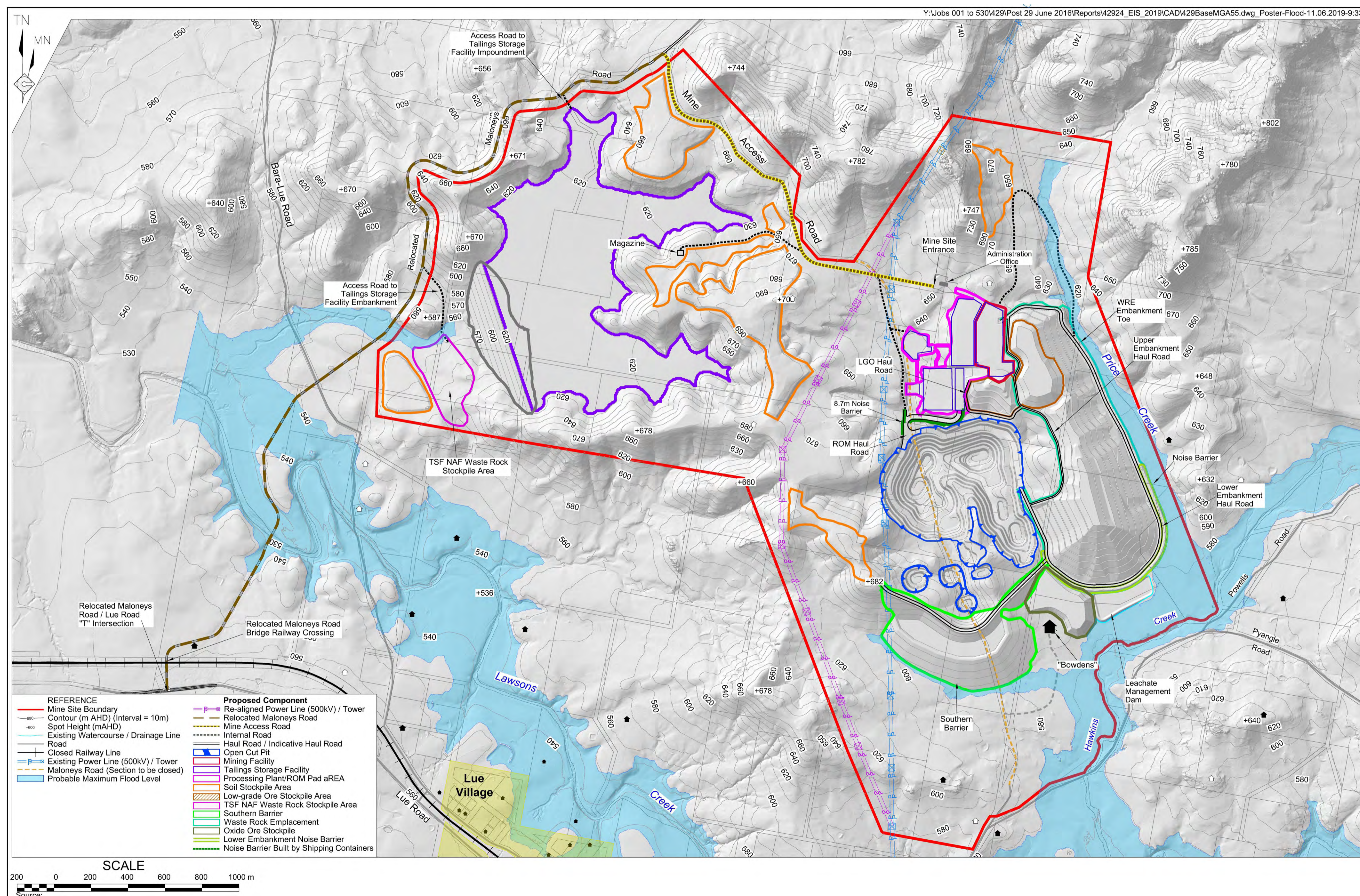


Surface Water Assessment

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Probable Maximum Flood (>1 000 year)



Undertaken in accordance with the DPE's assessment requirements and includes:

- Development of a water balance model that has been calibrated to recorded local conditions;
- Developed hydrologic and hydraulic models that have been calibrated to local conditions, to identify the magnitude and extent of potential impacts
- Provided all models to an independent, industry recognised peer reviewer for assessment

Surface Water

What the community would like to see	What we propose
Lined dams	<p>The tailing storage facility (TSF) would be constructed with design features to control seepage through the embankment and floor, via installation of:</p> <ul style="list-style-type: none">• a low permeability compacted clay liner that would control seepage of TSF from the stored tailings• a low permeability bituminous geomembrane liner on the upstream face of the TSF embankment• a low permeability grout curtain to a depth of 40m beneath the TSF embankment and tied into the bituminous geomembrane liner <p>Vibrating wire piezometers and stand pipe piezometers would provide data which would be used to assess the effectiveness of this design</p>
Rigorous assessment process	Commissioned comprehensive surface water assessment that will be subjected to independent peer review
Provide information on where water will be sourced	<p>Water used on site would be drawn (in priority order) from recycled water from the TSF, groundwater inflows to the open cut pits; sediment - laden surface water collected and lastly water from the water supply pipeline.</p> <p>The water supply pipeline would negate the need for a major surface water storage on site.</p>
Water management and monitoring	<ul style="list-style-type: none">• continue to sample and monitor surface water and build on our robust dataset. This dataset is based on regular monitoring since 2011/12 at Mine Site and Lue Village of groundwater, surface water, air quality and meteorological data• TSF and waste rock emplacement runoff captured for use in processing• maximise the diversion of runoff from undisturbed areas of the Mine Site to help maintain flows in Hawkins and Lawsons Creeks• diversion of water around the Mine Site and TSF, maintaining flows into Hawkins and Lawsons Creeks• water capture on mine site for recycling or treatment and discharge to help maintain flows in Hawkins and Lawsons Creek• capture and treat all runoff with high sediment levels and subsequently release it to help maintain flows in Hawkins and Lawsons Creeks• capture all runoff, seepage and leachate from areas that are in contact with potentially reactive material and re-use it in processing operations

Access to Water

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“Where will the water [for the Project] be sourced from?”

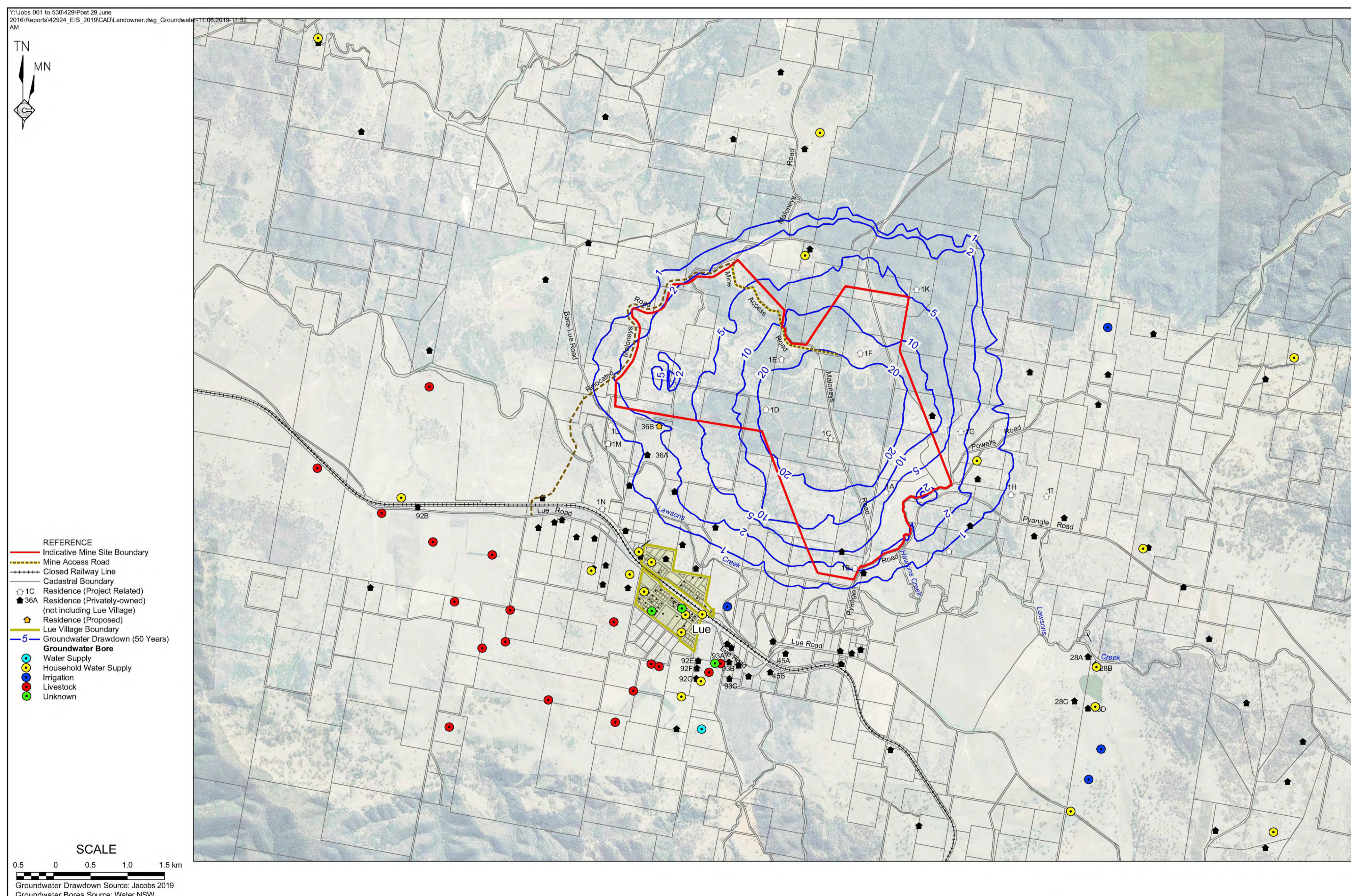
“I’m concerned that the options they have put forward [for water supply] won’t be enough”

What the community would like to see	What we propose
More information about where water will be sourced	Bowdens Silver recognises that water is a key resource for the whole community and is proposing to source (in priority order) from recycled water from the TSF, groundwater inflows to the open cut pits; sediment-laden surface water collected and lastly water from the water supply pipeline from the Ulan Coal Mine and/or the Moolarben Coal Mine.
No impact to current water supplies, especially for agricultural use	The make-up water delivered by pipeline is the result of licensed inflows to these coal mining operations, placing no additional demand on the local groundwater and regional water resources
Water management and monitoring	Continue to sample and monitor local surface and groundwater
Community access to water	Water pipeline has been designed to provide access for fire fighting along the extent of the pipeline

Groundwater Assessment

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Maximum Groundwater Drawdown - metres



Undertaken in accordance with the NSW Aquifer Interference Policy and includes:

- Development of a numerical groundwater model that is based on extensive testing in and around the Mine Site that has been calibrated to local and regional groundwater levels
- Provision of the groundwater model and report to an independent, industry recognised peer reviewer for assessment to ensure that it meets with the criteria of the Australian Groundwater Modelling Guidelines

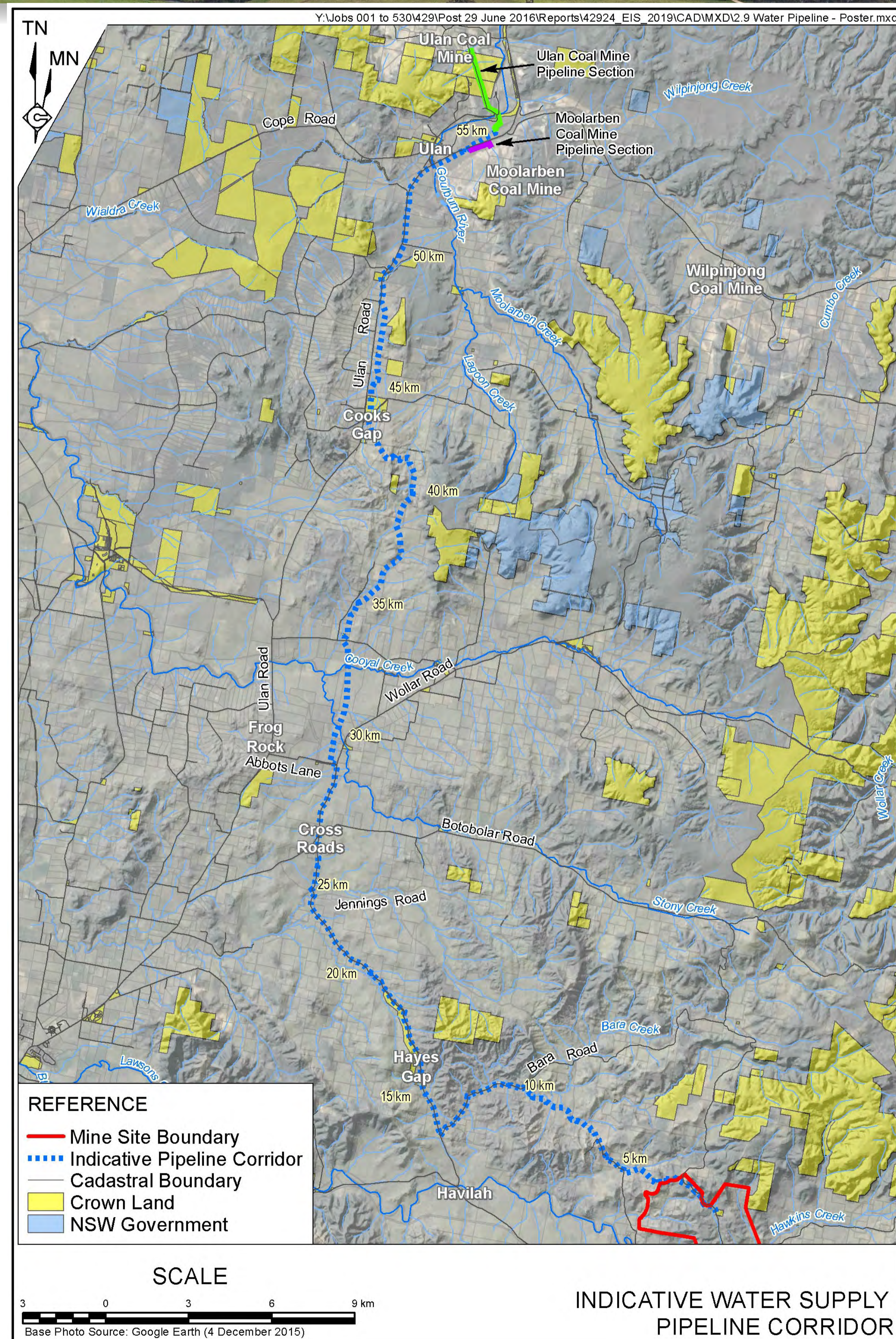
Groundwater

“What will happen to the underground aquifer? Loss of water would mean the end of my livelihood”

What the community would like to see	What we propose
Rigorous and robust assessment	<ul style="list-style-type: none">• The company has compiled a high quality, robust data set based on regular monitoring conducted on the Mine Site and in Lue village, since 2011-2012. The data set comprises surface water and groundwater quality, air quality and meteorological data• Assessment has determined there are limited impacts to groundwater surrounding the Mine Site
Supply of water for local farmers if water table declines	<ul style="list-style-type: none">• Make-up water required for the Project would be sourced from the Ulan coalfields, enabling us to minimise the impact on groundwater around the Mine Site.
Water monitoring and management	<ul style="list-style-type: none">• Continue to sample and monitor the local and regional groundwater system and build on our robust dataset. Dataset based on regular monitoring since 2011/12 at Mine Site and Lue village of groundwater, surface waters, air quality and meteorological data• Tailings storage facility design and construction would include measures to control seepage through the TSF embankment and floor• Designed a capping and closure cover for the tailings storage facility and waste rock emplacement that would create a stable and vegetated landform that sheds clean runoff• Mining operations would involve pit dewatering• Infrastructure with the potential to impact the local groundwater system would include design features to reduce any impacts (eg liners)• Designed infrastructure to limit impacts to the local groundwater system• We would secure water access licences to account for all groundwater inflows to the open cut pits

Water Supply Pipeline

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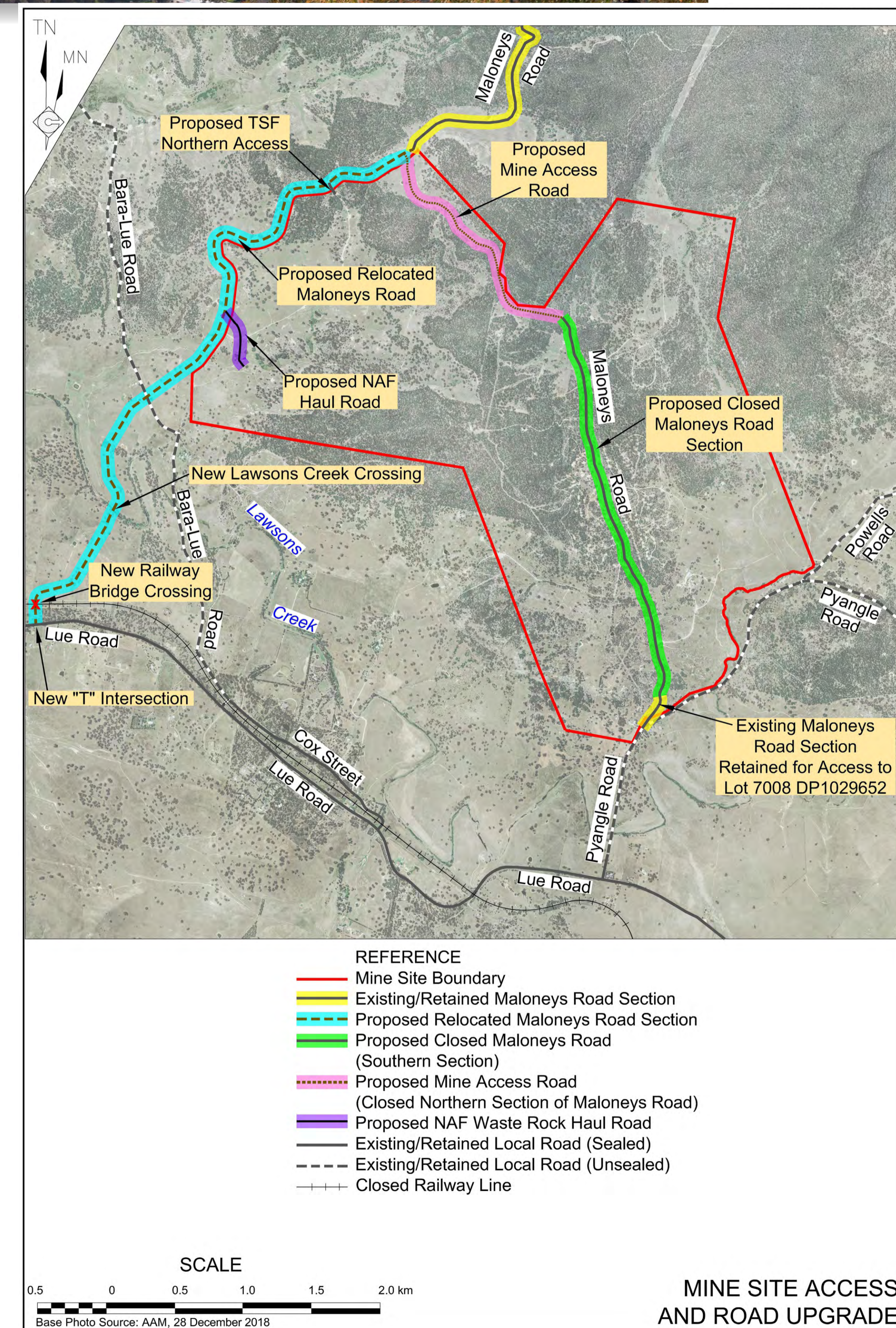
- Make-up water required for the Project would be sourced from the Ulan coalfields, enabling us not to pump water from any creeks or groundwater bores outside the Mine Site.
- Approximate requirement after start-up up to 1.75 ML per day
- Isolation valves would be installed at 2km to 4km intervals along the pipeline, and off-take hydrants would be installed at valve locations permitting access to water for fire fighting purposes
- The proposed route has been flown for high resolution mapping and the majority of the route has been ground surveyed for terrestrial ecology and Aboriginal cultural heritage

Traffic Impact Assessment

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Undertaken in accordance with the DPE's assessment requirements and includes assessment of:

- Existing local and regional road network and conditions, including traffic counts
- Impacts to local and regional road users as a result of Project-related traffic



Traffic and Transport

“The project will result in better roads”

“Roads would be improved, got to improve”

What the community would like to see	What we propose
No trucks through Lue Alternative transport route /Reduce speed zones through Lue	<ul style="list-style-type: none">• Designed a new road to access the Mine Site from the west of Lue removing mostmine-related traffic that would otherwise pass throughLue and past the school• The new road would relocate a section of Maloneys Road and provide a new intersection, new railway bridge overpass and new crossing of Lawsons Creek• No concentrate truck movements through Lue or Rylstone• Minimise mine traffic at peak times• New intersection would be constructed with full safety measures e.g. turninglane
Truck Curfew to limit trucks at night	Deliveries and despatch of heavy vehicles would be limited to periods outside of the night time as well as the morning and afternoon peak hours

Visual Impact Assessment

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Assessment involved:

- Observations of the Mine Site from 53 private and public viewing locations
- Cross-sections to analyse views from key viewing locations towards the Mine Site
- 3-Dimensional interactive model
- Detailed review of all Project components
- Photomontages to show the sequence of visual changes throughout the mine life
- Night glow assessment

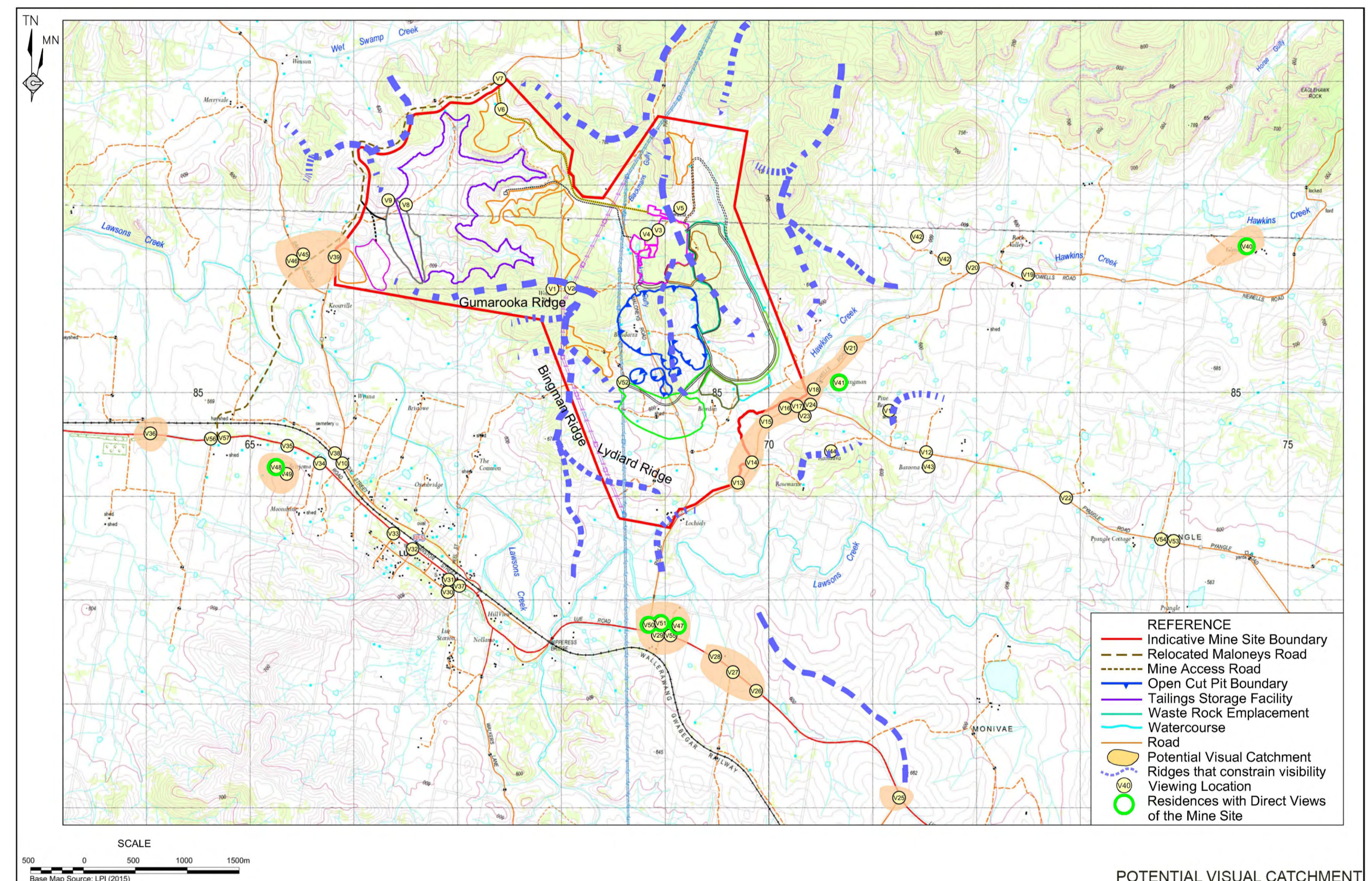
Impact Assessment

The activities on the Mine Site:

- would not be visible from Lue village at all;
- would be visible from sections of Pyangle Road and Powells Road and distant sections of Lue Road;
- would be directly visible from six non-project related residences within 5km of the Mine Site.

The most visible features would be:

- the light coloured rock exposed on the waste rock emplacement (sometimes up to 60m above the natural ground level), southern barrier and TSF embankment – to be minimised by progressive revegetation.



Visual

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“At some point there'll be a loss of visual amenity and lifestyle choices for us.”

“We'll see it lit up for miles around”

“We don't want a glow of light over the sky at night like other places”

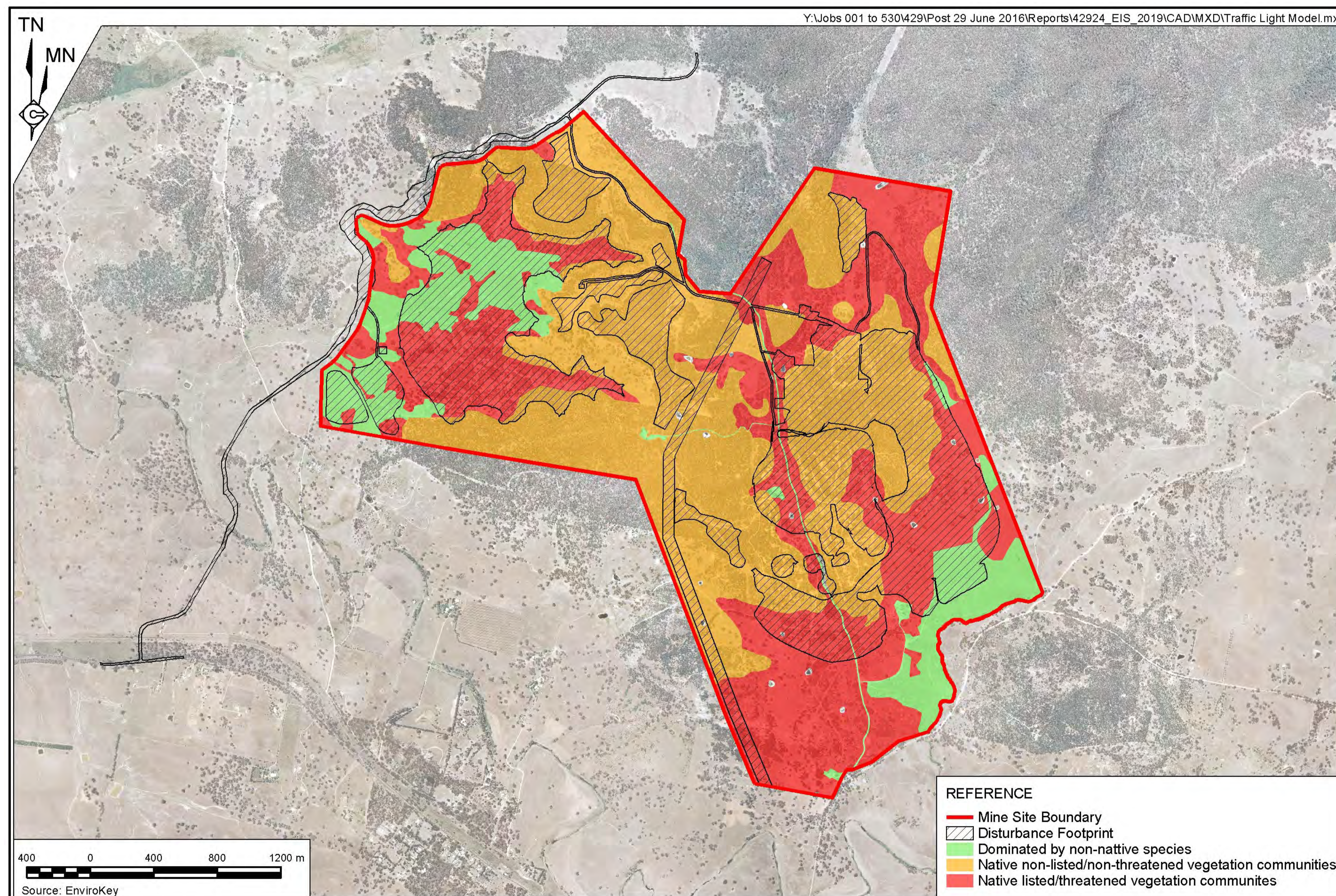
What the community would like to see	What we propose
Tree planting / screening	<ul style="list-style-type: none">• Progressive revegetation on interim and final areas• Further tree planting adjacent to Pyangle Road and Powells Road
Visual bunds or barriers	<ul style="list-style-type: none">• Set back the waste rock emplacement north of Hawkins Creek• Design the waste rock emplacement to a natural landform• Prepare cross-sections to analyse views from key viewing locations towards the Mine Site• Select a suitable colour for all buildings and noise barriers
Strategic location of operational lighting to reduce light spill	Ensure that the lighting used on site has the least impact through its colour (luminance), orientation and shielding

Do you have any further strategies?

Use the sheet below to record any additional strategies for us to consider.

Ecology Assessment

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The terrestrial ecology studies have identified within the Study Area:

- A total of 11 biometric vegetation types of which 3 classify as the State & Commonwealth listed White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, a threatened ecological community;
- A total of 370 flora species of which 2 are threatened; and
- A total of 168 fauna species of which 14 are threatened.

The aquatic ecology studies have identified within the Study Area :

- 4 native fish species and 3 introduced fish species, none of which are threatened
- that habitat for potential threatened species (none of which were identified) is sub-optimal
- limited stygofauna
- minor impacts to aquatic ecology with no impacts to key fish habitat and potential threatened species in Hawkins and Lawsons Creeks

Ecology

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“Research is needed on the impact on flora and fauna”

What the community would like to see	What we have done
Robust assessment and protection of flora and fauna	<ul style="list-style-type: none">• Commissioned comprehensive terrestrial ecology studies• Identified areas of high biodiversity value to inform Mine Site layout• Commissioned comprehensive Aquatic Ecology studies including:<ul style="list-style-type: none">o survey of Hawkins and Lawsons Creekso inspections and assessment of Walkers Creek, Blackmans Gully & Price Creeko inspection and assessment of nine springso sampling of 24 groundwater bores for stygofauna• Referred the Project to the Commonwealth Department of Environment and Energy– as a result, the Project is a controlled action• Altered the route of the water pipeline corridor, to avoid areas of high biodiversity value <p>We propose to:</p> <ul style="list-style-type: none">• Implement a biodiversity offset strategy once approved by the DPE• Prepare and implement a biodiversity management plan• Undertake progressive rehabilitation