



GLENCORE

Glendell Continued Operations & Mount Owen Continued Operations Mod 4 Virtual Site Tour

Briefing to Independent Planning Commission

4 March 2022

Introduction

- Acknowledgement of Traditional Owners
- Proponent attendees:
 - Chris Gerard, Operations Manager, Mt Owen Complex
 - Jason Desmond, Environment & Community Manager, Mt Owen Complex
 - David Holmes, Principal Consultant, Umwelt
 - Bradley Snedden, Approvals Manager, Glencore
 - Tim Walls, Approvals Manager, NSW, Glencore
 - Shane Scott, Project Manager, Glencore

Agenda

- 1. Regional Context
- 2. Project Overview
 - GCO Project
 - Proposed Pit Progression
 - Topography
 - Existing and Proposed Final Landform
 - Hebden Road Realignment
 - Existing Creek Diversions
 - Yorks Creek Realignment
 - Other Infrastructure Relocations
- 3. Key Aspects
 - Heritage
 - Environmental Management
 - Rehabilitation

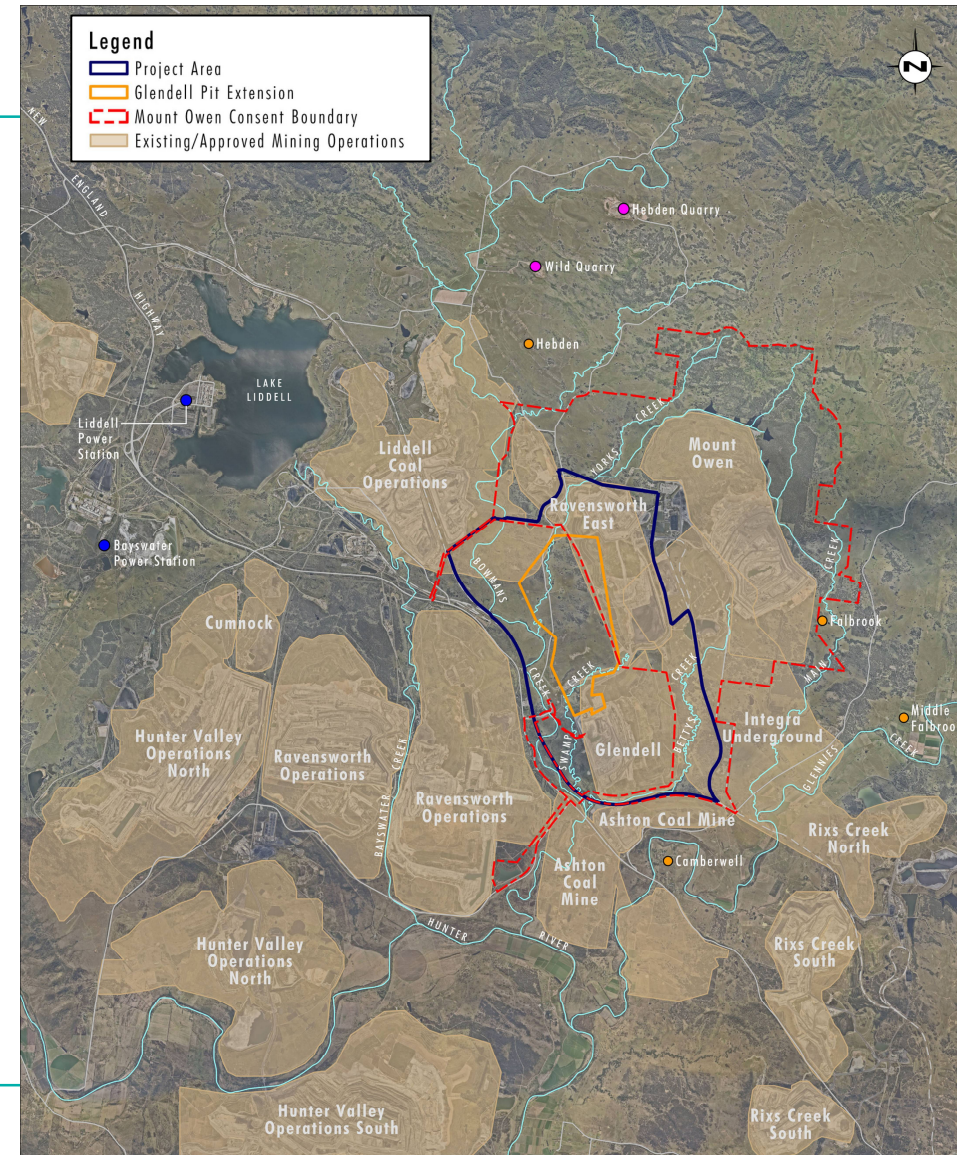
Regional Context

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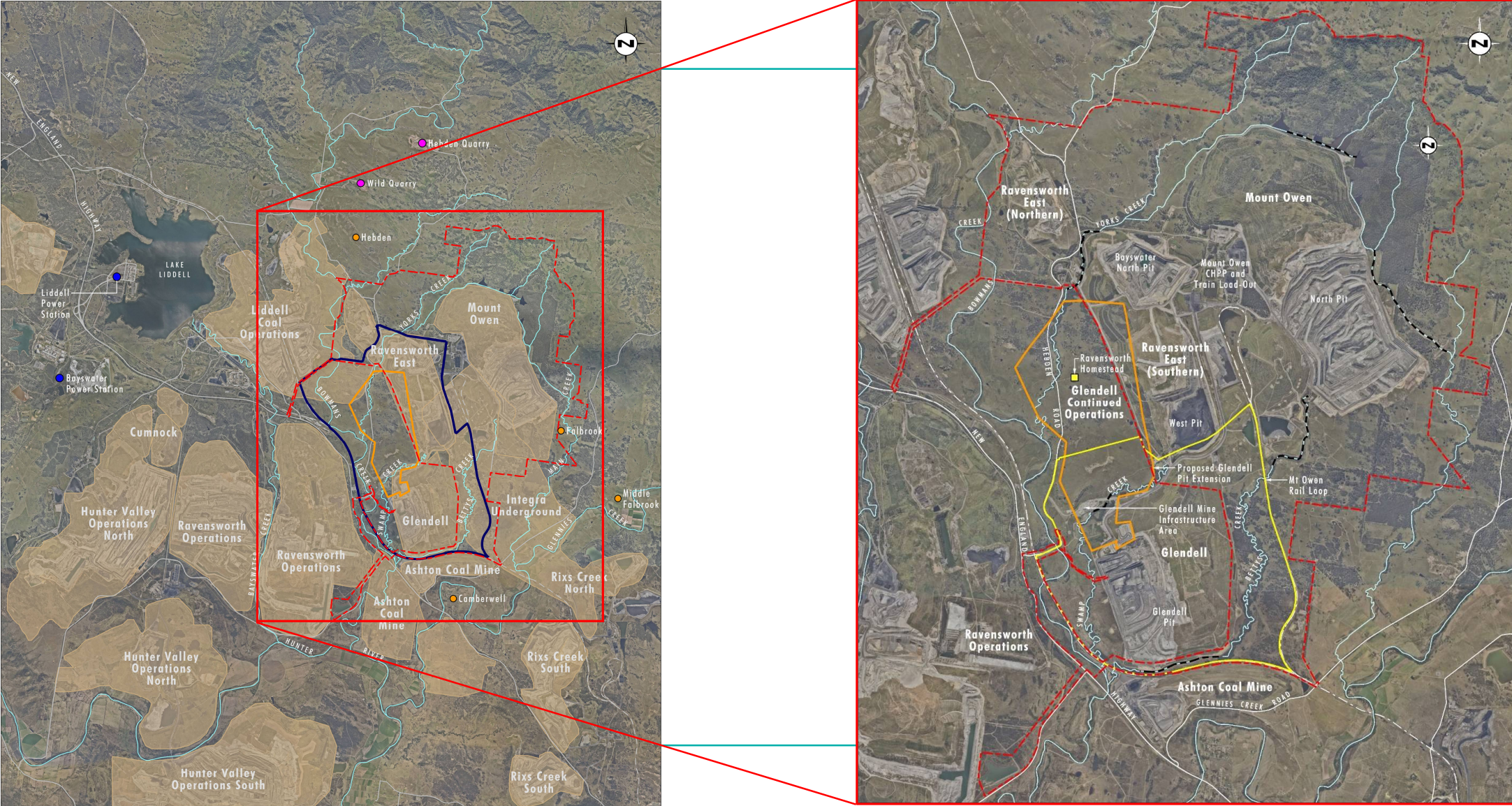
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Regional Context

- Greater Ravensworth Area
 - Situated midway between Singleton and Muswellbrook
 - Long history of mining and power generation
 - A number of existing quarry operations
- Glencore own and operate a number of mines in area
 - Ravensworth Surface Operations
 - Hunter Valley Operations (JV with Yancoal)
 - Liddell Coal Operations
 - Integra Underground Mine
 - Mt Owen Complex (referred to as Mt Owen Glendell Operations (MGO))
- In 2020, these mines:
 - Employed over 3,400 personnel
 - Spent in excess of \$2 billion on wages, goods and services
 - Paid over \$270 million in royalties to the State
- Mining operations connected through a series of pipelines that allow water and tailings to be transferred between sites – referred to as Greater Ravensworth Area Water and Tailings Scheme (GRAWTS)
 - Minimises reliance on water take from creeks and rivers through reuse of dirty water
 - Allows for transfer of tailings for emplacement in dedicated voids



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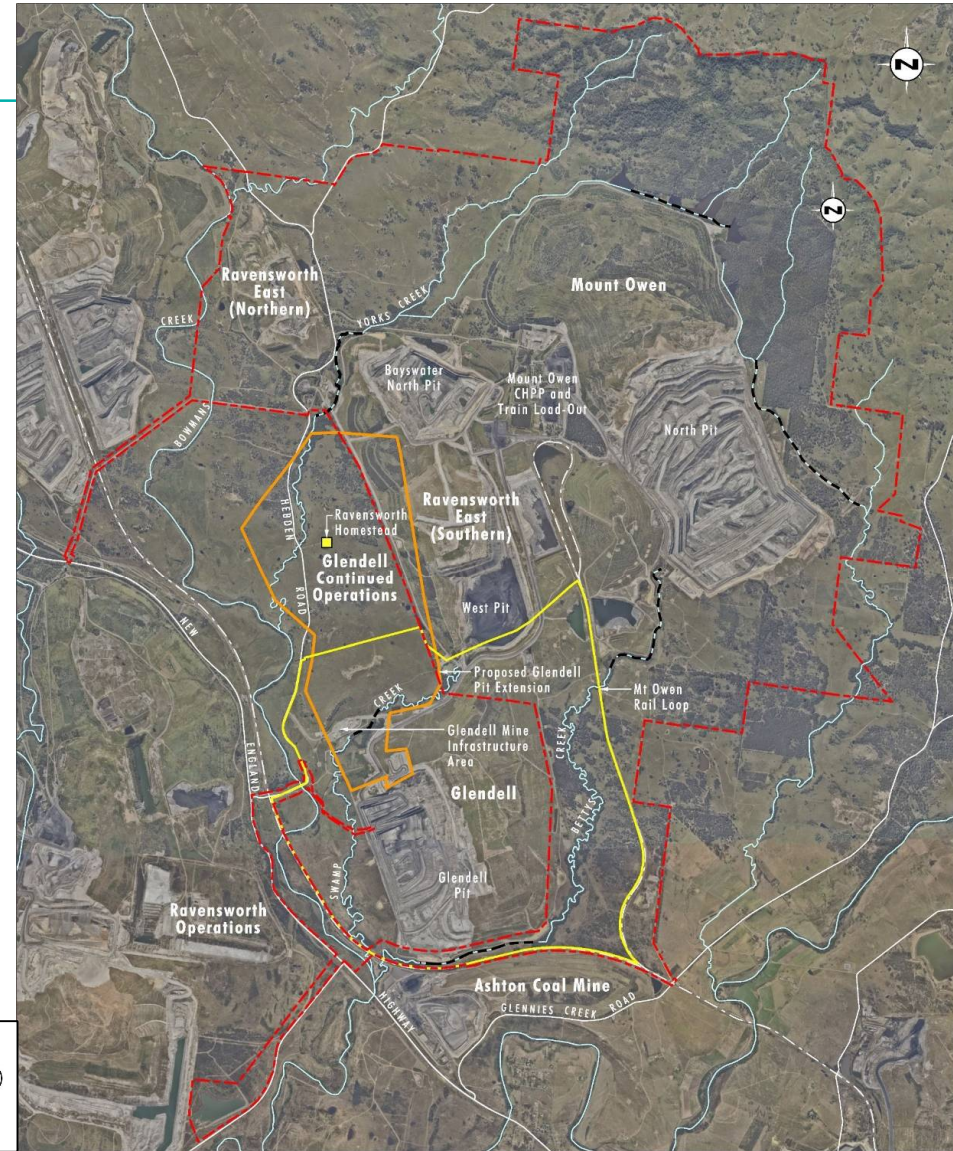
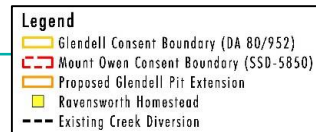


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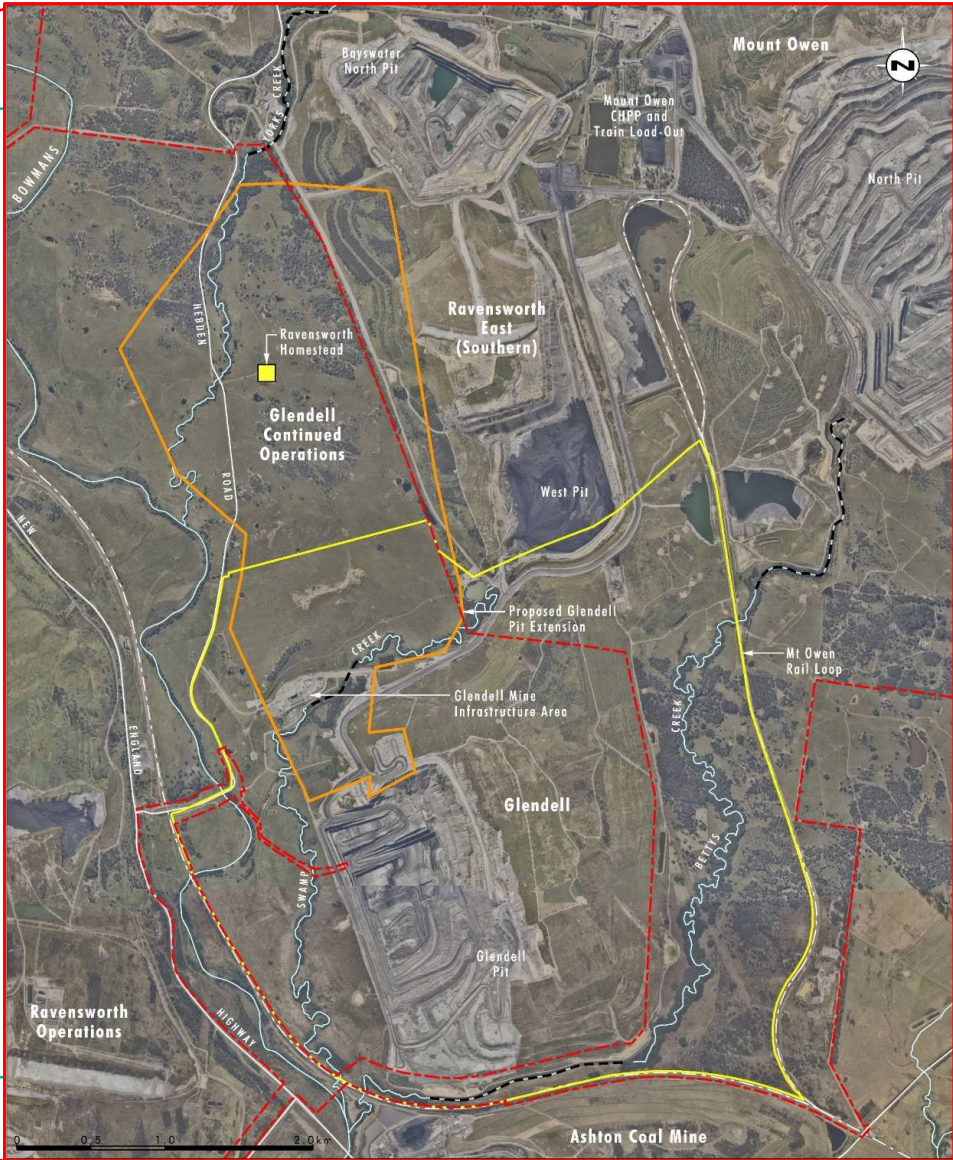
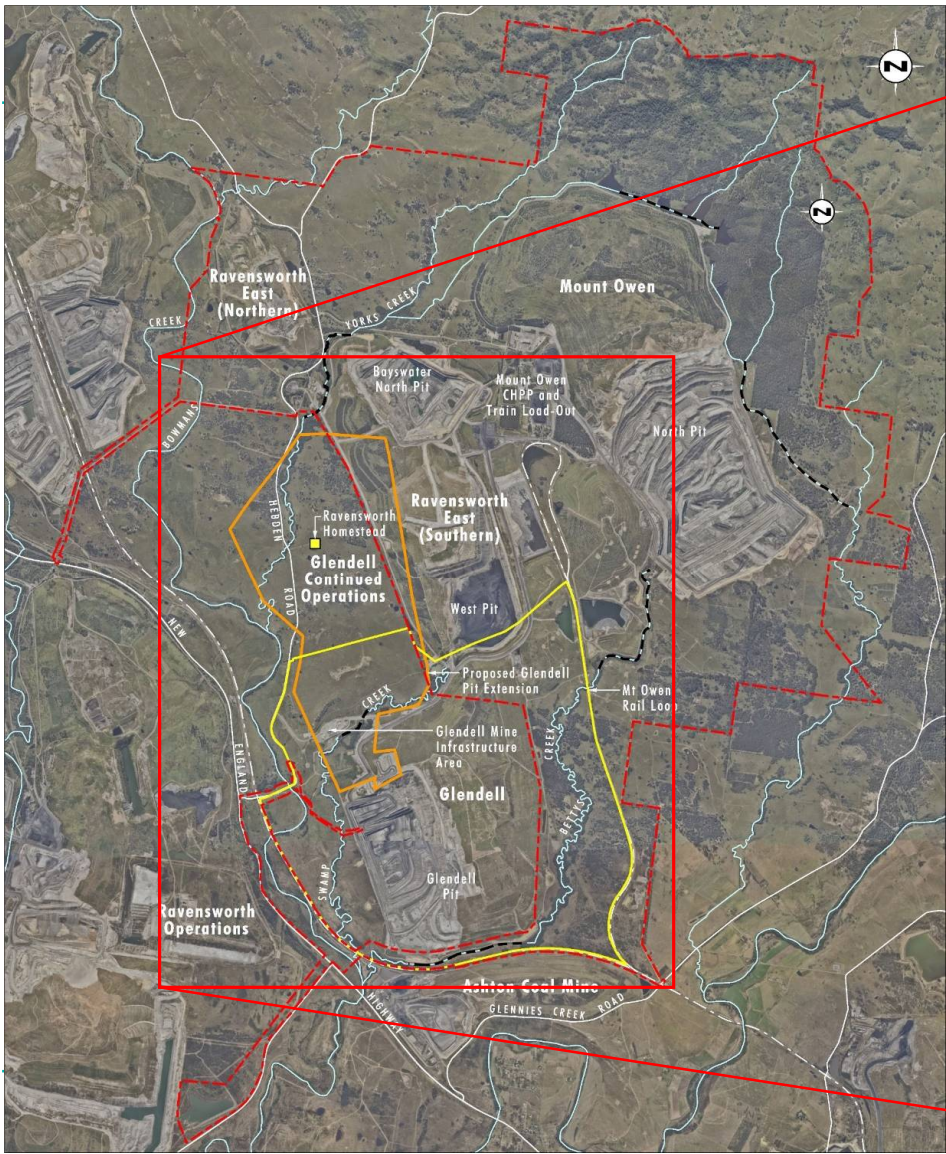
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Regional Context

- Mt Owen Complex (MGO):
 - Consists of 3 open cut mining operations
 - Mt Owen Mine – approved to 2037
 - Ravensworth East Mine – approved to 2037, resource depleted 2023
 - Glendell Mine – approved to 2024, resource depleted end 2022
 - In 2020, the Mt Owen Complex:
 - Employed around 820 personnel
 - Spent over \$420 million on wages, good and services
 - Paid in excess of \$60 million in royalties
 - Connected to GRAWTS
 - West Pit currently receiving tailings from Mt Owen, Liddell and Ravensworth CHPPs
 - Coal mined at complex is processed at the Mt Owen coal handling and preparation plant (CHPP)
 - Existing train load-out facility used to load coal on trains for transport to Port of Newcastle
 - Coal produced is of a high quality and is used in steel making (semi-soft coal) and coal-fired power stations (thermal coal)
 - Sold into export markets and is highly sought after due to its high energy and low ash content



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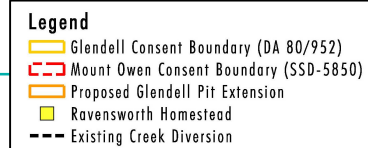


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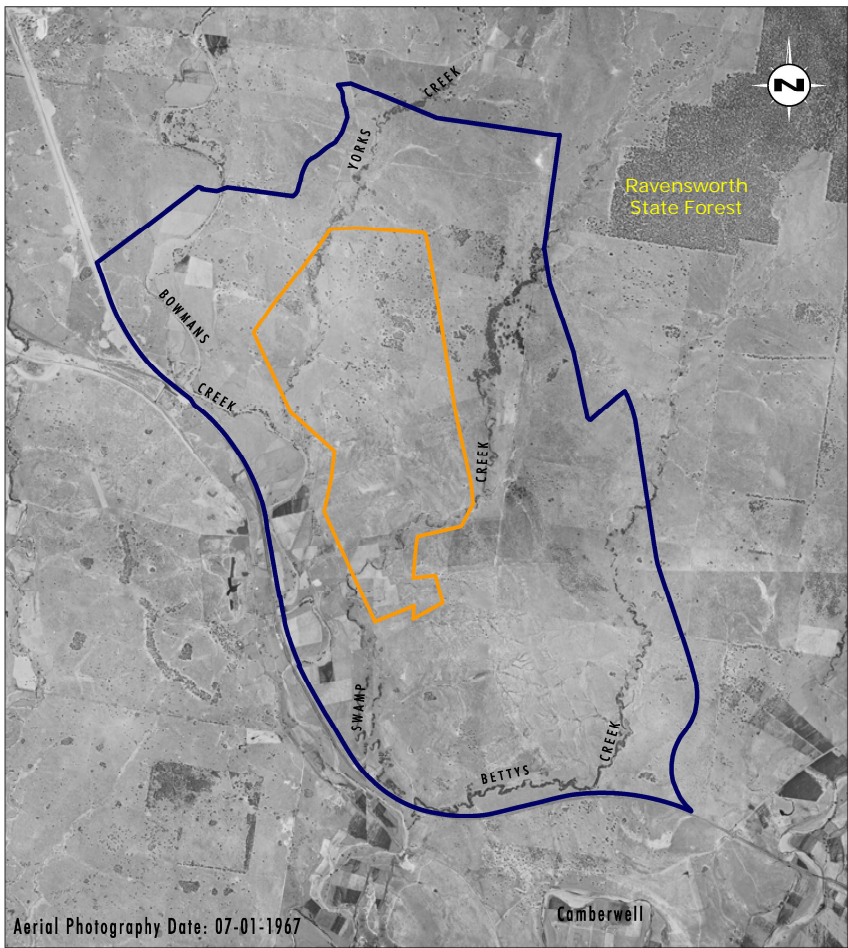
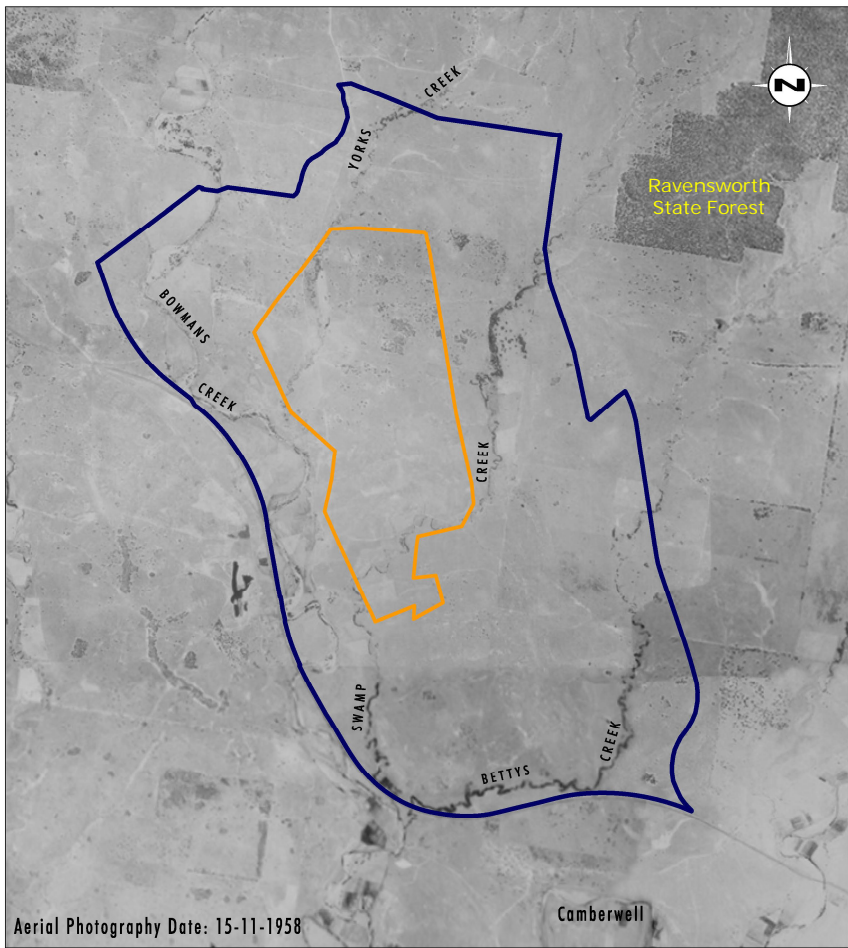
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Regional Context

- Glendell Mine:
 - Part of Mt Owen Complex (MGO)
 - Commenced mining in 2008 with mining to finish end 2022
 - Approval to mine up to 4.5Mtpa of ROM coal
 - Currently employs approximately 300 personnel
 - In 2020, Glendell Mine:
 - Spent \$120 million on good and services with 380 suppliers and \$39 million on workforce wages
 - Paid \$17 million in royalties to the State
- Coal processed at Mt Owen CHPP and loaded onto trains via existing train load-out facility for transport to Port of Newcastle

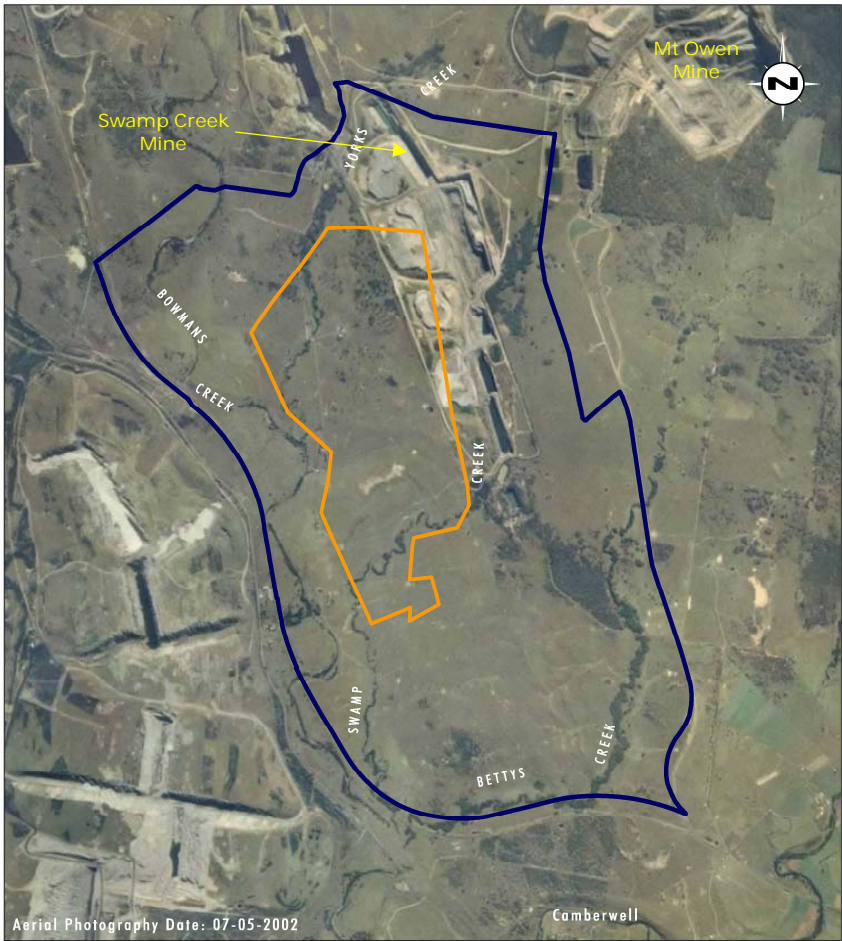
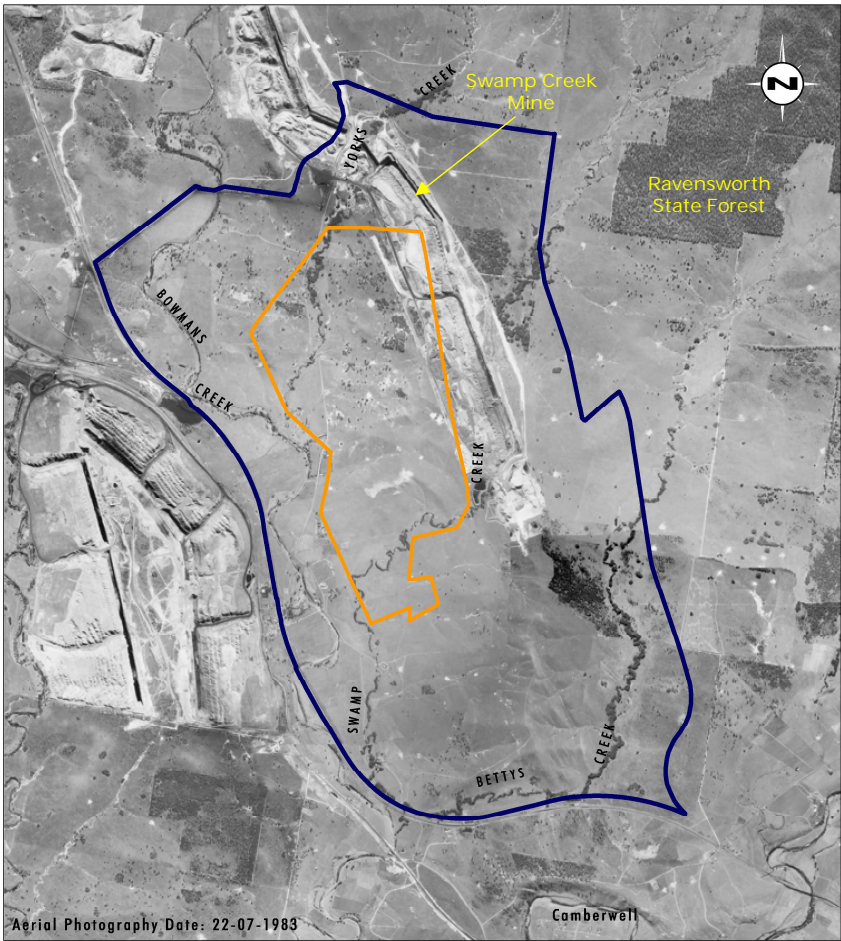


Regional Context



Legend
Project Area
Glendell Pit Extension

Regional Context



Legend

- Project Area
- Glendell Pit Extension

Regional Context



**Cleared Grazing Land in Southern Part of
Additional Disturbance Area (April 2019)**



**Cleared Grazing Land south of Ravensworth
Homestead (April 2019)**

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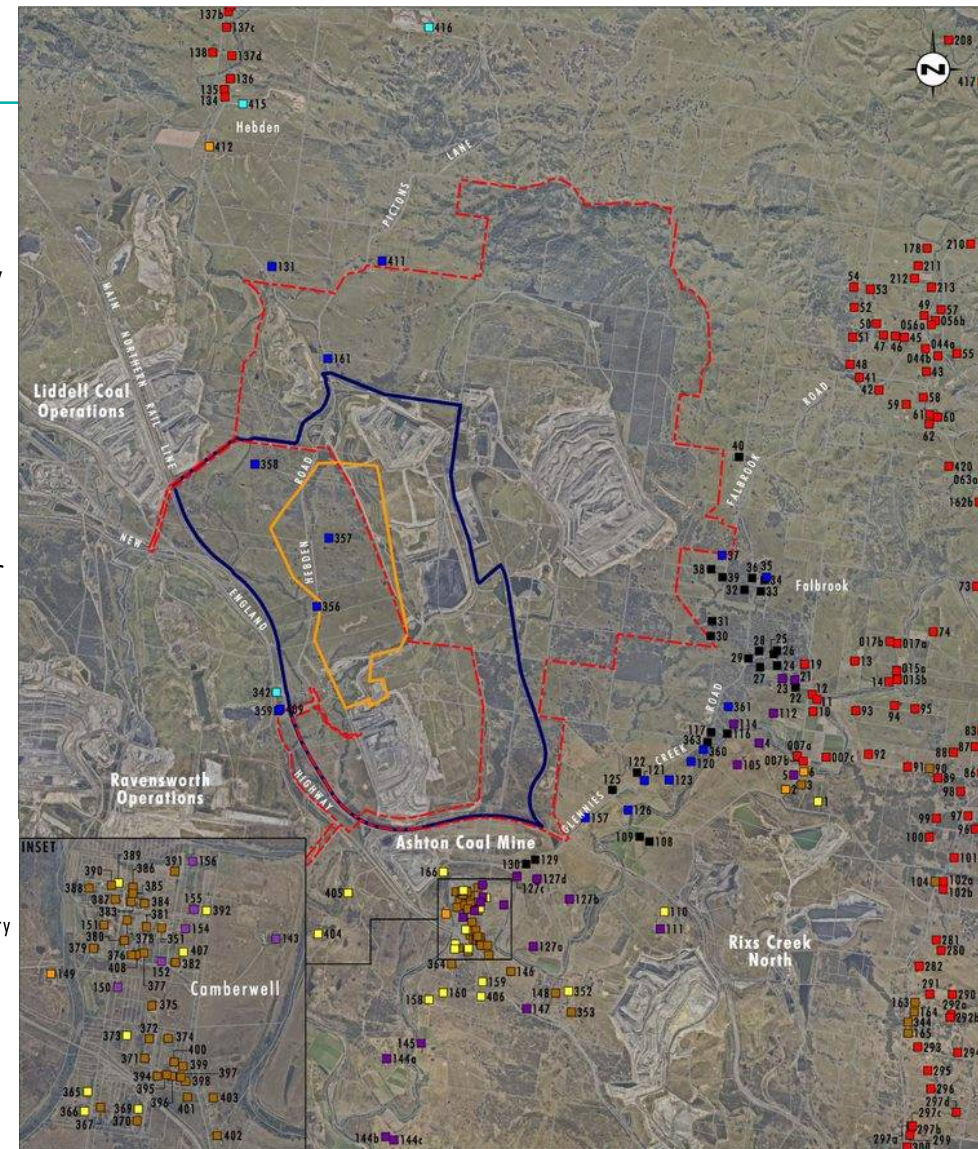
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Sensitive Receptors

- Falbrook – situated 4.5km to south-east of Mt Owen Mine
 - Contains a large number of private residences
 - Glencore own a large number of properties along boundary of Mt Owen Complex operations
- Camberwell – situated 2.5km to south of Glendell Mine
 - Majority of residences owned by mining companies
 - Remaining private residences have acquisition rights under existing mining approvals
- Hebden – situated 10km to north of Glendell Mine
 - Consists of private residences

Legend

- Project Area
- Glendell Pit Extension
- Mount Owen Consent Boundary
- Private
- Private (Acquisition Rights)
- Private Infrastructure
- Community Infrastructure
- Glencore Owned
- Glencore Owned - Vacant
- Other Mine Owned
- Other Mine Owned - Vacant



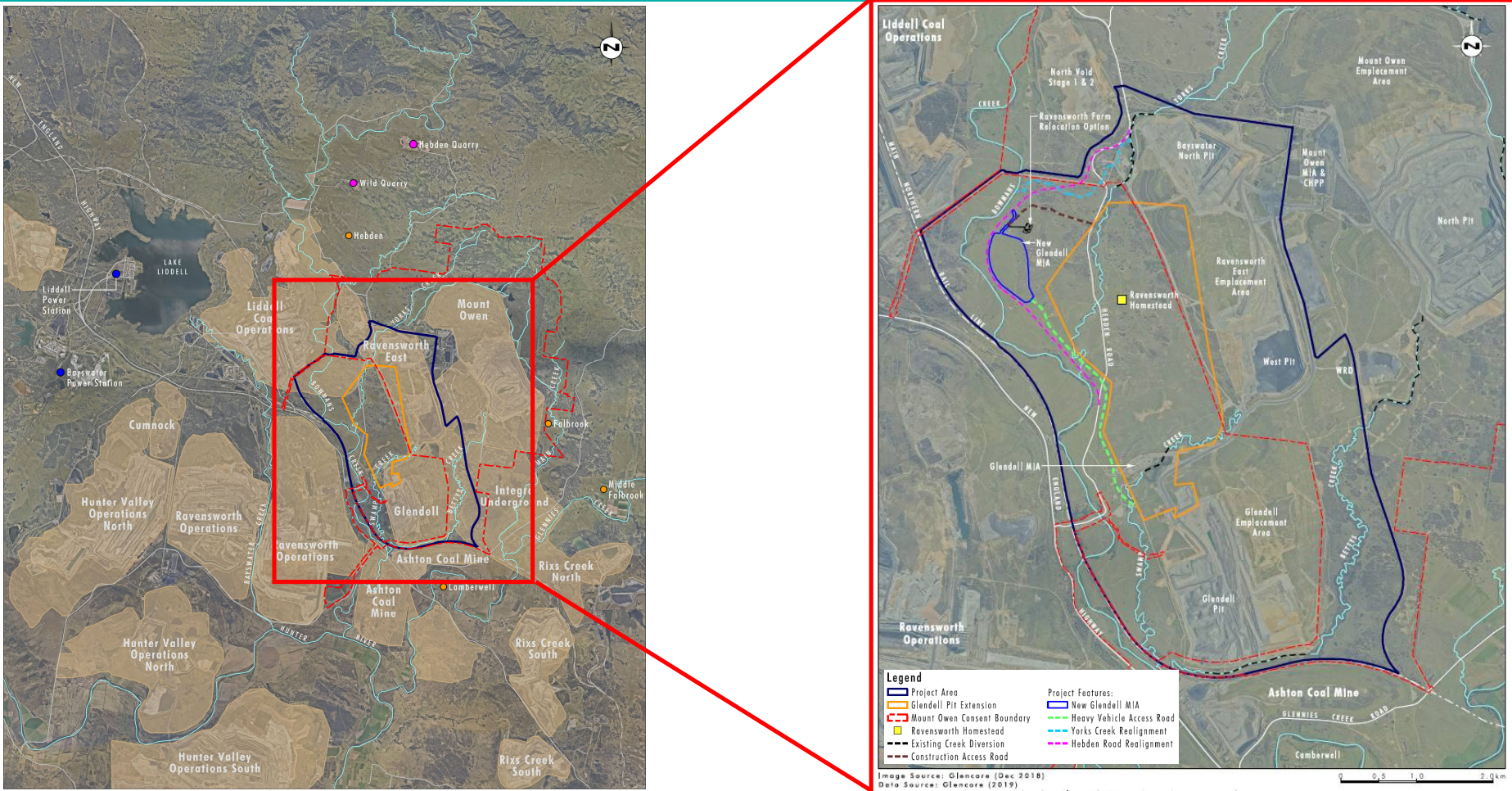


Any Questions?

Project Overview

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Project Overview

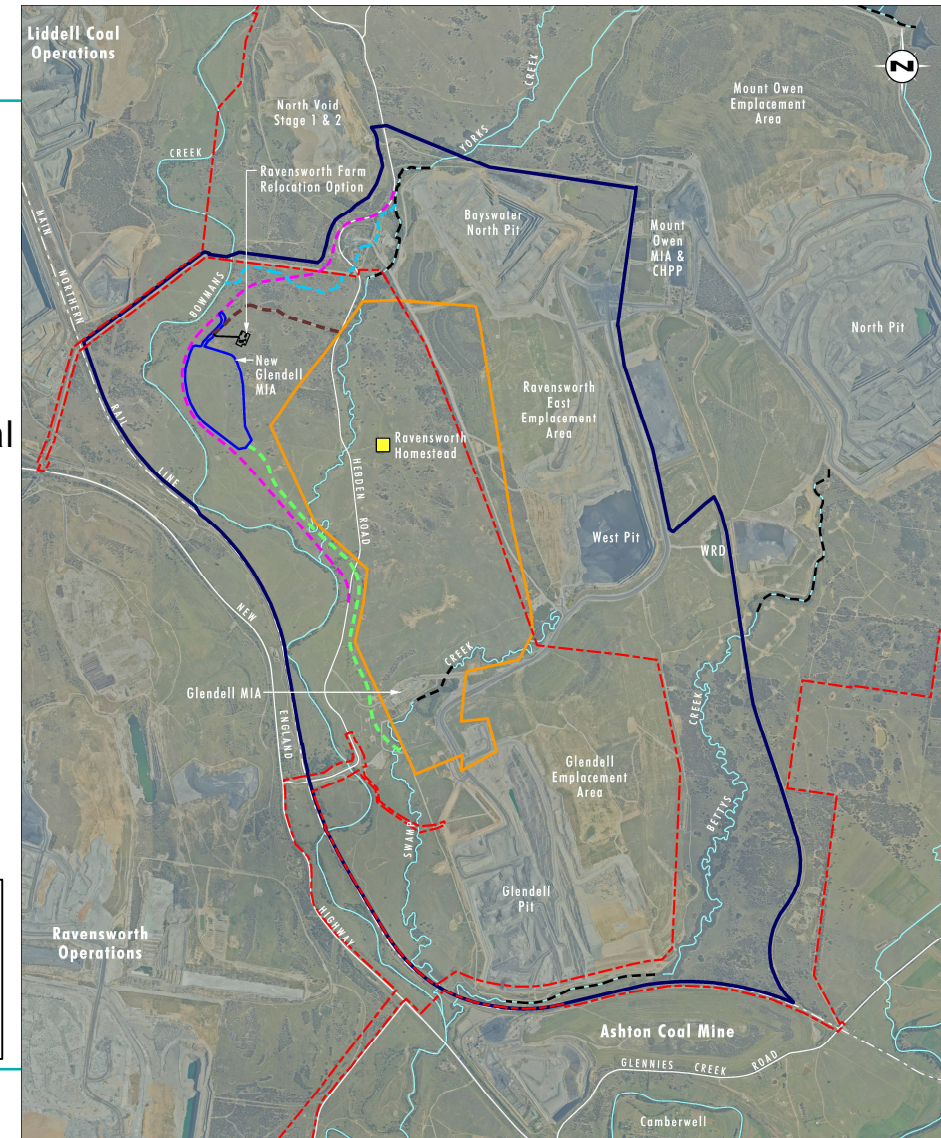
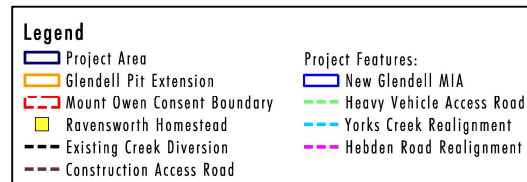


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Project Overview

- GCO Project involves continued open cut mining north of the existing Glendell Mine
- GCO Project will:
 - Provide access to 135Mt of coal and extend the life of Glendell Mine by a further approx. 20 years
 - Allow an increase in production rate up to 10Mtpa of ROM coal
 - Provide employment opportunities for up to 690 personnel
- Ravensworth Homestead is situated within the proposed mining footprint and requires removal – two alternate relocation options put forward
- Other infrastructure requirements include:
 - New Mine Infrastructure Area (MIA)
 - Relocation of Hebden Road
 - Realignment of Yorks Creek

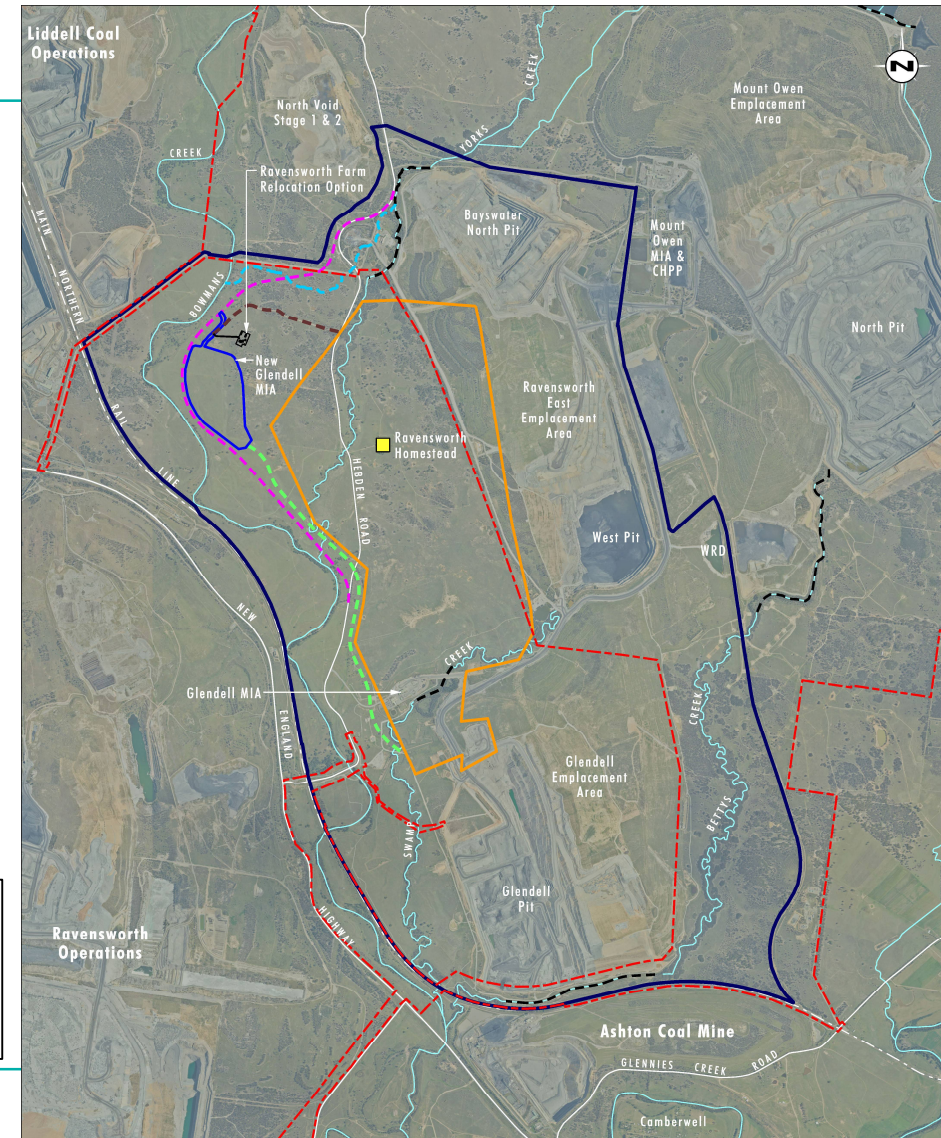
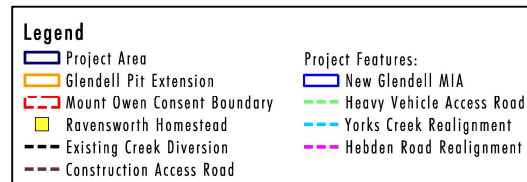


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Project Overview

- GCO Project makes use of synergies offered by shared infrastructure at Mt Owen Complex
 - Coal from GCO Project will continue to be processed at Mt Owen CHPP
 - Connected to Mt Owen Complex Water Management System and GRAWTS
- Mine same coal seams as presently mined at Mt Owen Complex
- There are no proposed changes to:
 - Mining methods and equipment
 - Product transport
 - Operating hours

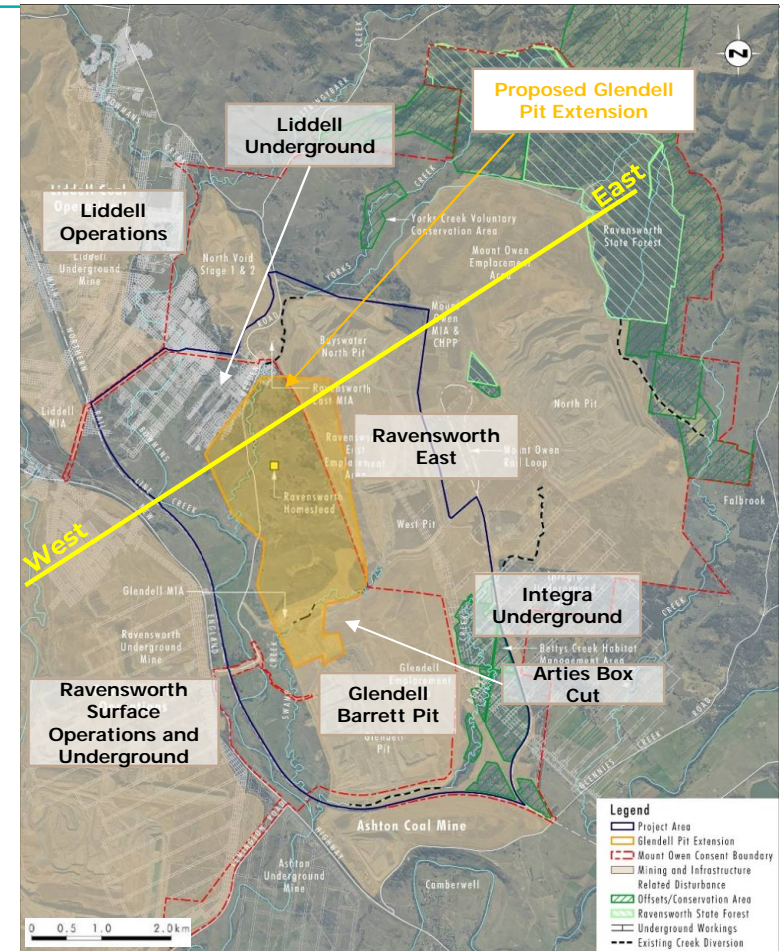
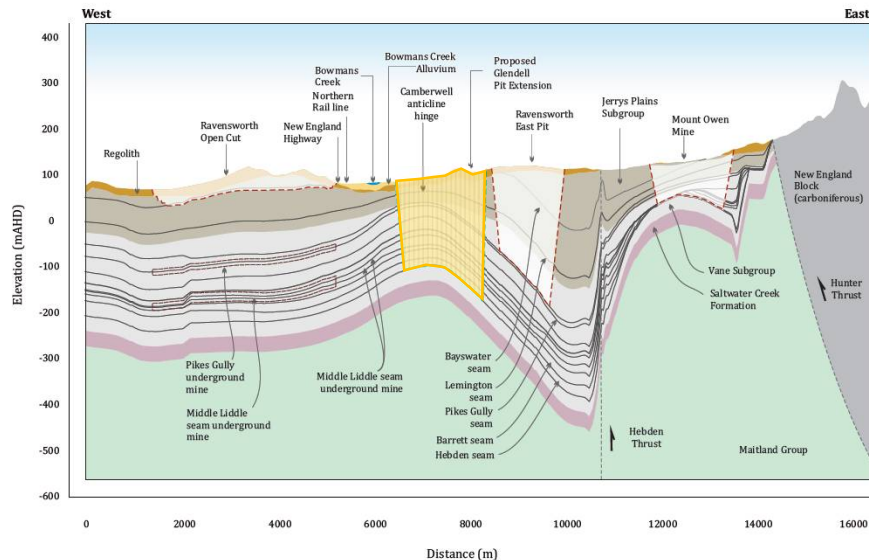


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Previous and Current Mining

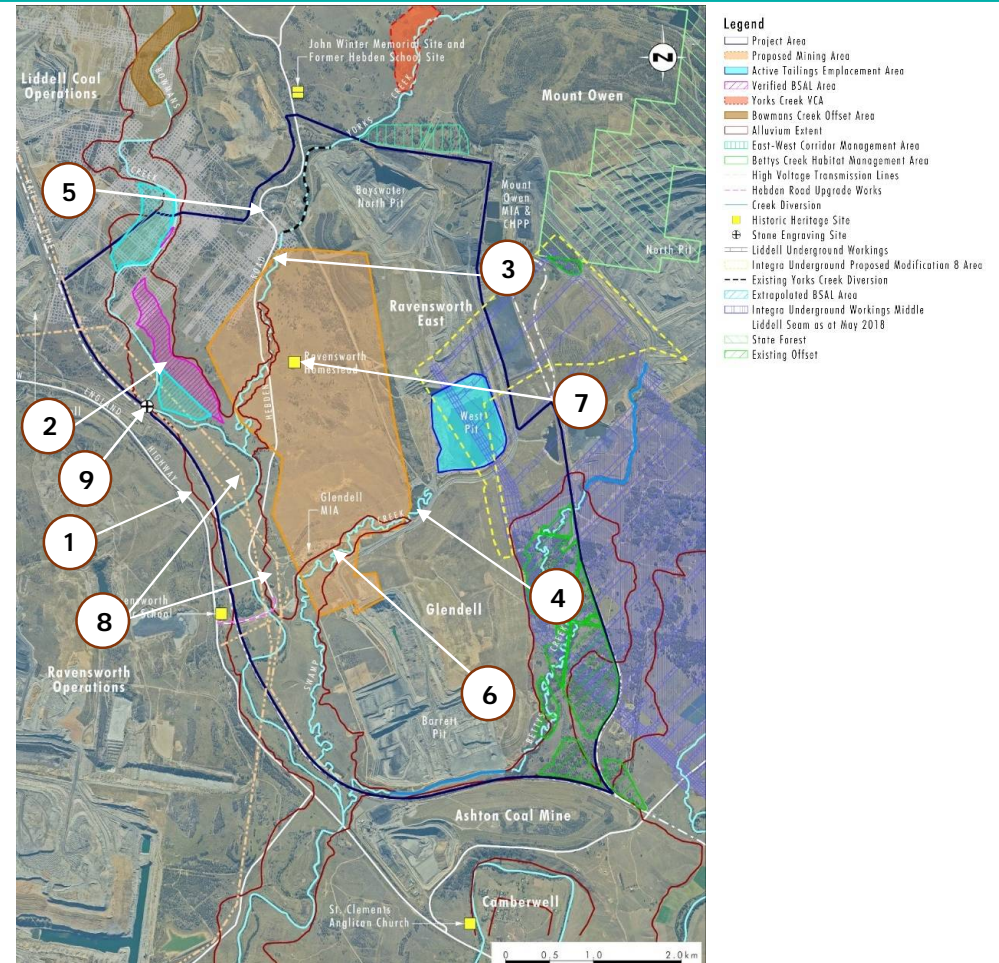
- Proposed Glendell Pit Extension surrounded by previously mined areas and current mining operations (both open cut and underground)
- Ravensworth East to the east and north (both complete and active)
- Glendell Mine (active)
- Ravensworth Surface Operations to the west (active)
- Ravensworth Underground to the west (complete)
- Liddell Underground to the north-west (complete)
- Integra Underground to the east (active)



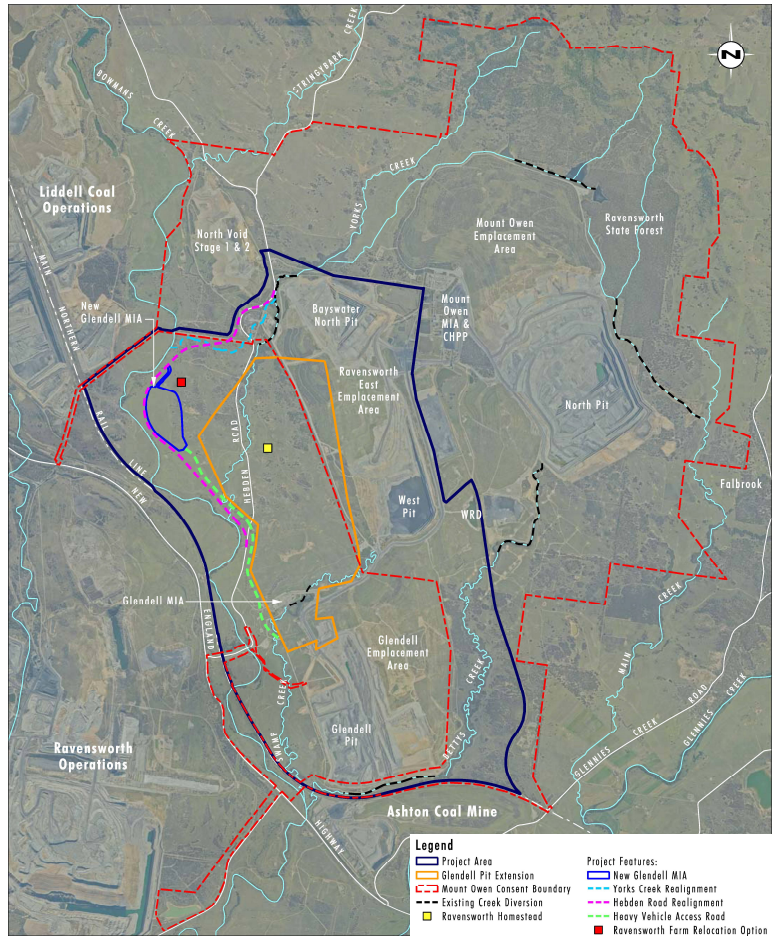
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Environmental and Infrastructure Considerations

- Key environmental and infrastructure considerations:
 - Bowmans Creek and associated alluvium (1)
 - Biophysical Strategic Agricultural Land (BSAL) (2)
 - Yorks Creek (tributary of Bowmans Creek) (3)
 - Swamp Creek (tributary of Bowmans Creek) (4)
 - Hebden Road – public road owned by Singleton Council (5)
 - Glendell Mine Infrastructure Area (MIA) (6)
 - Ravensworth Homestead (7)
 - High voltage transmission lines (330kV and 132kV) and other utilities (8)
 - Stone engraving site (9)
 - Potential amenity impacts (Air, Noise and Visual)

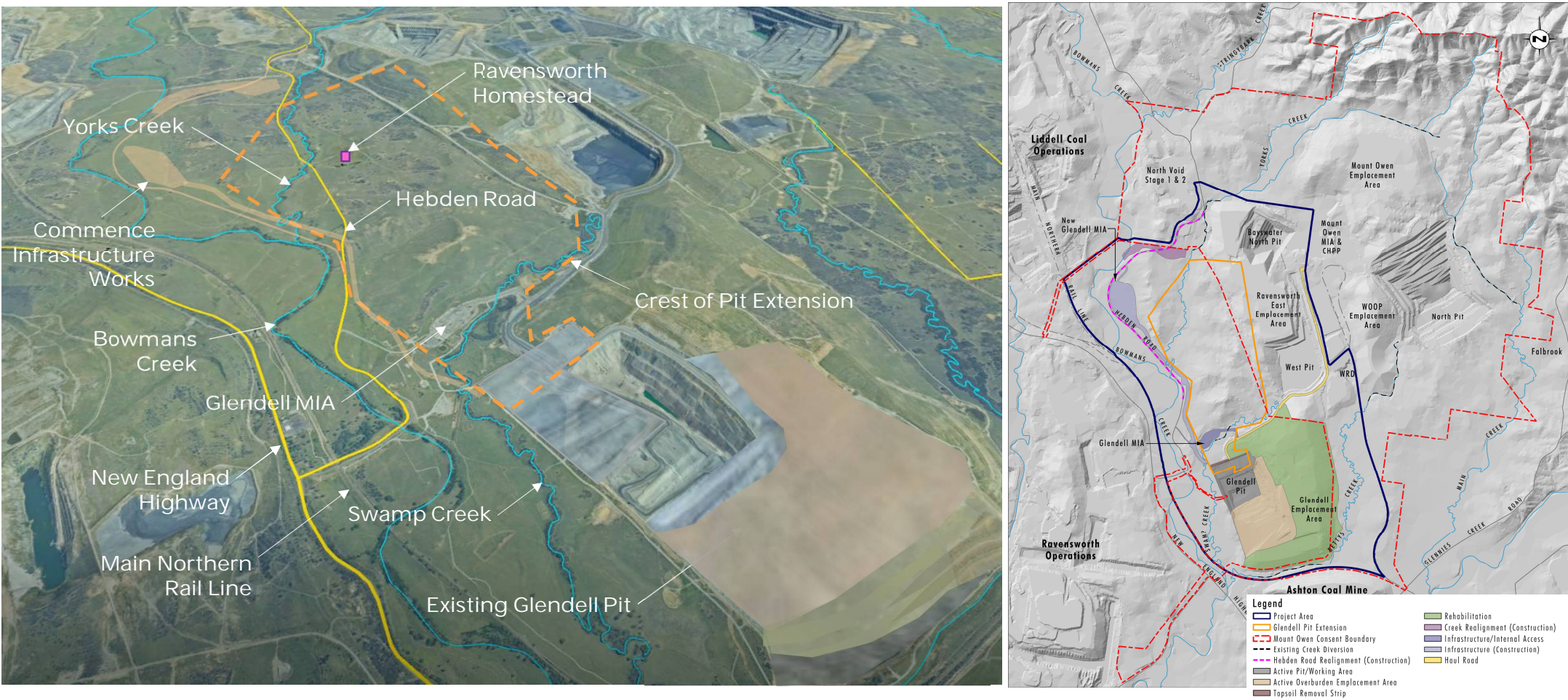


Existing Features



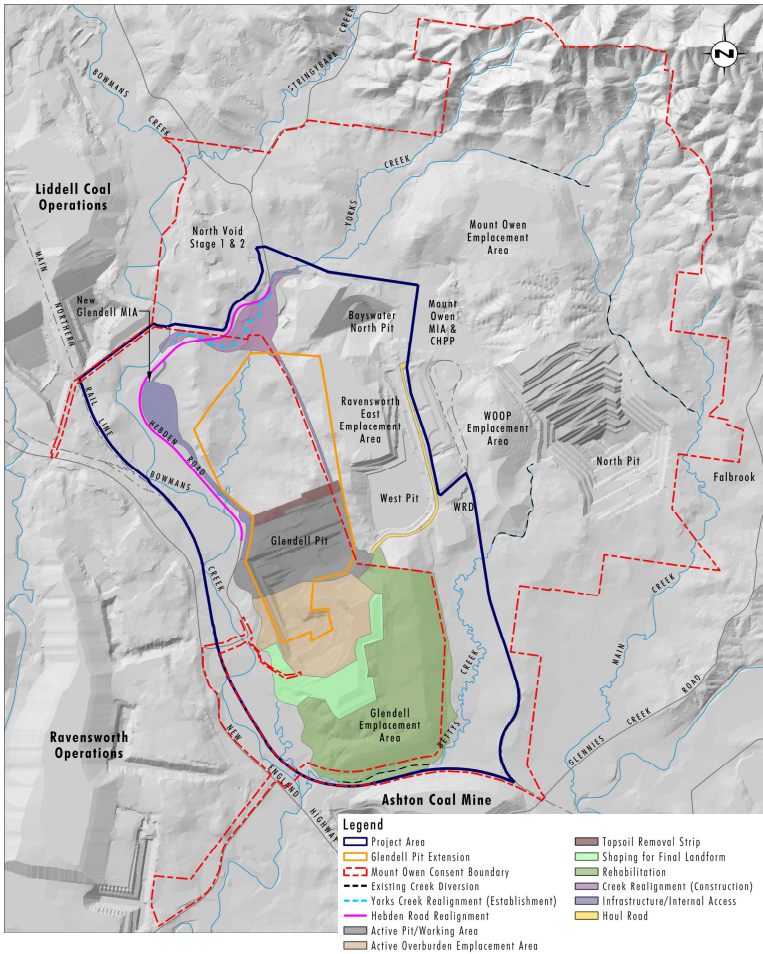
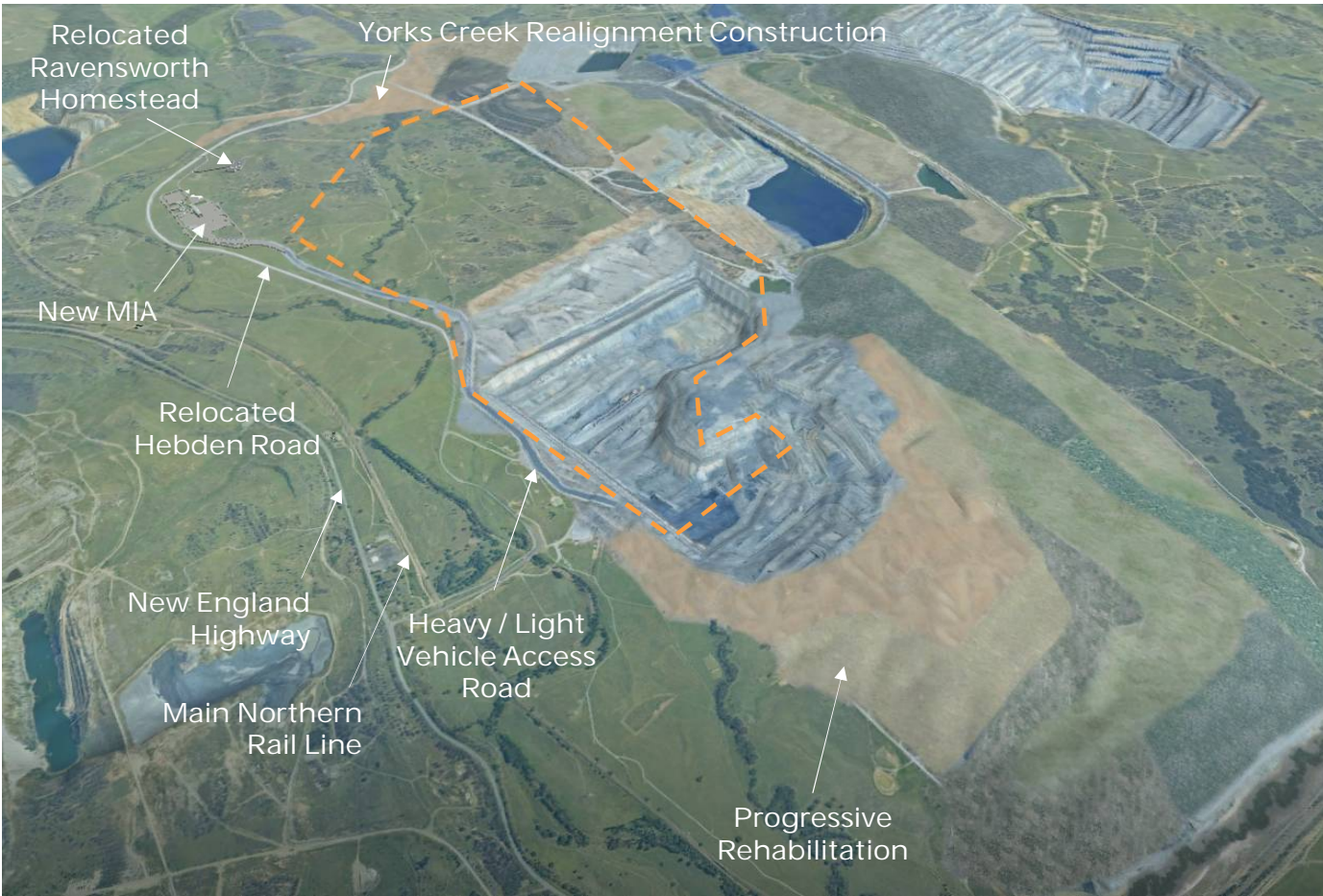
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Year 1



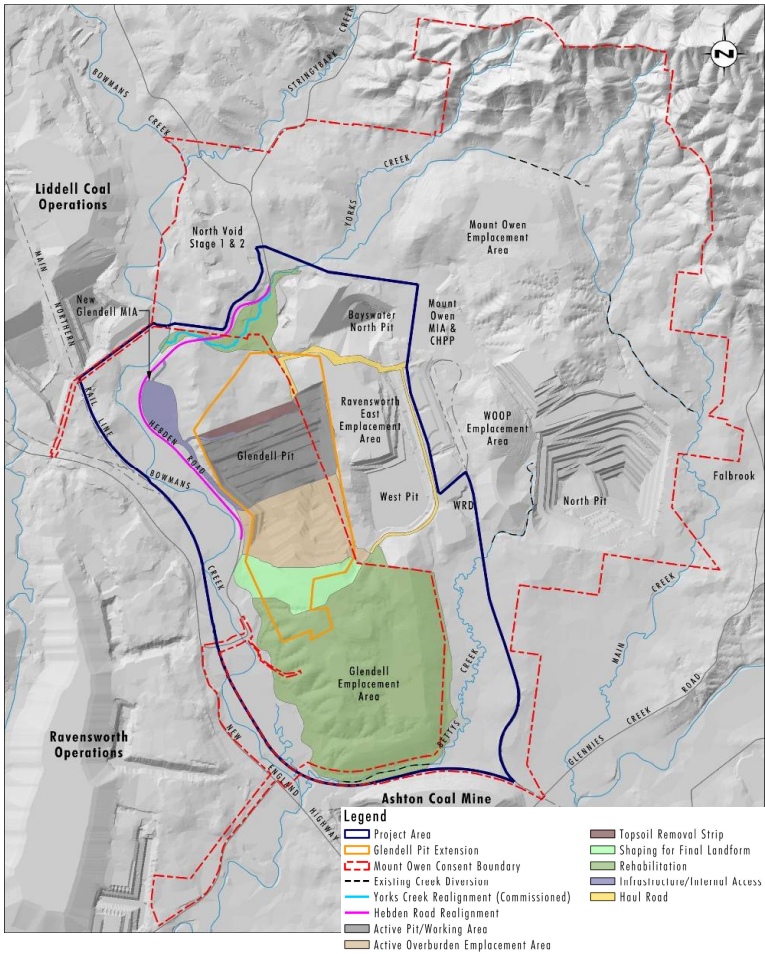
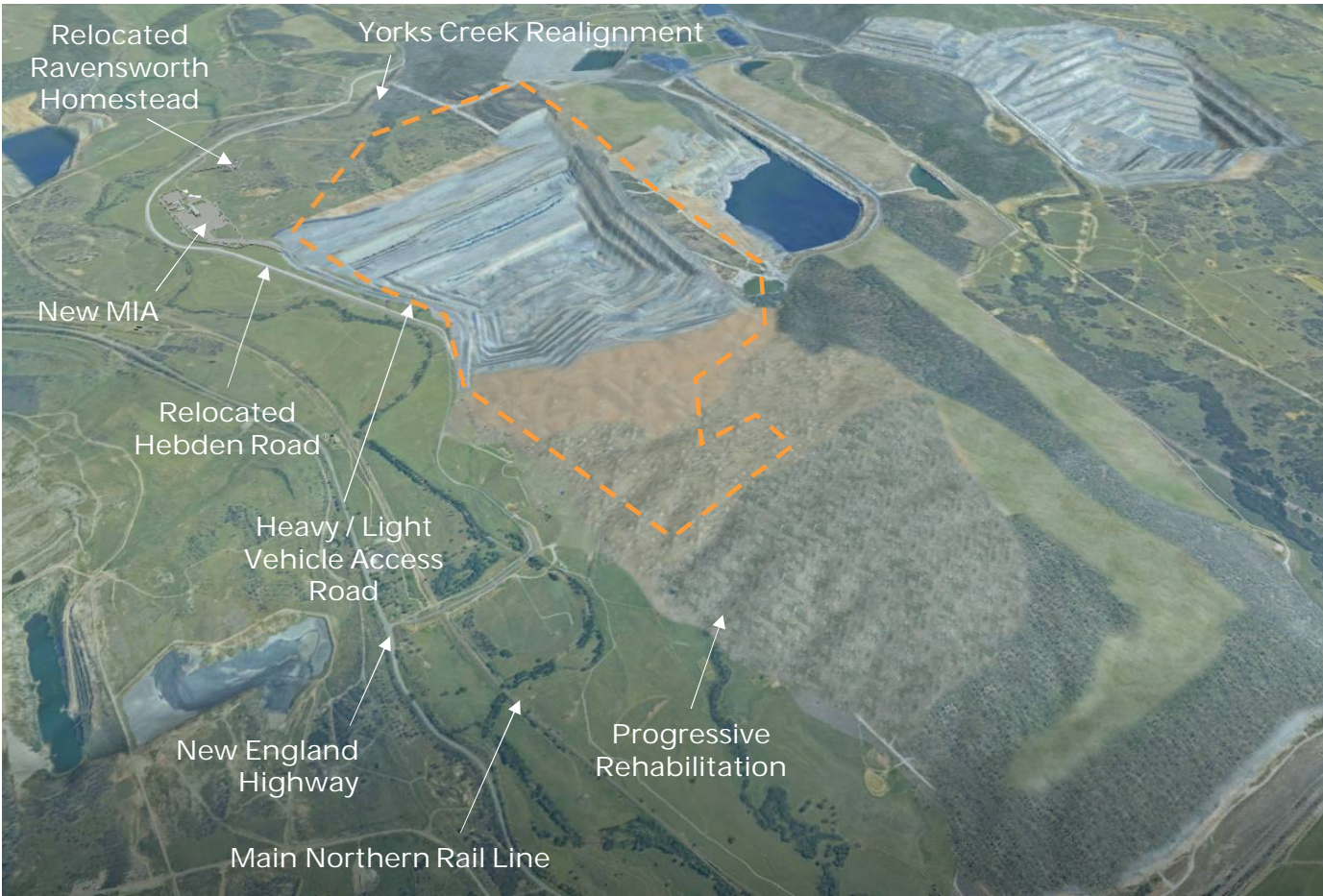
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Year 6

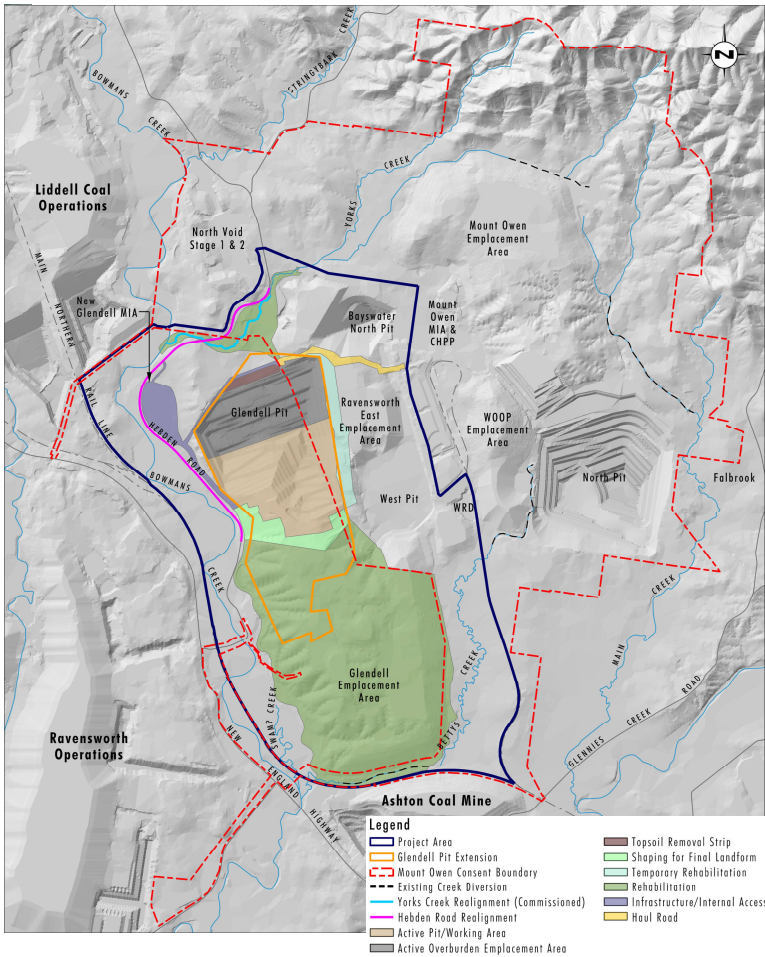


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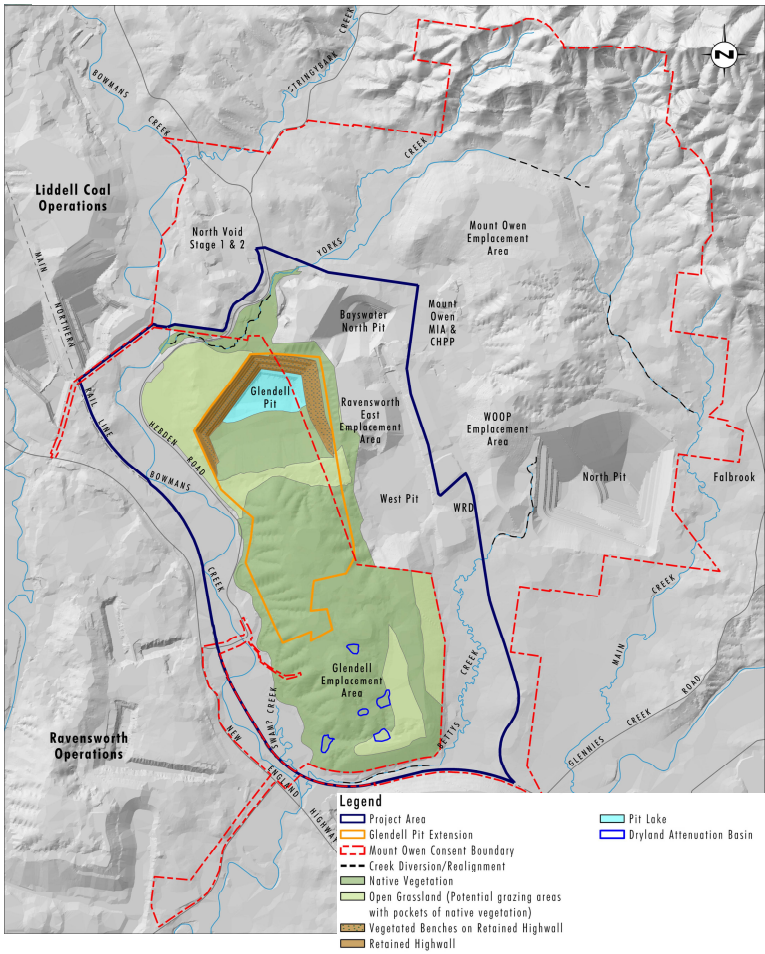
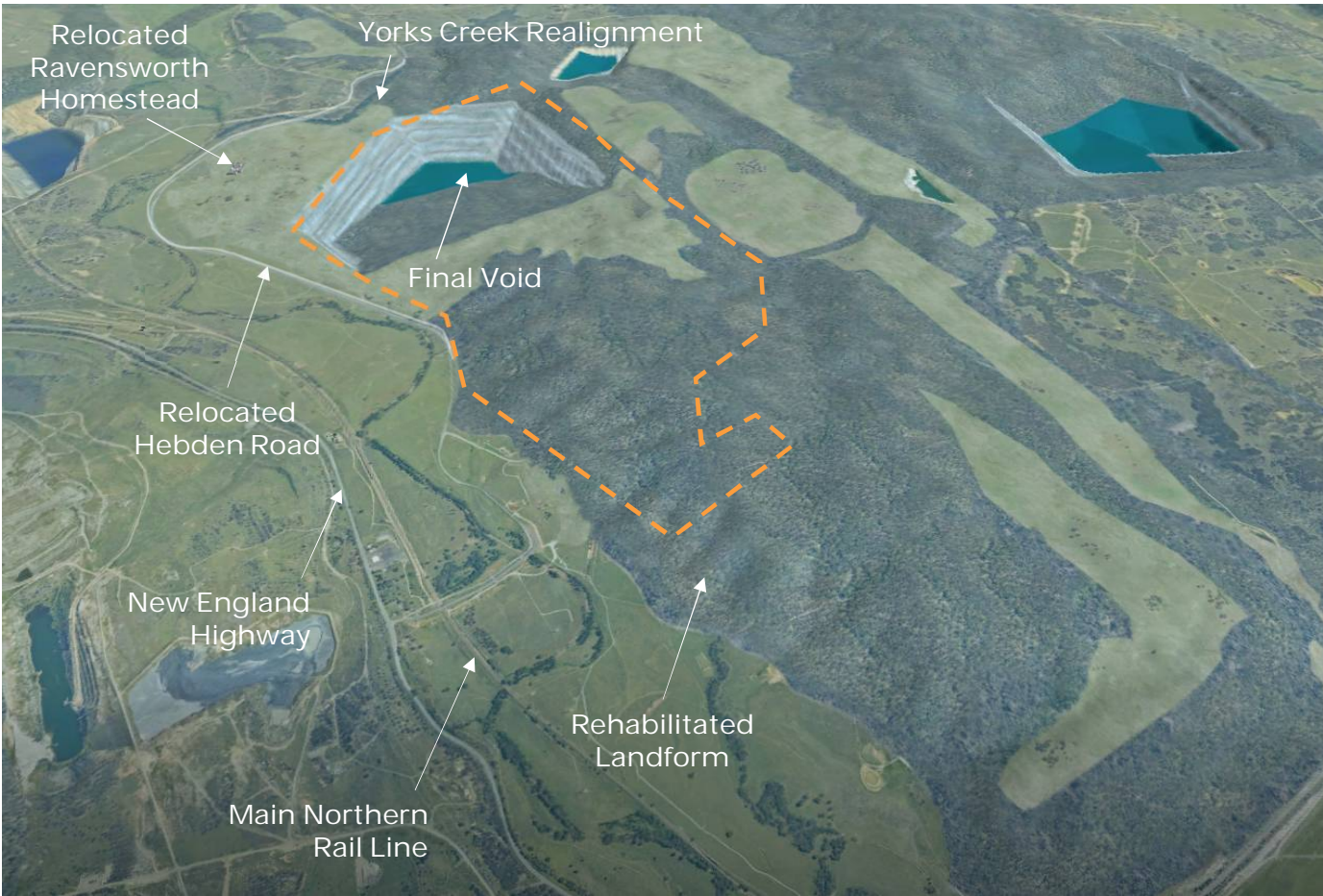
Year 13



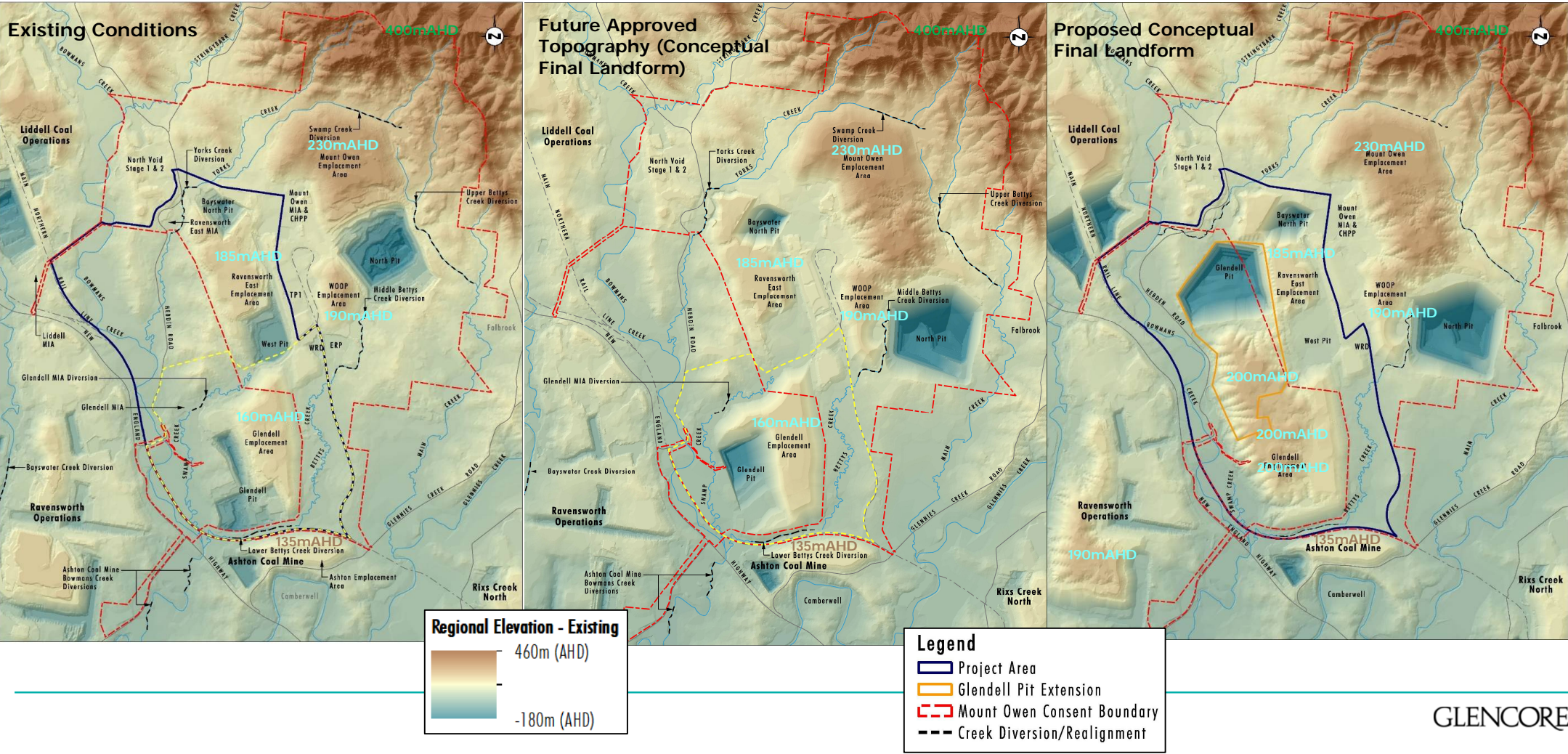
Year 18



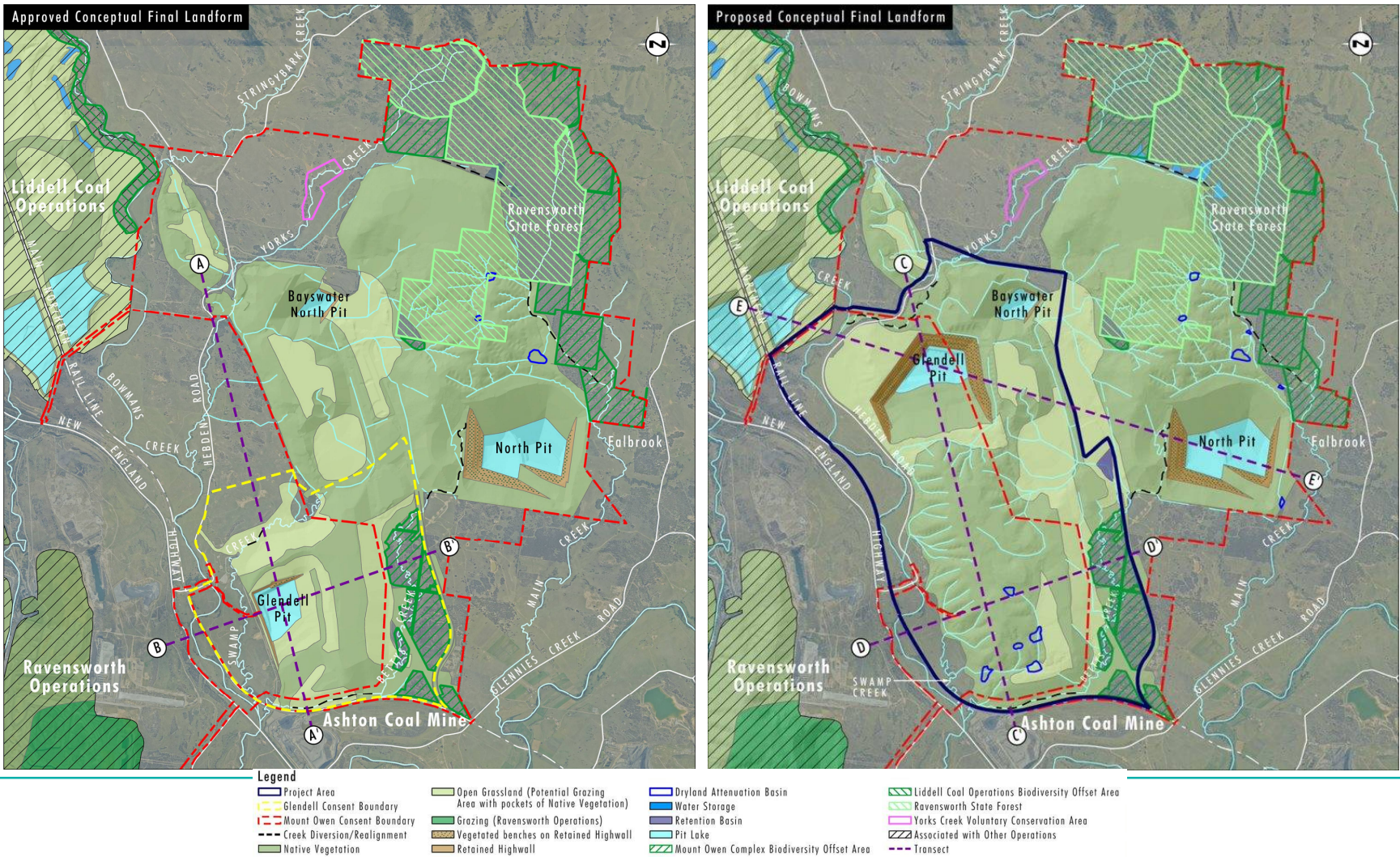
Final Landform



Topography and Drainage

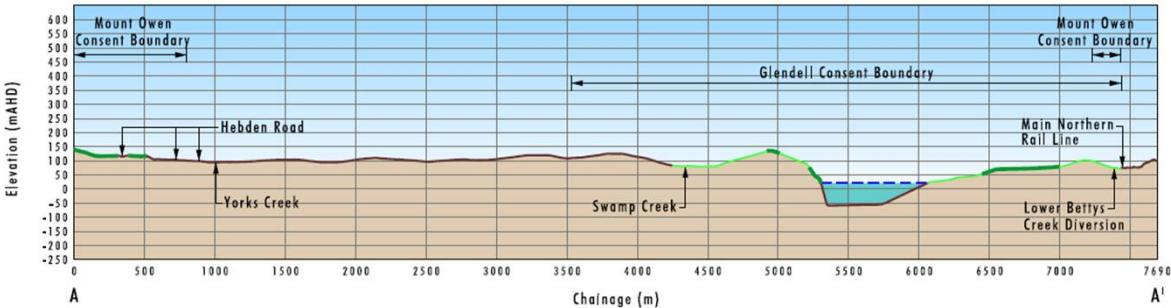
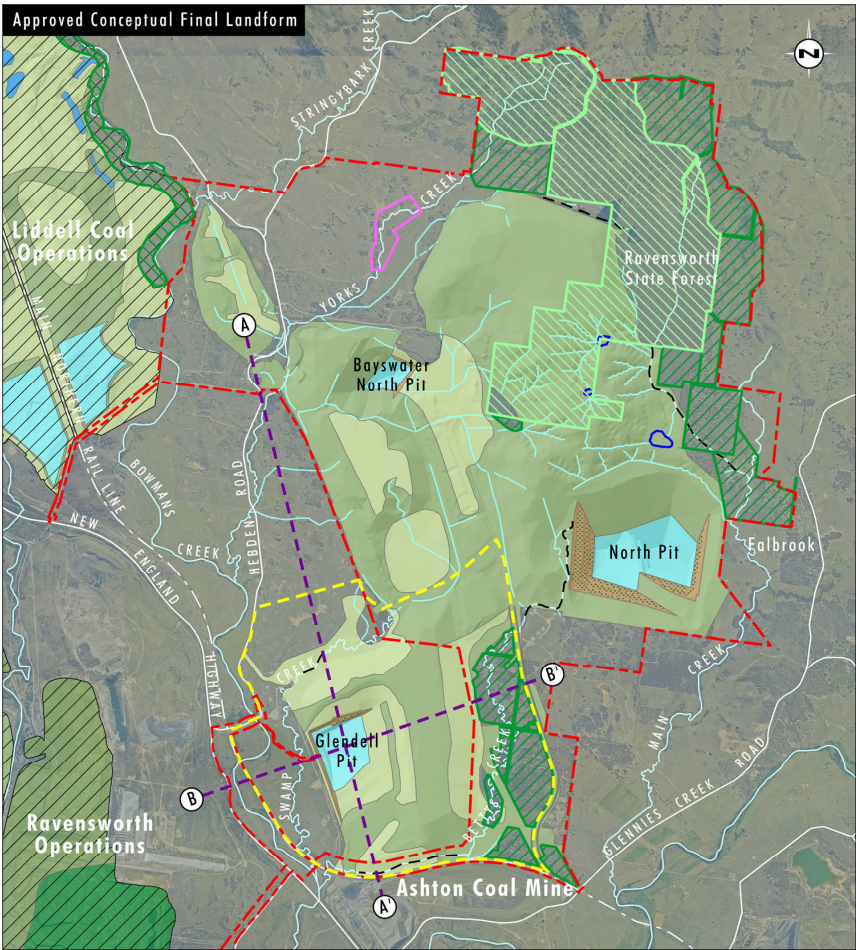


Final Landform

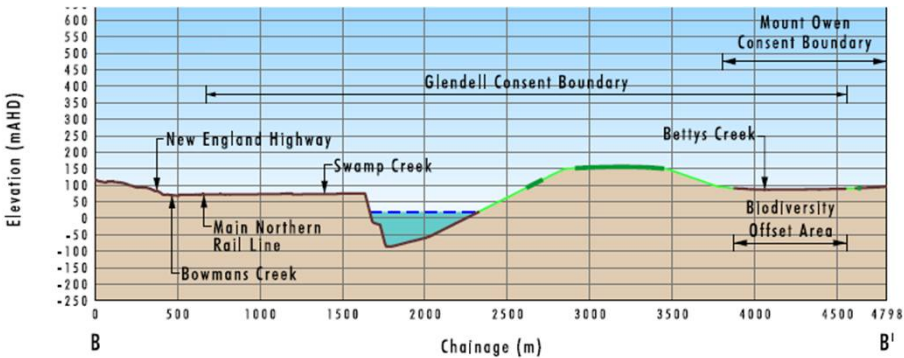


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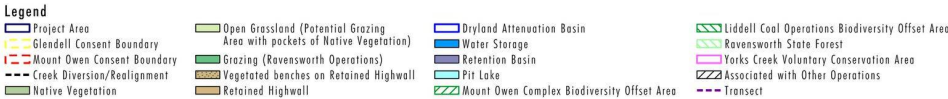
Final Landform - Approved



A-A' Approved Conceptual Final Landform

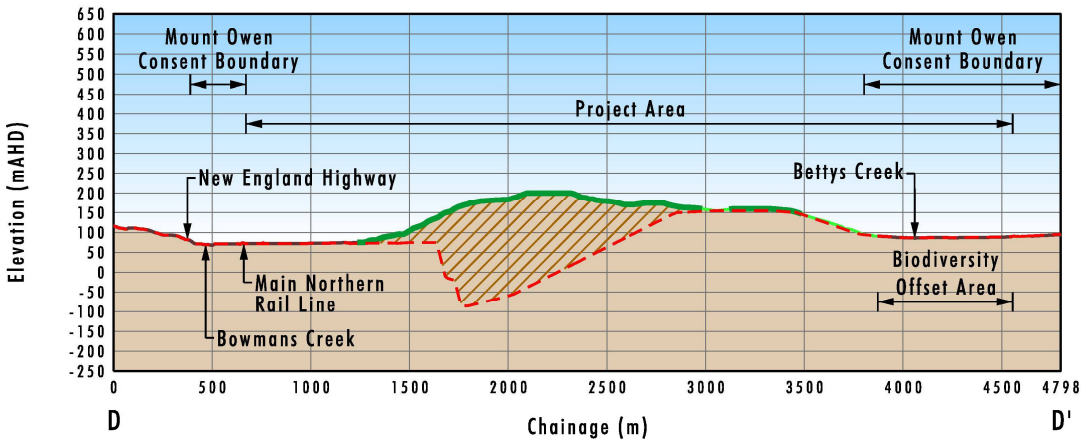
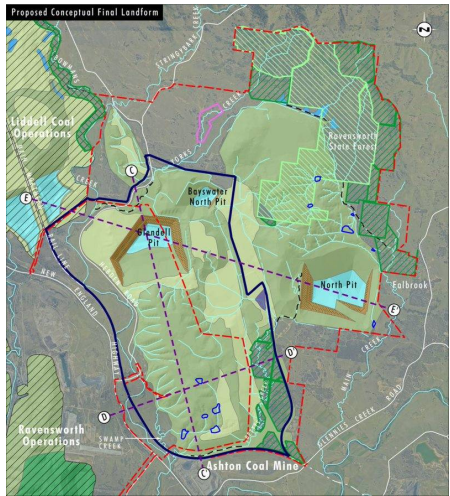


B-B' Approved Conceptual Final Landform

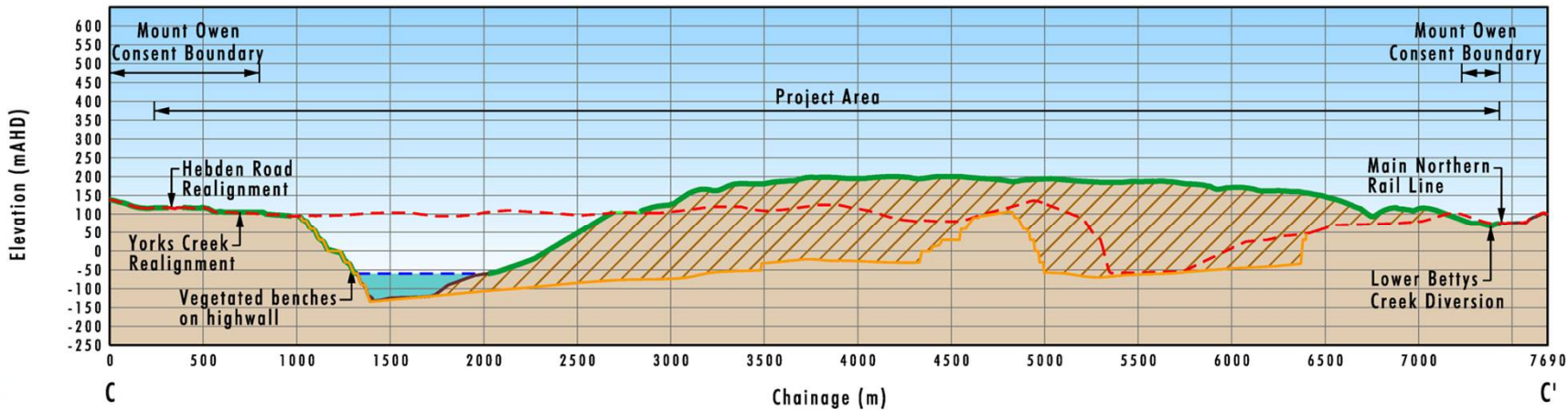


Proposed Conceptual Final Landform

- Legend**
- Landform Surface
 - Rehabilitated Final Landform Surface (Native Vegetation)
 - Rehabilitated Final Landform Surface (Open Grassland with Pockets of Native Vegetation)
 - Modelled Maximum Pit Lake Level
 - Pit Lake
 - Approved Conceptual Natural Landform Surface
 - Emplaced Overburden

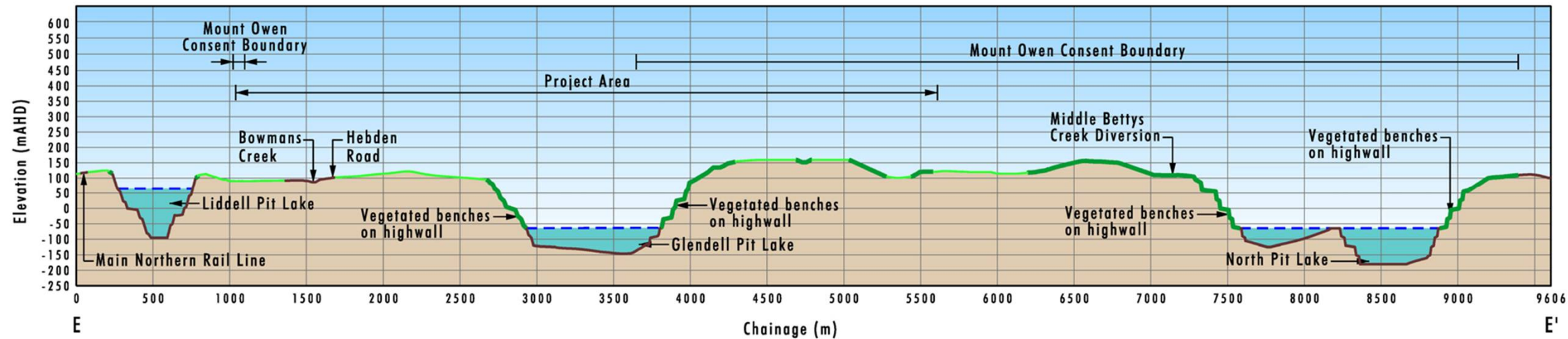


D-D' Proposed Conceptual Final Landform



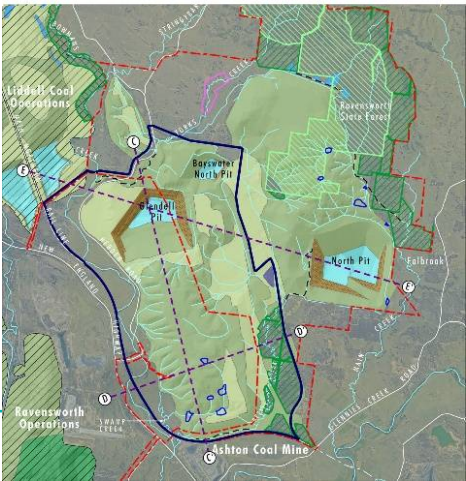
C-C' Proposed Conceptual Final Landform

Proposed Conceptual Final Landform



E-E' Proposed Conceptual Final Landform

- Legend**
- Landform Surface
 - Rehabilitated Final Landform Surface (Native Vegetation)
 - Rehabilitated Final Landform Surface (Open Grassland with Pockets of Native Vegetation)
 - Modelled Maximum Pit Lake Level
 - Pit Lake

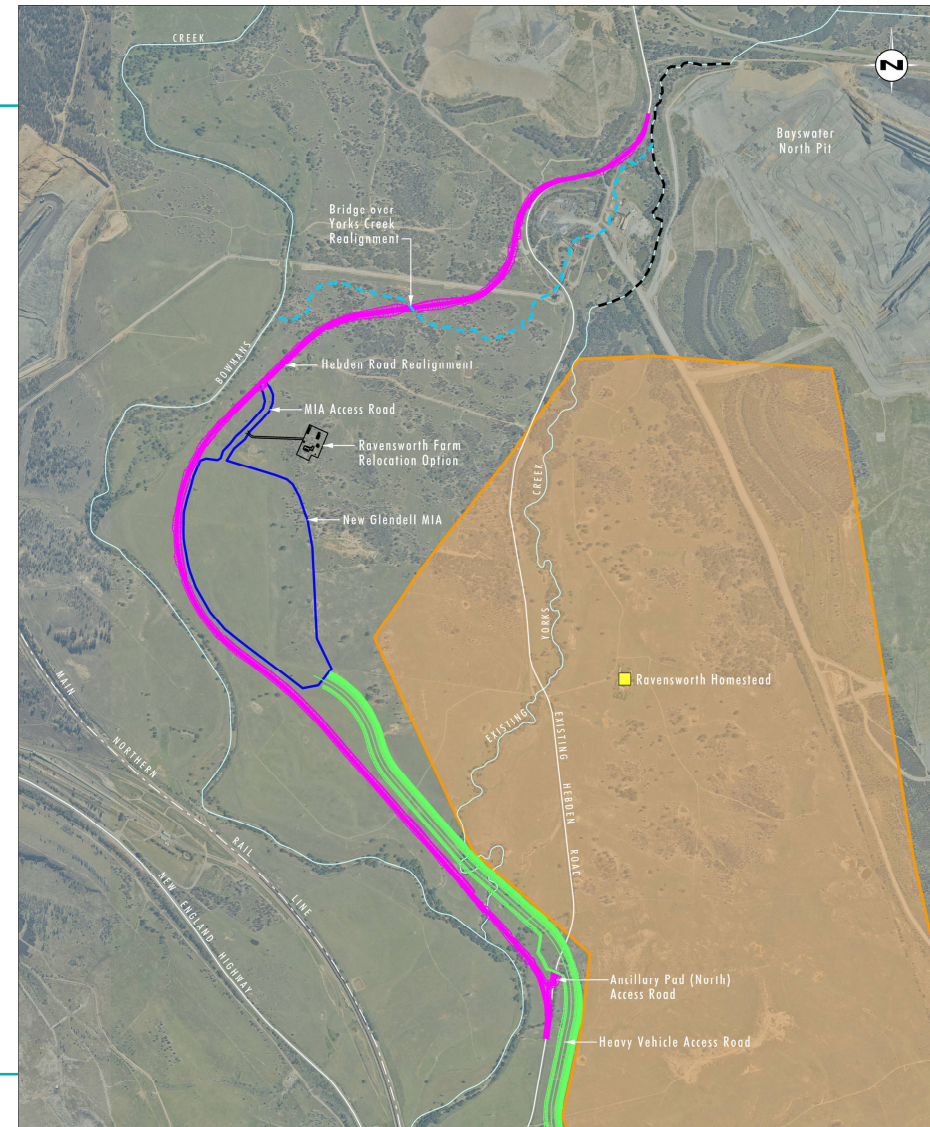


Hebden Road Realignment

- Hebden Road Realignment
 - Singleton Council is asset owner
 - Existing 3.7km section of Hebden Road requires closure with construction of new section of road to the west
 - New section of road is approximately 1.2km longer than existing
 - Adds less than 1 minute to travel times
- New section of road designed and constructed to modern standards
 - Constructed offline to minimise impacts to road users
 - Significant improvements in safety
- Leverage off traffic flow improvements from other road upgrades (removal of rail level crossing and single lane bridge)

Legend

- Glendell Pit Extension
- Ravensworth Homestead
- Existing Creek Diversion
- New Glendell MIA
- Yorks Creek Realignment
- Hebden Road Realignment
- Heavy Vehicle Access Road



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Existing Hebden Road Upgrades







Photo 1 – Rail Overbridge



Photo 2 – Dual Lane Bridge over Bowmans Creek

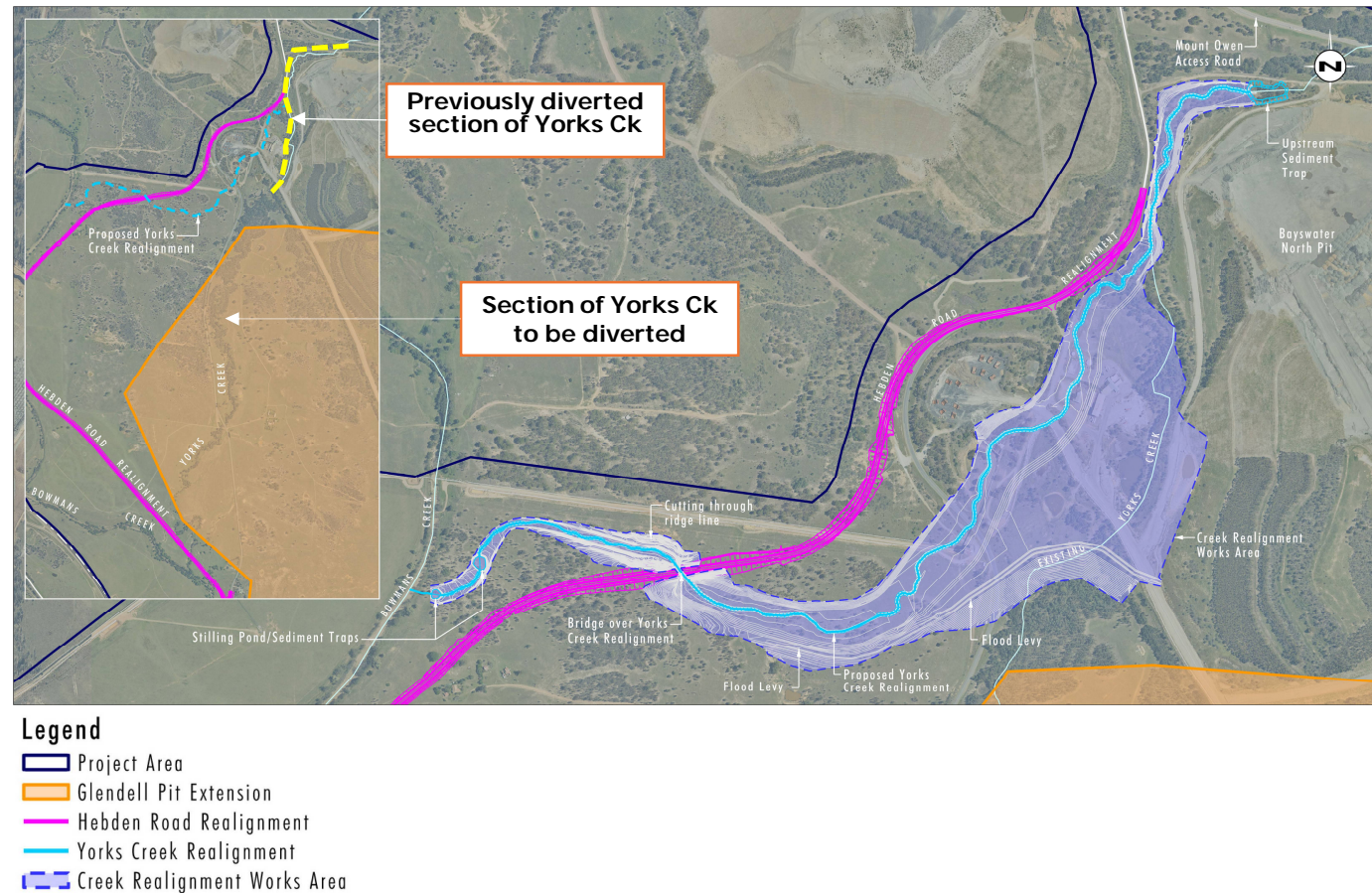


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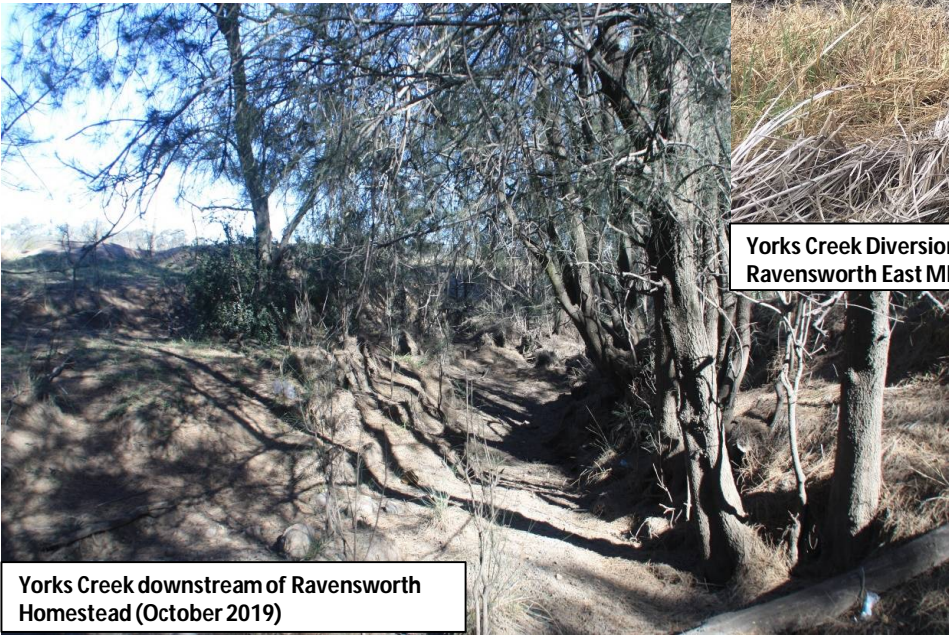
 Project Area
 Glendell Pit Extension
 Mount Owen Consent Boundary
 Existing Creek Diversion

Yorks Creek Realignment

- Yorks Creek is an ephemeral tributary of Bowmans Creek
- Section of Yorks Creek to be realigned includes a 1.5km section that has previously been diverted
- Realigned Yorks Creek will join Bowmans Creek upstream of the current alignment (approx. 3.8Km)
- Realignment incorporates contemporary design elements in order to be geomorphically stable



Yorks Creek Realignment



Yorks Creek downstream of Ravensworth Homestead (October 2019)



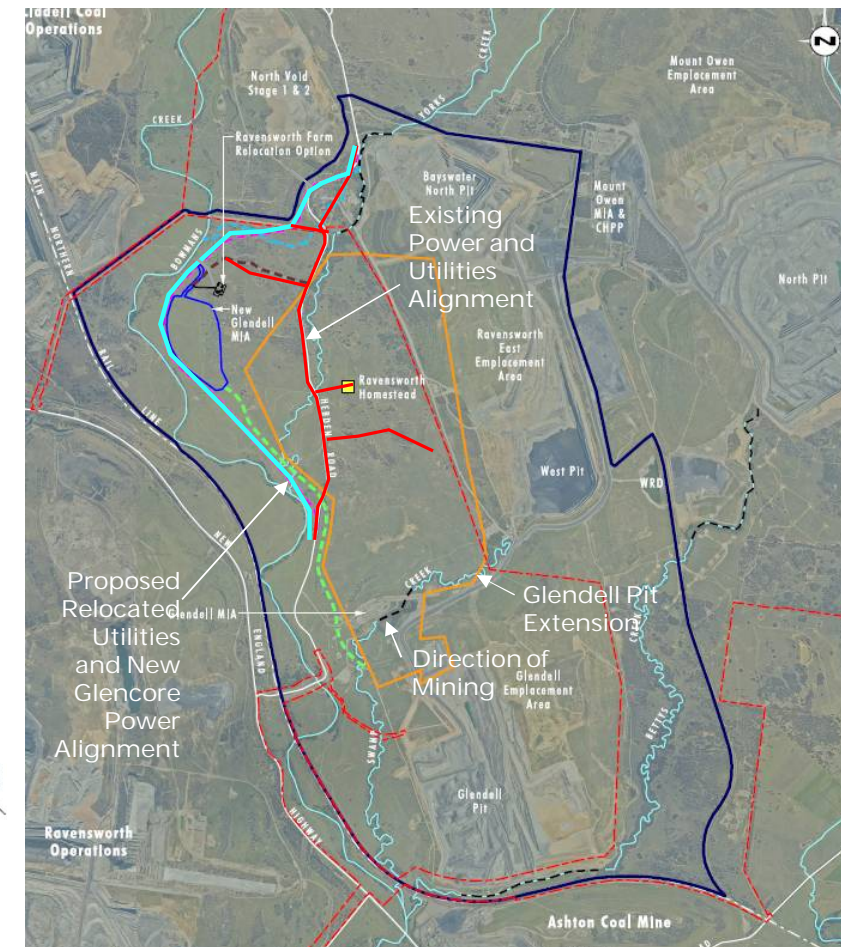
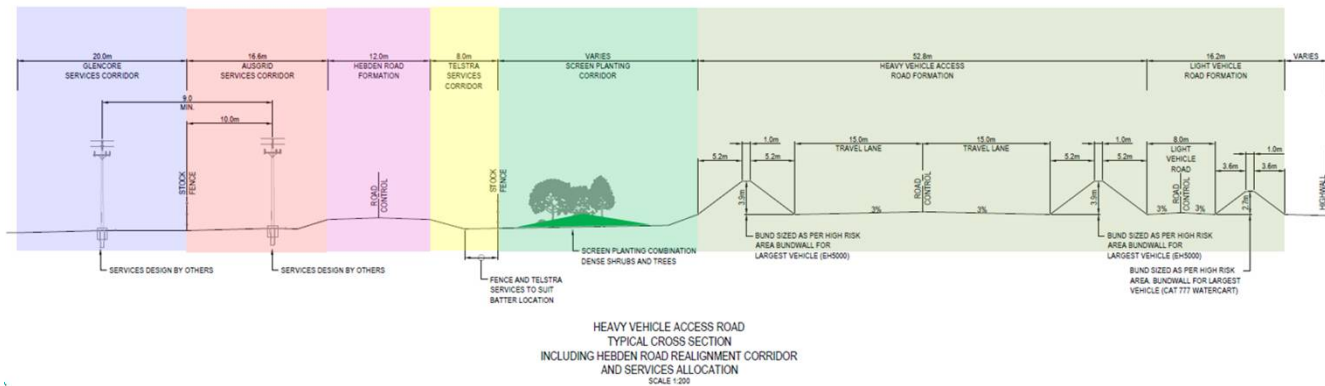
Yorks Creek Diversion of Ravensworth East MIA (January 2018)



Yorks Creek downstream of Ravensworth East MIA (Natural) (January 2018)

Other Infrastructure

- Relocation of existing Ausgrid power infrastructure along Hebden Road
 - Includes Ausgrid 11kV line along Hebden Road and 33kV feeder to Mt Owen Mine
 - New Ausgrid 11kV power line on western side of relocated Hebden Road (within road reserve)
- Power supply for the new MIA proposed for the Project via a new 11kV power line from existing 66/11kV switchyard
 - New Glencore 11kV power line beyond stock fence on western side of relocated Hebden Road
- Relocation of existing Telstra communications infrastructure on eastern side of relocated Hebden Road (within road reserve)





Any Questions?

Key Aspects

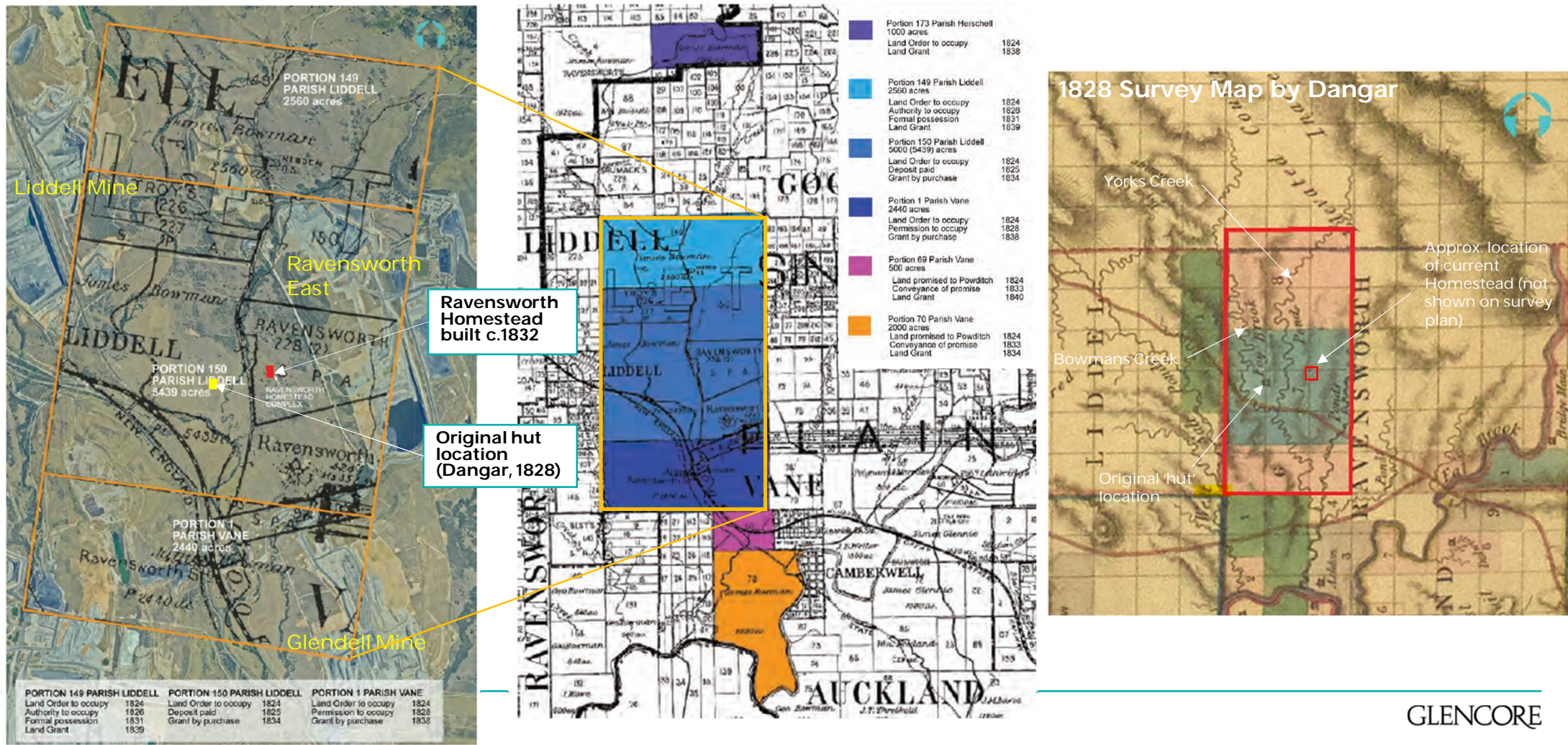
Heritage

Ravensworth Homestead

- Homestead owned by Glencore since 1997
 - Invested in repair and restoration works in 2008/9
 - Have kept buildings secure and water tight
- Colonial homestead complex constructed c.1832 consisting of 6 buildings (5 of sandstone construction and 1 timber cottage) in a farmyard arrangement
- Homestead has links to the Macarthur family
- One known gravesite – 'Miss White' buried in grounds of homestead
- Listed as an item of local significance in the Singleton Local Environmental Plan (LEP) 2013
- Currently buildings are inaccessible to public
 - Buildings not being used and have remained vacant since purchase
 - Little public interest in accessing the buildings



Ravenstworth Estate



Ravensworth Homestead – built c.1832



Photo 1



Photo 5

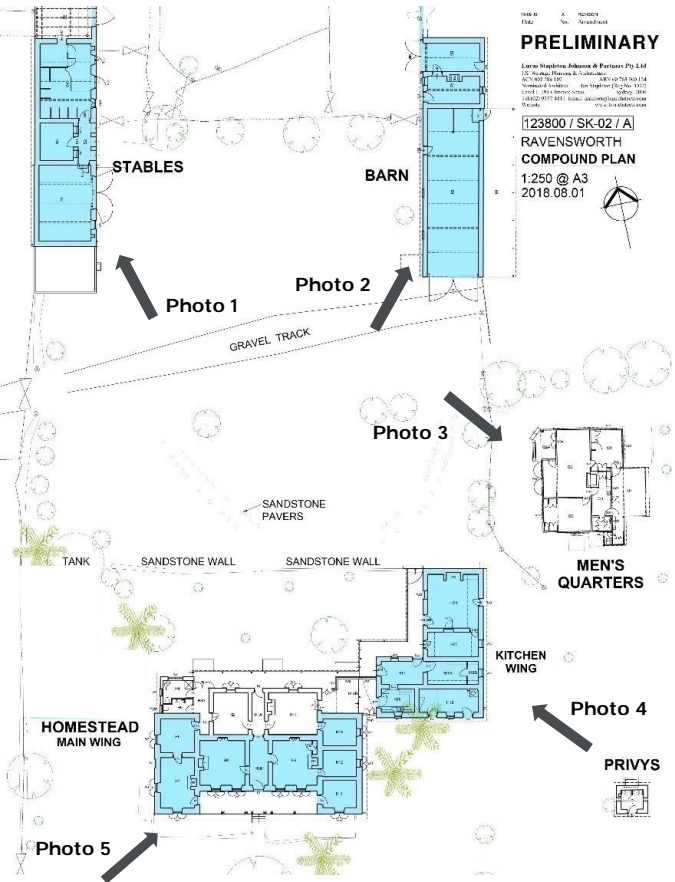


Photo 2



Photo 3



Photo 4

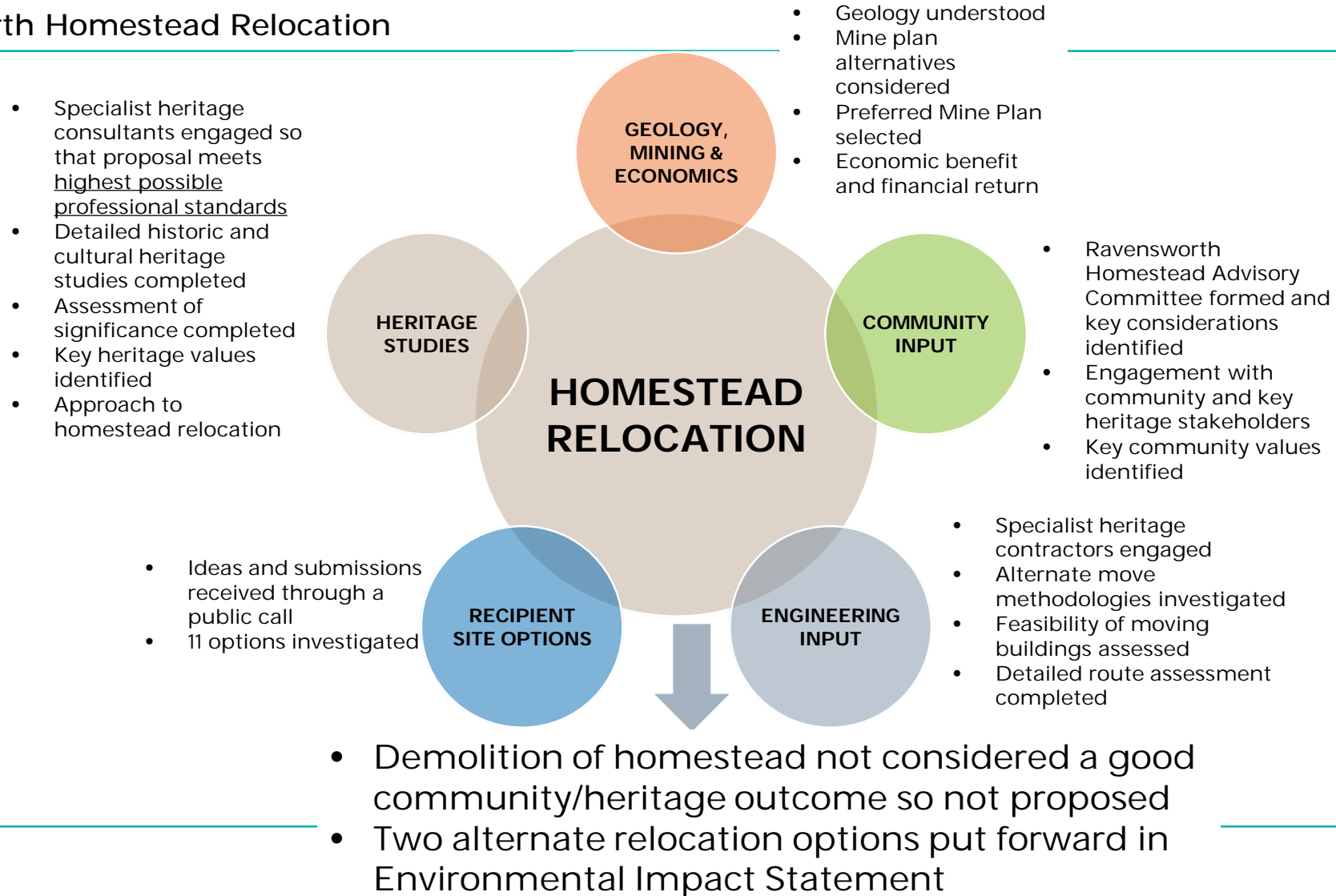
Ravensworth Homestead - Setting



Ravensworth Homestead – Drone Footage



Ravensworth Homestead Relocation



Heritage Consultants and Specialists

- History & Land Tenure (Dr Terry Kass & Dr Mark Dunn)
 - Land titles history
 - General and social history
 - Land use history
 - Early contact history between Aboriginal people and European settlers
- Architecture (Ian Stapleton, Lucas Stapleton Johnson)
 - Measured drawings, photography and fabric survey
 - Comparative analysis
 - Assessment of significance
 - Statement of Heritage Impact
- Historical Archaeology (Casey & Lowe)
 - Archaeological Research Design
 - Archaeological test excavations
 - Historical archaeological assessment
- Landscape, Setting and Garden (Geoffrey Britton & Colleen Morris)
 - Garden survey
 - Landscape and views survey
 - Cultural landscape understanding
- Aboriginal Archaeology (OzArk)
 - Site survey and test excavations
 - Aboriginal archaeological report
- Aboriginal Cultural Heritage Assessment (ACHM)
 - Cultural values workshops with RAPs and family groups
 - Cultural values assessment report
- Building Move – Intact (Mammoth Movers)
 - Detailed feasibility of moving buildings intact including footing investigation
 - Detailed route assessment including survey
 - Detailed move methodology
- Building Move – Dismantle and Rebuild (Heritage Stone Restorations)
 - Dismantle and rebuild assessment and methodology
- Structural Assessment (Mott Macdonald)
 - Structural assessment of buildings
 - Pre-move stabilization works
- Economic Modelling (Morrison Low and Ernst & Young)
 - Commercial modelling of options
 - Financial analysis of alternate mine plan options

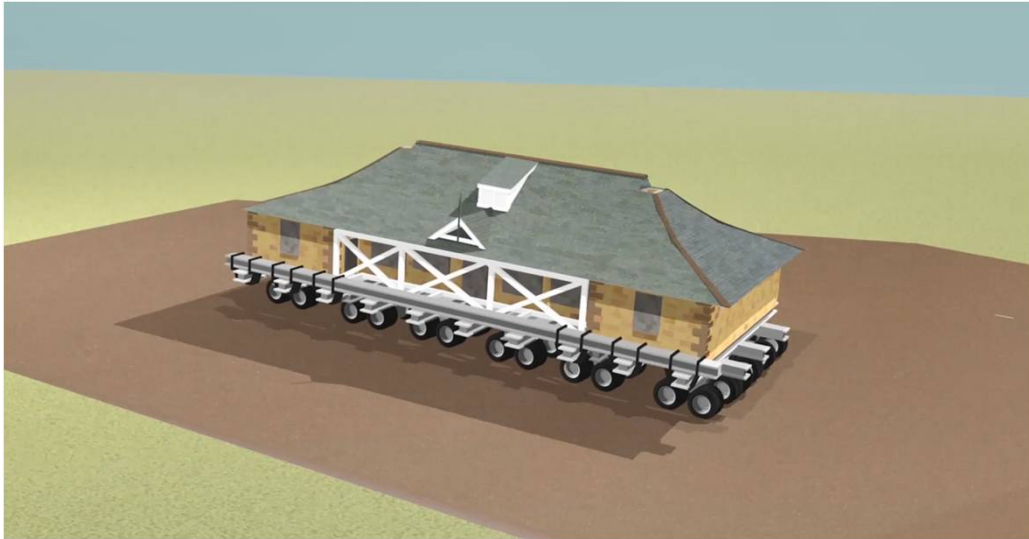
Proposed Relocation Options

- Two alternate options put forward in Environmental Impact Statement:
 - **Ravensworth Farm (Option 1) – RECOMMENDED BY DPE**
 - Emphasis on salvaging significant heritage features through:
 - Moving buildings intact to a site outside of the proposed mining footprint on the original Bowman '10,000 acre' land grant
 - Replicating existing site features (approach direction, landform, visual catchment)
 - Requires no additional approvals – part of SSD application
 - **Broke Village – McNamara Park (Option 2) – Community Proposal**
 - Emphasis on siting the buildings in a publicly accessible location that provides an ongoing community benefit through:
 - Dismantling and rebuilding the building group in Broke to form the village square
 - Requires a range of secondary approvals and land tenure
- Full archaeological investigation and recording would occur before relocation of the buildings
- Select plants, trees and other garden features would be salvaged from homestead garden and worked into the new landscape proposal

Move Methodologies

Below animations provided separately to IPC

Ravensworth Farm (Option 1)
Intact Move Methodology



Broke Village (Option 2)
Dismantle & Rebuild Move Methodology



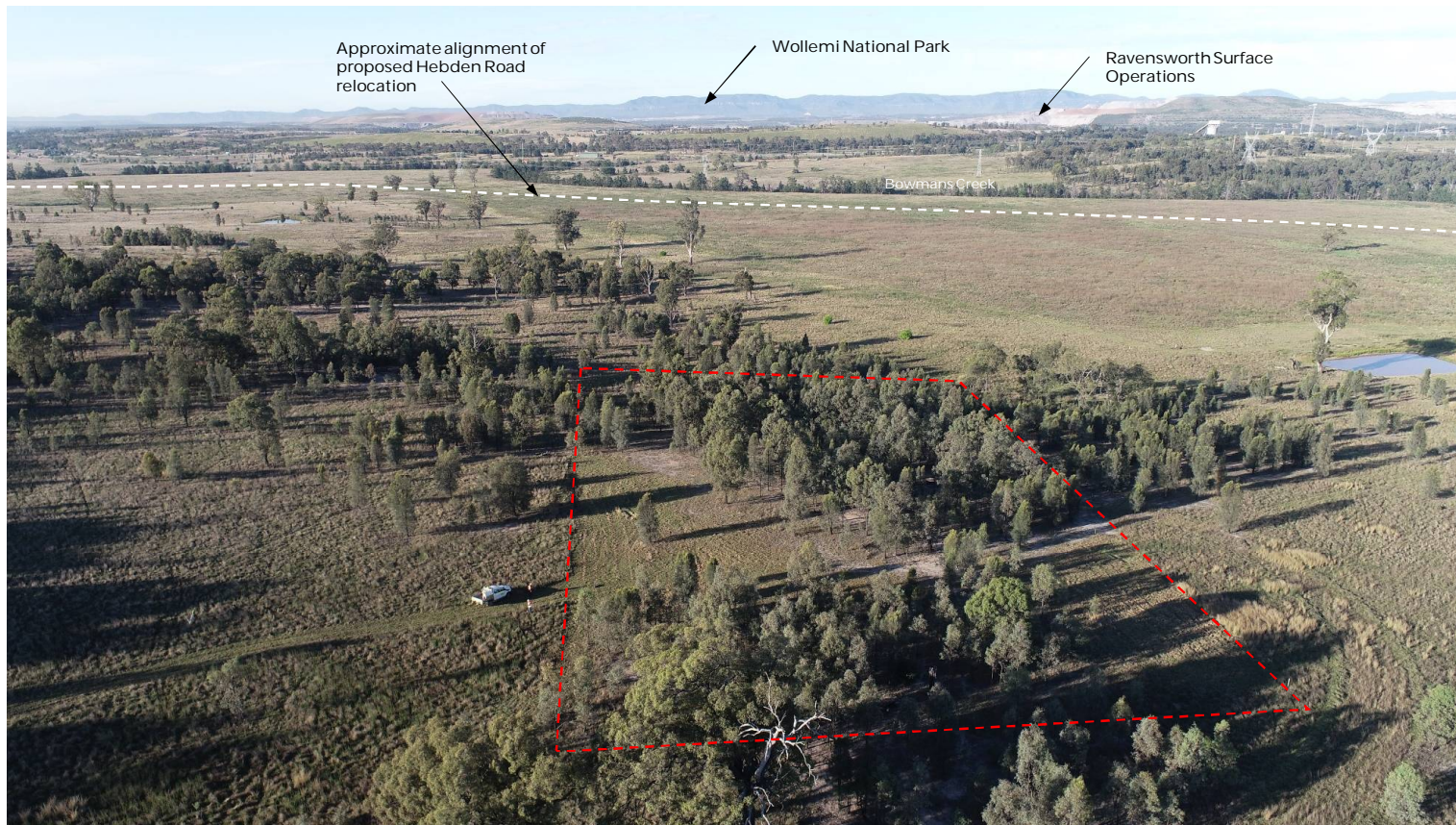
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Ravensworth Farm (Option 1)

- **Move methodology:**
 - Move each building intact on purpose built road – preserves as much of heritage fabric as possible
 - Adapt for office use
- **Proposed Use:**
 - During mining – Glencore office and training facility
 - Post-mining (~20 years time) – possible options include return to use as a private homestead with an attached landholding OR fulfil some other function to suit future land use and interest in the area
- **Ownership:**
 - During mining – Glencore ownership
 - Post-mining (~20 years time) – subject to future use and interest in the area
- **Key features:**
 - Stays within Ravensworth locality and remains situated on original Bowman '10,000 acre' land grant (Core Estate Lands) and close to New England Highway.
 - Recipient site to be adjusted so that landform is similar to current
 - Building orientation and arrangement very similar to current
 - Approach and offset from new road similar to current
 - Visual catchment/outlook/pastoral character would (after 20 years) be similar to current



Ravensworth Farm Recipient Site



Ravensworth Farm Drone Footage



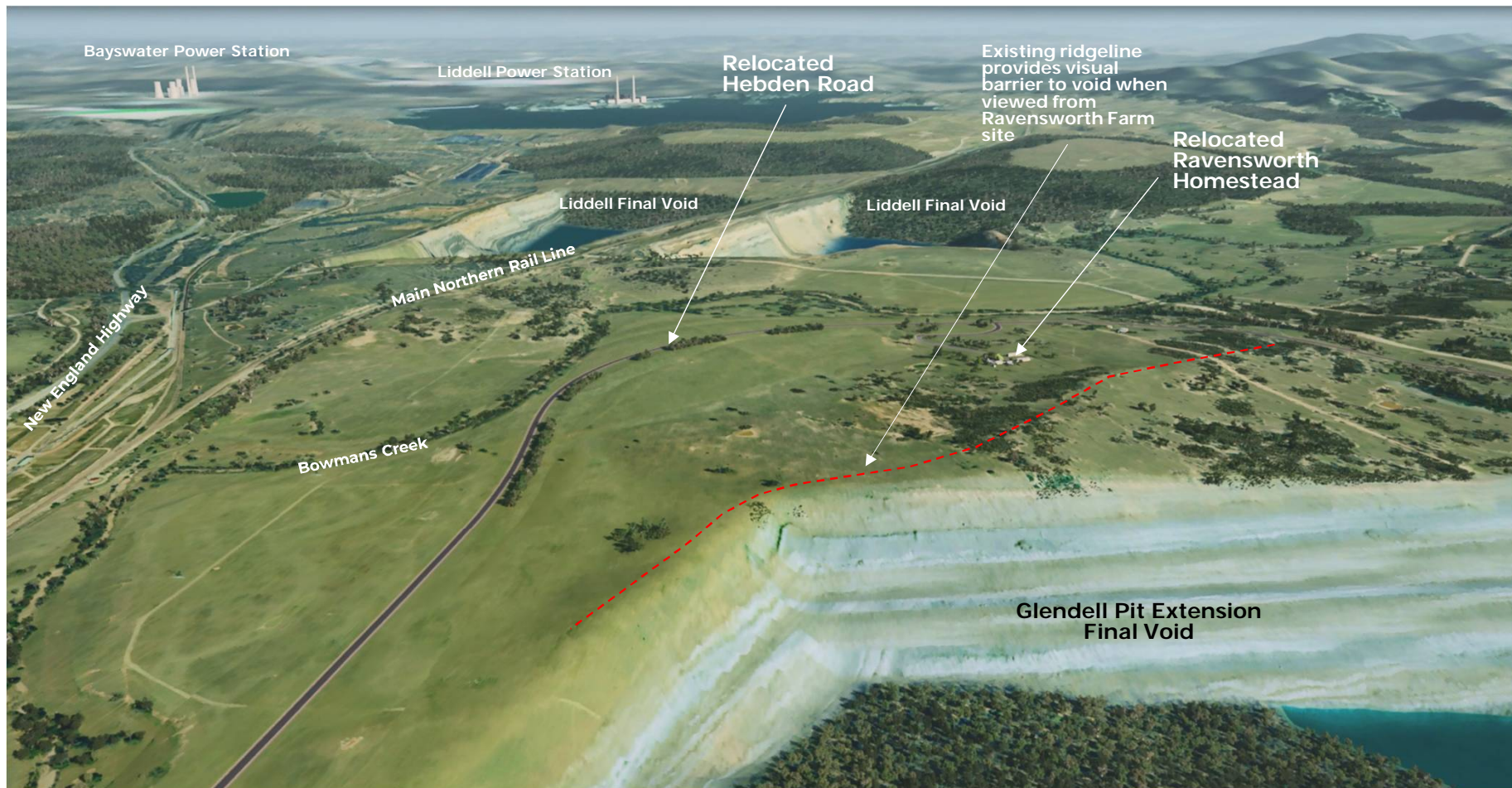
Ravensworth Farm Visualisation



Ravensworth Farm Visualisation



Ravensworth Farm Visualisation



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Broke Village – McNamara Park (Option 2)

- **Option proposed by members of the Broke-Fordwich community**
- **Move methodology:**
 - Dismantle and rebuild in McNamara Park (Crown Land)
 - Adaptation to suit end use
- **Proposed Use:**
 - Village Square - Mixed usage
- **Ownership:**
 - Broke Village Square Ltd – Not-for-Profit
- **Key features:**
 - Sites buildings in publicly accessible location (subject to acquisition/access arrangement)
 - Aims to provide Broke Village with village square
 - Aims to meet local needs through tourism opportunities
 - Aims to provide a focal piece for community events (Smoke in Broke, Broke Village Fair, Broke Community Markets)
- Requires a number of secondary approvals:
 - Rezoning
 - Development Application
 - Land tenure
 - Native Title considerations



Broke Recipient Site – McNamara Park



Broke Recipient Site – McNamara Park



Cultural Heritage

- Extensive consultation with 32 RAPs to inform the Aboriginal Cultural Heritage Assessment Report (ACHAR) and broader environmental assessment of the Project
- 91 Aboriginal sites impacted by the Project
 - 36 isolated finds
 - 55 artefact scatters
- No sites assessed as having high scientific significance
- ACHAR prepared to assess Aboriginal cultural heritage values of the Project Area and surrounds
- Some stakeholders suggest that Ravensworth Estate is significant due to its reported association with early conflict between European settlers and Aboriginal people
 - Comprehensive research and investigations completed indicate:
 - Incidents not unique and Estate not the centre of conflict
 - Massacre event (Sept 1826) occurred well beyond Project area
 - Ravensworth Homestead was constructed c.1832, after the main period of conflict
- Range of on-site and off-site management measures developed in consultation with RAPs

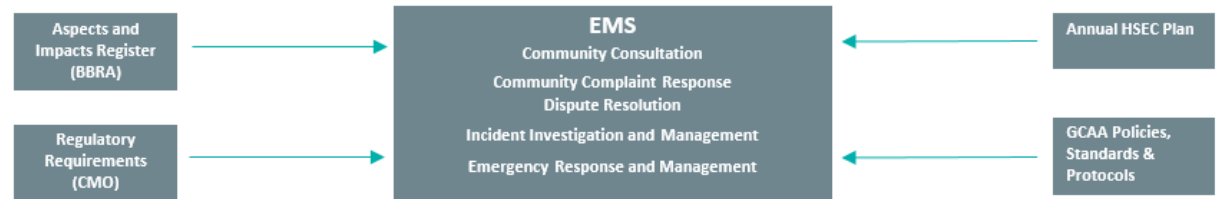
Survey transects Additional Disturbance Area
Survey area Project Area



Environmental Management

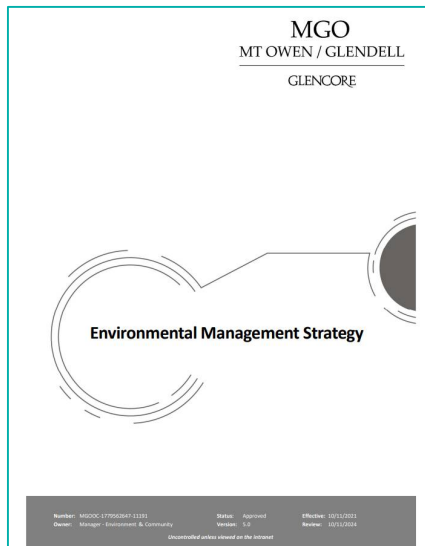
Operational Management

- Existing site operates a comprehensive Environmental Management System
- Environmental Management Strategy and all associated management plans are available on the company website



Environmental Management Plans

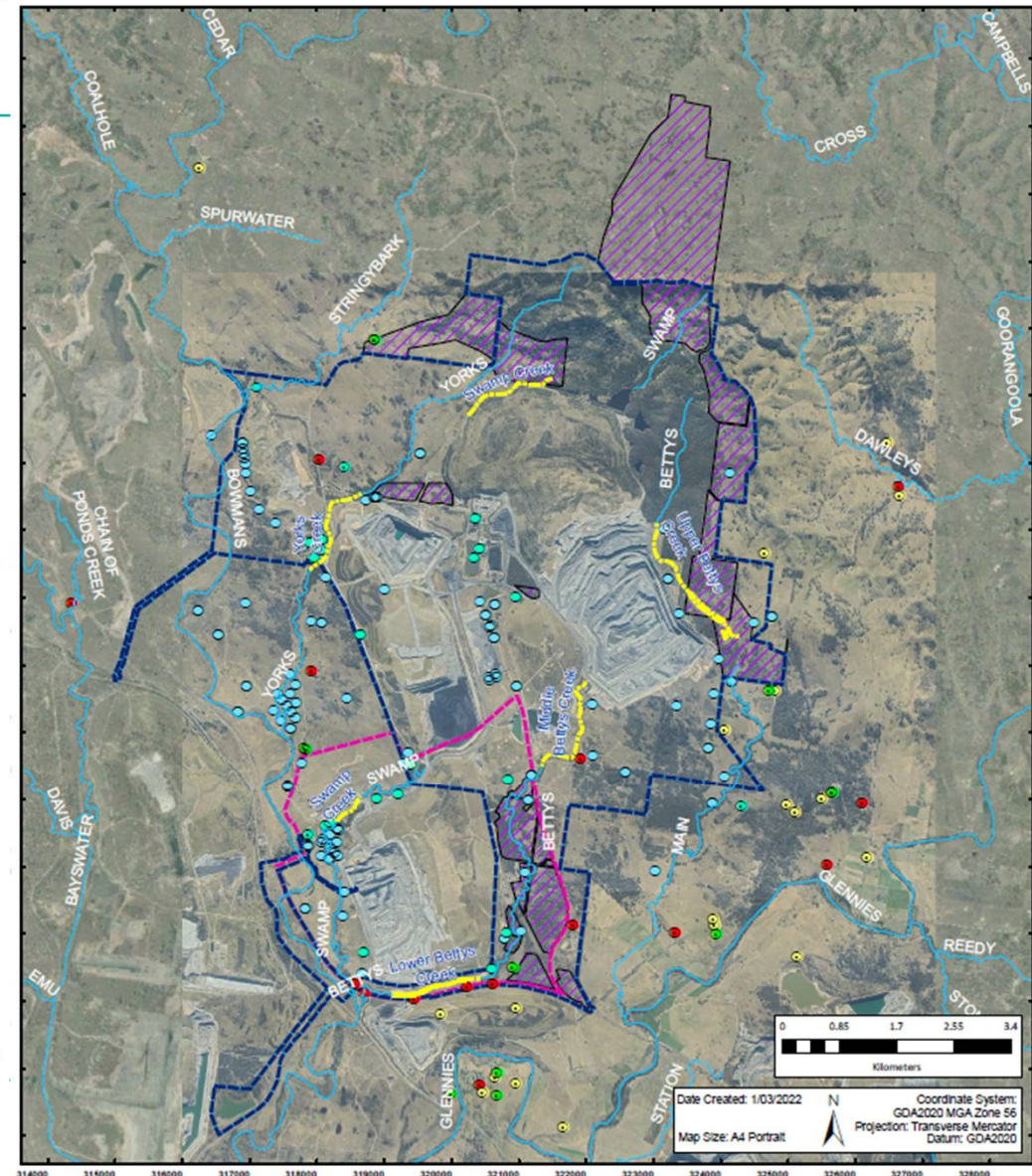
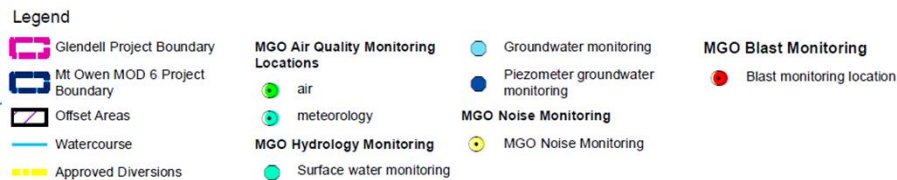
Noise	Air Quality	Blast	Water	Biodiversity	Rehabilitation	Aboriginal Heritage	Historic Heritage
Noise System Management System Noise Monitoring Program	Air Quality Management System Air Quality Monitoring Program	Blast Management System Road Closure Management Plan Public Infrastructure Vibration Limits Integra Underground Interaction Procedure Blast Monitoring Program	Site Water Balance Creek Diversion Management ESCP Surface Water Management Groundwater Management Surface and Groundwater Response Plan	Biodiversity Management Measures Biodiversity Offset Strategy Rehabilitation Performance and Completion Criteria Regeneration Strategies Biodiversity Monitoring Program	Rehabilitation Strategy Tailings Management Plan Rehabilitation Procedures Rehabilitation Monitoring	Aboriginal Heritage Management Measures Cultural Heritage Working Groups Storage of Heritage Items	Historic Heritage Management Measures Archaeological Procedures
MGO EMS Records		MGO Environmental Monitoring Database (EMD)		MGO Internal Forms		MGO Internal Plans and Procedures	
Approvals and Records Register Incident Register Complaints Register Stakeholder Register Acquisition Register Mitigation Register Training Register		Environmental Monitoring Data: - Air Quality - Noise - Water Quality		Environmental Inspections Rehabilitation Inspections Ground Disturbance Permits (GDP)		Waste Management Plan Lighting Management	



Glendell Continued Operations & Mount Owen Continued Operations Mod 4

Operational Management

- Extensive environmental monitoring network surrounding the mining operations:
 - Meteorological
 - Noise
 - Air Quality
 - Blasting
 - Surface Water
 - Ground water
 - Heritage
 - Rehabilitation
 - Biodiversity Offsets
 - Waste



Air Quality & Noise Management

MGO has developed an Air Quality and Greenhouse Gas Management Plan (AQGGMP) to effectively manage Air Quality and Greenhouse Gas aspects across the operation

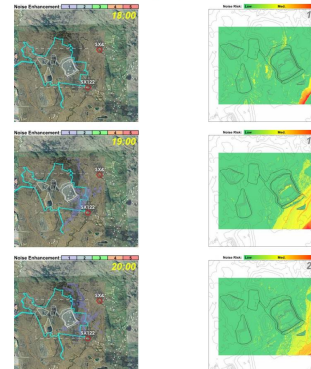
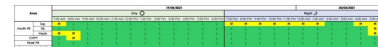
MGO manages day to day air quality impacts through:

- Weather forecast system
- Real-time dust monitoring network and alarming system
- Water carts
- Modifying activities
- Rehabilitating areas following disturbance

MGO has developed an Noise Management Plan (NMP) to effectively manage noise aspects across the operation

MGO manages day to day noise impacts through:

- Weather forecast system
- Predictive noise model (Mt Owen)
- Real-time noise monitoring network and alarming system



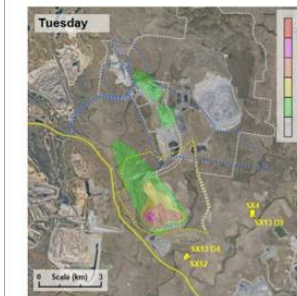
Jacobs

Air Quality Control System

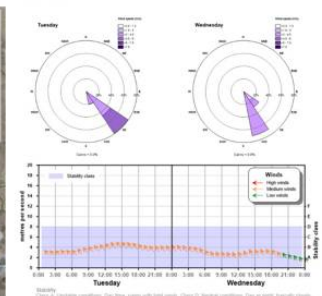
Weather

Summary:	Tuesday Star 1	Wednesday Star 2	Thursday Star 3	Friday Star 4	Saturday Star 5
Maximum:	28 C	28 C	28 C	28 C	28 C
Minimum:	19 C	19 C	20 C	21 C	21 C
Chance of rain:	50%	70%	50%	50%	50%
Rain amount:	6 to 15 mm	8 to 15 mm	6 to 20 mm	1 to 5 mm	0 to 3 mm

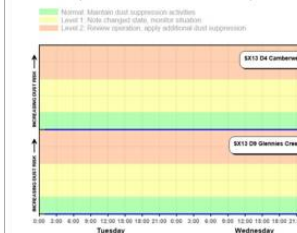
Dust



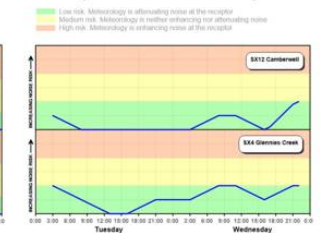
Winds



Dust (selected locations)



Noise (selected locations)



Glendell: 01 March 2022
<http://enforecasing.com>
 Produced: 01/03/2022 05:17

Air Quality & Greenhouse Gas Management

Management measures we employ to minimise GHG emissions include:

- Optimising the design of haul roads to minimise the distance travelled between the pit and dumping locations
- Minimising the re-handling of material
- Managing truck payloads to utilise the tray space without overloading
- Managing truck utilisation to minimise truck waiting times
- Maintaining the mine fleet in good condition and operating order
- Regular review and workshop to improve/reduce GHG emissions onsite



Work Area/ Equipment	Level 1 Normal Status		Level 2 Overage Status		Supervision Action/Response
	Trigger	Action/Response	Trigger	Action/Response	
Haul Trucks/ Haul Roads		Continuous work index exceeded. Monitor dust suppression activities. Continue monitoring operation.		Truck operator to reduce speed and modify route and operation for additional dust suppression.	Truck operator to notify Mining Supervisor and to call for additional dust suppression. If this dust suppression measure operations to be stopped. Dust generated from haul roads close to high loading operations is more likely to cause emissions.
Dumps		Continuous work index exceeded. Continue monitoring operation.		Dump operator to notify Mining Supervisor and to reduce dump height of material. Continue essential activities. Limit time spent. If work areas.	Limit dumping to block tipping or lower dumping levels. Work is continuously monitored and operations for the dust hazard are to be notified and dust suppression to be engaged.
Excavator Loading		Continuous work index exceeded. Monitor dust suppression activities. Continue monitoring operation. Dust generated from excavator loading is more likely to be intermittent status.		Excavator operator to notify Mining Supervisor and to reduce dump height of material. Continue essential activities. Limit time spent. If work areas.	Excavator operator to notify Mining Supervisor and to reduce dump height of material. If this dust suppression measure operations to be stopped.
Drills		Continuous work index exceeded. Monitor dust suppression activities. Continue monitoring operation.		Drill operator to ensure dust suppression activities functioning correctly. Mining Supervisor to monitor conditions. Assess impact of operations being conducted between working of area.	Dust suppression system to be checked for operational status and maintenance requirements. Supervisor to notify activities. If this dust suppression operations to be stopped.
ROM Pad		Continuous work index exceeded. Monitor dust suppression activities. Continue monitoring operation.		Continuous work index exceeded. Monitor dust suppression activities. Continue monitoring operation.	Dust suppression system to be checked for operational status and maintenance requirements. Supervisor to notify activities. If this dust suppression operations to be stopped.

Noise Improvements

- MGO SMART alarms are generated via the DNAT (Dust & Noise Analysis Tool) allowing supervisors to quickly identify noise sources. This ensures compliance with sites approval conditions.
- First Glencore site to utilise such technology and site presented at NSWMC Conference in 2019.

OCENoiseDustMapActionHistory

01/03/2022 09:15

Noise

Glendell contribution in Camberwell 13 dB under criterion (40dB(A))

Low audibility in Camberwell

Met is Valid (sx13 RMS average: 2.6m/s M1: 2.7m/s 146.9° M2: 2.4m/s 118.6°)

Dust

Glendell Contribution in Camberwell is 0µg/m³ (D4-D1)

Glendell Contribution in Middle Falbrook is 0µg/m³ (D9-D1)

Telstra 3G9:17 am100%

GlendellNAT

Fri, 11 Feb, 9:57 pm

Caution, Noise levels >40dB(A) in Camberwell (SX12 Aol-1) and Met is non-licensed due to high wind [11/02/2022 17:55]
<http://www.glendellnat.com/>

Fri, 11 Feb, 9:57 pm

Caution, Noise levels are within 38 to 40 dB(A) in Camberwell (SX12 Aol-1) [11/02/2022 19:55]
<http://www.glendellnat.com/>

Sat, 12 Feb, 9:57 pm

Caution, Noise levels are within 38 to 40 dB(A) in Camberwell (SX12 Aol-1) [11/02/2022 20:10]
<http://www.glendellnat.com/>

Sat, 12 Feb, 9:57 pm

Text Message

OCENoiseDustMapActionHistory

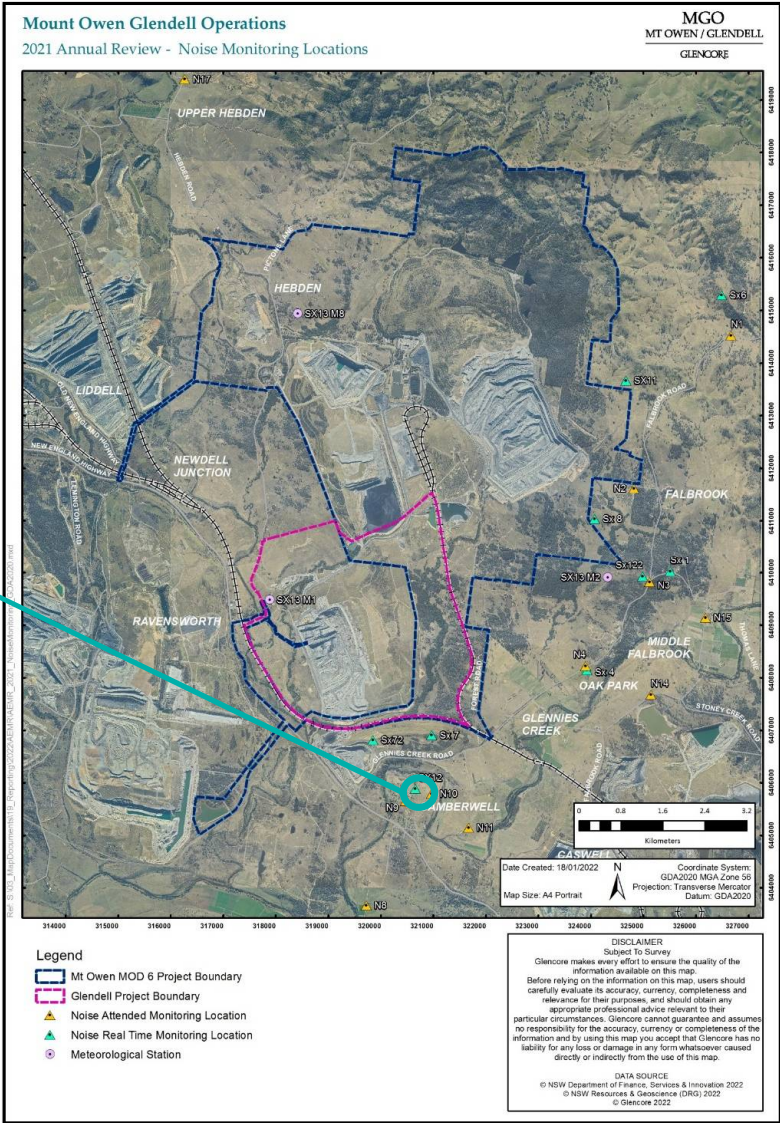
01/03/202209:15

Noise ResponseDust Response

Enter actions or choose from list below

Replace tracked dozer with rubber t

Save Actions

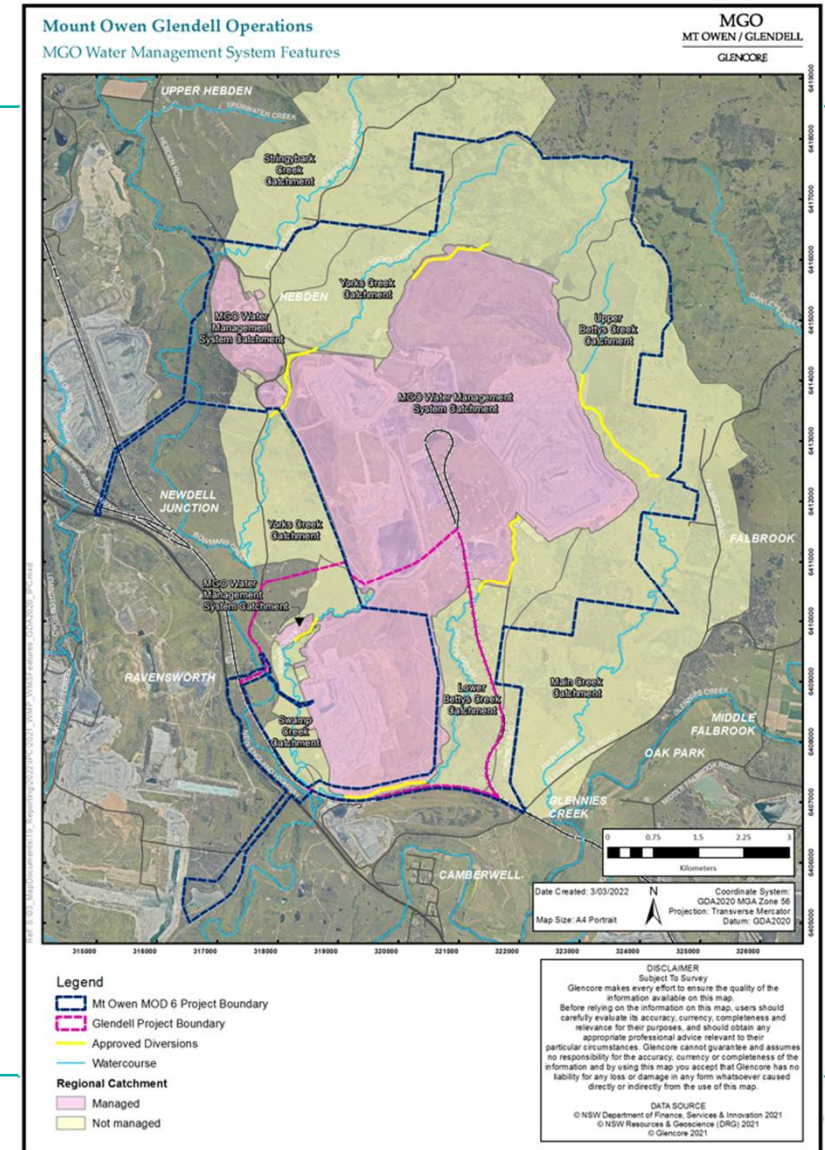


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Existing Water Management System

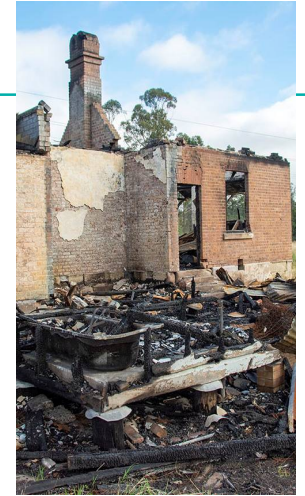
- MGO has developed a suite of management plans to manage water at MGO which cover:
 - Surface Water Monitoring
 - Groundwater Monitoring
 - Surface and Groundwater quality exceedance response
 - Creek Diversions management
 - Erosion & Sediment Control
- Site falls within the Glennies Creek and Bowmans Creek catchments
- Non discharging member of Hunter River Salinity Trading Scheme (HRSTS)
- Existing site water storages designed "in pit" to reduce surface water inflows
- Site water balance is updated annually
- GRAWTS was developed in 2014 and allows for transfer of water between several operations reducing surface water take from Glennies Creek and Hunter River



Historic Heritage – Ravensworth Public School

Ravensworth Public School is one of many sites managed via MGO's Historic Heritage Management Plan. The school was opened in 1876. It is of local heritage significance.

- Building was the subject of an arson attack in 2019
- During 2020, site consulted with various stakeholders to transform the site into a "managed ruin" and install educational signage which is visible to the public
- During December 2020 an event was held allowing former students and members of the public to view the completed works



Storyboard sign installed at Ravensworth Public School

Aboriginal Heritage

MGO has an existing Aboriginal Cultural Heritage Management Plan (ACHMP) which includes consultation with Registered Aboriginal Parties.

- Aboriginal Heritage consultation
 - Quarterly monitoring of Aboriginal Cultural Heritage sites
 - Bi-annual Aboriginal Cultural Heritage Working Group meetings
 - 3-yearly photographic monitoring
 - York's Creek Voluntary Conservation Area open days

ACHMP also includes processes for managing known cultural heritage sites and dealing with unexpected finds during operation.

- Management of Cultural Heritage on-site
 - Ground Disturbance Permit due diligence process
 - All personnel are trained on the importance of Cultural Heritage Management during induction process
 - Ongoing monitoring and maintenance of known cultural heritage sites to ensure they are protected.
- Salvaged Sites
 - Salvaged Cultural Heritage Artefacts are in the process of being stored in the Minimbah Teaching and Keeping Place located on the Wollombi Brook. This facility provides a secure storage location for salvaged artefacts while also allowing access to the aboriginal community.



Mt Owen Glendell Operations (MGO)

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Community & Stakeholder Engagement

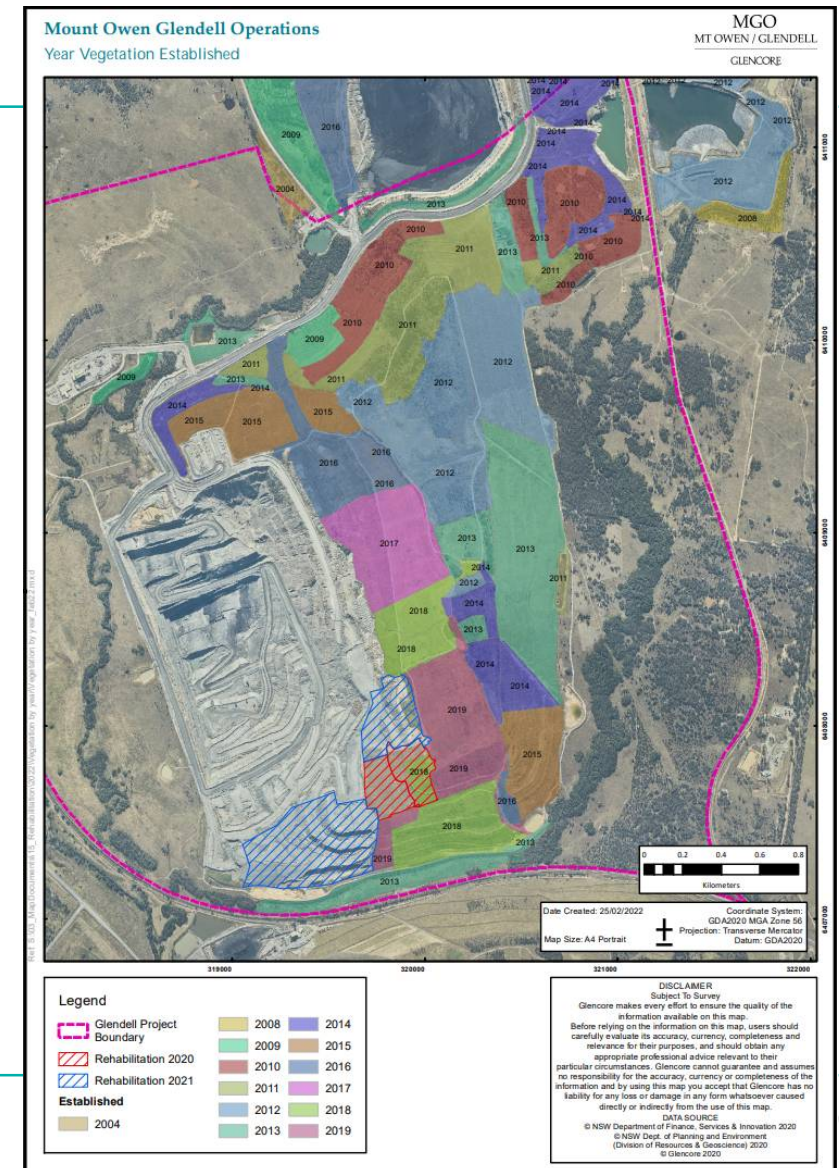
- MGO provides ongoing support to several community projects which are an important component of our Stakeholder Engagement Strategy (SES).
- As part of our strategy we maintain regular contact with community members and other stakeholders through:
 - External Website
 - Community Newsletters
 - Meetings
 - 3-yearly community perception surveys
- Regular engagement with stakeholders includes:
 - Community Consultative Committee
 - Community Gatherings (local halls)
 - Community Coffee's
 - Site tours
- Regular engagement with stakeholders includes:
 - Apprentice payback program
 - Working Bee's
 - Providing funding to charities via the workforce



Rehabilitation

Rehabilitation

- Rehabilitation is integrated into the mining process and is completed as areas become available. This is historically completed throughout each year at MGO. Rehabilitation is a focus during the operational phase to reduce mine closure risk.
- The focus of mine rehabilitation is to deliver the agreed outcomes in the environmental assessments.
- Glencore conducts rehabilitation activities across all of its operations and has a proven track record of success. Examples include:
 - Glendell commenced mining in 2008 and completed first rehabilitation in 2009
 - Mt Owen transitioning from conventional rehabilitation design to a natural landform design in 2019
 - Two sites obtaining sign off for rehabilitation in 2020 with 40ha at Westside and 50ha at Ulan – a first for a coal mine in NSW.
 - Mangoola pioneering the natural landform rehabilitation design. In 2020 Mangoola Coal won the excellence in Environmental Management category for their rehabilitation to date.

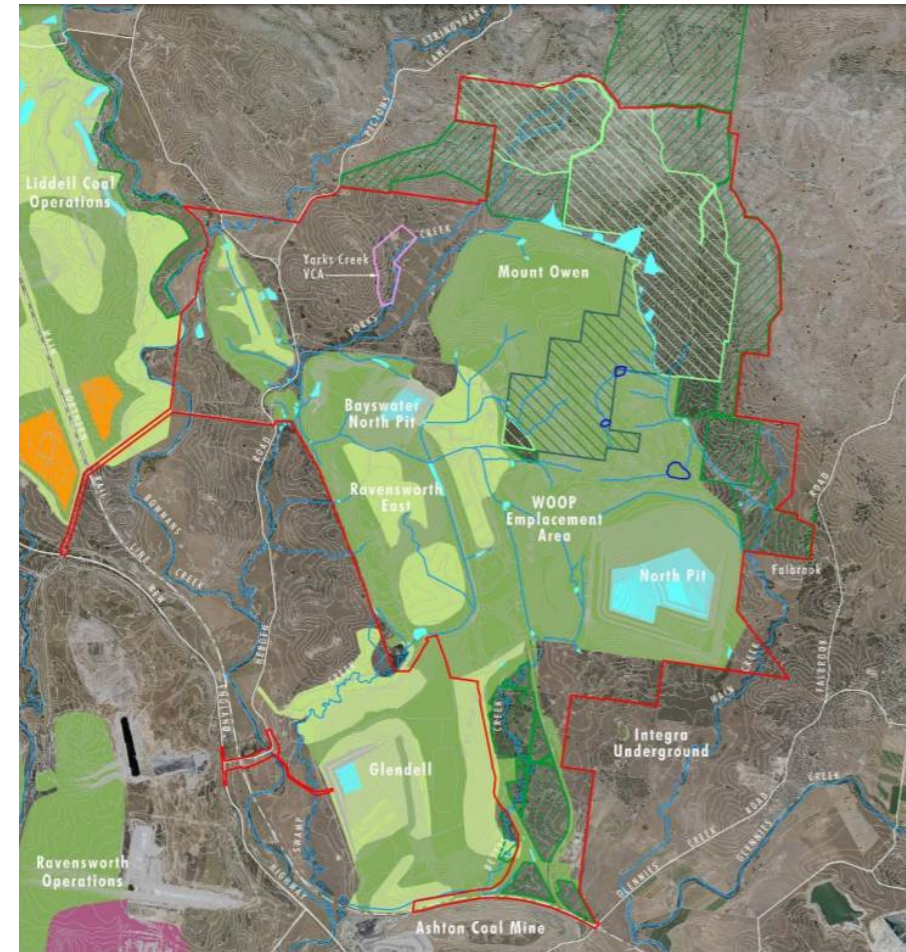


Rehabilitation

Rehabilitation is undertaken in accordance with the Mining Operations Plan.

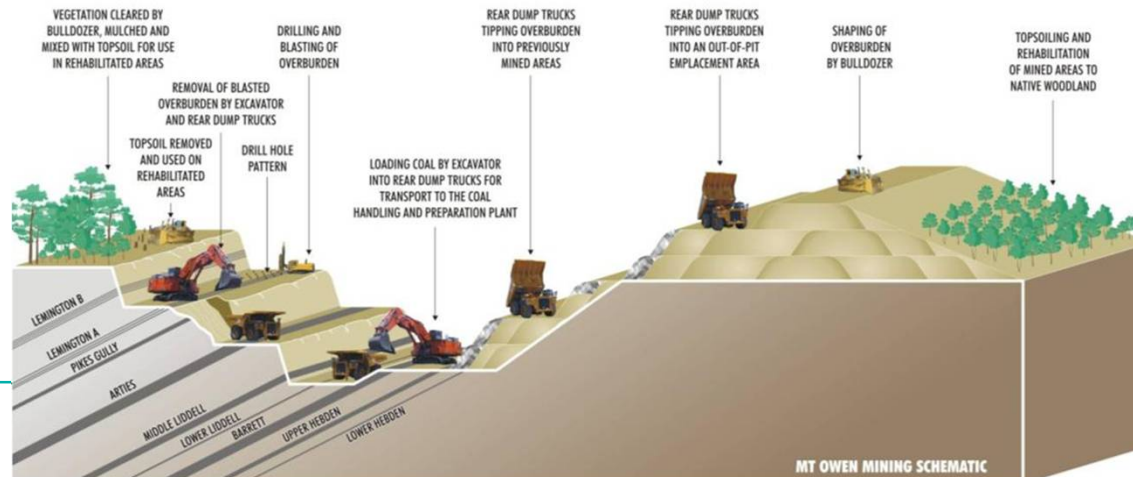
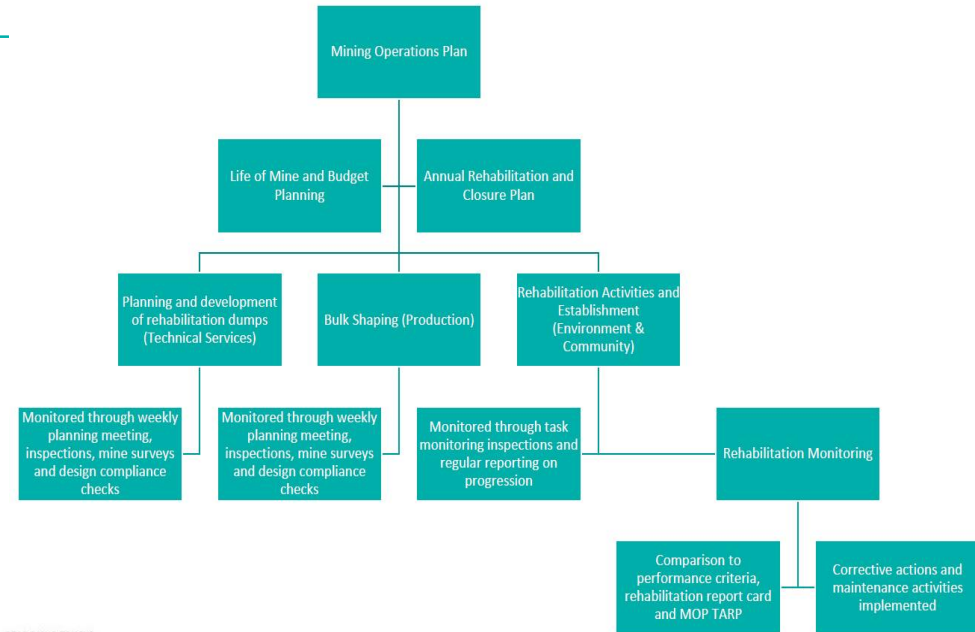
There are three rehabilitation categories at MGO:

- **Grassland**
 - Revegetation may involve the use of both native and suitable exotic pasture species for the establishment of grasslands (ground strata species), with pockets of native vegetation, which may ultimately be utilised as shelter for livestock.
- **Woodland**
 - Incorporates species representative of analogue sites to create woodland corridors that will link with remnant vegetation and rehabilitation areas at adjacent operations.
- **Forest**
 - Focus on establishing flora species assemblages characteristic of Central Hunter Box – Spotted Gum – Grey Box Forest.



Rehabilitation Process

- Planning for final land use begins as early as the environmental approval phase prior to mining commencing
- Rehabilitation is incorporated into the mining process
- Overburden dumps are placed as accurate as possible to increase efficiency
- Pre-strip areas are reviewed for sustainability of resources:
 - Heritage impacts
 - Topsoil availability and quality
 - Ecological value
- Direct placement of topsoil to limit storage
- Habitat tree salvage and installation with nest boxes for habitat creation
- Improvement works completed during mining phase which is determined via extensive monitoring
- Rehabilitation success may allow for rehabilitated areas to be signed off during mining phase (ultimate outcome)



Rehabilitation – Drone Flyover



Rehabilitation Improvements

Continued focus of vegetation community establishment in rehabilitation areas:

- Woodland seeding in older rehabilitation areas to ensure final land use requirement is met
- Tree planting in older rehabilitation areas
- Planting of native reeds around water bodies and within creek diversions to create additional habitat
- Native seed collected on and surrounding site

Continual Improvement such as:

- Development of Seed Production Nurseries in Mt Owen Rehabilitation areas as well as off site. This is to assist in Forest Woodland Community (planned final land use) being met.
- Over 600 nest boxes installed across the complex
- Ongoing weed management
- Monitoring and maintenance via track network
- Integrated approach with surrounding land such as offsets and buffer land



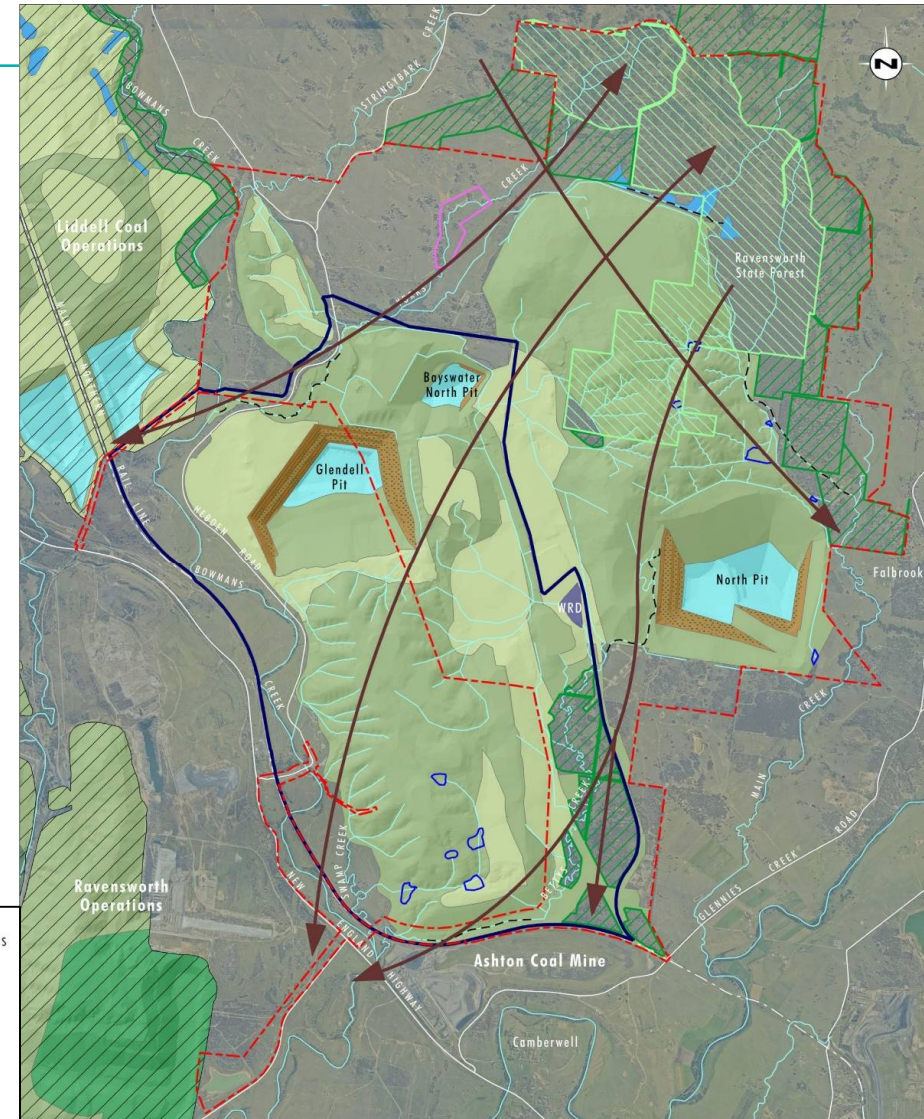
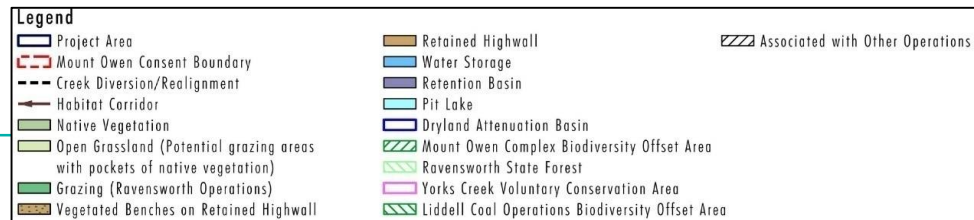
End Land Use and Habitat Connectivity

End use is a mixture of woodland and grazing land

The conceptual final landuse allows for habitat connectivity with the following:

- Ravensworth State Forest
- Riparian zones
- Adjacent buffer land
- Adjacent mining land
- Biodiversity offset areas

Areas with greatest potential for alternative end land uses targeted for grazing land to minimise future disturbance of woodland rehabilitation.

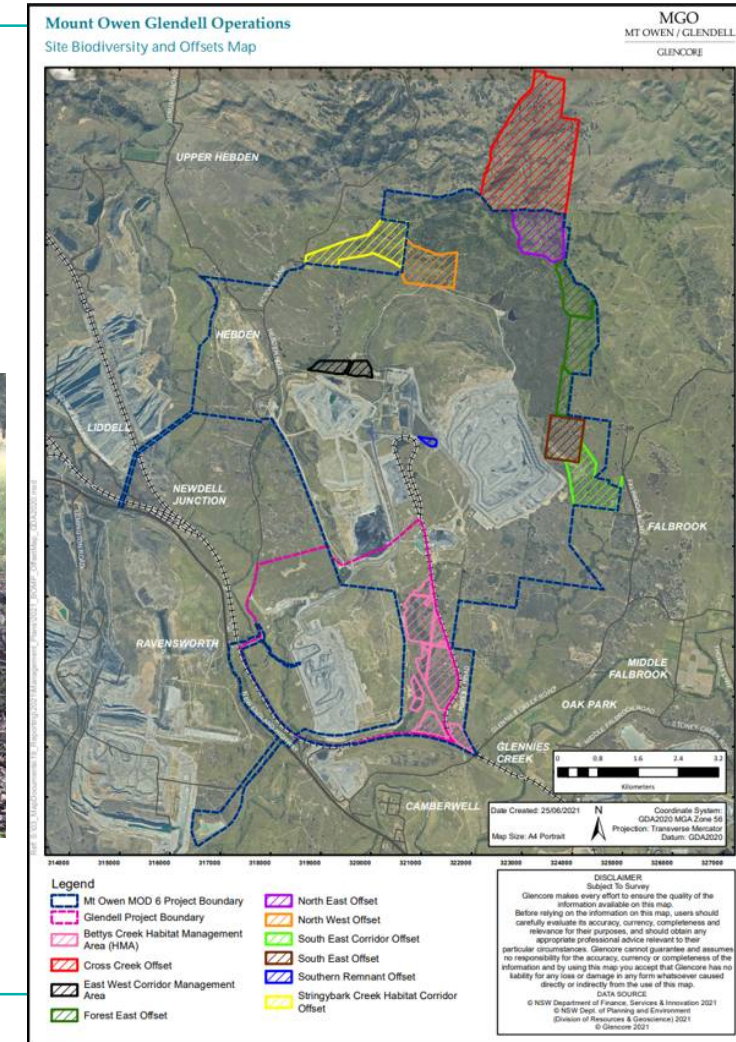


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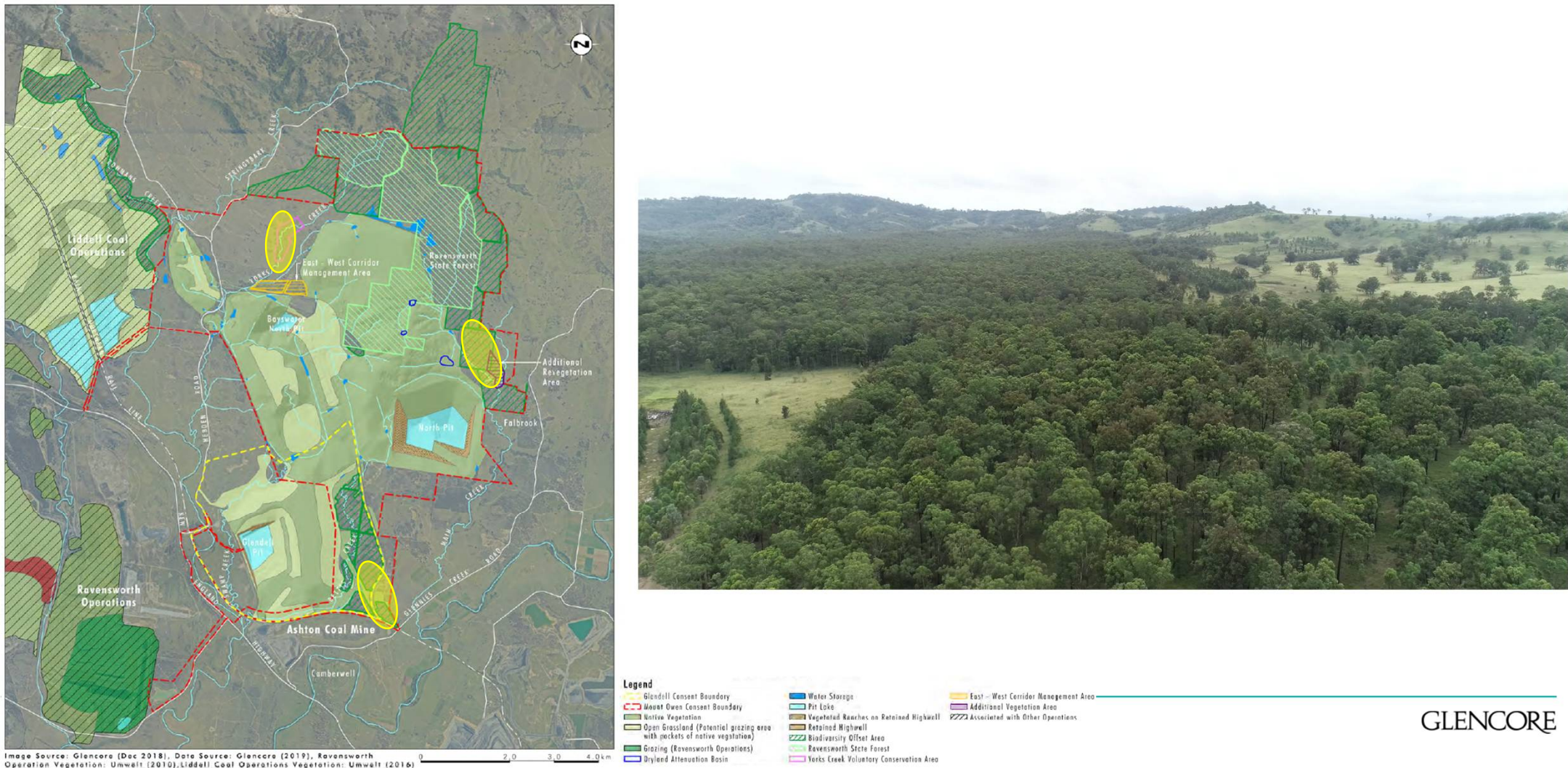
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Biodiversity Offsets and Conservation Areas

- MGO has an existing Biodiversity Offsets Management Plan which details the management of land currently approved via an Conservation agreement or part of an existing Stewardship agreement application.
- The agreements detail extensive works to be completed within these areas.



Offsets – Drone Flyover



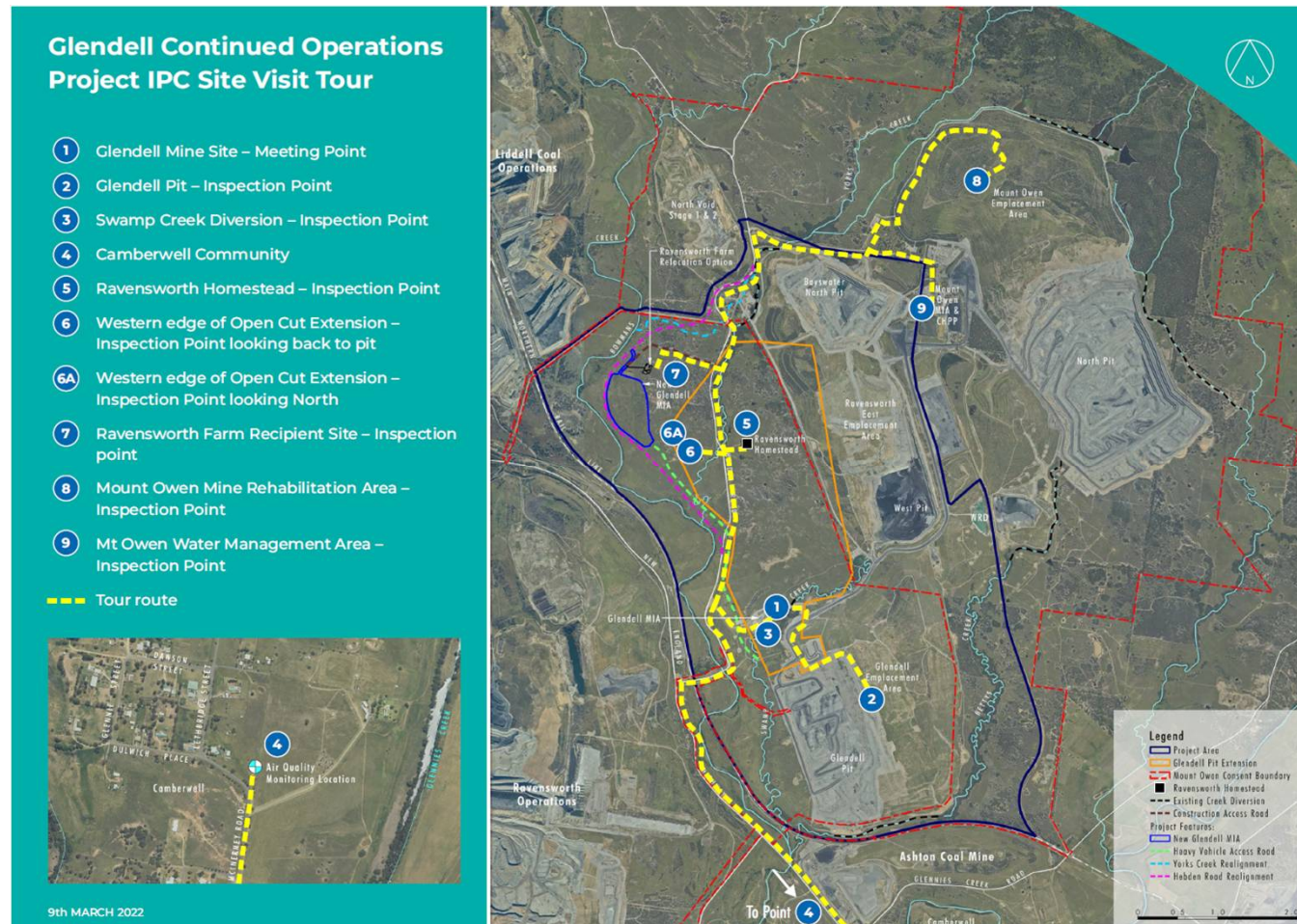


Any Questions?

Glendell Continued Operations & Mount Owen Continued Operations Mod 4

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Proposed site tour





Thank You