

Community Information Sheet 3 Impacts and Assessment Summary

SEPTEMBER 2019

Impact assessment outcomes

This Information Sheet provides further detail in relation to the Glendell Continued Operations Project (the Project). It provides a summary of the key findings of the environmental and social studies that have been undertaken to inform the preparation of the Environmental Impact Statement (EIS). The studies are currently being finalised and published as part of the EIS that will be placed on public exhibition towards the end of 2019.

What is the Project?

Glendell Mine is seeking approval to continue current open cut mining to the north of its existing operations, as shown in **Figure 1**. The Glendell Mine is part of the Mount Owen Complex, located off Hebden Road at Ravensworth. The Project would provide access to approximately 135 million tonnes (Mt) of additional coal resources located on land almost completely owned by Glencore, and on tenements owned by Glencore and its Joint Venture partner.

Key aspects of the Project include:

- mining the additional coal resources including on-going use of overburden emplacement areas, predominantly in-pit
- extending the mining life of Glendell Mine to 2044
- increasing the annual production rate during stages of the Project to match existing capacity across the Mount Owen Complex
- utilising existing infrastructure at the Mount Owen Complex
- constructing a new Mine Infrastructure Area (MIA)
- relocation of the Ravensworth Homestead
- realigning the lower section of Yorks Creek
- realigning part of Hebden Road
- relocating lower-voltage powerlines

What is being assessed?

Comprehensive technical assessments have been completed, or are near completion, which identify the potential impacts

of the Project and recommend measures to minimise and manage potential impacts. The project design has been informed by many of the studies to ensure impacts are mitigated as far as reasonably and feasibly possible.

A detailed Social Impact Assessment (SIA) is now being finalised as part of the EIS. This is being prepared in accordance with the assessment guideline for State significant mining, petroleum production and extractive industry development, which was adopted by the NSW Government in 2017.

The SIA is about identifying, assessing and effectively managing the social impacts that may be associated with the Project, and identifying opportunities to enhance the benefits of the Project.

Stakeholder Engagement

Engagement with relevant stakeholders for the Project commenced in 2017. The engagement contributed to the identification of key issues to focus the EIS preparation.

The results of the studies detailed in the EIS will be presented to the community through individual meetings and upcoming Information Sessions prior to lodgement of the EIS with government. Additional consultation as part of the SIA will also take place over the coming weeks.

Details regarding the Information Sessions contact details, and how you can be involved, are provided at the end of this newsletter.

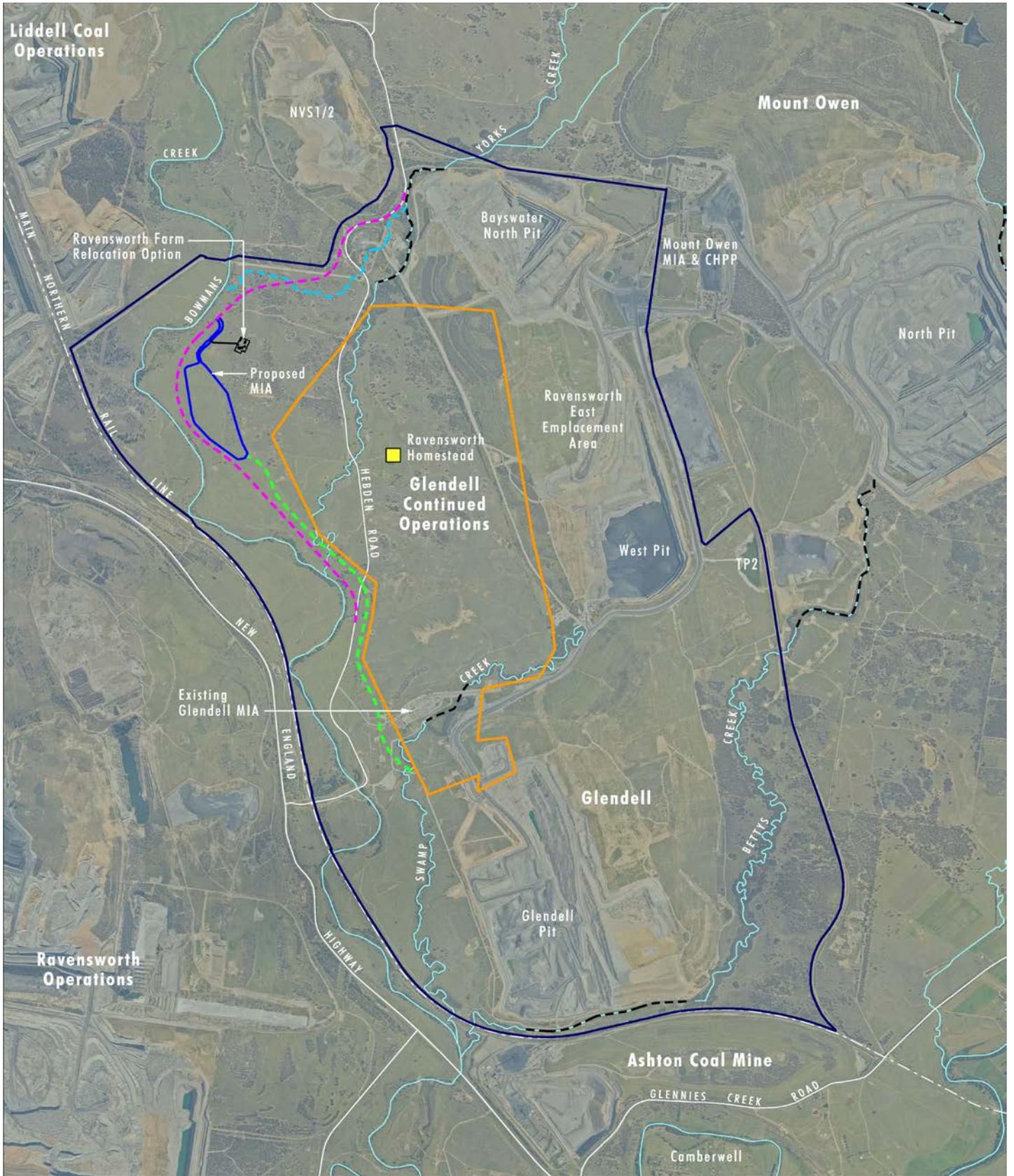


Figure 1: Proposed Glendell Continued Operations Project

Legend

- Project Area
- Glendell Pit Extension
- Ravensworth Homestead
- Existing Creek Diversion
- Project Features:
- MIA
- Heavy Vehicle Access Road
- Yorks Creek Realignment
- Hebden Road Realignment

Project Overview

Mining activities commenced at Glendell Mine in 2008. It currently has approval to mine up to 4.5 million tonnes per annum (Mtpa) of coal resources through to June 2024. Glendell Mine is one of three operating pits at the Mount Owen Complex, which also includes the Mount Owen and Ravensworth East operations. Coal from all three operations is processed at the Mount Owen Coal Handling and Preparation Plant (CHPP) and product coal is either transported to the Port of Newcastle via the Mount Owen Complex rail loop for export or railed to domestic customers. The Project comprises the following key components:

New Mining Area

- Continuance of mining operations within a new mining area located to the north of the existing mine
- Provide access to 135 Mt of additional coal through to 2044
- Disturbance of approximately 750 hectares (ha) of land outside of areas already approved for disturbance

Mining Operations

- Continued open cut mining operations beyond the existing Glendell Mine
- Emplacement of overburden (the rock removed to access the coal) from the new mining area and emplacement within the mine void to assist with creation of a final landform
- No increase to the overall operational workforce at the Mount Owen Complex
- An increase to the existing approved rate of mining from 4.5 Mtpa up to approximately 10 Mtpa. This increase coincides with the decrease in production rates at the other Mount Owen Complex pits to maintain the currently approved throughput at the CHPP
- Continued use of the existing infrastructure and equipment (with the exception of the existing Glendell MIA) for the life of the Project with some minor additions to the existing mobile equipment fleet
- The same open cut mining techniques will be used i.e. excavator and truck
- No increase in annual train movements are proposed
- A change in mine access along Hebden Road

Construction Activities

- A peak construction workforce of approximately 360 people
- Construction of a new Mine Infrastructure Area (MIA)
- Realignment of a section of Hebden Road
- Realignment of the lower section of Yorks Creek
- Construction of a water management system that will be integrated with the Mount Owen Complex existing system to manage water within the new mining area
- Relocation of Ravensworth Homestead to a new site

Conceptual Final Landform

- Establishment of a final landform utilising natural landform design principles
- No additional void in final landform. A single final void will remain at the northern end of the new mining area
- Mount Owen Complex has been recognised as having

industry leading rehabilitation practice. This approach will continue to be used for the Project

- At the end of mining, infrastructure that is not proposed to be utilised for subsequent approved land uses will be removed and the site rehabilitated
- Establishment of a final landform that provides connectivity to established offsets or areas of existing vegetation

Project Benefits

Without the Project, and based on current mining rates, mining at the existing mine would be finished around 2022. The Project will allow mining to continue for another 22 years providing ongoing employment opportunities and other economic benefits. The key benefits of the Project include:

- Continued employment opportunities for our predominantly local workforce
- Ongoing opportunities for local businesses and service providers
- Continued provision of significant economic benefits at local, State and Commonwealth levels
- Continued support of local community based groups and initiatives

Through the implementation of the Project, we believe we can contribute substantial economic benefits at local, regional and State levels while continuing to coexist with the local community.





Project assessment

The Project is declared as being State significant development (SSD) and will require development consent under the Environmental Planning and Assessment Act 1979 (EP&A Act). The Project will also require approval under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

An Environmental Impact Statement (EIS) is required to support the development application for the Project. The EIS details the potential environmental and social impacts that may be experienced during both construction and operation of the Project. The NSW Department of Planning, Industry and Environment (DPIE) issued the Secretary's Environmental Assessment Requirements (SEARs) that detail the matters to be addressed in the EIS. The EIS will also outline measures proposed to minimise and manage potential impacts.

The development application is planned to be lodged with DPIE by the end of 2019. Public exhibition inviting submissions from government agencies and the community will follow lodgement. The EIS will be available on the DPIE Major Projects website and hard copies will be available for viewing at selected locations. We will continue to disseminate information about the progress of the EIS, including locations of where and when it will be made publically available.

Further information on the steps in the assessment process and how you can be involved is detailed at the end of this Information Sheet.

Project Design Considerations

As a business in the local community, we believe in the importance of achieving a balance between maintaining an ongoing operation that supports the local community and managing the impacts of our operation.

Mining operations commenced at Glendell Mine in 2008. As part of the original approval process and during operation of the mine since that time, the local community has been actively engaged. Key issues that have historically been raised by the community include dust and air quality impacts and noise impacts. More recent consultation with the local community has identified changes to landform and site rehabilitation, and the management of Ravensworth Homestead as additional key issues. Over the past years of operations and years of planning for the Project, we have worked to put in place a range of operational management and mitigation measures aimed at addressing these, and other community issues.

The Project design has considered the key learnings from operating the existing mine, feedback from the community and other stakeholders and the findings of detailed environmental studies. Additionally, throughout the development of the Project, the mine plan has been revised to optimise resource recovery in a manner that is economically viable and provides an appropriate financial return. This has included a decision to reduce the proposed mining footprint in the north west by not extending open cut mining into the former Liddell underground mine workings.

Summary of environmental and social studies

A summary of the key findings is provided below for each area of assessment.

Air quality

Air quality is presently managed in accordance with the approved Air Quality Management Plan. During consultation you have told us that air quality impacts from mining operations are a key issue. As part of the EIS process, a detailed air quality impact assessment for the Project has been undertaken in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*

Modelling

Meteorological data from the region, background emissions from the existing environment, emissions from surrounding mining operations, wind erosion and the combustion of diesel on site have all been used to develop and calibrate an air quality model for the area. The model is used to predict air quality emissions from the proposed Project and the combined effect of emissions from all sources.

This model builds upon the previous air quality models used at the Mount Owen Complex. The model predicts Project and cumulative impacts of dust in various particle size fractions including Total Suspended Particulates (TSP), PM_{10} , $PM_{2.5}$ and depositional dust, and also nitrogen oxides other types of emissions.

Modelling has been undertaken for four stages of the Project, nominally Project Years 1, 6, 13 and 18 and includes predicted impacts for the operations when closest to Camberwell, impacts when operating at maximum production and predicted impacts when operating closest to the Hebden area.

Worst case predicted impacts from potential blast fume events have also been modelled to identify appropriate management measures to be implemented for blasts at Glendell to ensure that blast fumes do not present a public safety risk.

The modelled predictions are compared to government health and amenity impact assessment criteria which are based on National Guidelines and Standards. The modelling methodology and results have also been peer reviewed.

Results

The modelling indicates that the Project will have similar air quality impacts to the existing approved Glendell Mine with impacts in Camberwell and the Middle Falbrook area declining as operations extend towards the north. The Project is not predicted to result in any exceedance of the applicable annual average and incremental 24-hour average PM_{10} and $PM_{2.5}$, TSP or dust deposition criteria at any residences that do not currently have acquisition rights under existing consents. It is anticipated that 24-hour PM_{10} and $PM_{2.5}$ concentrations will continue to be variable from day to day, dependent on the weather at the time, activities at other contributing operations and extreme regional events such as bushfires.

Figures 2.1 and 2.2 illustrate the predicted maximum 24 hour and annual average $PM_{2.5}$ and PM_{10} concentrations due to the Project only, respectively.

Mitigation and Management

The Mount Owen Complex Air Quality Management Plan will be updated as required to incorporate the Project. Mitigation and management measures will include:

- modifying operations in response to meteorological conditions
- controlling dust on haul roads by using water carts
- reducing vehicle speeds as required
- completing progressive rehabilitation
- stabilising and partially revegetating long term soil stockpiles and exposed area

Real time monitoring of dust levels, local weather conditions and in-pit cameras are all used to check for potential dust issues. Responses to this monitoring will include modifying operations when required, such as relocating exposed equipment to less exposed locations, slowing or stopping specific equipment during high winds or increasing dust suppression activities through increased road watering.

The proposed mining operation will continue to be managed in a way that minimises the contribution to off-site dust levels, consistent with the existing Glendell Mine. Properties with acquisitions rights under the current Glendell Consent and Mount Owen Consent will continue to have these rights under the Project.

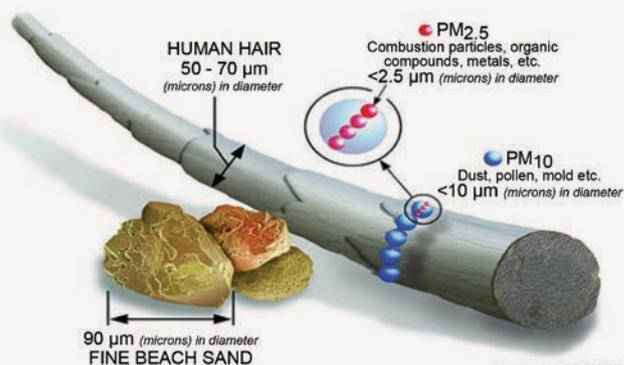
Particulate Sizes

Particles in the atmosphere vary in size. The particles monitored in NSW are:

Total Suspended Particulates (TSP) refers to the total of all particles suspended in the air less than 50 micrograms (μm) in diameter. Even the largest of these particles is barely half the width of a human hair.

PM_{10} , a subset of TSP, includes all particles in the size range 2.5 to 10 μm in diameter and are referred to as *coarse particles*.

$PM_{2.5}$, a subset of both PM_{10} and TSP, refers to all particles less than 2.5 μm in diameter. $PM_{2.5}$ is mainly produced from combustion processes such as vehicle exhaust and is commonly referred to as *fine particles*.



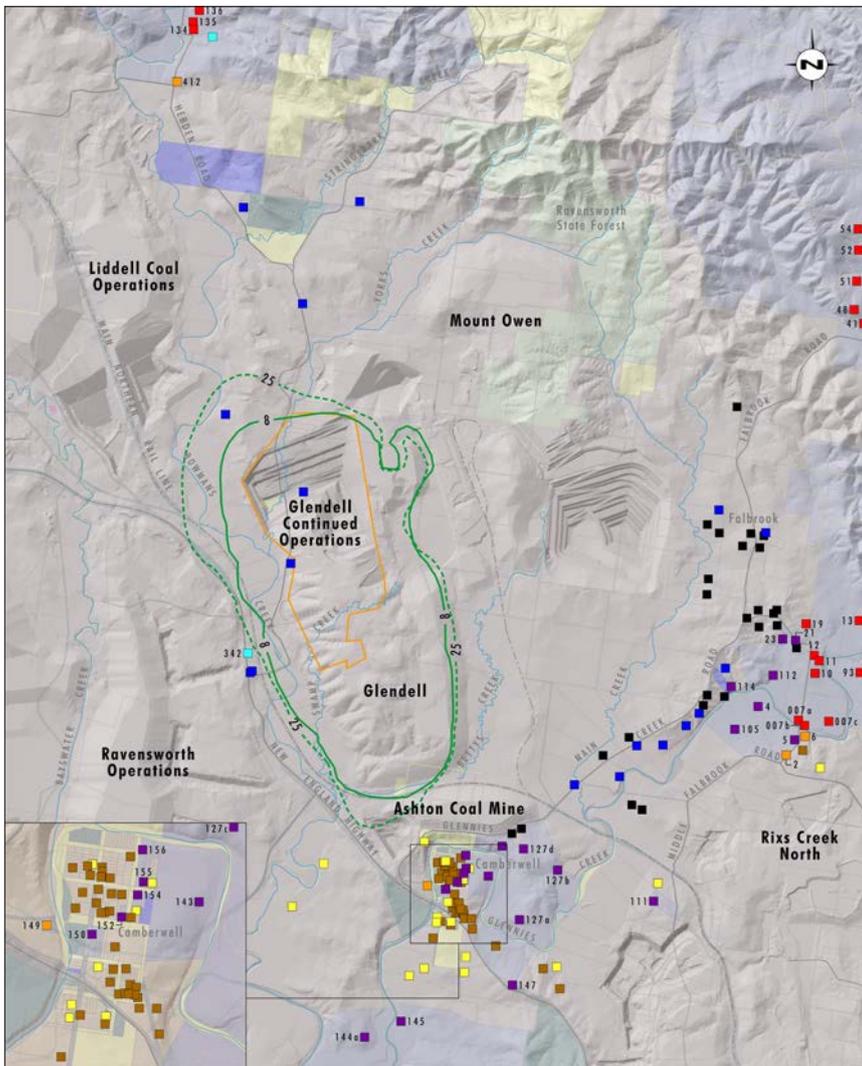


Figure 2.1: Predicted Maximum $PM_{2.5}$ concentrations due to the Project only for modelled years.

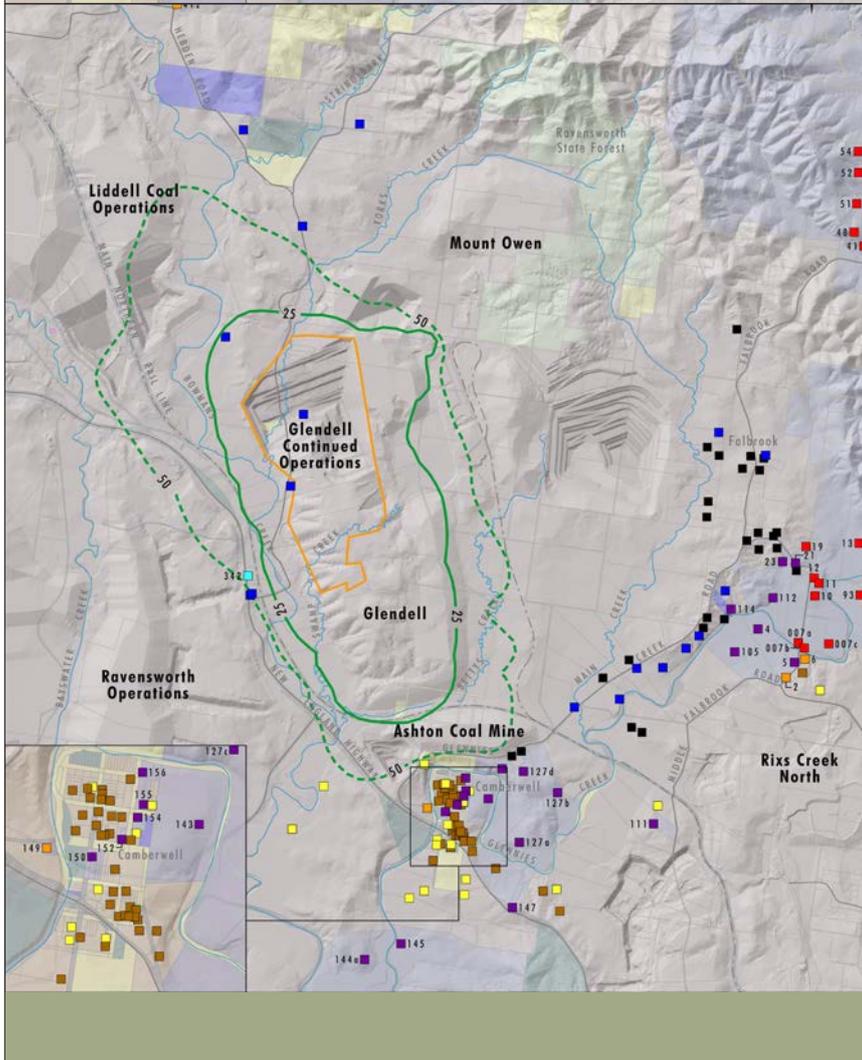


Figure 2.2: Predicted Maximum PM_{10} concentrations due to the Project only for modelled years.

Legend

- Glendell Pit Extension
- Predicted Maximum 24 hr $PM_{2.5}$ ($25\mu g/m^3$)
- Predicted Annual Average $PM_{2.5}$ ($8\mu g/m^3$)
- Private
- Private Vacant Land - Subject to Acquisition
- Mine Owned
- State Forest
- Crown Land
- Government Authority
- Ausgrid
- Telstra
- Receptor (Private)
- Receptor (Private Subject to Acquisition)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)

Legend

- Glendell Pit Extension
- Predicted Maximum 24 hr PM_{10} ($50\mu g/m^3$)
- Predicted Annual Average PM_{10} ($25\mu g/m^3$)
- Private
- Private Vacant Land - Subject to Acquisition
- Mine Owned
- State Forest
- Crown Land
- Government Authority
- Ausgrid
- Telstra
- Receptor (Private)
- Receptor (Private Subject to Acquisition)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)

Noise

The management of noise impacts from Glendell Mine, particularly in Camberwell, is a key focus of our existing operations. Noise from mining operations is another key concern raised during consultation. Similar to air quality, a detailed noise impact assessment has been undertaken for the Project and will be included in the EIS.

Modelling

As part of the planning process, we varied our mine plans numerous times by considering the locations and numbers of equipment to be utilised during the life of the Project, to ensure development of a mine plan that minimises noise emissions whilst maintaining efficiency in the operations.

Noise has been modelled over four mining stages of the Project that represent the progression of operations over the life of the proposed mine. As with the air quality modelling, these stages have been selected based on their representativeness of 'worst case' operating conditions for different areas around the Project. The stages nominally relate to Project Years 1, 6, 13 and 18. The noise impact assessment has been prepared in accordance with the NSW Noise Policy for Industry and the modelling methodology and results have been peer reviewed.

Results

Detailed modelling of different operating scenarios has been considered in both the design of the Project and the development of reasonable and feasible management measures. This modelling has indicated that the Project can be managed such that noise levels in the surrounding areas are predicted to remain within relevant assessment criteria. The Project's noise levels will be similar to, or in some locations less than, the approved Glendell operation. **Figure 3** illustrates the potential 'worst case' noise impacts from the Project

Noise levels from the Project experienced in the Hebden area are expected to increase as the proposed mining operation progresses to the north, however modelling predicts that this will occur during the later stages of the Project when cumulative impacts from Glencore's Liddell and Mount Owen operations have either ceased or substantially reduced. As a result, noise impacts in the Hebden area will remain below relevant noise assessment criteria at all private residences for the duration of the Project.

The noise impact assessment has determined that there is no predicted exceedances of the sleep disturbance criteria and no significant changes to current road traffic noise.

We will continue to utilise the Mount Owen Complex CHPP and associated rail infrastructure for coal processing and transport. Although the Project seeks to increase the rate of mining from 4.5 Mtpa up to approximately 10 Mtpa, this increase coincides with the decrease in production rates at the other Mount Owen Complex pits maintaining the currently approved throughput at the CHPP. Therefore, there will be no increase in annual train movements or previously predicted rail noise impacts.

Mitigation and Management

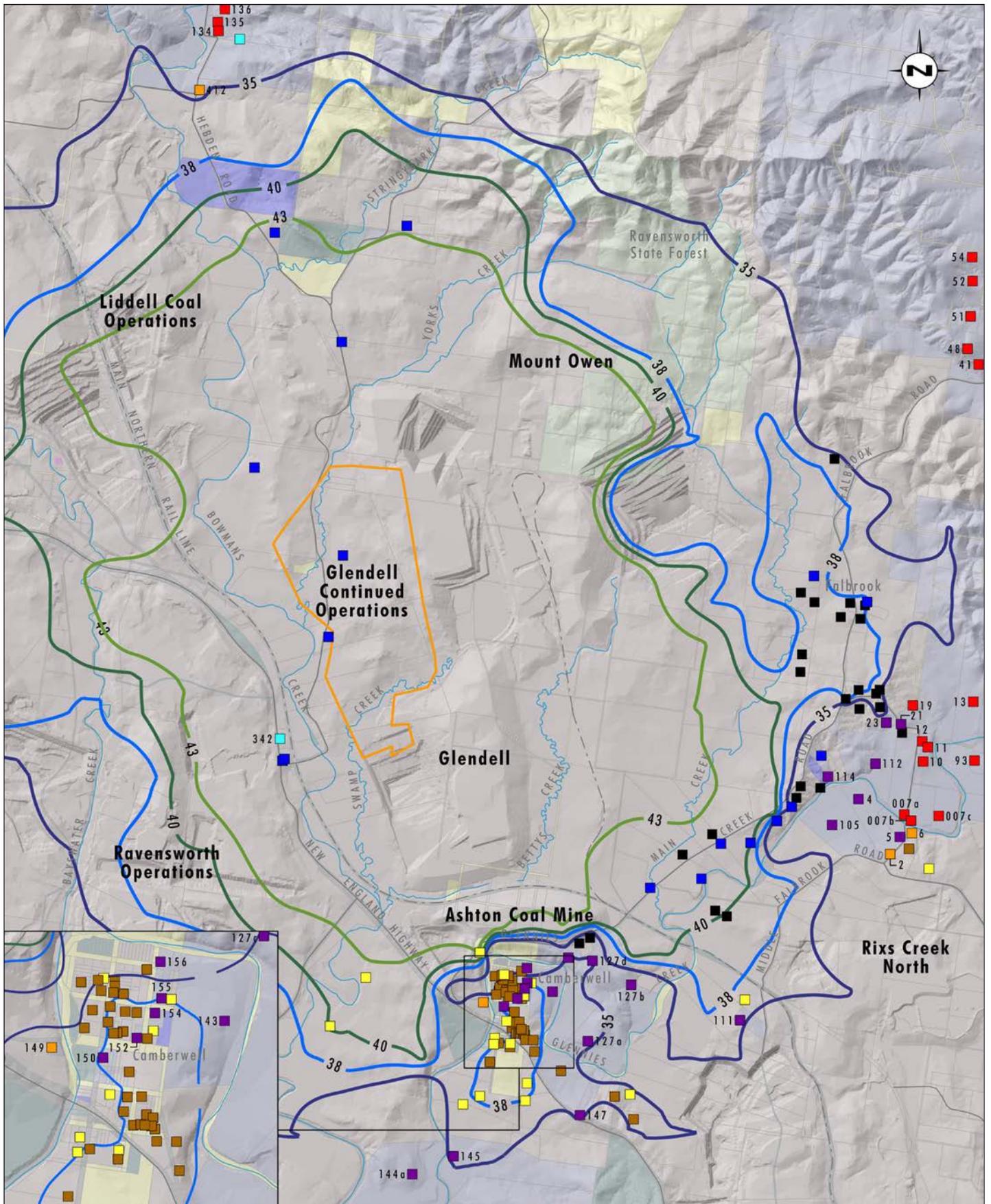
While the Project will move away from Camberwell as operations progress to the north, the management of noise during adverse weather conditions (particularly winter nights) will remain a key operational consideration for us. We remain committed to managing noise impacts from the Project to ensure that impacts at private residences in Camberwell are similar to those approved under the existing Glendell Consent. Noise impacts will continue to be managed in accordance with the Noise Management Plan currently implemented at the existing Glendell Mine. This plan will be updated to account for the Project.

As with the management of dust impacts, an important component of our noise management practices is the use of real time noise and meteorological monitoring. We plan operations on a daily basis to minimise noise impacts associated with any predicted adverse meteorological conditions. A real time weather and noise level monitoring network is used to modify operations where the potential for an exceedance of relevant impact criteria is identified. Management decisions that can be made to control potential impacts include relocating, slowing or stopping operations or particular equipment. These practices have been demonstrated to be effective in managing noise impacts at the existing operations to-date.

Other practical measures that will continue to be incorporated to manage our noise impacts include:

- the use of attenuation on equipment where reasonable and feasible
- progressive ramp-up in production as operations move away from the Camberwell area
- shielding mining operational noise using both natural terrain and overburden emplacements.





Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Private
- Private Vacant Land - Subject to Acquisition
- Mine Owned
- State Forest
- Crown Land
- Government Authority
- Ausgrid
- Telstra
- Receptor (Private)
- Receptor (Private Subject to Acquisition)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)

Figure 3: Projected “worst case” noise impacts from the Project (see previous page)

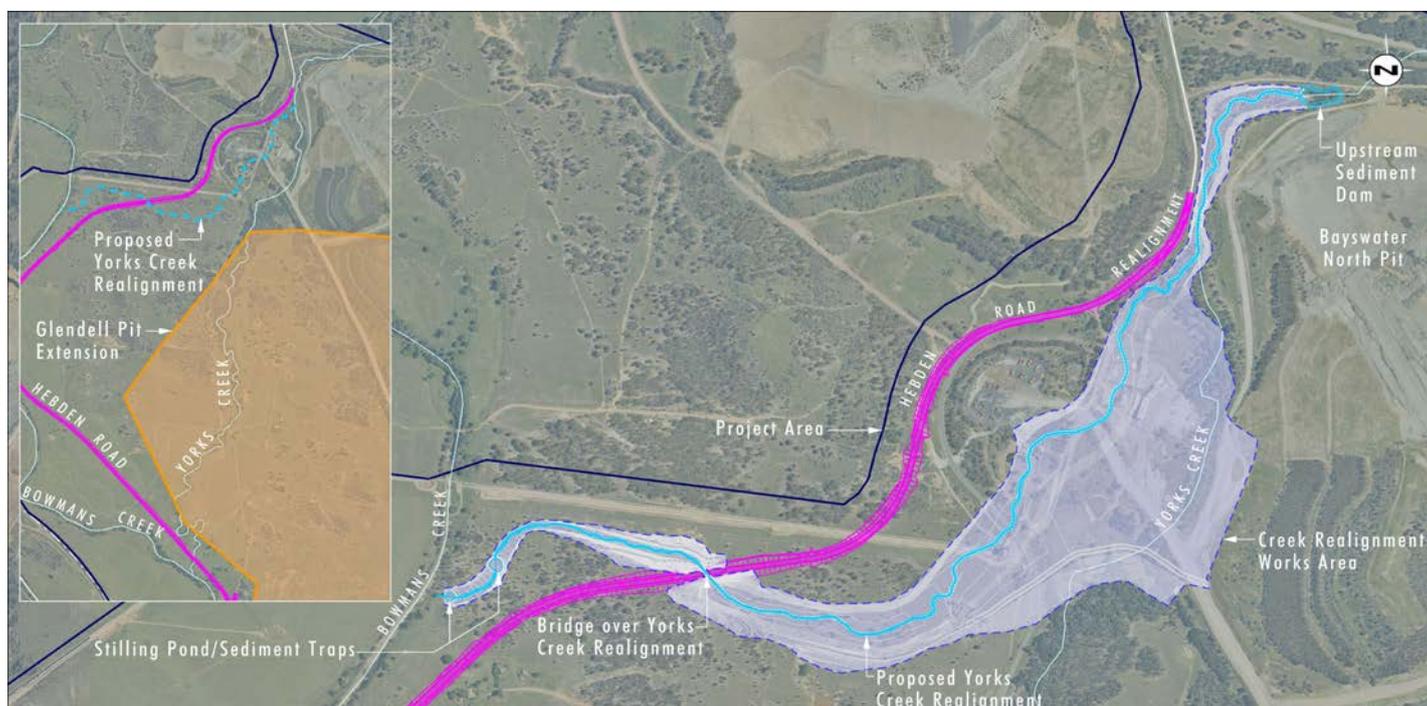


Figure 4: Yorks Creek realignment

Water Resources

Water Management

Water management for the Project will be integrated within the existing water management system at the Mount Owen Complex. We will continue to manage water resources in accordance with the existing Water Management Plan and within Glencore's Greater Ravensworth Area Water and Tailings Scheme (GRAWTS).

Erosion and sediment control measures will continue to be implemented throughout the life of operations to limit the potential impacts on downstream water quality. This includes measures such as clean water diversions, silt fences, sediment dams and vegetation cover. These measures will be implemented during construction, operational and rehabilitation phases as required.

Surface Water

The Project is located in the catchment of Bowmans Creek and its ephemeral tributaries of Yorks, Swamp and Bettys Creeks. The Project requires the realignment of the lower portion of Yorks Creek and will mine through remnants of Swamp Creek located immediately north of the Glendell Pit. While the Project will directly impact on Swamp Creek and Yorks Creek, there is no direct impact on Bowmans Creek and the Glendell Pit Extension is offset at least 200 metres from the high bank of Bowmans Creek. The proposed realignment of Yorks Creek is shown in **Figure 4**.

To capture and contain mine affected water and protect downstream watercourses from potential water quality impacts, the existing water management system at the Mount Owen Complex will be extended, incorporating additional dirty and mine water storage dams, pumps and pipelines. Results of flow regime modelling indicate that the reductions in the total catchment area of Bowmans Creek during the operation of the Project and in the conceptual final landform are minor and not expected to have a measurable impact on the flow regime of Bowmans Creek.

No discharge of mine affected water is proposed by the Project. Excess water will continue to be managed within the GRAWTS, which allows for the pumping and storage of

excess mine water between other neighbouring Glencore operations. The GRAWTS allows for greater flexibility in water use and management while also maximising water recycling and sharing to minimise the total volume of water extracted from the Hunter River and excess water discharges to the Hunter River under the Hunter River Salinity Trading Scheme. The Project is not expected to have any adverse impacts on downstream water quality.

The Project includes measures to minimise the interception of clean water, including building a network of clean water drains and the realignment of Yorks Creek to direct clean water away from areas disturbed by the mine. The realignment of Yorks Creek has been designed to be geomorphically stable, and to mitigate the potential impact of erosion on downstream water quality. Flood modelling indicates that no significant flooding impacts are expected due to the Project.

Groundwater

A comprehensive assessment of potential groundwater impacts has been completed for the Project using a numerical groundwater model. The model has been developed based on historical datasets and responses of the groundwater systems to the progression of mining in the area. A range of potential groundwater issues were investigated as part of the assessment.

The only potentially highly productive aquifer in the Project Area is the Bowmans Creek alluvium, which is relatively thin but contains a permeable sand and gravel base that readily transmits fresh to slightly brackish groundwater. Bowmans Creek meanders through the flood plain adjacent to the Glendell Pit Extension.

Years of monitoring data from an established groundwater monitoring network has been used to assess baseline conditions. The long history of underground and open cut mining in close proximity of the Project has resulted in the groundwater levels within the coal measures being extensively depressurised indicating evidence of cumulative impacts within this hydrogeological environment.

Groundwater (continued)

Modelling indicates that the Project will further depressurise the coal seams proposed to be mined. Localised areas of drawdown are predicted to occur within the Bowmans Creek alluvium in proximity to the areas where Yorks Creek and Swamp Creek will be removed. The predicted drawdown is up to 2 metres in isolated areas. There are no known operating private water supply bores in the area where the numerical modelling indicated the potential for drawdown. The existing groundwater monitoring program will be updated to provide further information relating to the hydraulic connectivity between the proposed Glendell Pit Extension and various groundwater receptors.

Groundwater levels and quality will continue to be monitored in accordance with the approved Water Management Plan which will be updated to incorporate the Project.

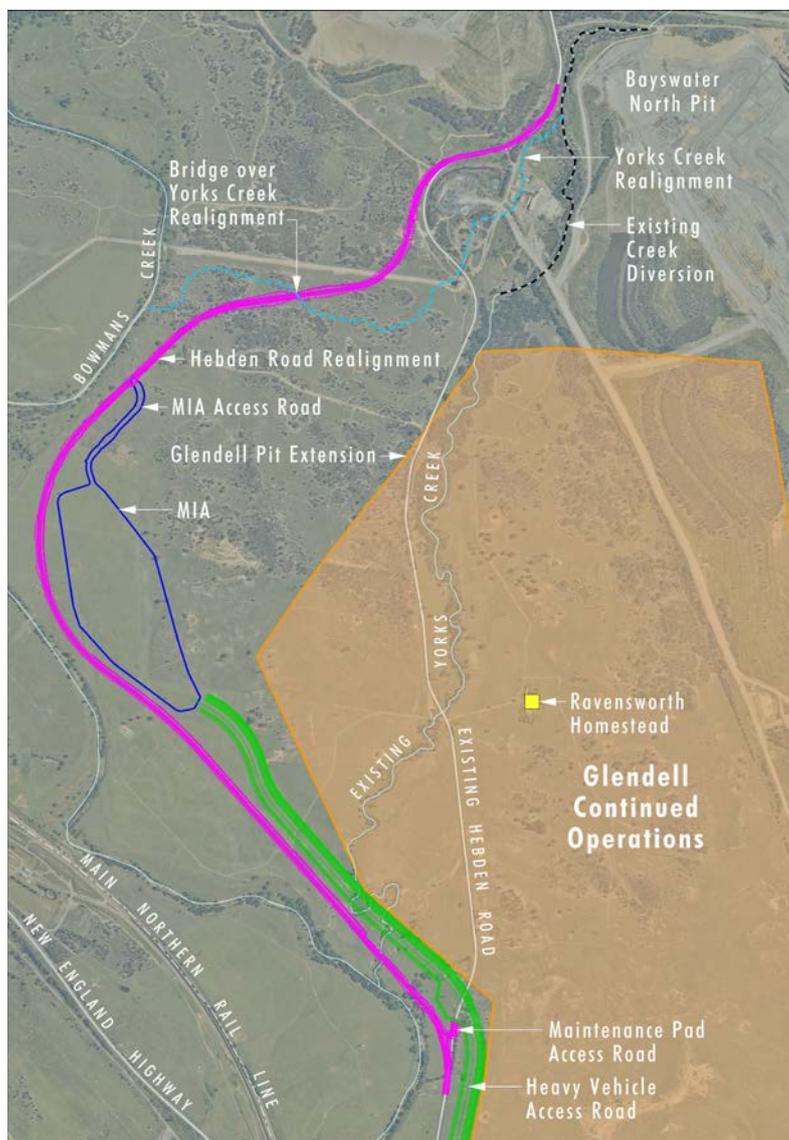


Figure 5: Hebden Road realignment

Hebden Road Realignment

As a result of mining progressing to the north, the Project will require the realignment of a section of Hebden Road. The proposed realignment is shown in **Figure 5**. The realignment will be undertaken by Glencore, in consultation with Singleton Council and all relevant approval authorities. The new road will be constructed at the beginning of the Project, and constructed 'off-line' to minimise disruption to existing road users. The realigned Hebden Road will increase the length of the existing Hebden Road by approximately 1.2 km. To ensure the safety of road users, the Hebden Road realignment will be designed to maintain the existing 80 km/h standard. Roadworks and construction will occur early in the project development.

Traffic and Transport

A traffic assessment undertaken for the Project found that the construction and operation phases of the Project will have a negligible impact on road safety conditions on the New England Highway and Hebden Road due to the minor increase in traffic volumes associated with the Project. Recently completed road safety projects have improved conditions in the area and the proposed Hebden Road realignment will provide a new, higher standard alignment that is more compatible with regulatory posted speed limits.

For a short period, construction traffic will increase. To help manage traffic during this period a Traffic Management Plan will be prepared in consultation with Singleton Council and Roads and Maritime Services.

Blasting

Blasting will continue to be managed in accordance with the approved Blast Management Plan currently implemented which will be updated to incorporate the Project. A Blast Impact Assessment has been undertaken for the Project. The assessment addresses the impact of the Project in terms of ground vibration, overpressure and flyrock on the surrounding environment including private residential receivers, heritage sites and infrastructure.

Blast impacts, due to ground vibration and airblast, has been identified at certain charge mass levels (or blast sizes). The assessment demonstrates that the blasting proposed for the Project can be effectively managed to meet the relevant criteria with no exceedances predicted to occur. The temporary closure of Hebden Road for a brief period of time (e.g. 15 minutes) will be required for blasts when the Glendell Pit Extension is nearer to Hebden Road. These blasts will be planned to occur outside of peak traffic usage on the road, and at worst could occur up to eight times per week.

Heritage

Aboriginal Heritage

The Project has undertaken an Aboriginal Cultural Heritage Assessment to better understand the cultural heritage values of the Project Area which was once occupied by the Wonnarua people.

In consultation with the Registered Aboriginal Parties, Knowledge Holders and the Local Aboriginal Land Council, we have sought knowledge and advice regarding the social, historic, aesthetic and scientific values that exist within the Project Area. This has included cultural workshops, interviews with indigenous service providers, walks on Country, as well as comprehensive archaeological surveys and test excavations of the area.

The historical associations with early settlement, conflict, dispossession and survival are important, and the nature of the area as a surviving cultural landscape is of significance to numerous members of the Wonnarua

people making this regional area significant.

The assessment of potential impacts to the Aboriginal archaeological values shows that there are 91 sites (56 artefact scatters and 36 isolated finds) that will be impacted by the Project. We have developed management and mitigation measures in consultation with the Registered Aboriginal Parties and Knowledge Holders involved in the assessment. All surface sites impacted by the Project will be collected and recorded. Management measures have been developed collaboratively with the Registered Aboriginal Parties involved in the assessment and will be undertaken in consultation with Knowledge Holders and community stakeholders. Further, the current Aboriginal Cultural Heritage Management Plan for Mount Owen Complex will be updated to incorporate the Project.



Recorded Artefact



Test Excavation at Area 9



Test Excavation at Area 1



Recorded Artefact

Historical Heritage

The Project requires the removal of the Ravensworth Homestead. As a mitigation measure, Glencore is proposing to relocate the homestead to a new recipient site.

The Ravensworth Homestead has been assessed as having State significant heritage values. Extensive heritage studies have been undertaken to allow for a greater understanding of the property and building group in the areas of social history, historical land use and landscape, archaeology, architecture, structural and engineering assessments, land tenure and early interactions between Aboriginal people and colonial settlers. These studies have been completed to gain a holistic understanding of the appropriate options for relocation, in consideration of heritage values and community values.

Detailed investigations have also been completed by specialist heritage contractors capable of moving the buildings, either largely intact or by dismantling and rebuilding, to understand the potential options for methods of relocation.

We have been investigating recipient sites and relocation options for the homestead over the past 18 months as part of a rigorous assessment process. To assist in this process, we established a community-based committee, the Ravensworth Homestead Advisory Committee (RHAC), to assist with the identification and assessment of relocation options for the homestead and associated buildings, with consideration to preserving its heritage value, whilst also providing an end use that is economically sustainable and allows some form of ongoing public access. The RHAC is facilitated by an independent chair and comprises representatives from the local community, and Singleton's business and heritage sectors

Relocation options

Two relocation options are proposed for the Ravensworth Homestead.

One option is the intact relocation of the buildings to a newly created 'Ravensworth Farm' site that is located adjacent to Bowmans Creek and the proposed Hebden Road realignment (refer to **Figure 1**). This site is on Glencore land (within the Project

Area) within the original 10,000 acre Bowman land grant. It is proposed to fill and shape the recipient site such that the landform on which the relocated buildings are sited would be similar to the existing site. Additionally, the proposed driveway alignment and distance from the relocated Hebden Road is similar to the existing driveway alignment and distance from the existing Hebden Road. The Homestead and associated buildings would be used for administration purposes by Glencore during the life of the Project and alternative uses post-mining could include a continuation of its previous use as a rural homestead. The buildings would be relocated in large in-tact pieces on a purpose-built road using highly specialised equipment. This option has a strong heritage focus through the use of a relocation methodology that retains most of the heritage fabric of the buildings, as well as by replicating most of the physical attributes of the existing homestead site (including transplanting of existing garden

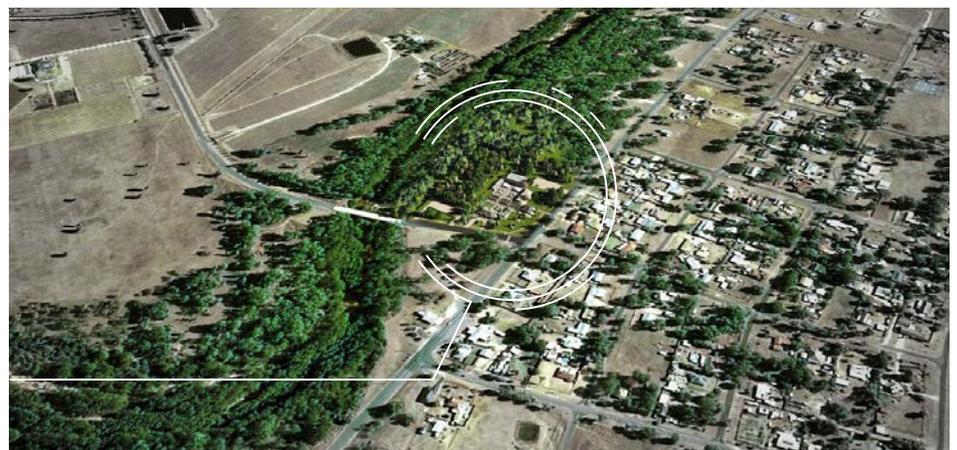
features and replication of the 'house dam') at the proposed recipient site.

Another option is to relocate the homestead and associated buildings to McNamara Park in Broke Village, where it would fulfil the function of the village square. The method of relocation requires dismantling the buildings 'stone-by-stone' and then rebuilding in the new location. The homestead complex would be owned by the local Broke community with mixed-usage that includes administration and exhibition space, café and restaurant, cellar door/wine tasting, market space and space for annual events. This option has a strong community focus through situating the buildings in a publically accessible space where they would be adapted to suit the intended end use and thus providing a useful new life for the buildings.

The EIS includes detailed investigations into the feasibility of these options, as well as all other options investigated.



Ravensworth Farm Option



Broke Village Option



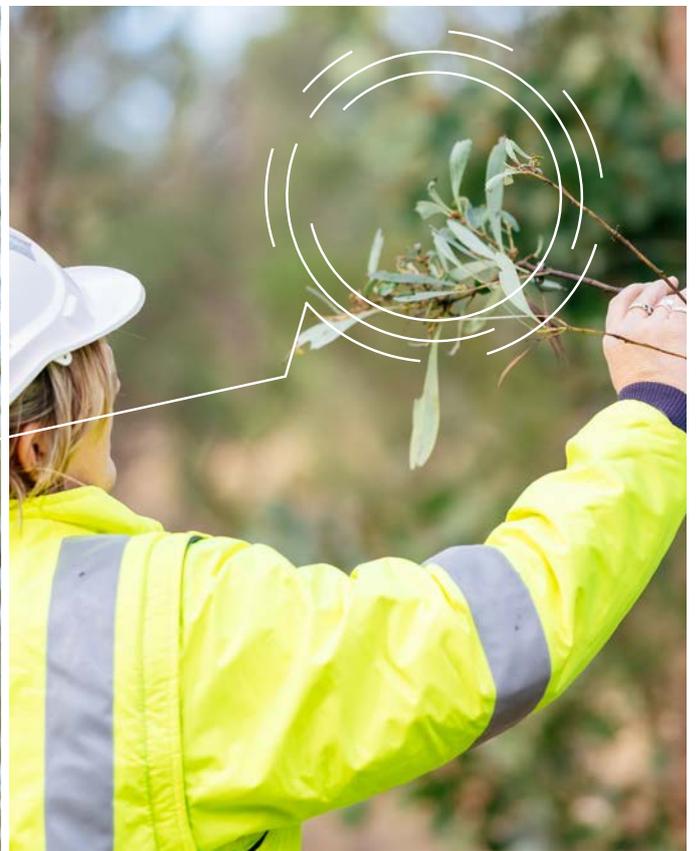
Ravensworth Homestead

Ravensworth Homestead is a collection of buildings built in the early 19th century and modified over time by subsequent owners. Ravensworth Homestead is considered to have State significant heritage values as a remnant of an early pastoral station that retains evidence of the colonial period of development including in the property boundaries, the road alignments, the homestead building group and associated site features, the historical archaeological sites and remnant landscape features.

The Ravensworth Estate is associated with a number of notable historic persons, including Dr James Bowman, colonial surgeon, for whom the homestead was constructed in circa 1832. The homestead complex comprises five sandstone buildings (main house, kitchen wing, two outbuildings and ablutions block) and one timber cottage.

The homestead is listed as an item of local heritage significance under the Singleton Local Environmental Plan 2013. The homestead and surrounding land is owned and maintained by Glencore.





Nest box in biodiversity offset area at Mount Owen Complex

Biodiversity and offsets

The biodiversity impacts of the Project have been assessed in accordance with the NSW Biodiversity Assessment Method (BAM). The Project will result in direct impacts on biodiversity values. These impacts include the loss of native vegetation and fauna habitats as a result of clearance works and subsequent mining activity.

The Project will impact approximately 591 hectares of native grassland, woodland and forest vegetation which will be offset. The majority of forest and woodland already being highly fragmented and disturbed and is in a rehabilitated or regenerative state. This represents lower value habitat when compared with vegetation in a remnant state, of which none is present within the disturbance area. This is mostly due to historical clearing associated with agriculture and more recently the mining in the area. Therefore, the relative loss of connectivity and movement corridors for native flora and fauna as a result of the Project is considered minor.

To address the direct and indirect impacts, a mitigation and offsetting strategy will be prepared, that includes:

- habitat enhancement measures such as the installation of nest boxes, salvaged hollows, fallen timber, hollow logs and rocks to supplement mine rehabilitation areas
- the delineation of clearance areas to prevent unwanted clearance of surrounding vegetation
- progressive rehabilitation of the area
- the implementation of a biodiversity offset strategy in accordance with relevant State and Federal requirements.

The Project is committed to delivering a biodiversity offset strategy that appropriately compensates for the unavoidable loss of ecological values as a result of the Project. A biodiversity offset strategy for the Project is currently being developed with potential offset sites being investigated.

Economics

Since the commencement of operations at Glendell we have contributed financially to Singleton Council under a Voluntary Planning Agreement and provided further funding and grants to various local community-based initiatives and groups. This is in addition to the royalties paid to the State of NSW. Specifically in 2017 we spent in excess of \$150 million on salaries, the purchase of goods and services, and community contributions. This direct spend resulted in over 1,400 equivalent jobs supported and over \$160 million in value added.

The Project will result in additional revenue through the extraction of further coal resources and provide ongoing employment opportunities through the extension of Glendell Mine. The costs and benefits associated with the Project are currently being finalised and will be presented with the submission of the EIS.

At this stage, it is anticipated that the Project would provide a royalty revenue stream flowing to the NSW Government estimated in excess of \$700 Million over the life of the Project.

Social Impact Assessment

A Social Impact Assessment is currently underway to identify and evaluate social impacts of the Project and develop appropriate management and enhancement strategies. The assessment has been undertaken in accordance with the Social impact assessment guideline for State significant mining, petroleum production and extractive industry development.

Community consultation has been ongoing since early 2018. During the project scoping phase, the most frequently cited concerns raised by stakeholders related to dust and

air quality, particularly the cumulative effects of dust from mine sites in the area.

Changes to landform and the importance of appropriate site rehabilitation were the next most common concerns identified. These were followed by concerns about potential impacts on water (including the realignment of part of Yorks Creek, potential pollution of waterways and the impacts on drinking water), noise, and the Ravensworth Homestead. The issues raised during the preliminary consultation phase are further defined in Table 1.

Table 1 – Preliminary Issues Raised by Stakeholders

Issue Themes	Description
Dust and air quality	Commonly noted as an impact of current operations, with concerns raised that this issue may increase with the Project. Cumulative impacts from mining operations located in the area were identified as a key issue.
Water	Common concern related to the potential impacts on Bowmans Creek, rainwater tank drinking water and the realignment of Yorks Creek. The community expressed a desire for the creeks to be protected.
Changes to landform and site rehabilitation	Concern about final voids and rehabilitation practices.
Noise	Noted as a previous impact of current operations, concern this might increase with the Project.
Traffic and road issues	Concern around road closures, potential delays associated with the Hebden Road realignment and blast related closures and associated impacts on travel times.
Ravensworth Homestead	Concerns around the removal of the homestead and its potential relocation including loss of heritage values.
Community and culture	The desire for both Aboriginal and Historic cultural heritage to be treated with respect.
Health impacts	Health impacts as a result of dust, such as respiratory issues.
Having a voice and opportunity to contribute	The potential to provide people in the community the opportunity to provide input and be listened to.
Vibration and blasting	Noted as a previous impact of current operations, there is some concern this might increase with the Project.
Land management	Particularly noted in regard to management of wild dogs and noxious weeds.
Property sale and value	Concerns about how mining is impacting the value of private properties and the ability to sell.
Longevity of mining	Concerns about the extension of mining activities in the area.
Changes to land use	Concern with how mining activities will impact on current land uses, for example cattle grazing.
Power cuts	The potential for power outages

Source: Glendell Continued Operations Project Social Impact Assessment Scoping Report (2018)

Visual Amenity

The Mount Owen Complex is located within a rural environment in close proximity to several other mining operations. The character of the immediate visual environment is strongly influenced by existing mining operations, with mining making up a large part of the surrounding land use in the local area and having been present for over 50 years.

The active mine pit, emplacement areas, mine infrastructure area and Heavy Vehicle Access Road will be immediately adjacent to the realigned section of Hebden

Road. The realigned section of Hebden Road has been designed to minimise direct views into the pit from the public road. Other aspects of the Project will likely be visible along some sections of Hebden Road. The increased height of overburden emplacement areas associated with the Project is likely to result in increased visibility at some locations, all of which currently have visual impacts associated with existing operations at Glendell Mine and the operations within the Mount Owen Complex or other nearby mining operations.

Figure 6: Project Year 18 conceptual landform compared to existing landform, viewed from New England highway



Existing Landform



Project Year 18 Conceptual Landform

To assess the visual impacts of the Project a series of radial, panoramic photographs and visual montages have been completed at several locations surrounding the Project Area. Visual montages of the proposed Year 18 conceptual landform compared to the existing landform, as viewed from the New England Hwy and Glennies Creek Road, are provided in **Figure 6** and **Figure 7**. The proposed Year 18 landform represents the maximum height of the proposed

overburden emplacement area and the full progression of the proposed mine footprint.

Key mitigation measures will be similar to those currently implemented as part of the Mount Owen Complex operations and include roadside vegetation planting that acts as a screen, progressive rehabilitation and development of an appropriate landform that incorporates natural landform design principles.

Figure 7: Project Year 18 conceptual landform compared to existing landform, viewed from Glennies Creek Road



Existing Landform



Project Year 18 Conceptual Landform

Legend

- Project Area
- Glendell Pit Extension
- Active Pit/Working Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Shaping for Final Landform
- Temporary Rehabilitation
- Rehabilitation
- Infrastructure/Internal Access
- Haul Road
- Coal Stockpile ROM
- Coal Stockpile Product
- Water Storage
- Water Storage/Tailings Emplacement
- Highwall
- Tailings Capping in Progress



Woodland rehabilitation at Mount Owen Complex

Climate Change, Greenhouse Gas and Energy

A specialist greenhouse gas and energy study for the Project assessed emissions from the proposed operational activities, the electricity used, and the indirect 'downstream' emissions generated by third parties involved in getting the coal to the customers from end-use of the product (consumption). The assessment showed that the downstream emissions represent approximately 95% of the Project's total emissions.

Given that the coal produced from the Project is largely replacement production for other Glencore mines that are nearing the end of their operating life, the study also found that the Project's contribution to national annual emissions is relatively small and is unlikely to impact national greenhouse gas policy objectives. Similarly, the

Project is unlikely to affect the objectives of the NSW Climate Change Policy Framework. Glencore will continue to mitigate greenhouse gas emissions through ongoing energy efficiency initiatives and optimising productivity. This includes limiting the length of haulage routes to reduce transport distances and fuel consumption, and selecting equipment and vehicles that have high energy efficiency ratings.

Glencore is committed to transitioning to a low-carbon economy, and has recently announced publicly that it will limit coal production to current approved levels. The Project fits within Glencore's production cap commitment as it is focused on sustaining current coal production.

Rehabilitation and Final Landform

Areas disturbed as part of the the Project will be progressively rehabilitated as soon as practicable throughout the life of the Project. The Project will implement natural landform design principles and continue with revegetation techniques that are completed at the existing operations. The revegetation of the final landform (see **Figure 8**) has also been designed to optimise potential alternative high value land use options for the area. A final void will remain following mining, which is consistent with current approvals. Based on modelling, the long term recovery and water quality of the proposed final void is considered equivalent to

the approved final void and comparable to other final voids recently assessed in the upper Hunter Valley. The proposed final void will remain a self-contained system with no surface spills to downstream watercourses.

Rehabilitation of disturbed land is designed with the objective of returning as much of the Project Area to a combination of native woodland and open grassland areas, generally consistent with ecological communities that would have historically occurred in the area. The realignment of Yorks Creek will be developed with aquatic and riparian habitat to provide fauna and flora corridors.

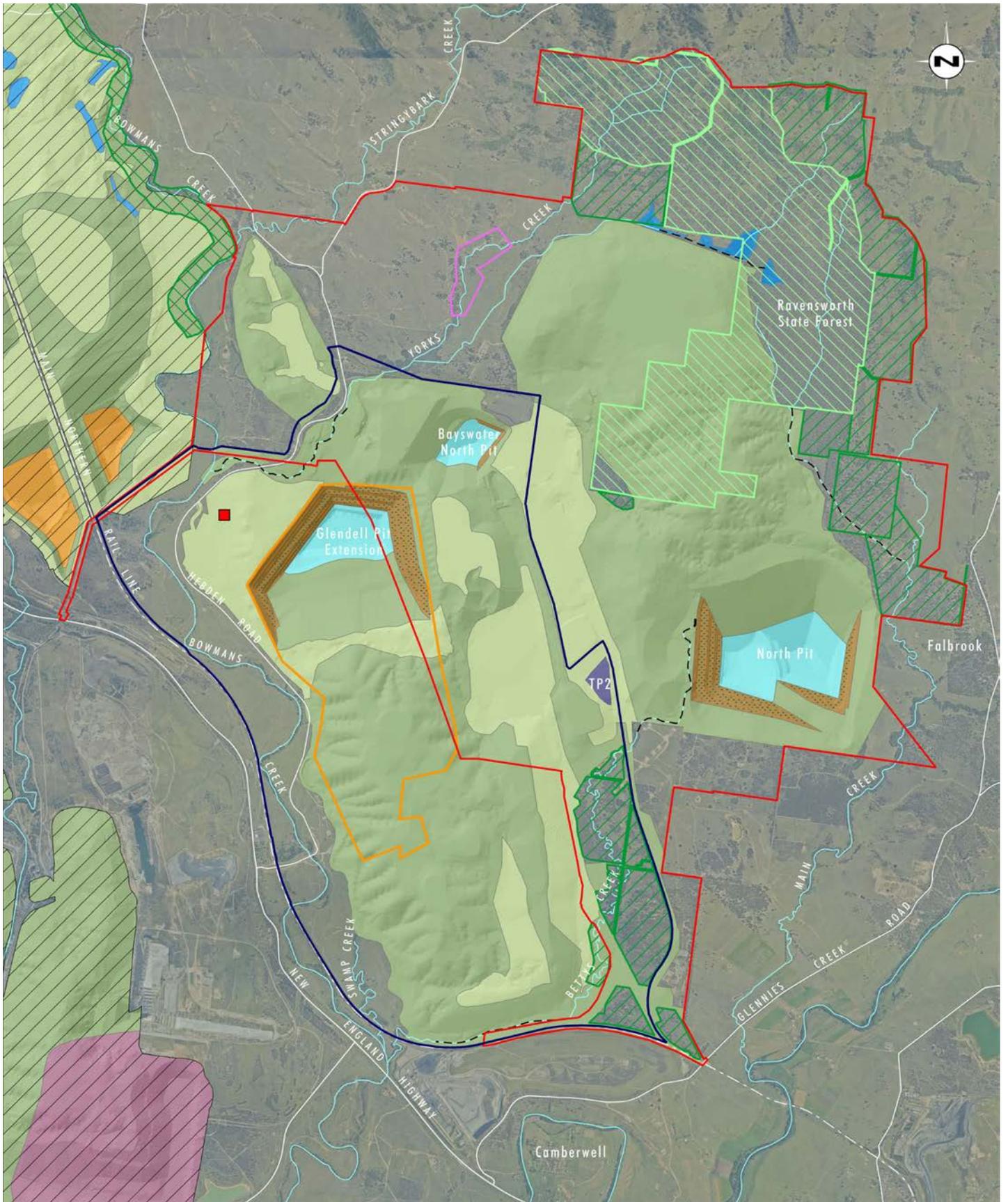


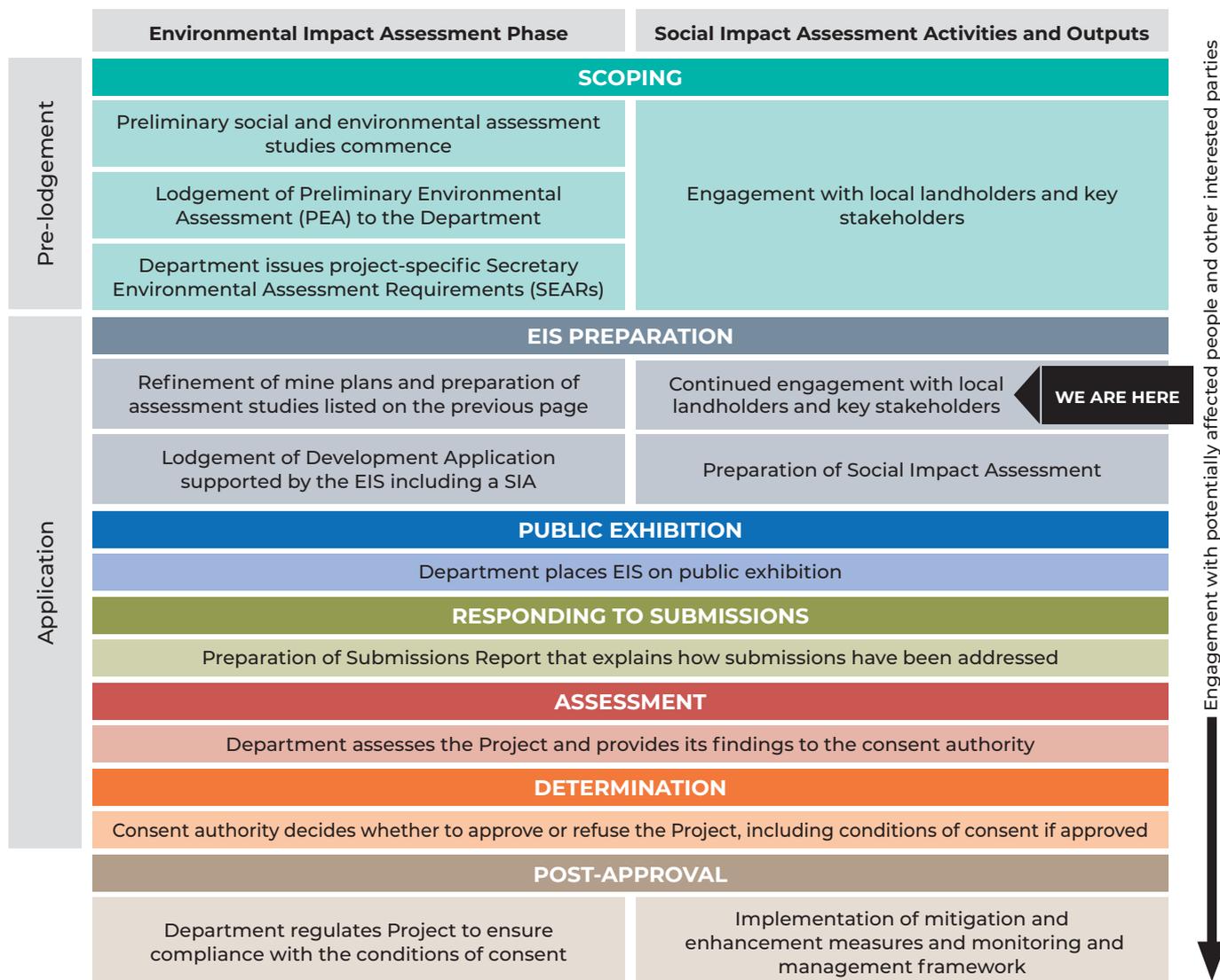
Figure 8: Conceptual post-mining landform

Legend

- | | | |
|--|--|------------------------------------|
| Proposed Mount Owen Consent Boundary | Vegetated benches on Retained Highwall | Associated with Other Operations |
| Project Area | Retained Highwall | Ravensworth Farm Relocation Option |
| Glendell Pit Extension | Water Storage | |
| Creek Diversion/Realignment | Detention Basin | |
| Native Woodland | Pit Lake | |
| Open Grassland (Potential grazing areas with pockets of woodland vegetation) | Existing Mount Owen Complex Biodiversity Offset Area | |
| Grassland for Stabilisation (Liddell Coal Operations) | Ravensworth State Forest | |
| Grazing (Ravensworth Operations) | Yorks Creek Voluntary Conservation Area | |
| | Liddell Coal Operations Offset | |

How can I be involved?

Consulting with the community continues to be a key part of the environmental and social assessment for the Project and over the coming weeks we will provide opportunities to discuss the outcomes of the environmental assessments in detail. The below figure shows where the Project is up to in the overall process.



Community Information Sessions

Come along to our upcoming Community Information Sessions. These sessions will:

- provide further detail on the Project
- provide an overview of the Government assessment process
- allow for discussion of community issues

All members of the community are welcome to attend at any time during the below sessions

Singleton Youth Venue

Cnr of Bathurst & Pitt Street, Singleton
18 September 2019, 2:30pm to 5:30pm
21 September 2019, 9am to 12noon

Broke Hall

Cnr Howe & Adair Street, Broke
19 September 2019, 4pm to 6pm

Further information

If you would like more information, or would like to schedule a meeting with the Project team, please contact:

Glencore: **Brad Snedden**

P: **0428 466 820**,

E: **bradly.snedden@glencore.com.au**

Project website: **www.mtowencomplex.com.au**

If you would like to learn more about the SIA process or provide input, please contact Angela Peace from Umwelt using the details below.

Umwelt Australia: **Angela Peace Principal Consultant**

P: **02 4950 5322**

E: **apeace@umwelt.com**