biodiversity offset strategy will be implemented under the FBA and will consist of the following:
 - Establishment of 5 land based offset sites, Highfields, Mangrove, Wambo, Jerrys Plains and Brosi
 - Progressive retirement of credits in line with MOP period 7 year term, accepted by DPE and OEH
 - Mine site rehabilitation contributing 25% of the overall offset requirement. Estimated at 880 ha
 of rehabilitation
 - Existing 11% 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

Biodiversity – Stage 1 PCT Status

Plant Community Type	Credits Required	Wambo	Mangrove	Highfields	Brosi	Jerrys Plains	Mine Rehab	Total Stage 1 Credits Acquired	Potential Per cent of Credit Allocation
Central Hunter Valley Eucalypt Forest and Woodland CEEC under the EPBC Act	11,247	3,175	3	0	2,678	2,415	2,976	11,247	100%
Hunter Floodplain Red Gum Woodland EEC	0	0	0	0	0	0	0	0	100%
Central Hunter Ironbark - Spotted Gum - Grey Box Forest EEC	1,424	0	0	0	658	0	766	1,424	100%
Central Hunter Grey Box - Ironbark Woodland EEC	385	0	301	0	0	0	0	301	78%
HU905 - Narrow-leaved Ironbark - Grey Box grassy Woodland of the Central and Upper Hunter	3,890	0	1,428	0	0	197	488	2,113	54%
HU906 - Bull Oak Grassy Woodland of the Central Hunter Valley	2,802	0	0	2,802	0	0	0	2,802	100%
HU945 - Swamp Oak - Weeping Grass Grassy Riparian Forest of the Hunter Valley	2,004	0	1,555	0	0	0	0	1,555	78%
ΤΟΤΑΙ	21,752	3,175	3,287	2,802	3,336	2,612	4,230	19,442	89%

Mine Rehab – CEEC

- NSW Minerals Council engaged Umwelt to assess the composition and condition of mine rehabilitation against the CEEC at four coal mines in the Hunter Valley, including United
- Found vegetation conforming to the CEEC at each of the four mine sites, it is noted that none of the sites set out to achieve the CEEC in their rehab
- Also found that further areas of mine rehab that do not currently meet the condition thresholds for CEEC could be managed to conform through actions such as weed management and further planting of characteristic canopy species.

Biodiversity – Proposed Offset Areas



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Final void considerations at United

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
- Means disturbing rehabilitated areas (approx. 690 ha) or delaying planned rehabilitation

Very high cost

- RTS quoted \$3/bcm for load, haul and dump costs only, equating to total quoted cost of filling the voids of \$450M (dollars of the day)
- Rate was based on steady state mining operations LOM average cost for load, haul and dump
- Further detailed analysis has been completed which shows 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
- Revised total cost to load, haul, dump and rehab is estimated at \$630M

Extending noise and dust impacts

- Based on material movement rates of 38Mbcm per year, filling the voids would extend mining activity, and associated noise and dust impacts for a further 4 years
- This assumes equipment lives at end of mine life can maintain rate and availability

Final void considerations – United Pit



46

Final void considerations – Montrose Pit



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VPA negotiations are ongoing with a meeting held 6 February

- The Project Team has met with Singleton Council on 8 occasions to provide information about the JV Project and in later meetings to discuss the VPA
- Glencore has successfully negotiated multiple VPAs with Council over many years
- Discussions have included the distribution of 50% of the VPA to local projects (Jerrys Plains etc.) and 50% Singleton LGA
- In more recent discussions, Council have shifted the focus of the VPA from a negotiation on contributions based on impact to a percentage of Capital Investment Value (1%) or a cent per tonne of production rate
- Singleton Council along with the Association of Mining Related Councils (AMRC) have formed the view that the mining industry should be contributing more to local communities despite contributions to CSI, mining land rates, royalty payments
- An offer was made to Council on 5 June 2017 and a revised offer was made on 6 February 2018

Provide a map identifying properties that have received attenuation, those that have that have existing acquisition rights, and those that would be afforded attenuation and/or acquisition rights should the project be approved.

Property

Impact	No. of Residences EIS/DPE Report	Consultation	
Active Noise Management Zone Moderate Impacts (Acoustic Treatments) 3-5dB(A)	 EIS 18 properties DPE 22 properties 4 additional in DPE Report - 44, 50b, 56, 133 50b & 133 are sheds, 56 is a vacated house 56 and 133 have same owner 	 Consulted with 18/22 letters sent to other owners received 7 submissions 	44 56 41 133 43 40 344 50 344 30 345 320 345 42 348 29
Noise Affectation Zone (Acquisition on Request) >5dB(A)	 EIS 7 properties DPE 9 properties 2 additional in DPE Report (28b, 50c) Property 28 has two houses 28a/28b and has been purchased by JV 	 Consulted with 8/9 2 purchased no submissions 	Legend UVJV Project Area SSD 7142 United Pit Shell
Blasting Impacts Warkworth Village	 1 privately owned property - 19 	Consulted on two occasions	 Wallborn Siles Noise Affectation Zone (Mitigation Rights for HVO South MOD 5) Active Noise Management Zone Private Land Vacant Land Properties Purchased by the Project Existing Acquisition Rights (Wambo and Warkworth) Existing Acquisition Rights (Warkworth)

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Environmental Management

Glencore will manage the JV Operations and environmental management will be undertaken using Glencore systems

- Implementation of Glencore Values, Code of Conduct, Environment and Community Policies, Frameworks, Standards, Protocols and Procedures
- Development of a robust and practical Environmental Management System (EMS) in consultation with relevant agencies and government departments which incorporates the requirement for continuous evaluation and review of environmental performance
- The real-time, monthly and yearly environmental monitoring detailed in the Management Plans will be implemented and managed by Glencore
- All required approvals such as mining leases, EPL and water licences will be obtained, varied and maintained as required during mining operations
- Implementation of **industry leading practice** for management of environmental impacts such as air quality, noise, blasting, groundwater, surface water, biodiversity and heritage will be an integral part of site environmental management
- Structured, consistent and appropriate **community consultation** will be continued during the life of the Project to provide that community concerns are heard and addressed promptly and satisfactorily

Glencore - Earning Our Licence to Operate

• Committed to Sustainable Development

- We understand that our on ground performance is key to obtaining our Social License to Operate
- We need to minimise our impacts on the environment and the community
- Understand that our social licence to operate has to be earned:
 - We plan, we listen, we work co-operatively and respond to concerns/issues
- We support the communities in which we operate





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Questions?

6



Site Tour

- 1. United
- 2. Trig Point
- 3. Montrose Property
- 4. Redmonvale Road
- 5. Warkworth
- 6. Wambo Rail Loop
- 7. Wambo MIA (Lunch)
- 8. Wambo Mine
- 9. Brosi Property