Broken Hill Cobalt Project

Scoping Report
SSD 10426

November 2021

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1. Introduction

1.1. Background

Demand for cobalt will increase in line with the global adoption of battery storage and electric vehicle applications. The global demand of cobalt is 136 kt (2021) and forecast to rise to 400 kt by 2030 (Citi, 2021).

Battery manufacturers are concerned about future supply of cobalt due to sovereign risks (71% of global supply was from the Democratic Republic of the Congo in 2020), and ethical/sustainable mining and minerals processing practises. Cobalt is almost exclusively recovered as a by-product of nickel or copper refining. The top 5 cobalt producers control ~53% of global supply, typically sourced from DRC based operations. China then processes 80% of global intermediates producing cobalt metal or cobalt salts.

The Australian, State and Territory governments have developed a list of 24 'Critical Minerals' which includes cobalt. The list aligns with similar policy initiatives in our key trading and defence alliance markets of USA, Europe, India and Japan. Hence, the collective Australian governments have stated strategic goals to increase the supply of critical minerals, increase the downstream value adding 'within Australian industries', and develop new supply chains that exclude our competitors.

Within the context of critical minerals, the Broken Hill Cobalt Project (BHCP) has been listed as part of the following government documents:

- Australian Critical Minerals Strategy.
- Australian Critical Minerals Prospectus, and
- NSW Minerals Strategy.

In Australia, the majority of cobalt comes from processing of nickel laterites (~3,300 t in 2020) which require large capital investment. The BHCP, and the patented metallurgical processing technology that is proposed, provides the opportunity for the production of cobalt sulphate from a previously undeveloped cobalt-pyrite ore in a sustainable, ethical and cost effective manner.

The production of cobalt sulphate in Australia would provide a missing component in the development of an Australian battery materials supply chain where all the necessary minerals in the correct form and ratios for downstream value adding could be provided. The Project will also generate elemental sulphur which is currently imported to Australia for use in agricultural and metal processing industries. Producing elemental sulphur in Australia will lower input costs for fertiliser manufacture and some metal processing operations by reducing transport costs. Australia has the opportunity to become a one stop shop for the supply of battery pre-cursor materials, in turn potentially facilitating investment in downstream battery and energy solutions in Australia. Presently, the missing piece in the Australian market is large volumes of domestically sourced cobalt sulphate.

The BHCP would extend for 20 years, produce approximately 4% of the global cobalt supply and one quarter of Australia's elemental sulphur requirements, and create ~410 regional jobs in the high tech, critical minerals processing industry.

1.2. Project Summary

The Broken Hill Cobalt Project (the Project) (formally known as the Thackaringa Cobalt Project) is a proposed greenfields open cut mining and processing operation that is located approximately 25 kilometres south west of Broken Hill in the far west of New South Wales (Figure 1). The Project is owned by Cobalt Blue Holdings Limited, and will be executed by the Broken Hill Cobalt Project Pty Ltd which is a wholly owned subsidiary of Cobalt Blue Holdings. The Project is located on Thackaringa Station which is a perpetual pastoral lease granted over Crown Land in the Unincorporated Area of New South Wales.

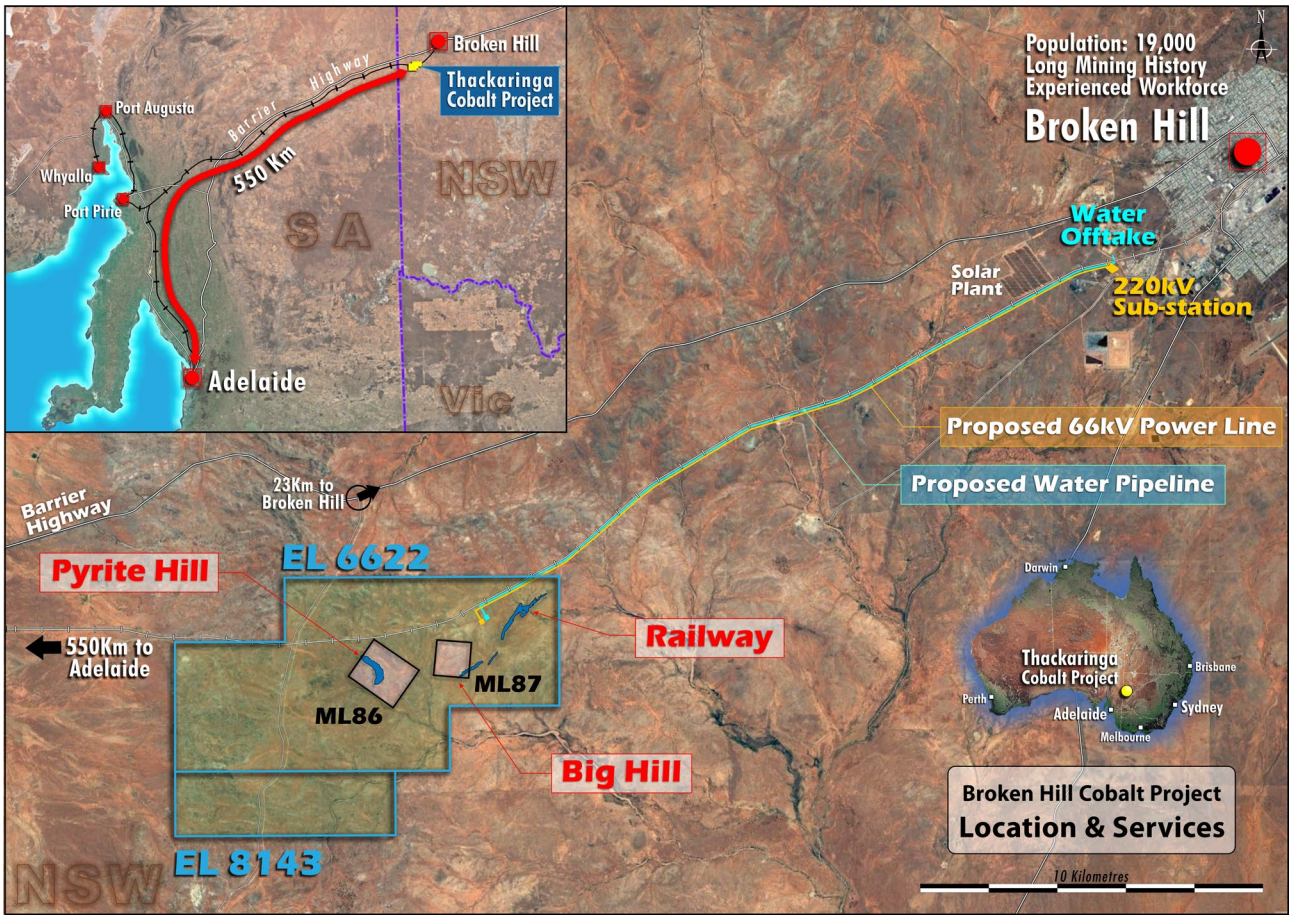


Figure 1: Regional Project location

The Project hosts a global Mineral Resource estimate of 118Mt at 859ppm cobalt-equivalent (CoEq) for 81,100 contained cobalt (at a 275ppm CoEq cut-off). Cobalt Blue has confirmed that the cobalt is locked inside the pyrite mineral, and subsequently developed and patented a tailored metallurgical process with the following characteristics:

- High cobalt recoveries.
- No sulphur dioxide emissions.
- Relatively low capital and operational costs compared to other processing methods.

The Project includes the development of a greenfield open cut mining operation, down-stream ore processing and a refinery to produce intermediate mixed cobalt-nickel hydroxide and/or high purity cobalt sulphate (suitable as a battery cathode precursor), elemental sulphur and potentially a low

grade iron product. It is expected that the life span of the mine and processing operations will be 20 years. Potential target ore bodies in close proximity to the project have been identified, thereby offering potential extension of the Project life.

At full production it is estimated that total employee numbers will be approximately 410 full time equivalent positions. During construction it is estimated that 450 personnel will be required for approximately two years. Site personnel will preferably be based in Broken Hill, and where it is possible to do so, shift based employees will be transported to site via bus.

The scope of the Project includes:

- Open cut mining operations targeting three well established cobalt-pyrite deposits. Up to four open cut pits know as Pyrite Hill, Railway and Big Hill (north and south) are planned. It is possible that the Railway deposit could be mined in two open cut pits;
- Ore production of up to 6.7 Mt per year and overburden extraction of up to 26 Mt per year. Multiple open cut pits may be in operation simultaneously;
- Development of mining infrastructure including but not necessarily limited to; haul roads, explosives magazine, fuel (such as diesel, compressed natural gas) and raw water storage(s), vehicle maintenance and parking facilities, employee facilities such as crib rooms, amenities and training/meeting rooms, ROM pad(s), temporary ore, NAF waste rock and topsoil stockpile(s);
- Ore processing and refinery infrastructure including:
    - Comminution involving crushing and grinding of the cobalt ore.
    - Concentration involving gravity separation, flotation and sizing to produce a cobalt - pyrite concentrate and tailings.
    - Pyrolysis of the cobalt concentrate in a rotary furnace operated under an inert nitrogen atmosphere to produce pyrrhotite and elemental sulphur. The gaseous elemental sulphur will be cooled and formed into solid pastilles or granules up to 5 mm diameter.
    - Leaching of the artificial pyrrhotite in a low temperature (130^{o}C) and pressure (10-15 bar) autoclave to produce an iron leach residue and a solution containing cobalt. The cobalt is precipitated as mixed metal hydroxide. Iron leach residue may be further processed to facilitate sulphur removal/recovery and iron product specification.
    - Refining of the mixed metal hydroxide precipitate to produce cobalt sulphate crystals via ion exchange, solvent extraction and crystallisation operations.
- Approximately 16,700 tonnes of cobalt sulphate (or 10,000 tonnes of mixed cobalt-nickel hydroxide) and 300,000 tonnes elemental sulphur will be produced annually at full production. These products will be loaded into shipping containers and transported by rail for export or distribution to domestic customers. A low grade haematite product may also be able to be developed from iron leach residue. Up to 700,000 tonnes per annum of leach residue will be produced and either be emplaced in on-site waste management facilities or transported to domestic customers by rail. A 2km long rail siding adjacent to the Broken Hill to Peterborough rail line, associated signalling and crossing of the mine access road will be required.

- Power and water supply infrastructure from Broken Hill to the Project site will be located immediately adjacent to the Broken Hill to Peterborough rail line or utilising exiting Essential Energy power line infrastructure adjacent to the Barrier Highway. Battery storage may be considered on-site.

- Water management infrastructure such as; creek diversions, water storage dams and/or tanks, water supply pipelines, pit dewatering pumps, pipes and drains, water cart fill points, drains and berms, and water flow, pressure and quality monitoring equipment.

- Waste management facilities including Integrated Waste Landforms, dewatering infrastructure for processing plant tailings and leach residue, and general waste management infrastructure. Integrated Waste Landforms will be progressively rehabilitated with non-acid forming capping material to provide for a long term physically and chemically stable final landform. An on-site sewerage management system will be required.

- General surface facilities including; offices, training/meeting rooms, light vehicle parking, warehouse, an upgraded site entry road from the Barrier Highway and level crossing, truck access and delivery areas, internal site roads, rail siding and container storage/loading area, lighting, security fencing and signage. Access to the site via an upgraded Triple Change Mine Road from the Barrier Highway.

- Monitoring, trials, rehabilitation and remediation of mining, ore processing/refining, and waste management activities.

- Development associated with ongoing mineral exploration within the Project Area.

- Other associated minor infrastructure, plant, equipment and activities.

- A biodiversity offset area may be required. Where appropriate, a biodiversity offset may be established on or near the site. Such a biodiversity offset area will require a range of management actions to be implemented including; weed and pest control, fire management, fencing, habitat restoration and monitoring.

- Site closure will include; capping acid forming waste emplacements with non-acid forming materials to provide for a physically and chemically stable landform. All infrastructure will be decommissioned, demolished and removed from the site at the completion of the Project. A stable landform commensurate with the post Project land-use will be developed. Opportunities for reuse for ongoing beneficial purposes of the site infrastructure and landforms will be investigated with relevant stakeholders during planning for site closure.

1.3. Proponent

Broken Hill Cobalt Project Pty Ltd (ACN 638 134 095) is the proponent for the Project. Broken Hill Cobalt Project Pty Ltd is a wholly owned subsidiary of Cobalt Blue Holdings Limited (ACN 614 466 607). Contact details for Cobalt Blue are:

Level 17, Suite 3
100 Miller Street
North Sydney, NSW, 2060
Phone: 02 8287 0660
Email: info@cobaltblueholdings.com

The Cobalt Blue's web site is: https://www.cobaltblueholdings.com

The proposed mine is located at Thackaringa Station, Barrier Highway via Broken Hill, NSW, 2880. Cobalt Blue Holdings Limited is an ASX listed exploration company.

1.4. Project Need

Cobalt Blue Holdings is the only ASX-listed primary cobalt exploration/development company. The company's strategy is to extract and refine cobalt in Australia to produce cobalt sulphate for the battery manufacture supply chain. The current goals are to advance the Broken Hill Cobalt Project and seek opportunities to commercialise Cobalt Blue's patented minerals processing technology for treatment of cobalt-pyrite feedstocks. The Broken Hill Cobalt Project has the potential to become a globally significant, long term cobalt producer. Proposed production is approximately 3,600 tpa of contained cobalt in 16,700 tpa of cobalt sulphate. For context, a production rate of 3,600 tpa of contained cobalt would make Cobalt Blue one of the largest cobalt producers outside of Africa. The global demand of cobalt is 136 kt (2021) and forecast to rise to 400 kt by 2030 (Citi, 2021).

Cobalt is a key metal required for both metallurgical and chemical industries. Cobalt demand is split into historical long-term consumption in superalloys, and the new emerging demand for batteries. Since 2005, the consumption of cobalt has surged 50% (increase of 30,000 tpa) based on battery manufacturing. Today, most portable applications are powered by cobalt based lithium ion batteries, initially commercialised in the 1990s. Battery materials will continue to dominate global consumption and drive demand over the next 10 years+.

Cobalt supply remains tightly held by a few commercial entities and is largely sourced geographically from Africa (71% of 2020 global supply is from the Democratic Republic of the Congo). Cobalt price is often linked to perceived risks in supply. In addition, battery producers are now considering ethically and sustainably sourced materials. China then processes 80% of global intermediates producing cobalt metal or cobalt salts.

The Australian, State and Territory governments have developed a list of 24 'Critical Minerals' which includes cobalt. The list aligns with similar policy initiatives in our key trading and defence alliance markets of USA, Europe, India and Japan. Hence, the collective Australian governments have stated strategic goals to increase the supply of critical minerals, increase the downstream value adding 'within Australian industries', and develop new supply chains that exclude our competitors.

Within the context of critical minerals, the BHCP has been listed as part of the following government documents:

- Australian Critical Minerals Strategy.
- Australian Critical Minerals Prospectus, and
- NSW Minerals Strategy.

Commercialisation of the BHCP will meet the strategic goals as follows:

- Double Australia's cobalt production, with new production of 3,600 tpa cobalt in a chemical form (mixed hydroxide precipitate or cobalt sulphate).
- Install a refinery to produce high purity cobalt sulphate - the raw material in electric vehicle battery cathode manufacturing.
- Enable Australia to develop a national battery manufacturing industry using domestic raw materials.
- Enable Australia to export cobalt (or cobalt chemicals) to selected partners, in alignment with national security and strategic interests, and provide new supply chains for the production of batteries.
- Potentially provide cobalt materials required to establish and support an Australian domiciled battery industry, including private and public sector usage.

Cobalt Blue has strong project support and global commercial partnerships. A strategic First Mover partnership has been established with LG International (LGI) in 2018, the resources investment arm of LG Corporation. LG possesses strong technical leadership in the development of next generation batteries, for fixed storage and Electric Vehicles (EVs). LG Chem is one of the largest Li-ion battery manufacturers globally. Under the First Mover partnership, LG will provide capital and technical assistance for Cobalt Blue to make a high purity battery grade cobalt sulphate. Cobalt Blue and Mitsubishi Corporation have established an agreement for the technical evaluation of elemental sulphur produced by the Project. Cobalt Blue is also a member of the Future Battery Industries Co-operative Research Centre (FBICRC) which aims to facilitate value adding production and manufacturing of battery materials in Australia. The Australian Government has allocated $25M to the FBICRC and Cobalt Blue is one of several NSW based research / industry entities contributing to the FBICRC.

Cobalt Blue was also successful in being awarded $2.4M in 2020 by the Australian Government to further develop the processing of pyrite ore to produce battery grade cobalt and sulfur with our research partners the University of New South Wales and the Australian Nuclear Science and Technology Organisation.

The BHCP has strong and broad support from a range of stakeholders at the national, state and local level. Letters of support for the Project have been provided by the NSW Government, Broken Hill City Council, Foundation Broken Hill, Regional Development Australia, Australian College of Mining and Northvolt.

Cobalt Blue has been undertaking stakeholder engagement in accordance with our Stakeholder Engagement Strategy 2020-2023.

The reputation of the Project has been significantly enhanced through the development of the Demonstration Plant, located in Broken Hill's Industrial Estate. The overall impression of local industry, community leaders, civic leaders, the media, and broader Broken Hill community is that this Project has real potential to throw a significant lifeline into Australia's longest-lived mining city.

There are more than 200 COB shareholders from the Broken Hill 2880 postcode, four times more shareholders than any other postcode within Australia, proving the local commitment to the project.

Through our engagement locally we have achieved a two-way exchange of information and therefore a broad appreciation of the challenges and opportunities that can be faced in collaboration. As a community priority, we aim to support and encourage the development and attraction of a residential workforce wherever possible, to achieve maximum economic and social benefit for Broken Hill.

To this end, COB is a leading partner in an initiative to investigate impediments to achieving a residential workforce – housing, childcare, airport, local skills/training and a pipeline from schools into the workforce. These issues are being addressed in a project involving COB as an inaugural member, led by Foundation Broken Hill, in collaboration with Benagerie Gold and Copper, Toll Resources, and Perilya. This is considered a 'first' in terms of this level of collaboration between mining companies in Broken Hill to get on the 'front foot' and assist in solving issues that could impede its capacity to take maximum advantage of future mine development in the region.

1.5. Planning and Assessment Process

Development consent for the Project will be sought under the State Significant Development provisions under Part 4 of the NSW Environmental Planning and Assessment (EP&A) Act, 1979. This Project is development for the purpose of Mining and Mineral Processing, and therefore will be State Significant Development as it has a capital value is in excess of $30 million. Consent will be sought from the NSW Minister for Planning (or delegate).

1.6. Purpose of Report

The purpose of this report is to support a renewal of the Secretary's Environmental Assessment Requirements (SEARs). Note that a Scoping Report was submitted for the Broken Hill Cobalt Project on 21 January 2020 and SEARs were provided for SSD 10426 on 18 February 2020. Cobalt Blue has been unable to progress the preparation of an Environmental Impacts Statement for a number of reasons, including but not limited to:

- Travel restrictions caused by Covid-19
- Access limitations imposed by the Landholder
- Feasibility Study funding

Once re-issued, the SEARs will set out the matters to be addressed by Cobalt Blue in the Environmental Impact Statement (EIS) to be prepared and submitted in support the application for State Significant Development Approval. This report documents the outcomes of the preliminary environmental risk analysis for the Project and scopes the matters and impacts that are likely to be relevant to the Project. The scope of the BHCP is largely unchanged from that described in the initial Scoping Report.

2. Project Description

Cobalt Blue Holdings Limited is seeking State Significant Development Approval to construct and operate open cut mining, ore processing and refining operations within an area contained within Exploration Licence (EL) 6622, including Mining Lease (ML) 86 and 87 (see Figure 1 and Figure 2). This would be supported by ancillary infrastructure at the mine-processing-refinery site as well as utilities infrastructure between the site and Broken Hill, and an access road from the site to the Barrier Highway on the existing Triple Chance Mine road. A preliminary Schedule of Lands is provided in Appendix A. Operations at the Project are expected to occur for approximately 20-25 years, inclusive of final rehabilitation of the site.

The Project Area and the land surrounding it is located on the Barrier Range, a north-south orientated range of low hills. The maximum elevation surrounding the Project Site is approximately 350m AHD. The land is generally undulating, with low, rocky, ridges separated by open, sandy valleys and drainage lines.

The Project Area is located immediately southeast of the catchment divide between the Lower Darling Catchment and the Lake Frome Catchment, with surface water to the south and east of the Project Site largely flowing to the south towards the Darling River (Figure 2). Surface water to the north and west of the Project Site flows to the west towards Lake Frome and Lake Eyre in South Australia. Surface water flows in either of the catchments in the vicinity of the Project Site are unlikely to reach either the Darling River or Lake Frome except in exceptional circumstances.

Principal drainage lines in the vicinity of the Project Area include Felspar and Pine Creeks (see Figure 24), with Felspar Creek merging with Pine Creek approximately 10km to the southeast of the Project Area. These creeks and their tributaries are ephemeral and flow only after substantial rainfall.

Native vegetation, although substantially modified by grazing, remains over most of the Project Site, except for the presence of access roads, railway lines, farm infrastructure such as dams and other minor disturbances.

Other mines or mineral processing operations within 50 km of the Project include:

- Triple Chance Mine (not operational).
- Pinnacles, North and South Mines operated by Perilya Broken Hill Limited.
- Rasp Mine operated by CBH Resources Limited.
- Cristal Mining Mineral Separation Plant.

Carpentaria Resources Hawsons Iron Project, located 60 kilometres south-west of Broken Hill, is also currently undergoing evaluation.

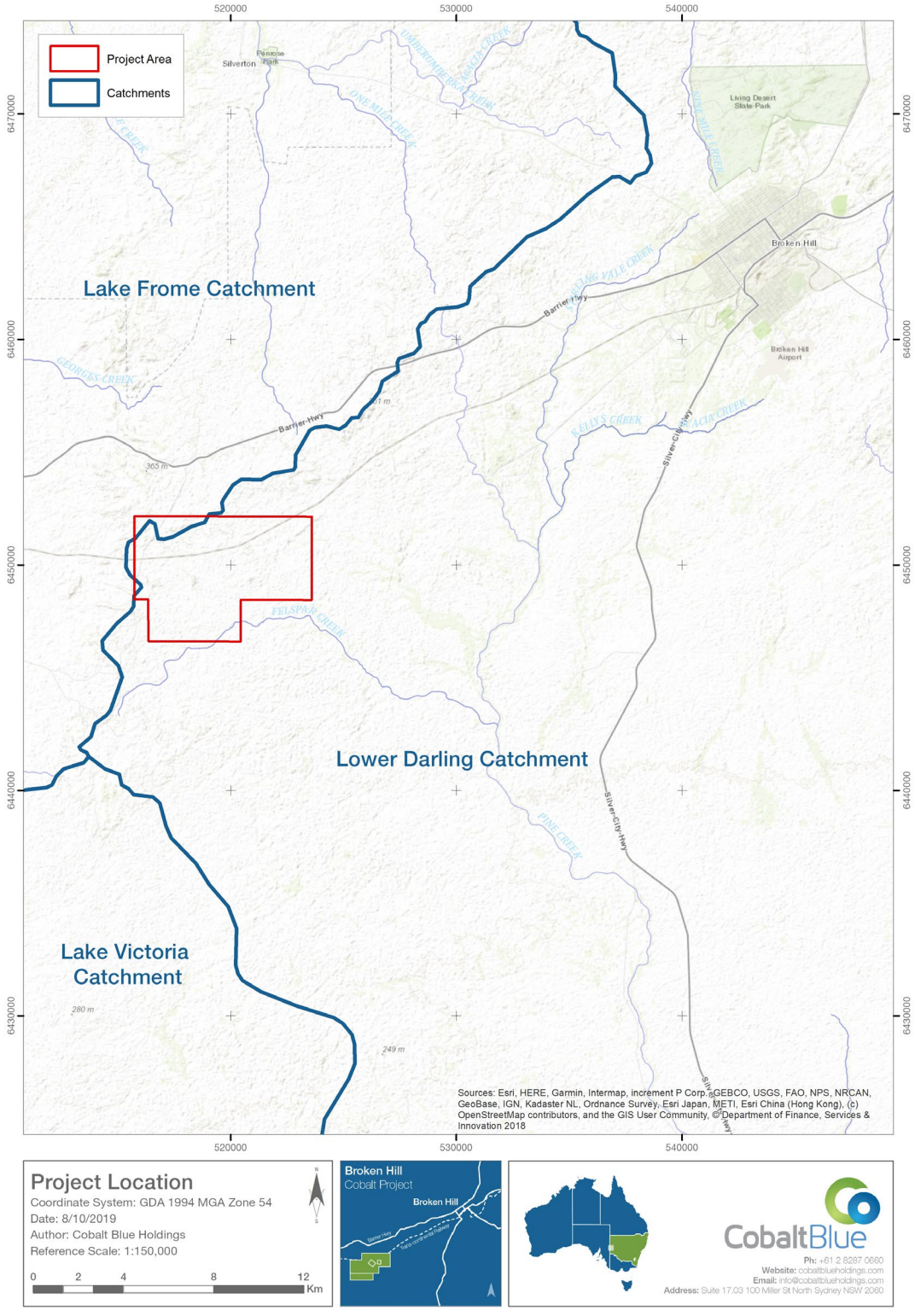


Figure 2: Regional topography and drainage

The Project will target the extraction of ore from three cobalt-pyrite deposits known as Pyrite Hill, Railway and Big Hill (referred to collectively as the Thackaringa Cobalt deposits). The Ore Reserve estimate comprises 118 Mt at 859 ppm cobalt equivalent (CoEq) for 81,100 t contained cobalt (at a 275 ppm CoEq cut-off) as reported to the ASX in August 2021 and detailed in Table 1 and illustrated in Figure 3.

Table 1: Mineral Resource estimates for the Thackaringa Cobalt deposits

	Mt	CoEq (ppm)	Co (ppm)	S (%)	Ni (ppm)	Contained Co (kt)	Contained S (kt)	Contained Ni (kt)
Pyrite Hill								
Measured	18	1,276	1,030	10.9	191	18.3	1,935	3.4
Indicated	7	931	742	8.5	141	5.3	613	1.0
Inferred	6	1,171	943	10.1	174	5.9	627	1.1
Total	31	1,176	946	10.2	176	29.5	3,179	5.5
Big Hill								
Indicated	11	742	604	5.8	129	6.7	644	1.4
Inferred	7	655	529	5.4	105	4.0	404	0.8
Total	19	707	574	5.6	119	10.7	1,041	2.2
Railway								
Indicated	41	775	619	6.9	118	25.1	2,798	4.8
Inferred	28	727	571	7.0	116	15.8	1,938	3.2
Total	68	755	599	6.9	118	40.9	4,709	8.1
Total								
Measured	18	1,276	1,030	10.9	191	18.3	1,935	3.4
Indicated	59	788	631	6.9	123	37.1	4,062	7.2
Inferred	41	781	619	7.2	123	25.6	2,979	5.1
Total	118	859	687	7.6	133	81.1	8,968	15.7

The Mineral Resource estimates for the BHCP deposits (at a 275 ppm CoEq cut-off) detailed by Mineral Resource classification (CoEq = Co + S % × 18.0078 + Ni ppm × 0.2639)

A geological model of the Mineral Resource was developed to provide the Measured, Indicated and Inferred Categories. In addition, geotechnical test work on drill core provided data to allow for the development of safe and stable pit batter and inter-ramp slope angles, bench heights and berm widths. This information was used to develop a mine plan based on Whittle pit shell optimisation.

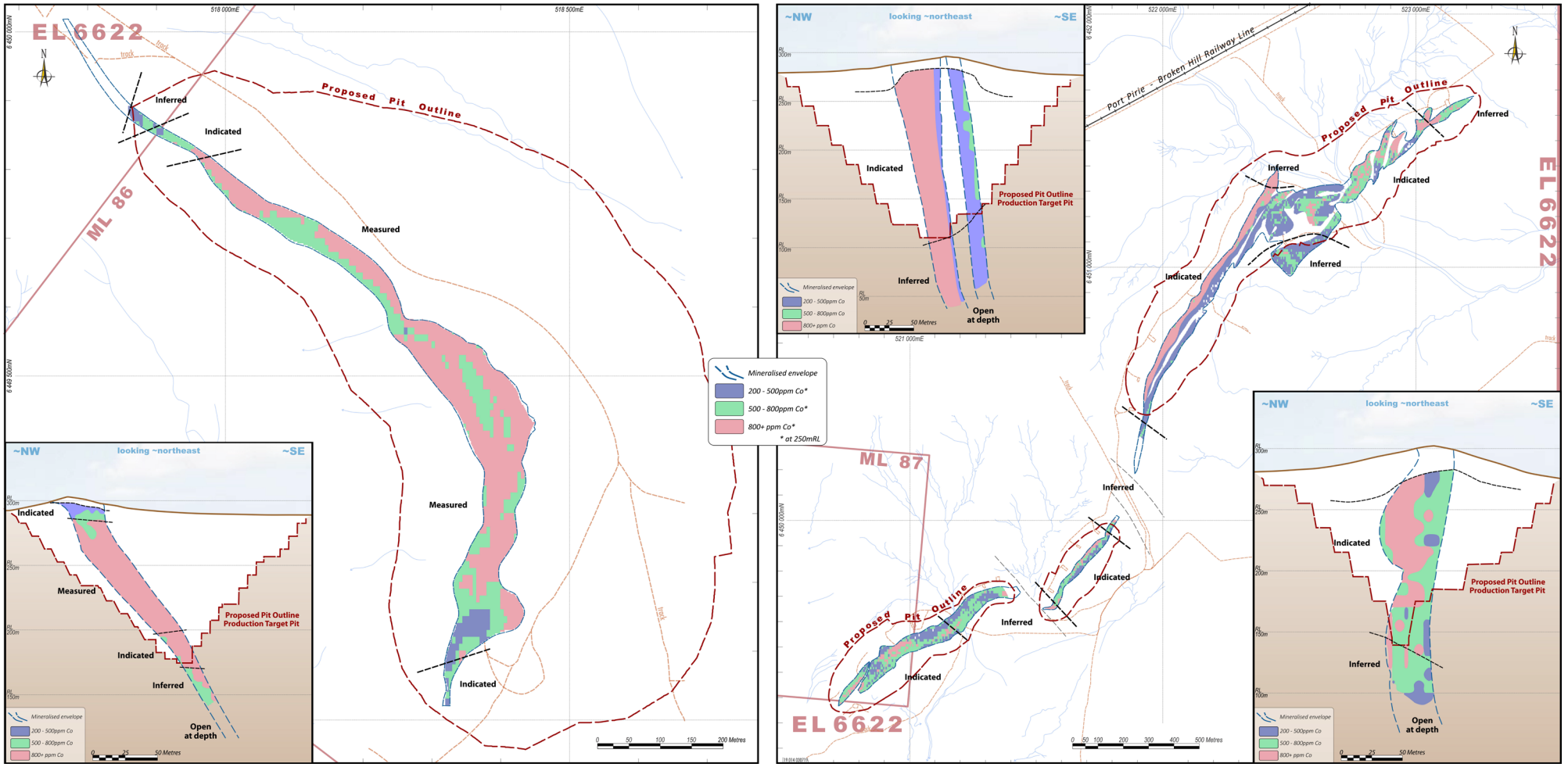


Figure 3: Ore classifications and grades with indicative pit geometries

2.1. Project Activities

The Project is focused on mining the cobalt-pyrite ore, concentrating the pyrite from the ore, and then processing the pyrite concentrate to recover cobalt. After a review of the current and forecast market for cobalt, the target end product selected is an intermediate mixed cobalt-nickel hydroxide and/or high purity cobalt sulphate heptahydrate. These cobalt chemicals are used in the production of battery cathodes. A schematic of the generalised project process is shown below in Figure 4.

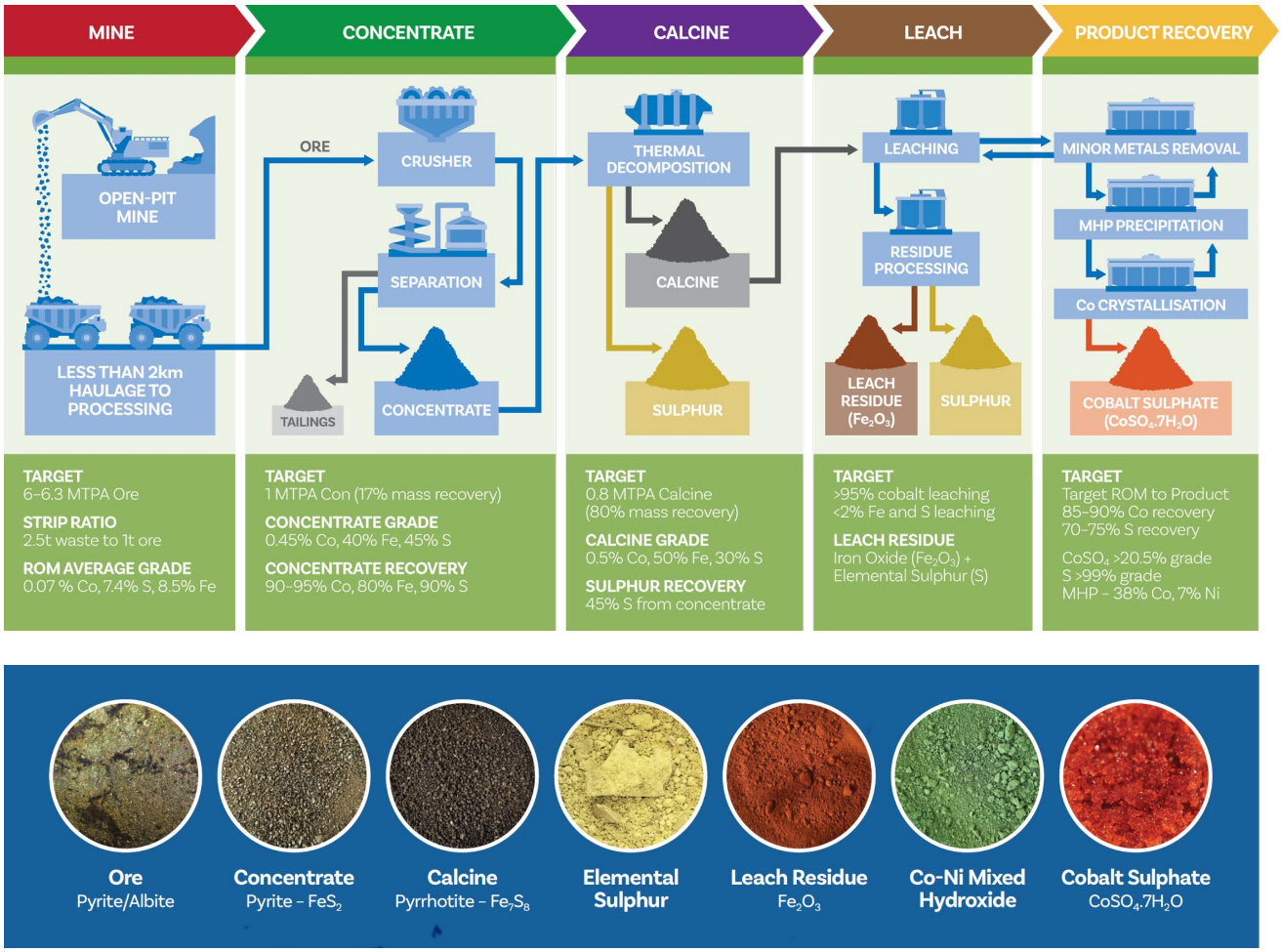


Figure 4: Generalised recovery, concentration and refining process

2.1.1. Mining Operations

The Project involves open cut mining operations comprising four open pits, namely;

- Pyrite Hill.
- Railway (potentially Railway could be mined in two open cut pits).

- Big Hill (North).
- Big Hill (South).

The Project may operate several open cut pits simultaneously that will extract pyrite ore using conventional drill and blast, load haul and dump methods to produce up to 6.7 Mt ore per annum. Preliminary mining optimisation studies indicate that approximately 100 Mt of ore would be extracted over the duration of the Project. This would require waste rock in the order of 360 Mt to be removed to access the ore over the duration of the Project at a rate of up to 32 Mt per annum. It is envisaged that the mining operations will span approximately 20 years. It is proposed that mining will be conducted on a dual shift operation seven days per week for 365 days of the year.

Other associated infrastructure and activities that would support the mining operations include:

- Staff and contractor amenities such as crib rooms, office / training spaces, parking.
- Heavy vehicle maintenance facility, fuel storage and refuelling infrastructure, spares store and waste management (oils, tyres, general wastes).
- Heavy mining equipment such as excavators, haul trucks, drills, stemming loaders, water cart, grader, dozer, service and fuelling trucks, cranes, tyre handler, forklifts and telehandlers and light vehicles/busses.
- ROM ore pads, ore, topsoil and NAF waste rock stockpiles. ROM pads and stockpiles will be used to facilitate blending, optimise downstream processing and stockpile lower grades for processing later in the mine life. NAF waste rock and topsoil stockpiles will be reserved for site rehabilitation.
- Mobile pit lighting.
- Explosives magazine, preparation and handling facilities.
- Heavy vehicle haul roads, signage, berms and drainage infrastructure.
- Water management infrastructure such as creek diversion channels and bunds, in pit dewatering pumps and ancillary water transmission equipment, raw water dams or tanks, site drainage associated with dump, road and stockpile infrastructure. Where it is practicable and feasible to do so, surface and ground water captured in areas disturbed by mining operations will be reused for dust suppression or other site uses.
- Pollution control and monitoring equipment such as water cart, oil/water separators, weather station, surface and ground water level and quality equipment. Trials of waste and mine site rehabilitation practices.

The design of the open cut pits and associated infrastructure, as well as the expected volumes of ore and waste rock extracted according to a mine schedule, will be refined and optimised through detailed mine planning and environmental impact assessment.

Coarse and fine tailings are produced during the gravity spiral and flotation concentration circuits, respectively, that produce the cobalt concentrate. Approximately 80% of the mined ore will report to tailings. Approximately 82 Mt of tailings and 14 Mt of leach residue will be generated over the life of the project (based on 100 Mt ore produced) – see Table 5 for a more detailed breakdown. Initial test

work indicates that the tailings are mildly acid forming and classified as PAF. The concentration of pyritic sulphur in the tailings is substantially less that the ore given that the bulk of the pyrite reports to the cobalt concentrate (see Table 4). The tailings readily settle, making dewatering possible with standard equipment prior to emplacement.

Several strategic management options have been investigated for tailings and waste rock, namely:

- Integrated Waste Landform (IWL) that combines both waste rock and process tailings into combined emplacement facilities. Integrating coarse waste rock and tailings has the advantage of increasing the bulk density of the emplacement and minimising void space available for oxygen and water flow, thereby minimising the potential for acid generation and transport, as well as reducing the footprint required for waste management facilities.

- Centrally Thickened Discharge (CTD) for the management of flotation tailings and leach residue. The CTD options would also require separate waste rock dumps. Here gravity tailings would be combined with waste rock to construct an IWL. The design criteria adopted for any CTD tailings management option will be based on the New South Wales Dam Safety Committee (NSW DSC) guideline DSC3F which is in line with the recommendations of the Australian National Committee on Large Dams (ANCOLD) guidelines. For any CTD option, a failure Consequence Category of “Significant” has been assessed, based on a Population at Risk (PAR) of less than 1 whereby there will be no persons permanently located downstream of the proposed CTD storage facility. An environmental consequence of failure of “Major” has been adopted due to tailings being considered as PAF, even though the receiving environment is considered to be remote / degraded. Any CTD Option would be classified as a declared dam under the NSW DSC guidelines, and as such be regulated in accordance with the Dams Safety Act (2015).

- Dry Stack (DS) for the management of process tailings that would also require separate waste rock dumps. Here tailings would be dried, placed and compacted within a tailings storage facility.

The DS and IWL storage options are not considered to be typical tailings dams and as such do not need to be assessed for Consequence Category. All tailings or waste rock/tailings facilities will be progressively rehabilitated, and a long term physical and chemically stable landform will be engineered prior to Mining Lease relinquishment using similar processes described in Section 2.1.2.

The selection of the preferred tailings and waste rock management strategy has been based on a number of selection criteria including;

- Overall water consumption with the objective to minimise water use.

- Capital, operational and rehabilitation costs.

- Ability to progressively rehabilitate to form long term physically and chemically stable landforms.

- Environmental performance and ability to avoid/minimise acid generation.

- Risks (technical, operational etc).

- Monitoring and regulatory requirements (eg, Declared Dam surveillance requirements)

Cobalt Blue has selected IWL as the preferred mining waste management strategy.

An indicative site layout showing the open cut pits, IWLs, processing plant and other infrastructure is shown in Figure 5.

Depending on mine schedule and technical considerations, cost and regulatory requirements, Cobalt Blue will endeavour to fill the open Big Hill voids with processing and/or mine wastes towards the end of the Project as part of site rehabilitation. These filled voids will be capped in a similar manner to IWLs. At this stage, the Pyrite and Railways voids are not planned to be filled so that the remaining cobalt bearing ore is not sterilised for future extraction operations.

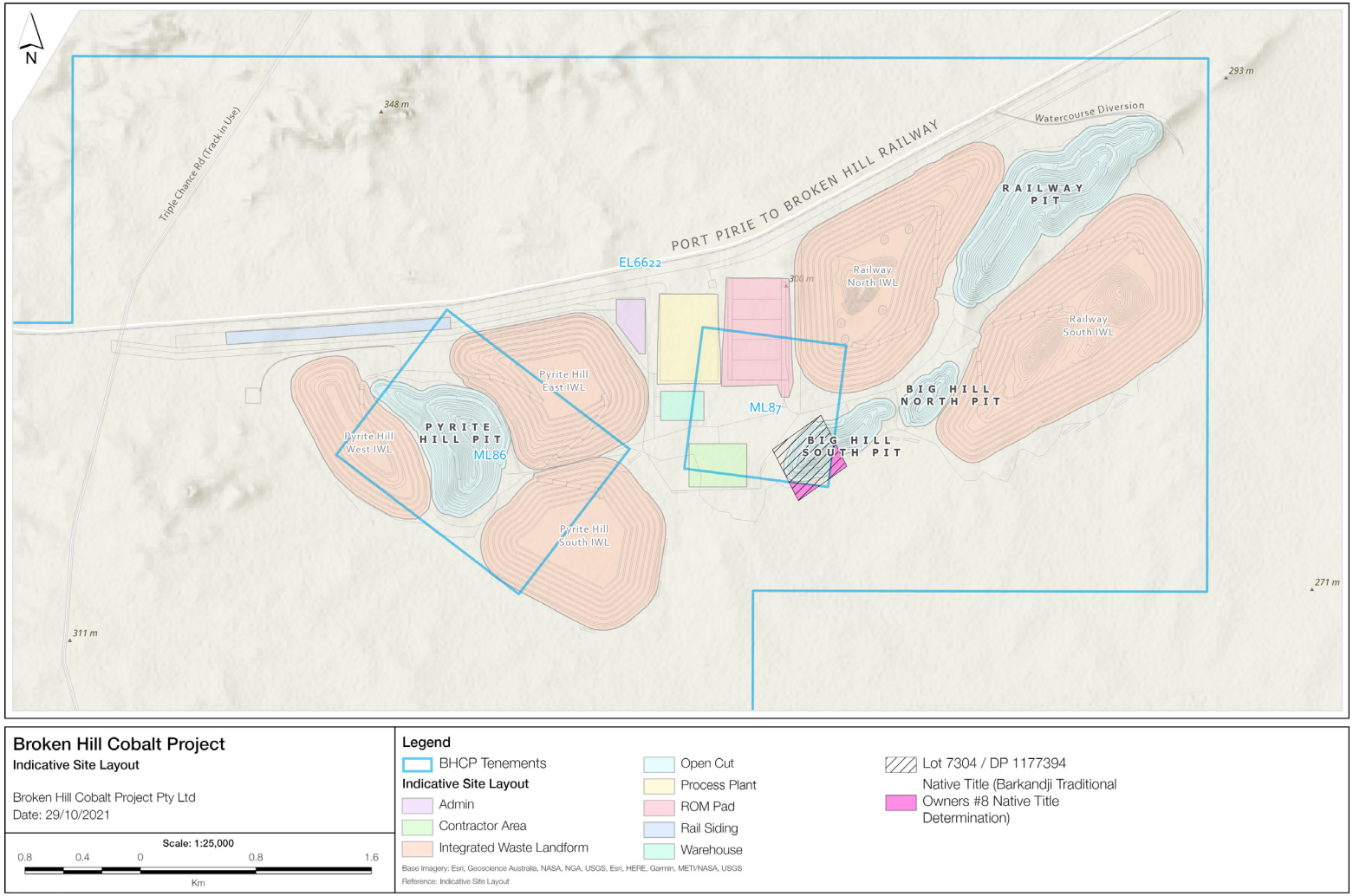


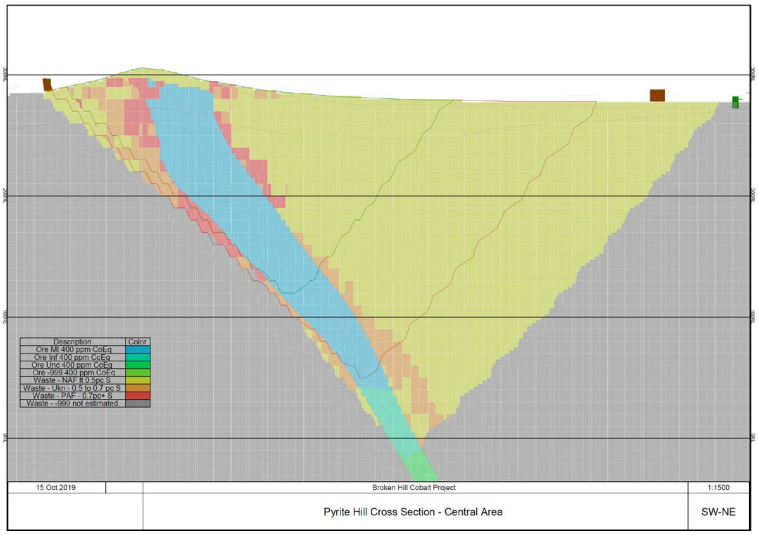
Figure 5: Indicative site layout

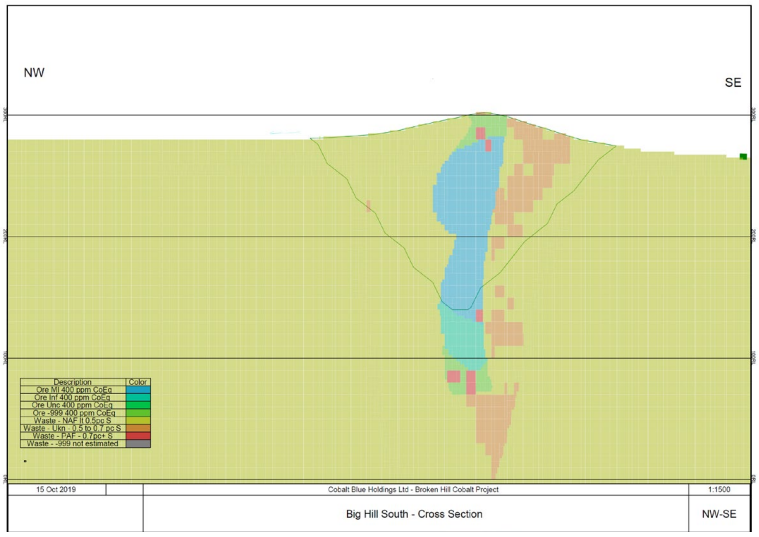
Further investigation of the operational and environmental performance, linkage to mine schedule(s), ore grades and project valuation is required to optimise the waste management strategies. In particular, opportunities to minimise the volume of waste rock extracted and to maximise in-pit waste management options for waste rock and/or tailings by backfilling completed mine voids will be considered. Where pit backfilling is technically achievable and financially comparable to other alternatives, then waste emplacement within completed mine voids may be preferred however the opportunity cost of this option is the sterilisation of open cobalt ore at depth. However, schedule and cost constraints dictate that not all voids will be able to be filled.

2.1.2. Geochemical Considerations for Waste Rock and Tailings

Two primary types of rock waste will be generated by the Project, namely potentially acid forming waste (PAF) and non-acid forming waste (NAF). Integrated Waste Landforms (IWLs) are intended to be located close to the open cut pits to minimise haulage and will be designed with a capacity to incorporate all waste rock extracted, and tailings generated, from the Project. All IWLs will be designed to encapsulate PAF material with sufficient NAF to minimise ongoing acid generation and to provide a long term stable landform. A compacted NAF base will be constructed prior to waste emplacement operations. Progressive encapsulation and rehabilitation of the IWLs will be undertaken where possible throughout the Project life. A long term stable landform will be designed. Given the semi-arid climate, a store and release cover system that may include a capillary break layer as part of the cover design will be implemented to minimise water infiltration through the potentially acidic waste material as well as minimising oxygen transport to the potentially acid forming waste. The cover system would result in a rock mulch surface with oxide rock and/or soil in the mulch pore space to provide growth media for native vegetation. The finalised landform would be seeded with endemic vegetation species. The rock mulch would also provide habitat for the Barrier Range Dragon. During operations, under-flow and surface runoff from the IWLs will be directed to open cut voids or seepage collection dams where it is possible to do so.

Waste rock characterisation is currently being undertaken to delineate a PAF/NAF cut off based on criteria published in the ARD Test Handbook (AMIRA, 2002) and similar guidelines (also see Section 5.1 Waste Management and Acid Mine Drainage). Waste rock volumes and types (NAF or PAF) will be refined and optimised (with an overarching design principle to minimise rock waste generation and especially PAF) during the preparation of the EIS. Waste rock characterisation undertaken to date indicates that the ratio of PAF to NAF is about 40:60, indicating that sufficient NAF is available to ensure complete encapsulation of the PAF. Ore and waste rock block model cross sections for the mining areas have been developed to show the distribution and classification of rock types. Samples of these block model cross sections are shown in Figure 6.





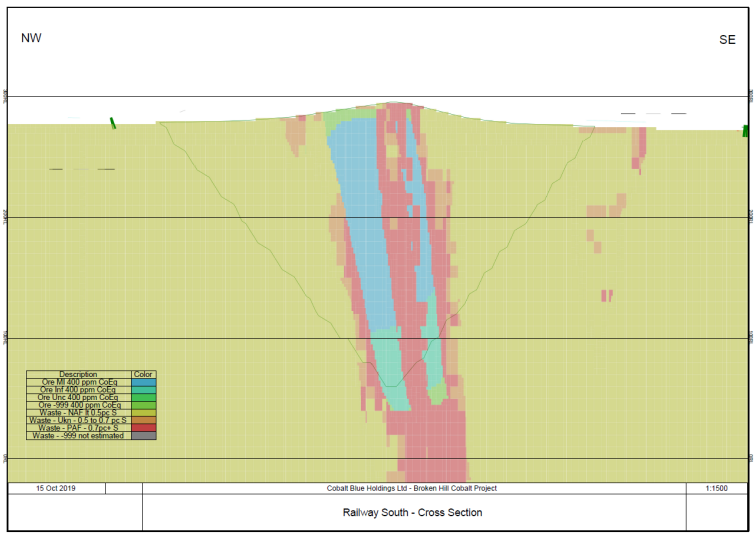


Figure 6: Ore and Waste Block Model

2.1.3. Processing Operations

The overall metallurgical processing operation is divided into five stages.

1. The first stage is comminution where the ore is crushed to a particle size less than 1.2 mm diameter.
2. The second stage is concentration of the pyrite from the ore by gravity separation and flotation.
3. The third stage is thermal treatment of the pyrite to produce artificial pyrrhotite.
4. The fourth stage is leaching of the artificial pyrrhotite and production of a mixed-hydroxide precipitate.
5. The fifth stage is refining of the mixed-hydroxide to produce cobalt sulphate crystals.

These stages are described below, and a block diagram of the process is shown in Figure 7.

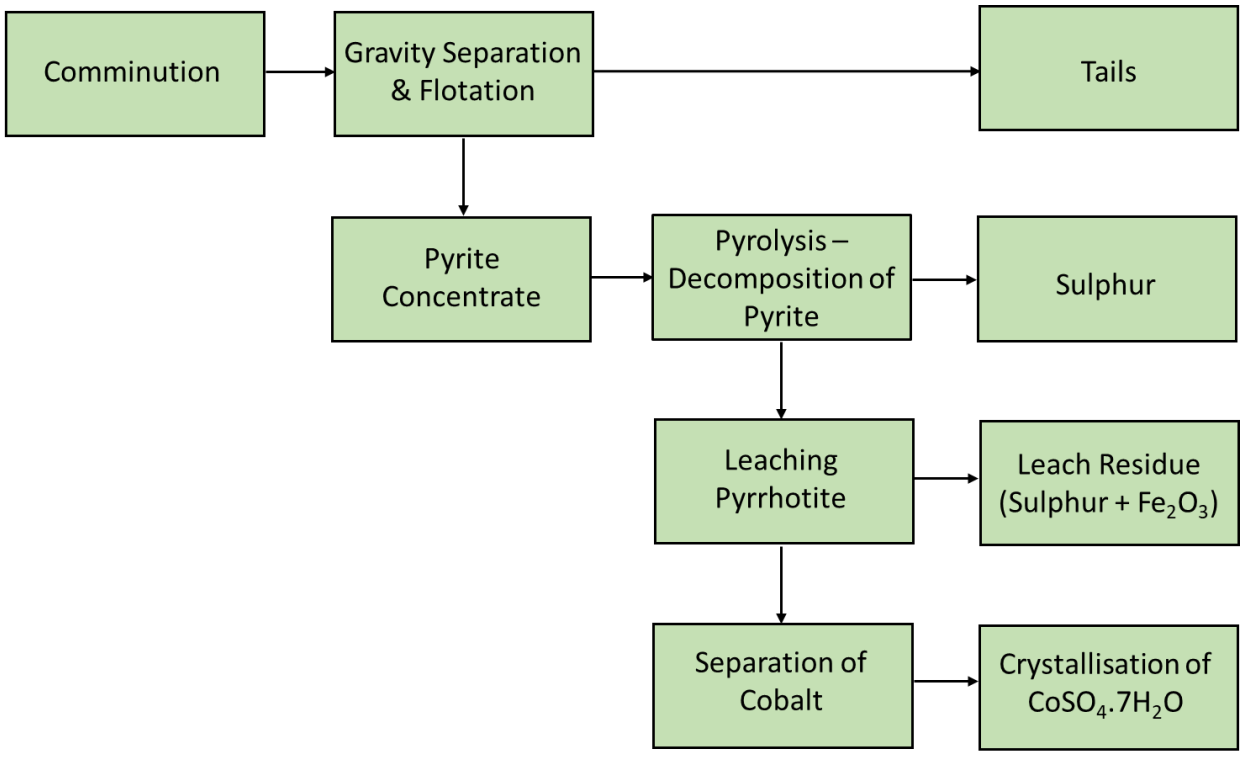


Figure 7: Key processing stages

Stage 1: Comminution

The mined ore is crushed to p80[1] ~ 800-900 µm (p100 1.2mm) using multiple crushers then mixed with water to form a slurry and fed to the concentration circuit.

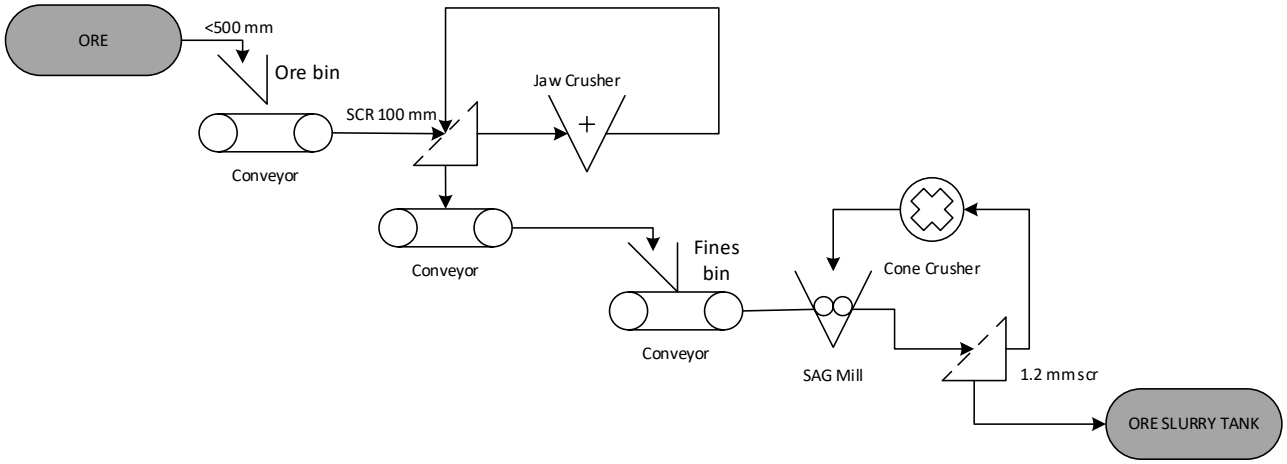


Figure 8: Comminution Circuit

Stage 2: Concentration of pyrite from ore

The ore slurry is passed over gravity spirals to produce a pyrite concentrate. The gravity tails are screened and the fines fraction (<125 µm) is sent to a scavenger flotation circuit to recover any sulphides. The use of gravity spirals takes advantage of the coarse pyrite grains (p80 200-800 µm) and limits costs associated with crushing and milling, as would be the case for a typical flotation circuit requiring feed at p80 100-200 µm.

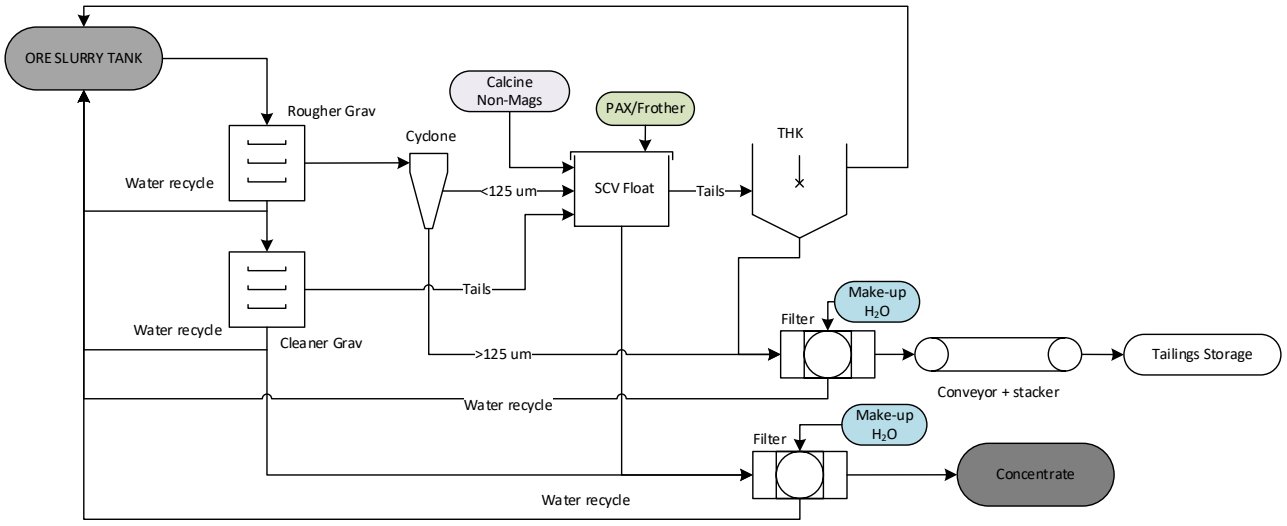


Figure 9: Concentration Circuit

[1] 80% of material below the stated diameter

Stage 3: Thermal decomposition (pyrolysis) of pyrite concentrate

The pyrite concentrate is thermally decomposed into an artificial pyrrhotite and elemental sulphur by heating to 650-700°C in a rotary furnace. A nitrogen atmosphere is used to prevent any sulphur oxidation. The off-gas is collected and cooled to recover elemental sulphur. More than 95% of the pyrite is converted into artificial pyrrhotite along with the simultaneous recovery of at least 40% of the head content of sulphur. The calcine is then passed through a magnetic separator to prepare a magnetic fraction containing artificial pyrrhotite for leaching, and a non-magnetic fraction containing unreacted pyrite for recycling back to the concentrator circuit.

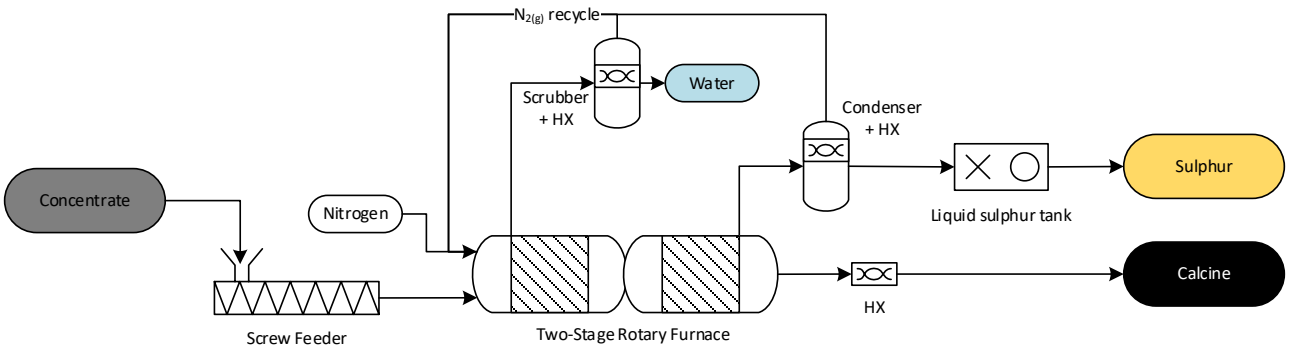


Figure 10: Thermal decomposition using pyrolysis

Stage 4: Leaching and Production of Mixed Hydroxide Precipitate

The artificial pyrrhotite is leached in a low-temperature (130 °C) and pressure (10-15 bar) autoclave. A chloride brine is used to preferentially control iron precipitation as hematite. This also permits the use of calcium based alkalis (e.g. limestone) in the neutralisation circuit without the attendant issues of gypsum scaling as would be present in a sulphate media circuit. Further, the chloride brine permits recycling of acid and oxygen through the ferric/ferrous oxidation couple.

The resulting leach residue is screened, and the coarse fraction is sent for sulphur recovery by remelting and/or distillation in a furnace. The fines fraction is discarded as tails from the process plant.

The resulting leach solutions are treated to remove iron, copper and zinc before precipitating the cobalt as a mixed metal hydroxide (cobalt along with nickel and manganese). This circuit is currently being optimised and so the process may be adjusted or additional process steps added.

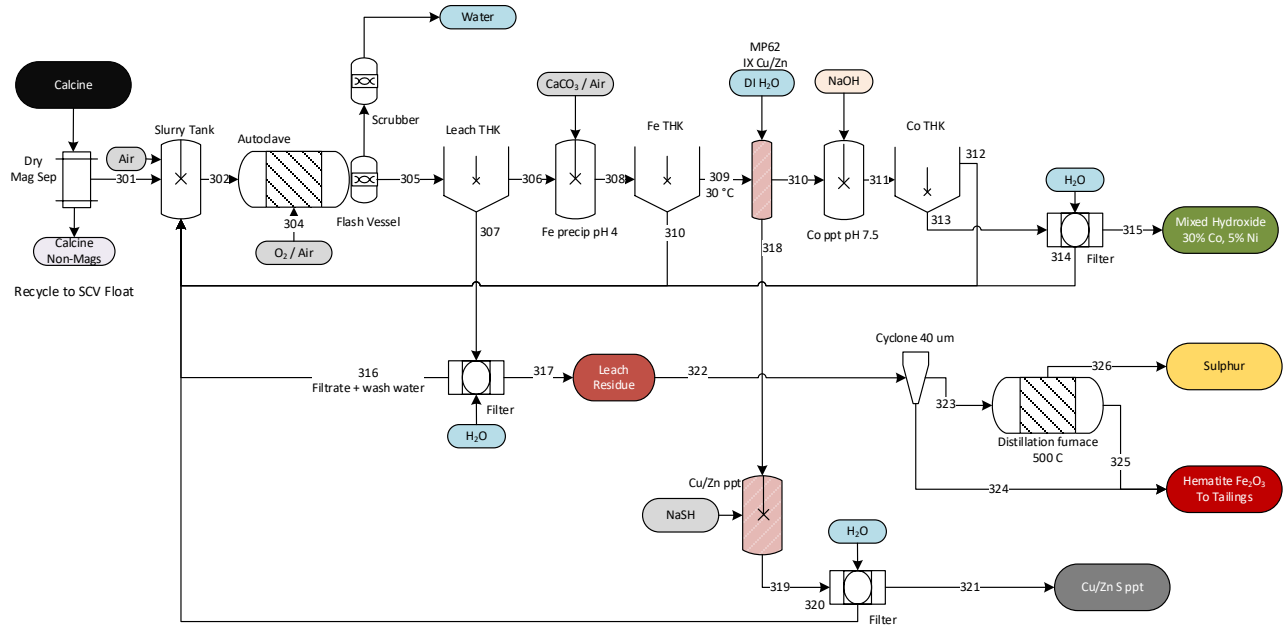


Figure 11: Leaching to produce mixed metal hydroxide and sulphur

Stage 5: Refining of the mixed hydroxide precipitate to produce cobalt sulphate crystals

The mixed-hydroxide is redissolved in a sulphate media, and then passed over a cationic resin (VP OC 1026) to remove manganese, and any trace amounts of iron, calcium, copper, and zinc. The resulting liquor is then sent to a solvent extraction circuit to sequentially extract cobalt and nickel using Cyanex 272. The respective strip solutions from the organic phases, are directed to crystallisers for the production of cobalt sulphate and nickel sulphate crystals. The crystals are assayed, bagged and packed into containers to await export from site.

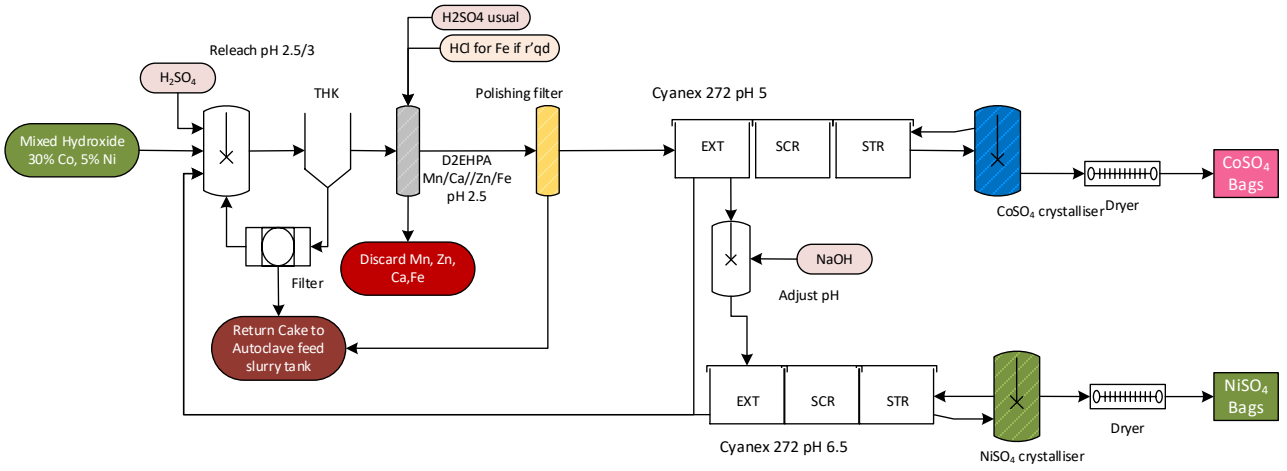


Figure 12: Refining to remove impurities and produce cobalt sulphate

Figure 13 shows the indicative layout of the five components of the mineral processing plant and ancillary infrastructure. The processing infrastructure will be located centrally on the Project Site and close to the railway siding to minimise ore and product haulage distances.

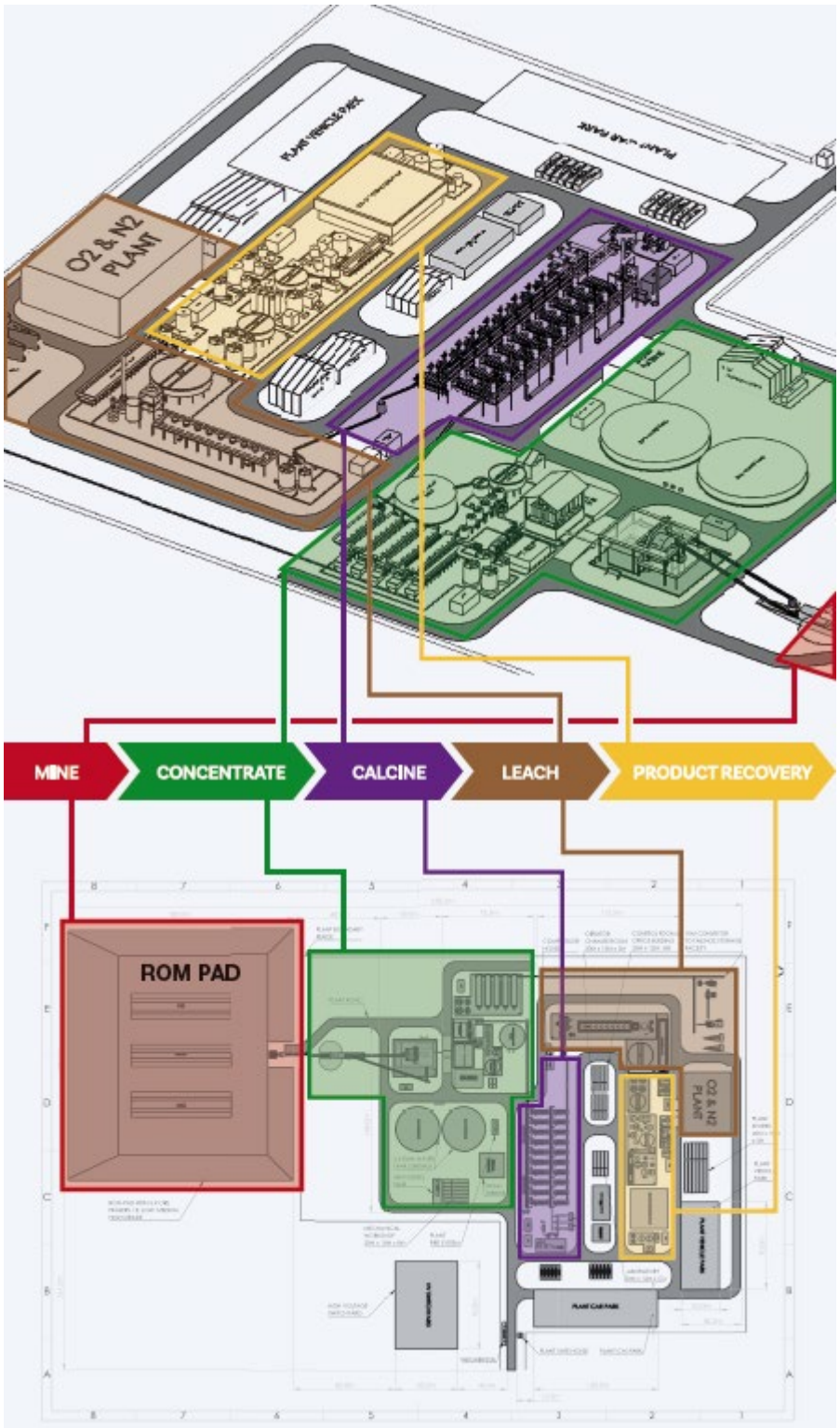


Figure 13: Processing Plant Infrastructure

2.1.4. Water Supply

A preliminary water balance has determined that approximately 1.5 GL per annum of water is consumed in the annual processing of 6.7 Mt ore. Essential Water have confirmed that up to 1.5 GL per annum is available to be supplied to Cobalt Blue at a metered take-off point on the western outskirts of Broken Hill, from where it will be pumped to the Project Site in a buried pipeline adjacent to the railway line.

The raw water is received into water tanks at the processing plant site and pumped to meet the needs of the processing plant, including maintaining a minimum level in the process water tanks. A fire water system is located throughout the plant for fire suppression, except for the solvent extraction area which will have a dedicated fire foam system. A fire fighting foam will be selected to ensure it does not contain per- and poly-fluoroalkyl substances (PFAS).

The raw water is pumped and treated to drinking water quality and delivered to safety showers located throughout the process plant. Cleaned water is also used to supply heat exchangers, in turn generating steam for supplying the site generator. Some of the low-grade hot water is also used for solution heating in solution purification and crystallisation areas.

Where Water Access Licensing allows, groundwater may be extracted from the aquifer that will be mined for use in ore processing or other site processes. The groundwater is highly saline, low pH and contains elevated concentrations of cobalt (from naturally occurring oxidation of the ore body) which may be able to be recovered in the processing operations. This groundwater will be affected from aquifer interference drawdown from the open cut mining operations. Water collected in the open cut pits will be reused on site. The BHCP has secured 650 unit shares of groundwater from the relevant Water Sharing Plan areas. Water Access Licenses from the Controlled Allocation have been granted by NRAR. The BHCP has made an application for a further 100 unit shares of groundwater from the 2021 Controlled Allocation.

Rainfall that falls within disturbed areas of the mine will be captured and treated in stormwater basins designed in accordance with Managing Urban Stormwater: Soils and construction, Volume E: Mines and Quarries. Where practicable, captured dirty water will be reused for operational purposes such as dust suppression, vegetation establishment in rehabilitation areas, tailings management and the like. Clean water diversions will be in place surrounding the mine to ensure upstream catchment surface water flows bypass the mine and continue to flow downstream.

2.1.5. Power Supply

A TransGrid substation is located on the western outskirts of Broken Hill. A 220kV to 66kV step down transformer will be required and is planned to be placed adjacent to the existing substation. 66kV power will be provided to site by overhead transmission wires and poles running parallel to the rail line. Power demand at site will be in the order of 75MW.

A HV switchyard will be located nearby to, but isolated from, the Project process plant site in a fenced HV area. The main power consumers in the process plant such as dryers, furnaces, oxygen/nitrogen gas plants, and mill are supplied with 11kV to local switchboards and feeders. A turbine generator will feed energy back into the 11kV switchboard from the steam recovery system associated with the autoclave.

Alternative power generation options may also be considered. This might include transmission of natural gas from the Moomba to Adelaide pipeline to site, then on-site generation of electrical power using generators and/or gas firing of furnaces. Augmentation from solar and/or wind generation, as well as back up battery storage or diesel generation, may also be considered.

2.1.6. Road Access

An upgrade to the access road (the Triple Chance mine road) and rail crossing to Project site from the Barrier Highway will be required to accommodate construction traffic and access by light and heavy vehicles during operation. Process plant site roads, generally at width of 8 m, are graded to provide water runoff to drains and culverts to direct water flow and collect at specified points where solids can settle out.

2.1.7. Inbound Logistics

The main plant access road will have a security hut and communications protocols to the control room, required for site access. Delivery vehicles will cross a weighbridge upon site entry and exit for recording of deliveries and for accounting purposes.

Deliveries by road are also weighed and volumes delivered are recorded. Similarly, any inbound consumables that are delivered by rail (for example, diesel) will be metered upon discharge prior to reticulation to storage tanks.

Reagent delivery tankers/trucks drive to receiving tanks located adjacent to the site roadways and a local pump is used to fill each dedicated storage tank. Connections from the tankers to offloading, differ to ensure the correct tank is filled, avoiding potential harm and any environmental issues.

2.1.8. Internal haul roads and infrastructure pads

Site infrastructure such as haul roads, ROM pads, IWL bases will be constructed using NAF waste rock which will be sourced on site during initial mine development.

2.1.9. Product Transport

A rail siding approximately 2km long as well as ancillary signalling and road crossing will be constructed adjacent to the Broken Hill rail line.

Products such as cobalt sulphate heptahydrate and elemental sulphur are planned to be containerised on-site prior to dispatch to customers. Each container is coded and weighed before exiting the plant site. The containers are transported to, and stacked, at the rail siding for loading by

forklift onto rail wagons then transported either directly to domestic customers or to a South Australian port for shipping to domestic and/or international customers. Other options such as the use of bulk bottom dumping rail wagons will be investigated. The cobalt product will be transported by rail transport to domestic customers and/or a South Australian port for shipping to international customers. Cobalt sulphate could also be transported by truck if customers are unable to receive rail deliveries.

If the low grade haematite can be developed into a saleable product, it will be transported by rail, either in containers similar to the sulphur or in bottom dumping wagons to domestic customers or to a South Australian port for export.

2.1.10. Products

Cobalt

Cobalt is a key metal required for both metallurgical and chemical industries. Cobalt demand is split into “new” and “old” economy drivers:

1. Battery precursor materials, as a means of distributed energy storage and for powering Electric Vehicles (EVs); and

2. Superalloys used in high temperature speciality applications such as aircraft engines

Cobalt supply remains tightly held by a few commercial interests, and is largely sourced geographically from Africa (71% of 2020 global supply from the Democratic Republic of the Congo). Uncertainty of supply remains a key risk for global consumers and will add to the price premium commanded by cobalt over the next 10+ years.

The Broken Hill Cobalt Project strategy is to develop an integrated mine/refinery concept. Traditionally, cobalt mines have sold cobalt as a by-product of either copper or nickel and received a fraction of the value of the contained cobalt. Cobalt Blue’s strategic focus is upon the battery industry and producing cobalt sulphate at a specification to enter the production chain directly. This allows Cobalt Blue to sell directly into the battery industry (specifically to cathode precursor manufacturers representing the front end of the industry). The global Mineral Resource estimate contains 81,400 tonnes of cobalt.

The cobalt will be sold as mixed metal hydroxide and/or cobalt sulphate heptahydrate. Approximately 16,700 tonnes per annum of refined cobalt sulphate would be generated by the Project. Mixed Metal Hydroxide is a stable green hydroxide precipitate. Cobalt sulphate heptahydrate ($CoSO_4.7H_2O$) is a stable, non-flammable red-brown crystal that is water soluble and solutions are mildly acidic (Figure 14). Mixed metal hydroxide and cobalt sulphate heptahydrate is classified in the Transport of Dangerous Goods Regulations as UN3288 Toxic solids, Hazard Class: 6.1 - Poisonous materials.

Figure 14: Cobalt sulphate heptahydrate (red) and Mixed Metal Hydroxide (green)

Sulphur

The BHCP Mineral Resource is characterised by disseminated to semi-massive pyrite mineralisation. Cobalt is substituted inside the pyrite mineral lattice and is not present as a discrete mineral. Minerals processing options are centred on recovering pyrite from the ore, and subsequent downstream treatment of the pyrite concentrate to extract the cobalt and sulphur.

Historically, commercial operations have roasted pyrite in oxygen, generating sulphuric acid. However, there is limited demand for sulphuric acid at/near Broken Hill, and any sales would compete against low-cost sulphuric acid generated at base metal refineries. Sulphuric acid production is energy intensive and often gives rise to the emission of sulphur gasses which can be harmful to the environment and human health.

An alternative to the production of sulphuric acid is the production of elemental sulphur. Elemental sulphur is mainly sourced from treatment of sour-gas from the oil and gas industry. There is no local producer in Australia, and hence this presents an opportunity for Cobalt Blue to displace imported elemental sulphur. Further, there is a growing Australian demand for elemental sulphur for production of fertilisers, and on-mine-site generation of sulphuric acid for metallurgical processing. Approximately 300,000 tonnes per annum of elemental sulphur would be generated by the Project.

Cobalt Blue seeks to generate elemental sulphur which has the following advantages over sulphuric acid:

- Ease to handle and transport.
- No alternate local supply within Australia.
- No sulphur emissions to air.

Commercially formed solid elemental sulphur is bright yellow in colour and is generally formed into solid pellets approximately 5 mm diameter (Figure 15). The elemental sulphur produced is very high purity (> 99%) and inert (that is – does not oxidise to form acidic sulphur gasses) at ambient temperatures.

Figure 15: Solid granules of elemental sulphur

Large volumes of solid elemental sulphur are generated as a by-product in the Canadian oil and gas industry. The management and processing of liquid sulphur to solid elemental sulphur is well understood and several robust proprietorial systems are available – for example https://www.enersul.com/sulfur-solutions/

Solid elemental sulphur is often stored in outdoor stockpiles and handled using conventional bulk granular materials handling systems such as conveyors, stockpile reclaimers, and road, rail and ship loaders (Figure 16). Standard dust and environmental controls are employed. Elemental sulphur is imported at Berth 29 at Port Adelaide.

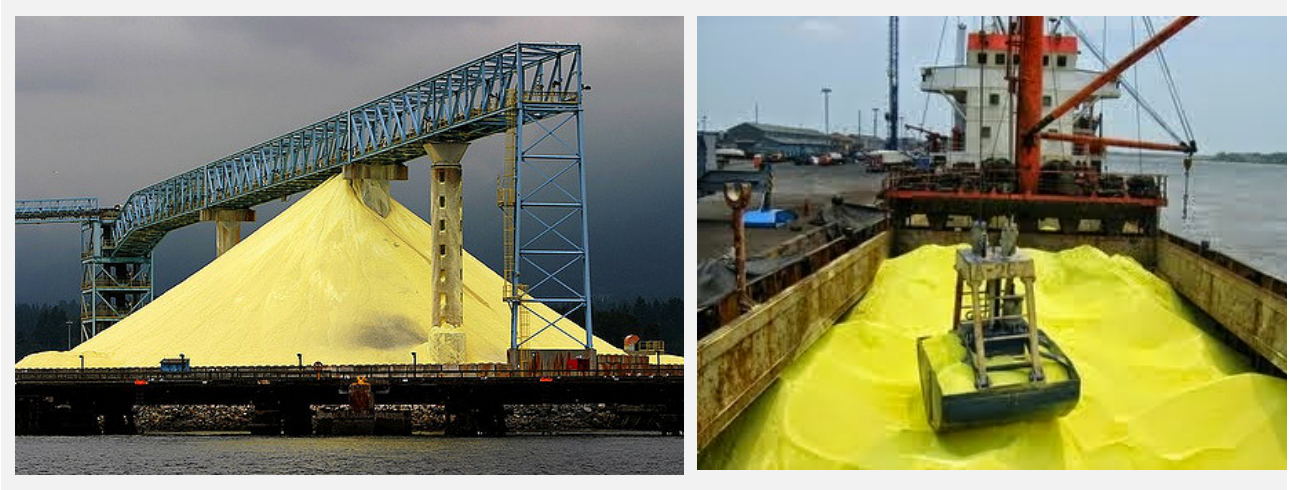


Figure 16: Sulphur stockpiles and ship loading in Canada

Solid elemental sulphur is classified in the Transport of Dangerous Goods Regulations as a Class 4.1 Flammable Solid, Category I, with special provision 33 which exempts commercially formed

sulphur from classification under Transport of Dangerous Goods Regulations as a Class 4.1 flammable solid. This exemption resulted from the test data submitted to the regulatory authorities on the rate of flame propagation in standard tests of the various types of commercially formed solid elemental sulphur that are commonly used in road or rail shipment of the product. As a result the Schedule 2 special provision 33(b) was applied to UN1350 Sulphur – which states "these regulations do not apply to these dangerous goods if the dangerous goods have been formed to a specific shape such as prills, granules, pellets, pastilles or flakes".

2.1.11. Rehabilitation, landform and final landuse

The Project is in generally flat, semi-arid, chenopod country located within a single grazing property that operates under a perpetual Western Land Lease ('Thackaringa Station'). The land is used for low intensity sheep grazing and mining exploration activities. Thackaringa Station is approximately 66,000 ha.

The IWLs will be progressively rehabilitated over the life of the Project to create a long term physically and chemically stable landform that is able to sustain native vegetation cover (or other agreed final landuse). Recovered NAF rock will be used to create habitat for the Barrier Range Dragon as progressive rehabilitation of waste emplacements takes place. Preliminary design of IWLs has incorporated height and shape geometries to be sympathetic to the local landform of the Barrier Ranges. Given the arid climate where rainfall is approximately 10% of annual average evaporation, excess moisture in the IWLs is likely to evaporate and acid salts will be contained in the storage facilities. It is proposed that tailings from the process plant will be dewatered prior to emplacement to minimise leachate in the IWLs and to recycle the recovered water in processing plant operations. Any supernatant water from tailings management would be returned to the processing plant for reuse. A long term stable landform will be designed. A store and release cover system that may include a capillary break layer as part of the cover design will be implemented to minimise water infiltration through the potentially acidic waste material as well as minimising oxygen transport to the potentially acid forming waste. The cover system would result in a rock mulch surface with oxide rock and/or soil in the mulch pore space to provide growth media for native vegetation. The finalised landform would be seeded with endemic vegetation species. The rock mulch would also provide habitat for the Barrier Range Dragon. Under-flow and surface runoff from the waste rock dumps will be directed to open cut voids or seepage collection dams where it is possible to do so. Where the mining schedule allows and based on reasonable cost considerations, waste rock (and tailings) will be emplaced in completed open cut voids (or areas within the voids) to minimise disposal in ex-pit waste rock dumps. In pit waste management options will be rehabilitated and final landforms created in a similar manner to ex-pit waste management alternatives.

Any drainage from the IWLs during operations will be directed to the open cut voids or reused on-site. Opportunities to completely or partly fill the open cut voids with waste rock and/or tailings will be explored but will be dependent on mine schedule, emplacement methods and cost considerations. The final pit voids would accumulate localised surface runoff, any drainage from the waste rock dumps and tailings storage facilities, and groundwater seepage. It is unlikely that they will accumulate sufficient water to maintain a permanent pit lake. All infrastructure, utilities and disturbed areas would be decommissioned and returned to the pre-existing landform in consultation with relevant stakeholders. Where it is possible to do so, adaptive reuse of buildings, infrastructure or utilities will be considered.

2.2. Employment

At full production, it is estimated that total employee numbers will be approximately 410 full time equivalent positions. During construction it is estimated that 450 personnel will be required for about two years. Site personnel will preferably be based in Broken Hill. Where it is possible to do so, shift based employees will be transported to site by bus.

2.3. Hours of operation

The Project is a large scale mining and processing operation and would operate on a 24 hours per day, seven days per week basis.

2.4. Capital investment

The indicative capital cost of the Project is $550-600m. The capital investment value will be further refined during the Feasibility Study and presented in the EIS.

2.5. Mining royalties

Depending on the global price for Cobalt, based on an annualised ore production rate of 6.5 Mt, the Project has the potential to contribute in the order of $14 m/year in royalties to the NSW Government.

2.6. Project Schedule

The project is currently undertaking Feasibility Studies and a decision to mine is expected to be made in 2023. Project Approvals will be sought during the Feasibility Study period.

Construction of the proposed mine and processing plant will take approximately two years. A ramp up phase to achieve an annual ore production of 6.7 Mt will take about two years. The life of mining operations is expected to be approximately 20 years, with a further two years of processing to consume all remaining ore stockpiles. Demolition, rehabilitation and closure monitoring would then follow until the Mining Lease can be relinquished.

2.7. Project Benefits

The mining of cobalt ore and its value-add processing to crystalline cobalt sulphate heptahydrate that can be marketed directly to battery manufactures represents a unique opportunity for Australia's contribution to the development of new energy storage technologies. The Project will provide benefits at the international, national, state and local level.

Benefits from the Project occur through continued and additional employment for the mining and support services located in the Broken Hill area, expenditure on plant and equipment, export earnings, import replacement (particularly for elemental sulphur), and government revenue through royalties and taxes. Cobalt Blue will seek to attract skilled mine and process plant operators from the local area where mining employment opportunities are in decline. Employment flow on effects will extend more broadly to the western region of NSW, other manufacturing areas with NSW and Australia, as well as the providers of goods and services at the local, state and national level.

The 2020 pre-feasibility study update estimates indicated that the revenue of cobalt sulphate produced from the Broken Hill Cobalt Project exceeds A$3Bn, with an additional A$500m from the sale of elemental sulphur.

The innovative processing technology has potential application for similar ores and mine tailings in other parts of Australia. This may facilitate the recovery of valuable minerals currently locked up in mine waste tailings.

The development of cobalt sulphate in Australia provides a missing link in being able to provide all the necessary minerals in the correct form and ratios for downstream domestic battery precursor material manufacture. The Project will also generate elemental sulphur which is currently imported to Australia for use in agricultural and metal processing industries. Producing elemental sulphur in Australia will lower input costs for fertiliser manufacture and some metal processing operations by reducing transport costs. Australia can become the one stop shop for the supply of battery precursor materials, and perhaps to further facilitate investment in downstream battery and energy solutions manufacturing in Australia.

The production of cobalt sulphate for the manufacture of batteries is an important component that will help facilitate decarbonising the global economy and the broad scale adoption of alternative power generation technologies such as wind and solar that produce electricity on an intermittent basis and the adoption of technologies such as electric vehicles.

The BHCP is also considered important from a geo-political perspective, where the extraction and manufacture of cobalt chemicals will enable Australia to export cobalt (or cobalt chemicals) to selected partners, in alignment with national security and strategic interests, and provide new supply chains for the production of batteries.

Justification of the Project on social, environmental and economic grounds, including consideration of; the principles of ecologically sustainable development, Project alternatives, and a cost-benefit analysis, would be included in the EIS in accordance with the Guidelines for Economic Assessment of Mining and Coal Seam Gas Proposals (NSW Government, 2015).

2.8. Alternatives considered

A number of alternatives have been considered during scoping and pre-feasibility studies for the Project. A summary of these alternatives is provided in Table 2.

Table 2: Consideration of alternatives

Aspect	Justification
Do not mine	The Mineral Resource is estimated to contain 81,300 tonnes of cobalt. An innovative metallurgical processing technology has been developed to produce a high value cobalt sulphate. The Project provides significant economic benefit in comparison to the current land use. Shortfalls in global cobalt production are forecast post-2022.
Mine extraction method	The nature and spatial disposition of the ore bodies generally precludes underground mining operations on financial grounds given the current forecast price for cobalt. Underground mining options at the end of open cut mining were considered in order to maximise resource recovery. Underground mining options were discounted on financial, and to a lesser degree, technical mining considerations. Provision of an open void at the end of open cut extraction of Pyrite Hill would leave open the option of future underground mining options.
Mine schedule and production rate	Various mining schedules and production rates have been assessed to optimise project value. In addition, creation of available void volume as early in the project schedule for the emplacement of tailings and/or waste rock has been considered.
Mineral processing	Several mineral processing alternatives have been considered, including: a) Concentrate Pyrolysis (Decomposition) + Low Pressure Oxidation Leaching of the Calcine. b) Concentrate Roasting + Atmospheric Leaching of the Calcine. c) Conventional High-temperature Pressure Oxidation Leaching (POX) of the Concentrate. d) Concentrate Roasting + Acid Production + Calcine Leaching. e) Atmospheric Leaching of the Concentrate. The pyrolysis process, potentially allowing monetisation of cobalt, sulphur and potentially iron, represented the most desirable metallurgical process from an economic and environmental perspective.
Saleable product	Limiting the processing of the ore to the production of a cobalt-pyrite concentrate was considered. This would avoid most of the metallurgical processing required at site. This option was discounted on financial grounds. Generating cobalt-pyrite concentrate would generate approximately 35% of the revenue expected from the sale of cobalt sulphate. An option to limit the refining process to produce mixed metal hydroxide for refining elsewhere is still under consideration.

Aspect	Justification
Site layout	Ongoing exploration within the Project area has identified potential opportunities for Mineral Resource growth. These targets have been avoided by site infrastructure in order to avoid or minimise resource sterilisation. Site constraints such as; waterways, biodiversity and Aboriginal sites have been considered in site layout design with the aim of avoiding or minimising impacts.
Tailings management	Several tailings management options have been considered including; dry stacking, centrally thickened discharge, integrated waste landform and in-pit disposal. Factors such as: • Overall water consumption, • Expected capex/opex, • Rehabilitation and surveillance requirements, • Footprint, and • Technical, operational, environmental risks. have been considered in selecting the preferred tailings management strategy. Tailings management systems that require wet deposition and permanent water covers have been discounted given the climate / scarcity of water.
Power supply	Optimisation of the power supply strategy is continuing. The opportunity to provide solar PV and/or wind electricity generation either at site or via another location is being considered. Battery storage or diesel generation will provide backup power supply. Reticulation of natural gas to the site and the on-site generation of electricity from gas fired generators is also another power supply option. It may be possible to route electrical power along the Barrier Highway from the existing TransGrid substation in Broken Hill using the existing electrical distribution poles. Power would then be routed adjacent to the Triple Chance Road into the site. This easement is already highly disturbed.

3. Regulatory framework

3.1. Environmental Planning and Assessment Act 1979

Development consent for the Project will be sought under the State Significant Development provisions under Part 4 of the NSW Environmental Planning and Assessment (EP&A) Act, 1979. The EP&A Act and Regulations generally prescribe the framework for planning and environmental assessment in New South Wales.

Under section 4.36 of the EP&A Act, a class of development such as mining may be declared as State Significant Development by a State Environmental Planning Policy (SEPP). Clause 8 of the State and Regional Development SEPP provides that a development is declared to be State Significant Development for the purposes of the EP&A Act if:

a) the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act (Criteria 1), and
b) the development is specified in Schedule 1 or 2 (Criteria 2).

Regarding Criteria 1 above, Clause 7 of the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (the Mining "SEPP"), the Project may only be carried out in accordance with a Development Consent granted under Part 4 of the EP&A Act.

Regarding Criteria 2 above, development for the purposes of Mining and Metal, Mineral and Extractive Material Processing is specified in Schedule 1, Item 5 and Item 9, respectively, as being State Significant Development where the development has a capital investment value of more than $30m.

This Project is development for the purpose of Mining and Metal, Mineral and Extractive Material Processing and therefore will be State Significant Development as it has a capital value in excess of $30m. Development Consent will be sought from the NSW Minister for Planning (or delegate).

Section 4.38 of the EP&A Act provides that development consent may not be granted under Division 4.1 if the development is wholly prohibited by an Environmental Planning Instrument but may be granted despite the development being partly prohibited by an Environmental Planning Instrument. The Development Application Area is within the Unincorporated Area of New South Wales where no Local Environmental Plan exists, and the Broken Hill Local Government Area which is covered by the Broken Hill LEP 2013. The Development Application Area includes land zoned under the Broken Hill LEP as IN1 General Industry.

Clause 5(3) of the Mining SEPP gives primacy where there is any inconsistency between the provisions of the Mining SEPP and any other Environmental Planning Instruments. Clauses 6 and 7 of the Mining SEPP provide what types of mining and/or mining related activities are permissible with or without consent. Clause 7(1) states:

7(1) Mining

Development for any of the following purposes may be carried out only with development consent:

(a) underground mining carried out on any land,

(b) mining carried out:

(i) on land where development for the purposes of agriculture or industry may be carried out (with or without development consent), or

(ii) on land that is, immediately before the commencement of this clause, the subject of a mining lease under the Mining Act 1992 or a mining licence under the Offshore Minerals Act 1999,

(c) mining in any part of a waterway, an estuary in the coastal zone or coastal waters of the State that is not in an environmental conservation zone,

(d) facilities for the processing or transportation of minerals or mineral bearing ores on land on which mining may be carried out (with or without development consent), but only if they were mined from that land or adjoining land,

(e) mining on land that is reserved as a state conservation area under the National Parks and Wildlife Act 1974,

(f) extracting a bulk sample as part of resource appraisal of more than 20,000 tonnes of coal or of any mineral ore.

The term 'open cut mining' as defined in the Mining SEPP means mining carried out on, and by excavating, the earth's surface but does not include underground mining. The effect of Clause 7(1) in conjunction with the operation of Clause 5(3) of the Mining SEPP, is than not withstanding any prohibition in the Broken Hill LEP, development for the purpose of mining and facilities for the processing and transportation of mineral bearing ores may be carried out with Development Consent. As such, the Minister for Planning would not be precluded from granting approval under Section 4.38 of the EP&A Act for the Project in respect of those parts of the Project land where mining is prohibited under the Broken Hill LEP.

An EIS will be completed as part of the application for State Significant Development Approval. The EIS would include detailed consideration of the aims of the Mining SEPP described in Part 1 and the matters for consideration described in Part 3 of the Mining SEPP based in the final description of the Project and impact assessment. A preliminary review of the Project against Parts 1 and 3 of the Mining SEPP did not identify any matters which would prevent the Project proceeding. The form and content of the EIS would be in accordance with clauses 6 and 7 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*.

Part 4AA of the Mining SEPP applies as mining is proposed to occur on land where there is no current mining lease (that is, land subject to Exploration Licence 6622 but not including land subject to Mining Leases 86 and 87, respectively). Cobalt Blue will make an application for a Site Verification Certificate, however it is not expected that the Project site would be considered as a Biophysical Strategic Agricultural Land given the semi-arid climate.

In addition to the Mining SEPP, the following SEPPs may be relevant to the Project:

- State and Regional Development SEPP.
- Infrastructure SEPP.
- Hazardous and Offensive Development SEPP No 33.
- Remediation of Land SEPP No 55.

- Rural Lands SEPP.

A preliminary investigation of environmentally sensitive areas of State significance (as defined in the State Environmental Planning Policy (State and Regional Development) 2011) in respect to the Project has identified that the Project does not impact on any sensitive areas.

3.2. Water Management Act 2000

Under Section 4.41 (1)(g) of the EP&A Act, if the Project is approved as a State Significant Development, water use approvals under Section 89, water management work approvals under Section 90, or activity approvals (excluding aquifer interference approvals) under Section 91 of the Water Management Act 2000 would not be required.

The EIS would include consideration of the Project against the water management principles and access licence dealing principles under the Water Management Act 2000. The EIS would also identify Water Access Licences and Aquifer Interference Licences required for each water source associated with the Project.

The Broken Hill Cobalt Project successfully applied for an allocation of 650 units shares of groundwater extraction from the relevant Water Sharing Areas in the 2019 Controlled Allocation process. The relevant Water Access Licenses have been granted by the Natural Resources Access Regulator.

3.3. Protection of the Environment Operations Act 1997

The NSW Protection of the Environment Operations (POEO) Act 1997 and the POEO (General) Regulation 2009 prescribe the general obligations for environmental protection and regulation in NSW. Mining and Mineral Processing are Scheduled Activities that are defined in Schedule 1 of the POEO Act. Therefore, the Project will be required to hold an Environment Protection License granted under the POEO Act.

3.4. Mining Act 1992

The NSW Mining Act 1992 places controls on exploration and mining, the disposal of mining waste, land rehabilitation, and certain environmental activities as they pertain to mineral extraction. Under the Mining Act, a Mining Lease is required before any mining can take place. Mining Leases are granted after development consent has been obtained under the EP&A Act. A Mining Lease is granted for period of up to 21 years and the lease may be renewed, subject to approval. The mine would then be operated in accordance with this lease and its conditions once granted.

3.5. Roads Act 1993

The NSW Roads Act 1993 provides the statutory framework for the management of public roads within NSW. The Roads Act is administered by NSW Roads and Maritime Services (RMS), councils or the Department of Planning, Industry and Environment (Crown Lands). RMS has jurisdiction over major roads, councils over minor roads and Crown Lands over road reserves or Crown roads. Section 138 of the Roads Act requires that a person obtain the consent of the appropriate roads authority to erect a structure, or carry out a work in, on or over a public road, or dig up or disturb the surface of a public road.

Construction of the project would require works within public road reserves. Consent of the appropriate roads authority under Section 138 of the Roads Act would be required for any works within a public road. The proposal would have the potential to impact upon roads managed by RMS and therefore approval would be required from RMS. There is potential for impacts to other roads and approval would be required from the relevant authority. Under Section 89K of the EP&A Act, a permit under Section 138 of the Roads Act cannot be refused if necessary for the carrying out of State Significant Development that is authorised by development consent. The permit is required to be substantially consistent with the consent.

3.6. Crown Land Management Act 2016

The project would be located on Crown Land that is managed by the Department of Planning, Industry and Environment (Crown Lands). The land is currently leased for grazing purposes under the Crown Lands Management Act 2016. Under the NSW Crown Lands Management Act 2016, a Crown Lands Licence would need to be acquired to authorise the occupation over the affected land tenures for any aspects of the project which are located outside the area to be covered by a future mining lease. The ancillary infrastructure corridors would potentially not be covered by the mining lease and a Crown Lands Licence or Easement would therefore be required for these works if they impact on Crown land. Lot 7304 DP 1177394 is Crown Land that is subject to the Barkandji Traditional Owners #8 Native Title Determination. Much of Lot 7304 DP 1177394 is overlain by ML87 which was granted prior to the Native Title determination, thereby extinguishing Native Title for the purposes of mining. Only 3 ha of land that is outside ML87 but within Lot 7304 DP 1177394 is subject to Native Title. Cobalt Blue will seek a negotiated outcome with the Barkandji Traditional Owners to access this land. A Mining Lease Application for the Project will include all the land described by Lot 7304 DP 1177394.

3.7. Dams Safety Act 2015

Tailings are proposed to be managed by mixing with waste rock to form an Integrated Waste Landform. IWL and filtered tailings (dry stack) storage options are not considered to be typical tailings dams and as such do not need to be assessed for Consequence Category in accordance with the Dams Safety Act 2015. It is probable that any CTD tailings storage facility will be classified as a Declared Dam given it is likely to have a consequence category of Significant and that it retains

potentially acidic tailings. The requirements of the Dams Safety Act 2015 will apply to any Declared Dam.

3.8. Biodiversity Conservation Act 2016

The Project will impact on vegetation communities and potentially threatened species. All state significant projects are required to assess the biodiversity impacts of their proposals in accordance with the Biodiversity Conservation Act 2016. The BC Act regulates the way that biodiversity is assessed, managed and regulated. The assessment will be undertaken in accordance with the Biodiversity Assessment Method (BAM) by an accredited BAM assessor. It is likely that a biodiversity offset will be required and secured in accordance with the requirements of the BC Act.

3.9. Environmental Protection and Biodiversity Conservation Act (1999) Cth

At this stage, the Project will not be referred to the Commonwealth Minister for the Environment consideration as to whether the Project meets the criteria of a 'Controlled Action' under the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999 with the reasoning summarised in Table 3.

Table 3: EPBC considerations

Matter of Nation Environmental Significance	**Presence or significant impact**
World Heritage properties	City of Broken Hill. No significant impact – development of utilities infrastructure in land zoned industrial and incremental to existing utilities infrastructure.
National Heritage places	Nil
Wetlands of international importance	Nil
Listed threatened species and ecological communities	No significant impact to listed species or ecological communities: *Acacia carneorum* (Purple Wood) listed as Vulnerable – Project avoids impact on Purple Wood present in the general vicinity of the Project.
Migratory species	No significant impact to listed migratory species:

	Merops ornatus (Rainbow Bee-eater) – project area is not considered to comprise 'important habitat' for that species.
Commonwealth marine parks	Nil
The Great Barrier Reef Marine Park	Nil
Nuclear Actions	Nil
A water source in relations to coal seam gas development and large coal mining development	Project is not coal seam gas or large coal mining development.

4. Stakeholder Engagement

4.1. Engagement undertaken to date

Engagement to date has included discussion of the assessment pathway with the NSW Department of Planning, Industry and Environment (DPIE). This has included; the discussion of the project, preliminary impact assessments and identification of emerging issues for consideration in the EIS.

Several meetings have been held with DPIE – Division of Geosciences and Resources and the Resources Regulator during the development of the Conceptual Project Development Plan and assessment of options for waste rock and tailings management, as well as rehabilitation and final landform objectives.

An inter-agency meeting was held on 16 May 2018 to introduce the Project and to solicit feedback on matters for assessment and further development. Issues arising included; management of acid generating waste rock and tailings, void management, final landform and rehabilitation, surface and groundwater impacts, Aboriginal heritage and biodiversity impacts. Several follow up meetings have been held with the NSW Environment Protection Authority, Department of Industry (Lands) and Broken Hill City Council to discuss various aspects of the Project.

Some discussions with Essential Water, TransGrid, Transport for NSW, Australian Rail Track Corporation and Flinders Ports in respect to the Project have also been undertaken.

Cobalt Blue has undertaken substantial engagement with the existing landholder and the broader community in Broken Hill. Community engagement has included presentations to and feedback from:

- elected representatives and staff of Broken Hill City Council.
- the NSW Member for Barwon.
- The Federal Member for Parkes
- Various NSW and Federal ministers with relevant portfolio responsibilities
- Foundation Broken Hill.
- Broken Hill 25 x 25.
- general community engagement during interactions at Broken Hill.

Cobalt Blue has also engaged with the local community through sponsorship and participation in several local activities such as:

- 2DRY-FM

- Perfect light film festival
- Light up Broken Hill
- Country University Centre
- St Pats Races

Cobalt Blue has also sought advice from several existing mining operations within the Broken Hill area.

Cobalt Blue is a member of the Future Battery Industries Cooperative Research Centre. The FBICRC will address the existing gaps in the nation's capacity to respond to this growth industry by creating opportunities to process, manufacture and deploy batteries, delivering an estimated $2.5 billion benefit to the Australian economy over the next 15 years. Cobalt Blue has consulted widely among the FBICRC participants in order to maximise the potential for Australian cobalt.

Cobalt Blue has also engaged with the Federal Minister's for Industry, Science and Technology, and Resources and Northern Australia to further the outcomes of the Australian Critical Minerals Strategy. Australian and NSW government business development organisations such as Austrade and Regional NSW – International Engagement and Market Development are working with Cobalt Blue to develop product markets and potential project investment partners.

4.2. Proposed engagement

Cobalt Blue has publicly announced its plan for the Project and is actively engaging with relevant stakeholders. Key stakeholders for the Project include:

- landholders and neighbours.
- the community in Broken Hill including, residents, businesses, and community groups.
- elected representatives from Federal, State and Local government.
- Federal, state and local government agencies.
- Native Title Owners and Registered Aboriginal Parties.
- Infrastructure owners.

Cobalt Blue will continue to consult regarding the development of the Project in accordance with its Stakeholder Engagement Strategy 2020-2023 to ensure ongoing and effective engagement with key stakeholders and the community.

Cobalt Blue will continue to engage with the Australian and NSW Governments in regard to executing the Broken Hill Cobalt Project in accordance with their respective Critical Minerals Strategies, and seek further corporate investment and commercial agreements with Australian and international businesses.

4.3. Stakeholder issues

During engagement undertaken to date by Cobalt Blue, stakeholders have identified the following issues:

Broken Hill Community

- Number, type and duration of jobs to be generated by the Project.
- Residential location of project workforce (strong preference to locate employees in Broken Hill and/or to minimise Fly In Fly Out).
- Overall economic contribution to Broken Hill and the region by engaging local contractors and purchasing locally.
- Skills development (e.g. apprenticeships, local training).
- Opportunities for community enhancement.

Aboriginal Community

- Cultural heritage assessment and management
- Native Title
- Economic advancement including training, education, access to employment
- Ongoing consultation

Broken Hill City Council

- Support for economic development associated with the Project.
- Infrastructure development (e.g. support for an upgrade to Broken Hill airport).
- Sufficient forewarning on Project schedule to facilitate front end loading on housing and local business engagement.

State Government Agencies

- Scope, quality and timing of EIS including consultation, justification, mapping and format.
- Characterisation and management of waste rock and tailings, minimising waste generation.
- Progressive rehabilitation and final landform / land use including justification for any final voids.

- Water management (both surface and ground water) including potable water consumption from the Broken Hill water supply, aquifer interference and creek diversions.
- Avoid, minimise, offset footprint based impacts such as biodiversity, Aboriginal heritage, resource sterilisation.
- Avoid, minimise operational impacts such as dust, noise, air pollutants / greenhouse gas, contamination, waste.
- Regulatory issues such as Mining Lease Application, Environment Protection License, Water Access Licenses, s138 Roads Act permit, Crown Land license.
- Economic development and value adding in critical minerals industry in NSW and Australia.
- Job creation.

5. Consideration of Key Issues

This Scoping Report has been prepared to identify the key potential environmental issues associated with the construction, operation and closure of the Project. The Scoping Report will assist the Department of Planning, Industry and Environment to prepare the Secretary's Environmental Assessment Requirements under the EP&A Regulations. The Social Impact Assessment Scoping Tool has been used to guide the Preliminary Impact Assessment and is provided in Appendix B.

The Scoping Assessment is based on:

- understanding of the local and regional context and the scope of the Project,
- feedback from stakeholder consultation undertaken to date,
- baseline environmental data,
- understanding of the approval process and regulatory requirements in NSW,
- scoping worksheet.

Cobalt Blue has commenced a range of baseline monitoring, investigations and studies to obtain information to inform the EIS. The Key Issues for consideration include:

- Waste management and Acid Mine Drainage
- Rehabilitation and final landform
- Groundwater and hydrogeology
- Surface water
- Ecology
- Aboriginal heritage
- Socio-economic impacts

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5.1. Waste Management and Acid Mine Drainage

Waste rock and tailings reject material from ore processing will be generated during the mining operation. The mineralisation is hosted by pyrite (which contains oxidisable sulphur), which has the potential to generate Acid Mine Drainage (AMD) when exposed to air and water for long periods. As the mineralisation exists close to the surface, some AMD is occurring from the deposit naturally after rainfall and is a key reason for the low pH of the groundwater. Many mining projects involve excavation of some material that has the potential to cause AMD and

hence the management of AMD is well understood, with proven methods to ensure it does not impact the surrounding environment.

Preliminary assessment to determine the potential for material within the Project Site to generate AMD has been the subject of a testing program generally in accordance with the AMIRA International AMD Handbook (2002). During 2017/18 exploration program, samples from the differing rock types and deposits were identified, with approximately 100 samples from all three deposits, as well as fine and coarse metallurgical tailings, were selected and delivered to the Bureau Veritas (BV) laboratory in Adelaide for analysis.

The Stage 1 test work involved preparing samples and running static AMD tests including:

- Acid Neutralising Capacity (ANC).
- Total Sulphur (%S).
- single addition Net Acid Generation (NAG).
- pH (acidity); and
- Electrical Conductivity.

Further samples from the 2018/19 exploration program were taken to better define the volumes of acid forming wastes. These samples have been sent for analysis and include the determination of sulphur species. The AMD data set will be progressively added to and used to determine AMD cut off grades, volumes of Potentially Acid Forming (PAF) and Non-Acid Forming (NAF) materials, and methodologies for sustainably managing AMD materials, in accordance with criteria published in the AMD Test Handbook (AMIRA, 2002) and similar guidelines. Samples are classified as Non-Acid Forming (NAF), Uncertain (UNC), or Potentially Acid Forming (PAF). On the basis of data collected so far, a sulphur cut-off grade in the order of 0.5-0.7% S_{total} marks the boundary between NAF and PAF waste rock at the Project as shown in Figure 17 and Figure 18.

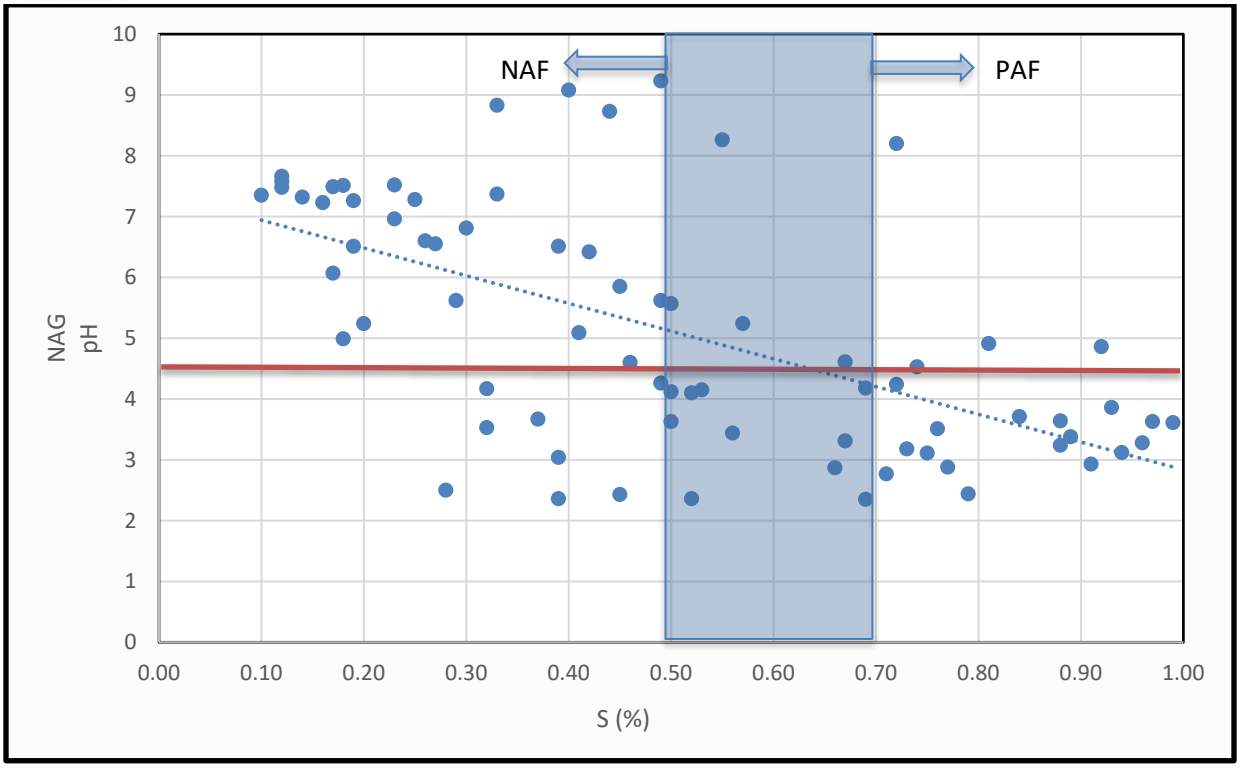


Figure 17: Net Acid Generation pH vs %S

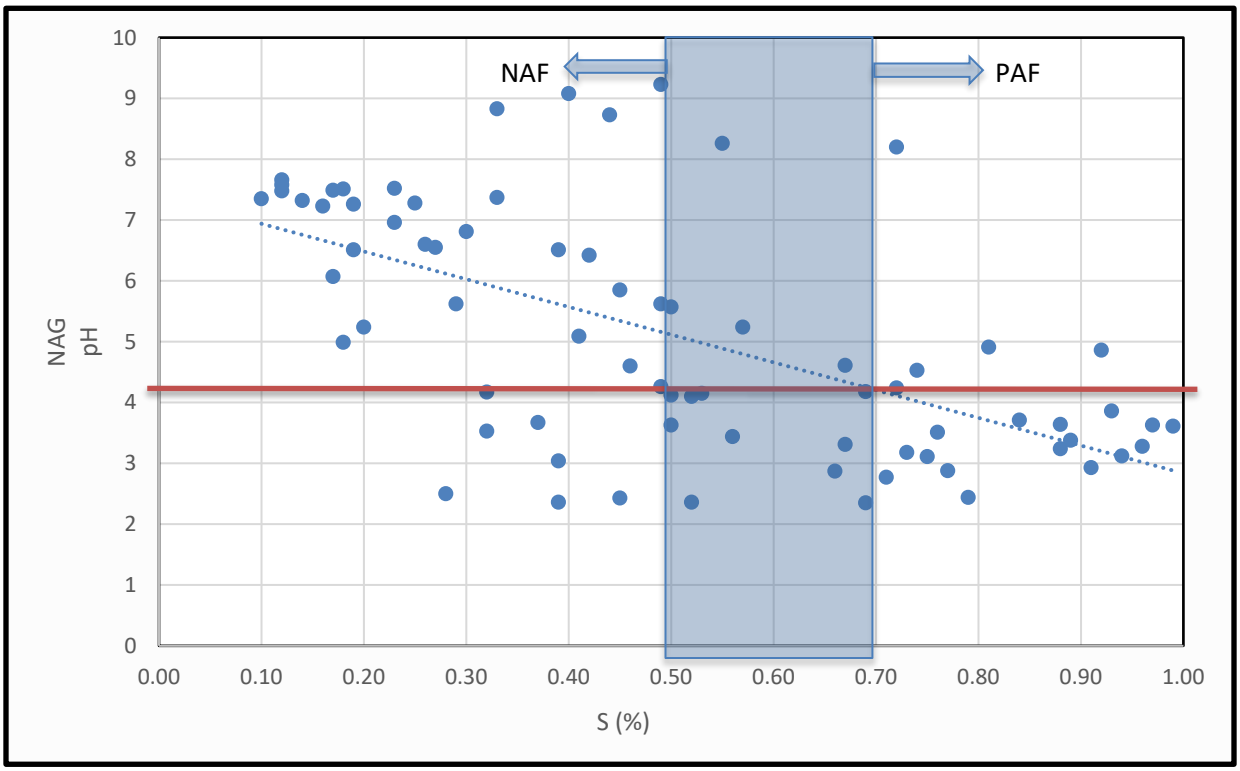


Figure 18: Net Acid Producing Potential vs %S

Samples of tailing have also been tested for AMD properties as shown in Table 4.

Table 4: AMD properties for tailings and concentrate

Tailings type	**S (%)**	**$NAG_{pH4.5}$**	**NAPP (H_2SO_4 kg/t)**
Coarse	5.1	97	155
Flotation	1.5	21	42

Based on a 20 year mine life, indicative volumes of waste materials are described in Table 5.

Table 5: Estimated waste rock and tailings for 20 years mine life

Waste Type	**Approximate volume (Mt)**
NAF – waste rock	217
Uncertain – waste rock	37
PAF -waste rock	104
Coarse gravity tailings (Particle size P80 900 µm)	47
Fine flotation tailings (Particle size P80 200 µm)	35
Iron oxide leach residue*	14

*The iron oxide leach residue may be diverted from tailings to a saleable iron product

Cobalt Blue will implement management strategies to sustainably manage the AMD waste likely to be generated from the Project. Several IWLs are proposed where both mine waste rock and process plant tailings are combined in the one facility. IWLs have the advantage of maximising the waste bulk density and minimising air filled pore space in order to reduce the potential for acid generation and transport within the waste mass. IWLs are not considered Designated Dams under the Dams Safety Act 2015 and form stable landforms that can be progressively rehabilitated.

Figure 19 shows the coarse reject, which is mostly a sand-like material.

Figure 19: Coarse reject generated from comminution test work.

Key issues

Potential AMD-related impacts may include the following:

- Generation of acidic (or neutral) leachate with elevated concentrations of metals, metalloids or salinity, that if not managed appropriately, could pollute nearby ground and surface water.
- Provision of sufficient NAF capping of all IWLs to ensue final landforms are long term physically and chemically stable.
- Dust generation and water management at the IWL.
- Acidification of water at the base of final voids.
- Long term physically and chemically stable landforms.

Proposed assessment approach

A detailed assessment of AMD impacts would be conducted in accordance with relevant guidelines during preparation of the EIS. This would include:

- Determination of mine waste rock and process plant tailings volumes according to the mining and processing schedules and their acid forming potential;

- Assessment of various AMD management techniques and locations for the waste materials with consideration of criteria such as:
    - Minimising overall water consumption and maximising water recovery.
    - Implementation of progressive rehabilitation for waste management facilities.
    - Final land-use of waste management facilities.
    - Risks associated with specific AMD management techniques (e.g; technical, operational, environmental).
    - Capital and operational costs.
    - Regulatory considerations and monitoring requirements.
- Preliminary engineering design and operational philosophy.
- Progressive and final rehabilitation of AMD emplacements.

5.2. Rehabilitation and final landform

The Project is in generally flat, semi-arid, chenopod country located within a single grazing property that operates under a perpetual Western Land Lease. The land is currently used for low intensity sheep grazing and mining exploration activities. It is expected that the land impacted by the Project will be rehabilitated and returned to low intensity grazing, with the exception of any residual voids.

The IWLs would be progressively rehabilitated over the life of the Project to create a long term physically and chemically stable landform that is able to sustain a native vegetation cover (or other agreed final land use such as solar or wind power generation). Recovered NAF rock will be used to create habitat for the Barrier Range Dragon as progressive rehabilitation of waste emplacements takes place. Preliminary design of IWLs has incorporated height and shape geometries to conform to the local landform of the Barrier Ranges. Given the arid climate where rainfall is approximately 10% of annual average evaporation, excess moisture in the tailings storage facility is likely to evaporate and acid salts will be contained in the storage facilities. It is proposed that tailings from the process plant be dewatered prior to emplacement to minimise leachate in the tailings storage facilities and to recycle the recovered water in processing plant operations. Any supernatant water from tailings management would be returned to the processing plant for reuse. A long-term stable landform will be designed using fluvial geomorphic principles. A store and release cover system that may include a capillary break layer as part of the cover design will be implemented to minimise water infiltration through the potentially acidic waste material as well as minimising oxygen transport to the potentially acid forming waste. The cover system would result in a rock mulch surface with oxide rock and/or soil in the mulch pore space to provide growth media for native vegetation. The finalised landform would be seeded with endemic vegetation species. The rock mulch would also provide habitat for the Barrier Range Dragon. Under-flow and surface runoff from the waste rock dumps will be directed to open cut voids where it is possible to do so.

The two smaller Big Hill open cut voids will be filled with tailings using hydraulic transport methods then encapsulated with NAF waste rock as part of the final rehabilitation and landform

design towards the end of the Project. Where it is possible to do so, water recovery from tailings deposition in the Big Hill voids will be undertaken.

Opportunities to completely or partly fill the Pyrite Hill open cut voids with waste rock and/or tailings will be explored during operations but will be dependent on mine schedule, technical and cost considerations as well as any future prospects for ongoing mining. The ore body at Pyrite extends deeper than the proposed open cut mining operation and backfilling the void would sterilise this resource for future extraction. The Railway open cut void will remain open. The final pit voids would accumulate localised surface runoff, any drainage from the waste rock dumps and tailings storage facilities, and groundwater seepage. It is unlikely that they will accumulate sufficient water to maintain a permanent pit lake. Final voids will be made safe and have a perimeter bund established to minimise overland flow entering the pit.

All infrastructure, utilities and disturbed areas would be decommissioned and returned to the pre-existing landform in consultation with relevant stakeholders. Where it is possible to do so, adaptive reuse of buildings, infrastructure or utilities will be considered.

Key issues

The key rehabilitation risks include:

- Long term management of acid generating materials in both waste rock and tailings management facilities.
- Execution of progressive IWL rehabilitation including construction of capture and release cover system, rock mulch, growth media and development of native vegetation in a harsh, dry environment.
- Design and execution of permanently stable landforms utilising fluvial geomorphic principles to minimise potential for erosion of structures for waste rock dumps and/or tailings storage facilities.
- Final rehabilitation including store and release cover system of tailings and leach residue management facilities.
- Rehabilitation of residual voids to ensure a safe and stable landform including any long-term implications for groundwater management and water entitlements.
- Demolition and removal of mining infrastructure and/or adaptive reuse.

Proposed assessment approach

A Preliminary Rehabilitation and Mine Closure Strategy will be prepared for the Project. The Preliminary Rehabilitation and Mine Closure Strategy will be prepared to satisfy the rehabilitation requirements of the SEARs, regulatory input to the SEARs and relevant rehabilitation guidelines, including:

- ESG3: Mining Operations Plan (MOP) Guidelines (the MOP Guidelines) (NSW Department of Trade and Investment, Regional Infrastructure and Services – Division of Resources and Energy [DRE], 2013).

- Mine Rehabilitation – Leading Practice Sustainable Development Program for the Mining Industry (Commonwealth of Australia, 2016a).
- Mine Closure and Completion – Leading Practice Sustainable Development Program for the Mining Industry (Commonwealth of Australia, 2016b).
- Strategic Framework for Mine Closure (Australian and New Zealand Minerals Council and the Minerals Council of Australia [ANZMEC-MCA], 2000).

Where relevant, the Preliminary Rehabilitation and Mine Closure Strategy will consider the outcomes of consultation with relevant stakeholders and potential post-mining land uses. It is expected that Preliminary Rehabilitation and Mine Closure Strategy will be progressively updated based on further research, trials, and development of best practice techniques, along with relevant closure criteria, performance standards and post-mining land use objectives during the operational phase of the Project.

5.3. Groundwater and hydrogeology

Groundwater in the regional area has been recognised as occurring within each of the following regimes:

- Alluvium.
- Colluvium.
- Fractured basement rock.

The site is overlain with a layer of weathered rock / regolith, with alluvium and colluvium accumulated in lower lying areas and drainage lines at the surface. Figure 20 is a graphical representation of the conceptual hydrogeological model for the Project Area and areas likely to host groundwater are highlighted in blue. The geology indicates that the area is predominantly gneiss that has been deformed and exposed. The deformational and metamorphic phases have likely led to the deposit losing the primary porosity of the original geological material and developing a secondary porosity/permeability based on the presence of geological contacts, faults, jointing and fracturing.

Any water that is present within the local geology is most likely to be hosted within the geological contacts, faults, jointing and fracturing. Also, within the mineralised units, a pebbly breccia has been intersected by several drillholes. Groundwater in the structural bedrock features is likely to be recharged either through direct infiltration into outcropping structures, or through leakage from overlying alluvium/colluvial aquifers.

A weathering profile is also present at varying depths from the surface. This profile extends approximately 15m from ground level in general and up to 30m in some areas. The basement rock is oxidised to some degree beyond this depth; however, the highest rock permeability will likely be within this initial 15-30 m. Groundwater that is potentially present in the weathering profile may be connected to potential adjacent alluvium aquifer(s). Areas of exposed mineralised rock may host areas of gossan. These areas are likely to be granular and highly jointed, and

possibly vesicular. These areas will likely be the primary recharge area for groundwater in the mineralised rock units.

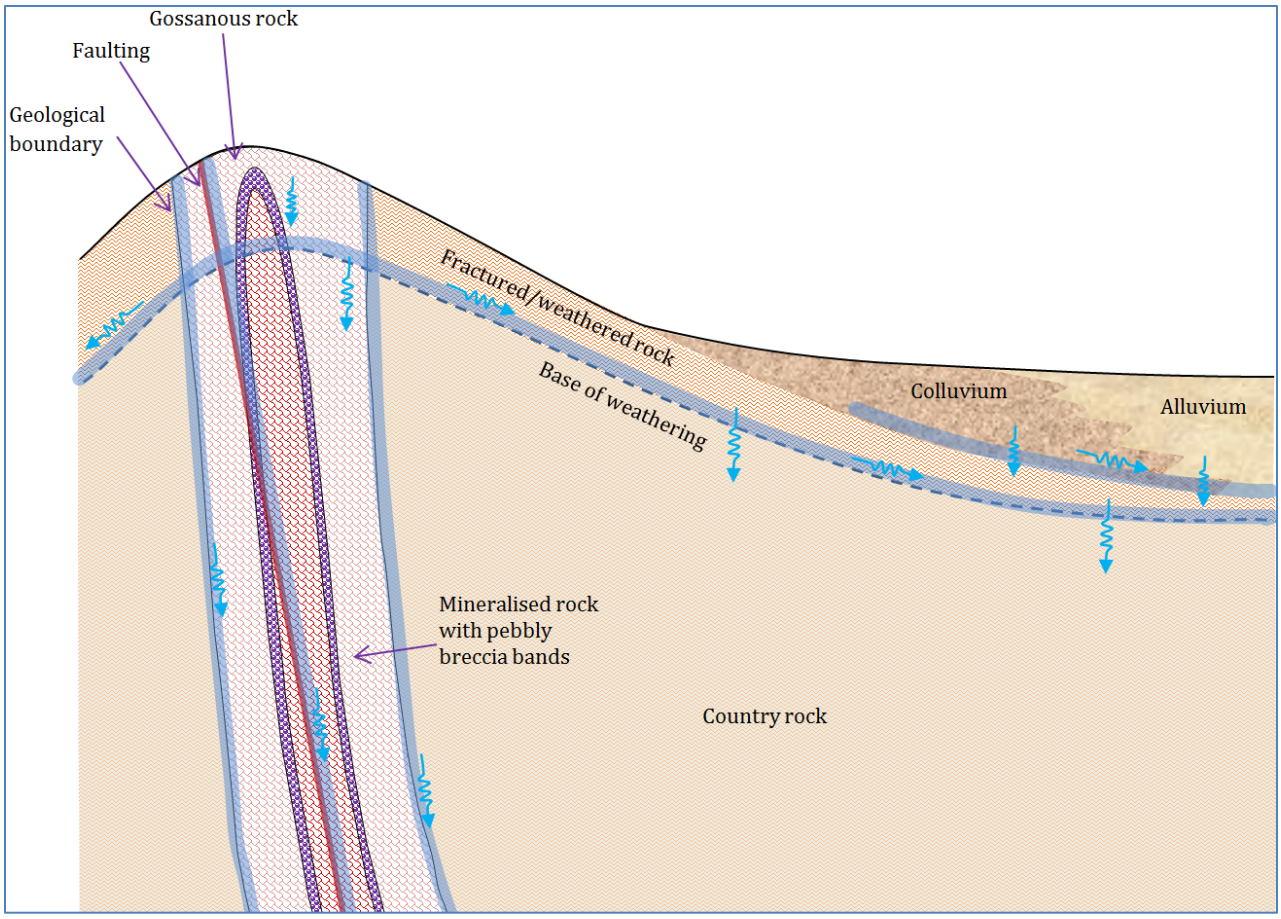


Figure 20: Hydrogeological conceptual model of the local area

A total of 13 monitoring bores were installed by Cobalt Blue between May and June 2018 (Figure 21). The monitoring bore network consists of one alluvium monitoring bore and six clusters of one shallow and one deeper monitoring bores. The clustered monitoring bores target the water table and the aquifer at a deeper portion of the geology.

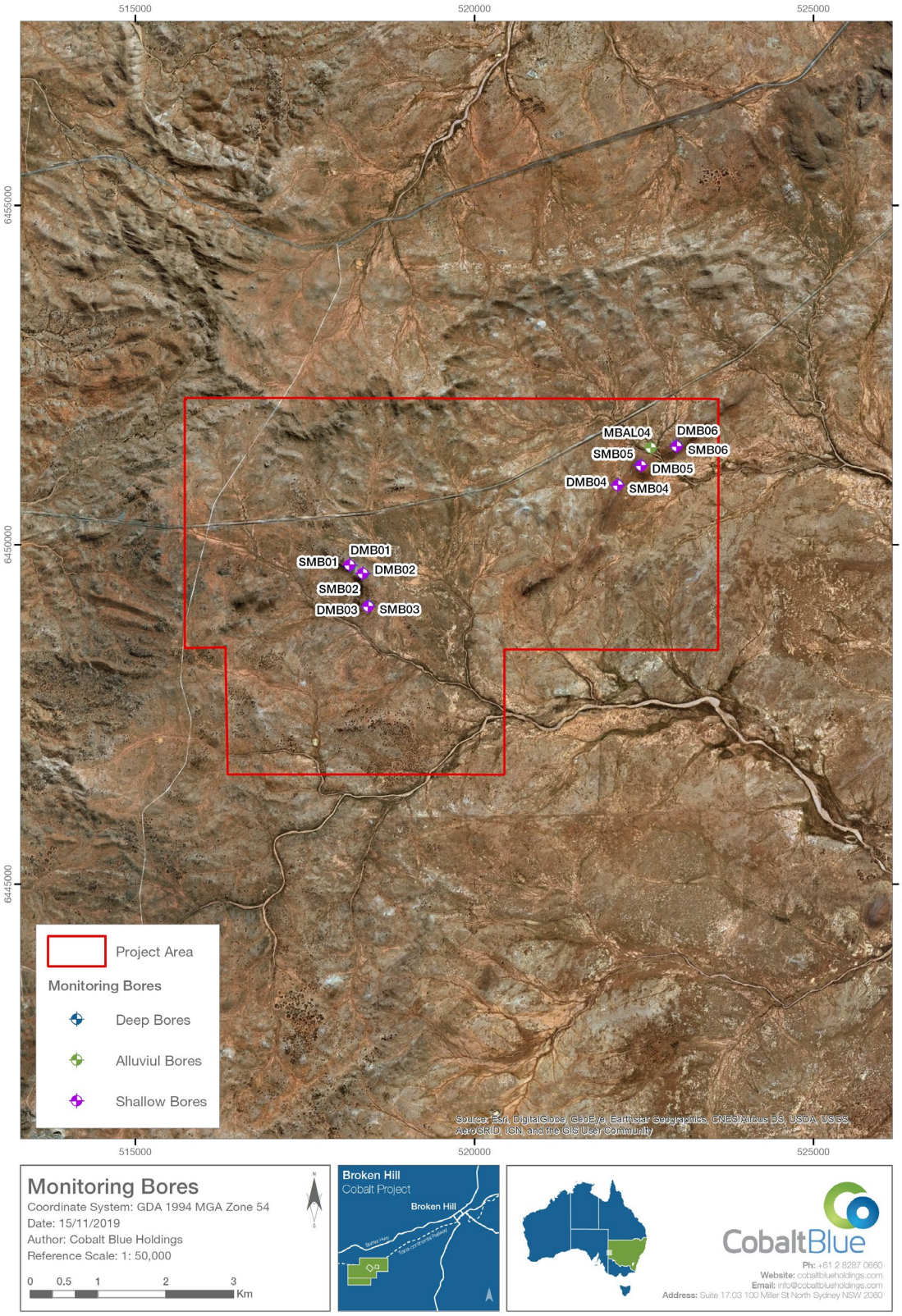


Figure 21: Groundwater monitoring bores at the Project Site

The groundwater elevations measured are generally consistent between the monitoring bores across the site at between approximately 267 m and 273 m Australian Height Datum (AHD), except for the boreholes located in the northern area of the Railway deposit. The groundwater in this area appears to be lower than the regional water table, possibly due to differing geology and/or recharge mechanisms. The intent of installing clustered monitoring bores was to assess the potential for different geological units to have differing pressure heads at different depths; however, from the data, the water levels are similar between the bores in each cluster. This demonstrates that, although different geological units were screened, the units are likely to be connected hydraulically via a network of fractures and jointing forming one aquifer. That said, the boreholes at the Railway deposit are likely to be screened in a separate hydrogeological unit with different local geology and/or recharge/discharge conditions and groundwater levels are also likely to be lower in that area.

Initial water quality measured at the Project boreholes indicated that the aquifers are acidic (pH 3-6) at deeper depths and acidic to neutral (pH 5-7) at the phreatic surface. All groundwater is highly saline with electrical conductivity ranging between 2,000-13,000 µS/cm. All site monitoring bores exceed the Australian Drinking Water Guideline criteria of 1,000 mg/L for Total Dissolved Solids. A significant concentration of dissolved cobalt has been measure in most monitoring bores (in the order of 1-20 mg/L), indicating that oxidation of the pyritic mineral body has occurred in the past and that has given rise to dissolved cobalt in the local groundwater. Where it is practical to do so, the Project will look to extract this contaminated groundwater and use it in the mineral processing operation to win out the dissolved cobalt. The open cut voids will act as a local groundwater sink thereby limiting the further migration of naturally contaminated groundwater away from the ore bodies.

A search of the Water NSW groundwater database has revealed 9 registered bores within a radius of 15 km from Pyrite Hill (approximate centre of Exploration Licence 6622 – see Figure 22). The geology screened by these bores is unknown; however, based on the depths of the bores, all are likely to be screened in the fractured basement rock.

The registered bores comprise:

- 9 private bores (all located outside of the EL, with the exception of one bore);
- 6 bores/piezometers with no indication of use or ownership (all located outside of the EL, with the exception of one bore);
- 1 ‘Irrigation’ bore (located at the limit of the 15 km radius); and
- 2 ‘Stock’ bores (located more than 10km from the site, toward the south and southeast).

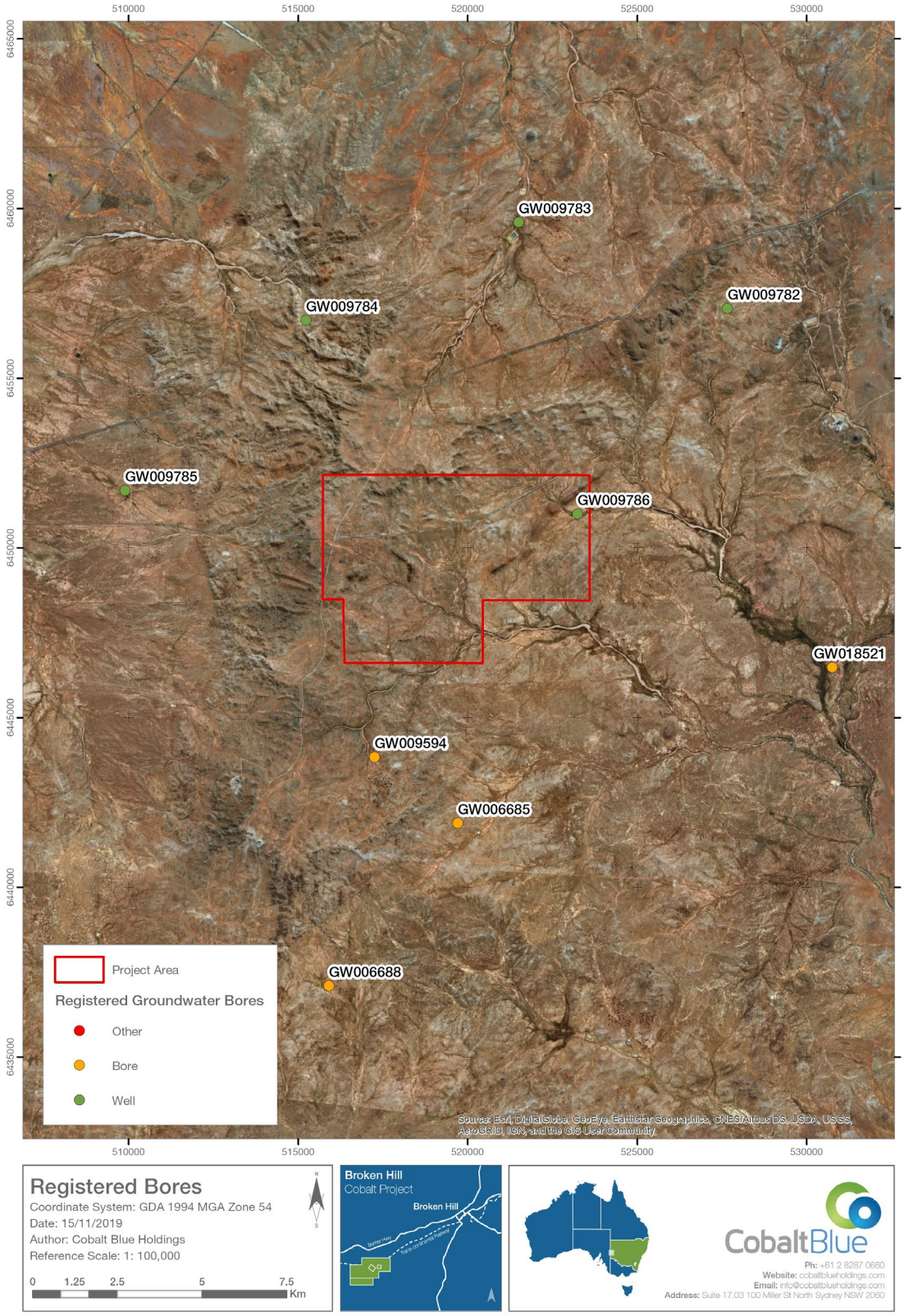


Figure 22: Registered bores in close proximity to the Project Site

The bore located within the proposed mine site footprint intersected groundwater at 30.5m. A bore located approximately 6 kilometres to the east of the site is recorded as intersecting saline groundwater at a low yield of 0.1 L/s at 77.4 to 79.8 metres depth with a standing water level of 74.7m. Yields in all bores in the vicinity of the proposed mine site were very low, with values ranging from 0.02 – 0.51 L/s. Groundwater in two bores was reported as been saline, one as stock quality and another was labelled as brackish. These reports are consistent with the high salinity levels for the region.

There are no groundwater dependent ecosystems mapped within close proximity to the Project.

Key issues

The key hydrogeological risks include:

- Impacts associated with drawdown of groundwater and water chemistry in the vicinity of the open cut mining and final voids.
- Groundwater / aquifer interference licensing requirements.
- Impacts on groundwater dependent ecosystems.
- Final void water chemistry.

Proposed assessment approach

A conceptual hydrogeological model for the proposed mine site area will be developed and used as the basis for assessing the potential impact of the project on existing groundwater systems, surface water – groundwater interactions, groundwater dependant ecosystems and registered groundwater users.

On the basis that groundwater interception from the mining operations will not have significant impacts on existing bores or groundwater dependent ecosystems, that the groundwater quality is poor, and that the geology indicates that the fractured rock aquifer at the Project Site is not extensively connected, a simple analytical approach will be undertaken to model groundwater impacts. The hydrogeological model will be used to:

- Identify the potential groundwater quantity, water-table level, and the direction of flow and quality through the proposed mine life and for the affected aquifers.
- Analyse the impacts of the extent and magnitude of drawdown.
- Analyse of the likely quality of intercepted groundwater and the implications for final pit voids.
- Discussion of issues associated with obtaining a licence for the groundwater extraction and/or interference.
- An outline of the proposed program to monitor groundwater impacts and extraction.
- Outline any make good provisions for the re-establishment of bores and/or supply of stock and domestic water impacted by the mine.

- Assessment of potential impacts on surrounding water users and groundwater dependent ecosystems.

The following Groundwater Sharing Plans apply to the Project Site.

- Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2011: Adelaide Fold Belt MDB Groundwater Source.
- North Western Unregulated and North Western Fractured Rock Groundwater Water Sources 2011: Adelaide Fold Belt North Western Groundwater Source.

The Water Sharing Plans establish rules for sharing water between different types of water users such as town, rural stock and domestic, irrigation, industry and environmental users. Each Water Sharing Plan identifies the maximum amount of water available within the area covered by the Plan and the available water allocations under the Plan.

On the basis of preliminary groundwater modelling for groundwater interception into the voids created by mining the Pyrite Hill, Railway and Big Hill deposits, the Broken Hill Cobalt Project has purchased 600 share units from the Adelaide Fold Belt MDB Groundwater Source (and a further 50 share units from the adjacent Adelaide Fold Belt North Western Groundwater Source as part of the NSW Government's 2019 Controlled Allocation process. These Controlled Allocations have been converted to Water Access Licenses granted by the Natural Resources Regulator.

The following approvals and allocations will be required to be obtained under the Water Management Act 2000 (WM) and/or the above Plans.

- A Water Access Licence with a suitable allocation for groundwater (and potentially surface water) that would be captured during and following mining operations. An allocation will be required to be obtained for groundwater that would flow into the proposed open cut voids. An adequate allocation will be required to be purchased on the open market and/or by a Controlled Allocation(s) from the NSW Government.

5.4. Surface water

The Project site is predominantly flat, open shrubland plain with several rocky rises and outcrops which comprise the mineralised zones that will be mined.

No permanent surface water bodies exist in the Project area due to low rainfall and high evaporation rates. The mean rainfall for the Broken Hill Bureau of Meteorology station is 259 millimetres per year; a value which is less than 10% of the annual evaporation rate of 2,600 millimetres. Cobalt Blue installed a weather station at the Project site in November 2018 to allow site specific data to be collected as an input to the EIS.

Most surface water features within the region are ephemeral and only flow during short periods of intense rainfall. Streams generally tend to flow in a southeasterly direction as water is drained from the Barrier Ranges and flow towards the Murray Basin. Depending on the

variable levels of discharge, watercourses either terminate in extensive swampy depressions or continue to the Darling River system.

There are several ephemeral streams in the Project Area, namely the headwaters of Felspar and Pine Creeks (Figure 23). These flow on an irregular basis immediately after heavy rain, which is rare near Broken Hill. Cobalt Blue commenced a surface water monitoring program in June 2018, however ongoing drought conditions have precluded the capture of any samples to date.

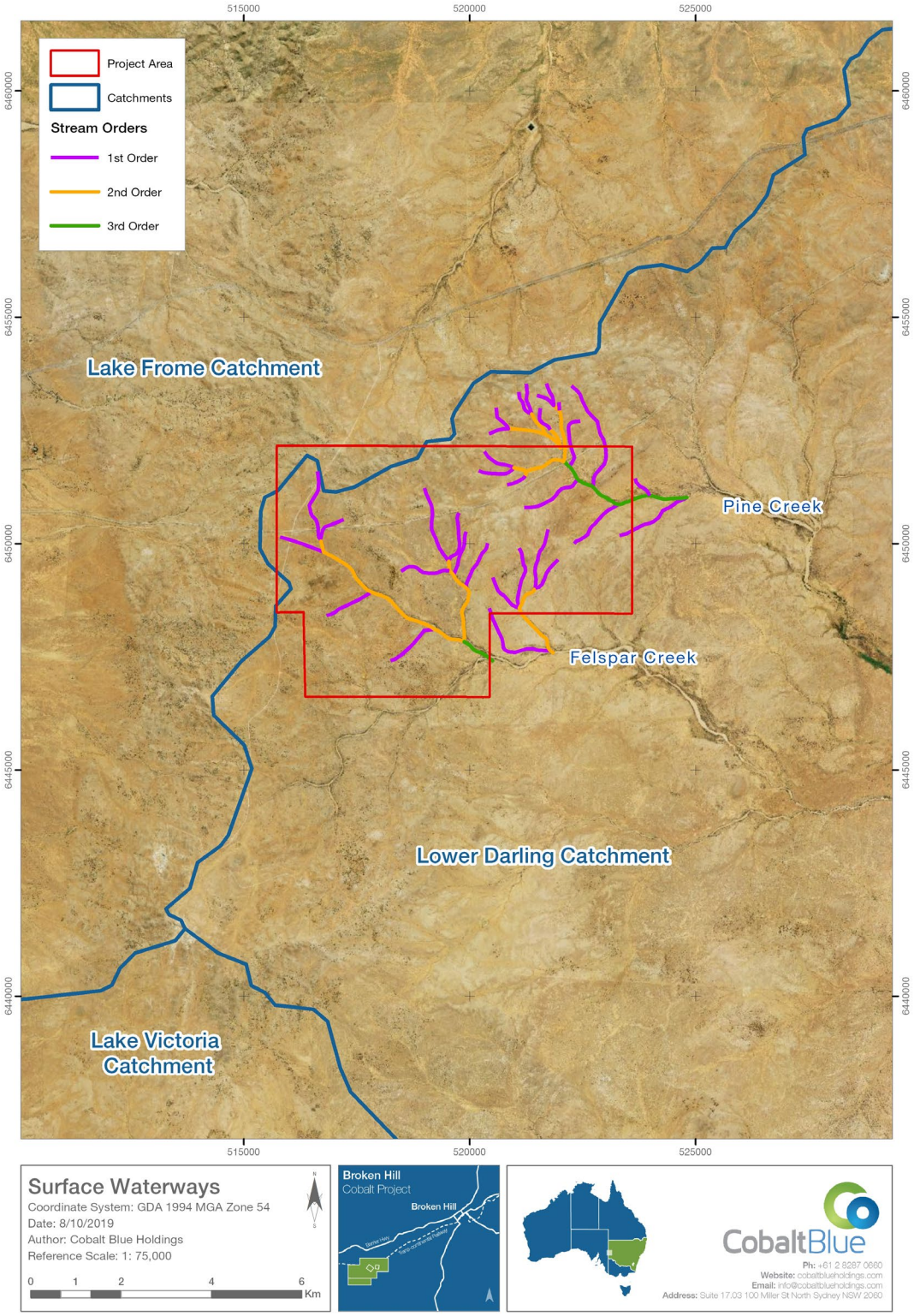


Figure 23: Surface waterways

Key issues

The key surface water risks include:

- Earthworks associated with the Project would alter the site topography and impact surface water flows. Watercourse diversions around site infrastructure and open cut voids will be required to minimise flooding impacts and to maintain stream continuity.

- Potential for water quality to be impacted if runoff is turbid, saline, acidic or otherwise contaminated. Poor quality discharge water may impact on downstream water users and/or the environment.

Proposed assessment approach

The EIS would include a detailed assessment of potential impacts on surface water. This would include modelling the hydrological characteristics of surface water flows within the Project area to allow impacts on the hydrological values of Feldspar and Pine Creeks to be assessed, particularly where they may be diverted.

The following Water Sharing Plan apply to the Project Site.

- Water Sharing Plan for the Lower Murray-Darling Unregulated and Alluvial Water Sources 2011: Lower Murray - Darling Unregulated Water Source.

The assessment would include:

- A site water balance to define site water demands and the expected volume of discharges. This would identify water supply, storage and management infrastructure.
- A description of potable and wastewater management systems.
- Estimate of final pit void water quantity, quality and any potential for ongoing discharge from these voids.
- Assessment of potential impacts on the quality and quantity of surface water discharged from the site, in particular Felspar and Pine Creeks.
- Assessment of the potential impacts on the geomorphology of receiving waterways.
- Assessment of impacts on riparian corridors.
- Determining whether specific measures would be required to manage issues associated with occasional flooding along Felspar and Pine Creeks.
- Any surface water licensing and allocation requirements.

5.5. Ecology

A preliminary ecological assessment of the project area has been undertaken that included a desktop information review and targeted seasonal surveys. The surveys were conducted in

October 2017, November - December 2017, and April 2018. Additional surveys relating to land access were undertaken in March 2021.

The surveys covered the proposed mine site, including the estimated footprints for the pits, waste rock dumps, mine infrastructure, and processing reject storage facilities. Based on the results of these surveys, most of the project area provides habitat for native biota, including threatened species. However, there remain large amounts of alternative habitat in equivalent vegetation types outside the project area.

In summary, six vegetation types were identified:

- Plant Community Type (PCT) 60: Black Oak – Western Rosewood – bluebush/saltbush low sparse woodland on gravel downs in the arid climate zone.
- PCT 123: Dead Finish on stony hills mainly of the Channel Country / Broken Hill Complex Bioregions.
- PCT 136: Prickly Wattle open shrubland of drainage lines on stony rises and plains of the arid climate zone.
- PCT 155: Bluebush shrubland on stony rises and downs in the arid/semi-arid zones.
- PCT 220: Purple Wood wattle shrubland of the arid zone sandplains. PCT220 contains threatened flora species. This vegetation community is classified as an Endangered Ecological Community (EEC) under the Biodiversity Conservation Act 2016 (BC Act). Five very small isolated areas of PCT220 are located near the southern, northwestern and northeastern edges of the Project Site. These patches will not be disturbed as a result of the Project. This will likely include exclusion zones, fencing of certain areas and active management of feral goats.
- PCT 359: Porcupine Grass – Red Mallee – Gum Coolabah hummock grassland / low sparse woodland on metamorphic ranges on the Barrier Range – Broken Hill Complex Bioregion. This vegetation community is classified as a Critically Endangered Ecological Community (CEEC) under the BC Act. One very small isolated area of PCT359 is located near the northwestern boundary of the Project Site. This vegetation community would not be disturbed.

Five listed species (four fauna, one flora) were identified as follows:

- Barrier Range Dragon – Endangered, BC Act.
- Dusky Woodswallow – Vulnerable, BC Act.
- Hooded Robin – Vulnerable, BC Act.
- Rainbow Bee-eater – Migratory, EPBC Act.
- Purple-wood Wattle – Vulnerable, BC Act, Vulnerable, EPBC Act.

The Purple-wood Wattle is associated with PCT220 and will be avoided by direct Project impacts. The Barrier Range Dragon is listed as Endangered under the BC Act, with the population identified within and surrounding the Project area being the third largest known population of the species. A targeted survey for the species was undertaken in November and December 2017 and identified 254 individuals, comprising 165 males and 89 females. The species is typically observed basking on rock outcrops in ranges and gorges and is widespread on rocky hilltops surrounding and within the Project Site. Some areas of habitat for this species would be impacted by the Project.

The results of the preliminary ecological assessment are shown in Figure 24. The majority of identified threatened species or endangered ecological communities identified are outside of the areas that will be impacted by mining and/or site infrastructure. It is proposed that Barrier Range Dragons will be relocated to alternate suitable habitat outside the proposed mining area.

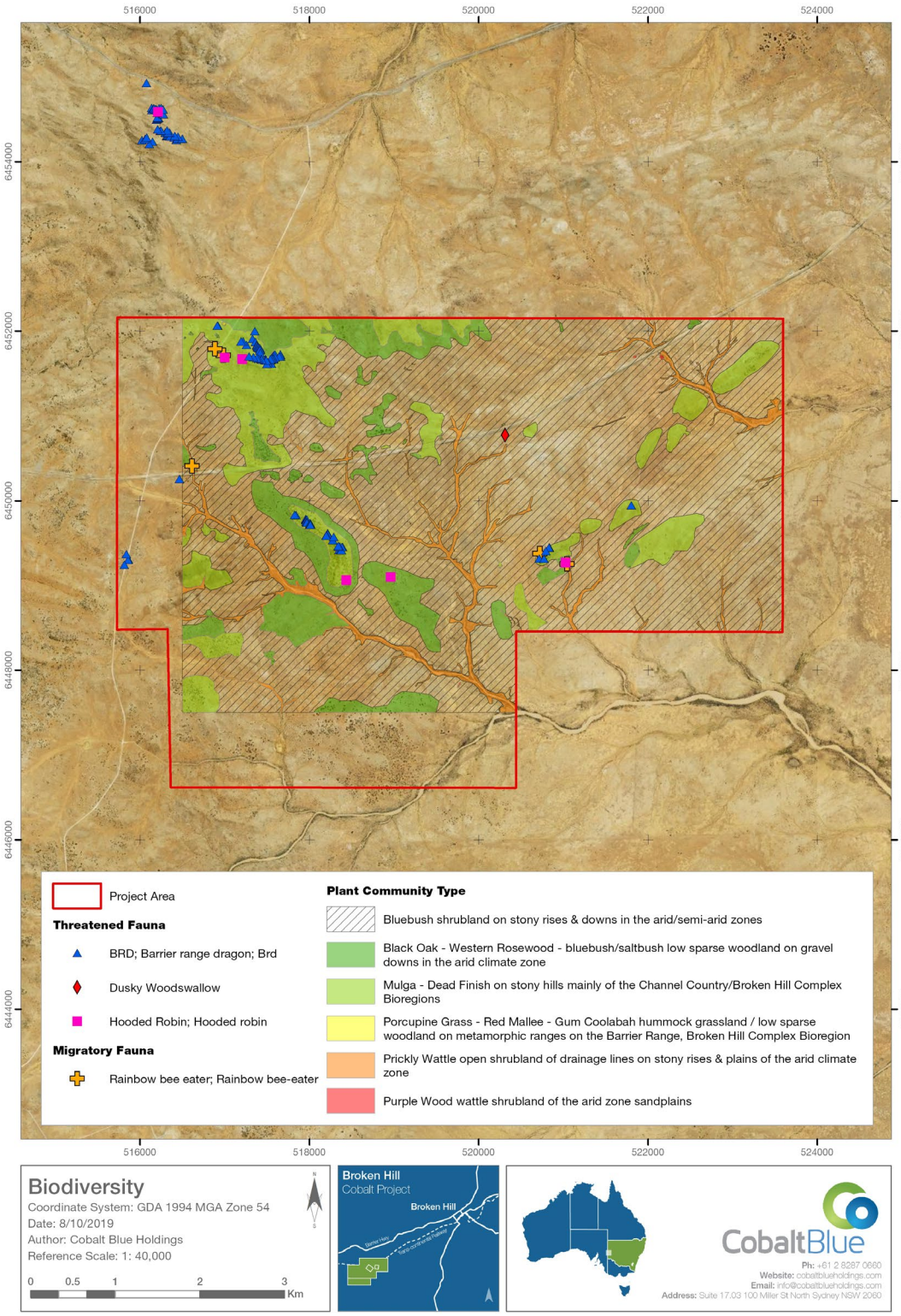


Figure 24: Biodiversity

Key issues

The Project would impact on native vegetation and habitat for the Barrier Range Dragon. Direct impacts associated with clearing vegetation and habitat would result in the temporary and permanent loss and/or modification of habitats. It may not be possible to locate and relocate all impacted dragons and therefore this has the potential to cause mortalities and alter the local distribution of species and populations.

Indirect impacts on flora, fauna and fauna habitat would potentially be related to issues such as lighting, noise, and dust impacts.

Proposed assessment approach

A detailed assessment of ecological impacts would be conducted in accordance with relevant guidelines during preparation of the EIS. This would include a targeted survey of project disturbance footprints that would expand upon the investigations undertaken between 2017-2018, including:

- Targeted searches for threatened flora and fauna.
- Flora surveys.
- Vegetation mapping to allow for calculation of the area of individual vegetation types that would be directly impacted.
- Fauna habitat assessment.
- Preparation of an ecological impact assessment including:
    - Description of the existing environment of the project area.
    - Impact assessment, including calculation of the areas of native vegetation types and amounts of habitat resources to be removed or modified, in accordance with the Biodiversity Assessment Method prescribed by the Biodiversity Conservation Act 2016.
- Preparation of a Biodiversity Offsets Strategy for the Project.

Relevant government agencies such as the Department of Planning, Industry and Environment would be consulted throughout this assessment to ensure that ecological matters are adequately assessed.

5.6. Aboriginal heritage

A search of the Aboriginal Heritage Information Management System database identified 24 Aboriginal archaeological sites within a 20 by 20km search area, centred on the survey area, but

none located within the Project area. These sites included 9 artefact scatters, 13 isolated finds and 4 hearths. All of these registered sites are associated with non-perennial water sources, with artefacts and hearths occurring an average of 79m and 41m from a water source respectively.

In addition, “The Pinnacles”, a Gazetted Aboriginal Place, is located approximately 8km to the east-northeast of the Project Area. The Pinnacles is significant because, according to the information provided on the Office of Environment and Heritage website, it is “associated with maintaining, developing, experiencing and remembering Aboriginal cultural identities and practices, past and present.” According to the NSW Office of Environment and Heritage website, “Aboriginal people traditionally camped along the creeks near the South and North Pinnacles”.

An archaeological field survey commenced in May 2018, targeting parts of the study area that would be directly impacted by the proposed mining operation, as well as creek lines and clay pans with high potential to contain archaeological material. The survey was undertaken by a team of four people including Registered Aboriginal Parties and Professional Archaeologists. The survey involved a total of 38 transects walked across four landform types. The survey recorded a total of 45 archaeological sites comprising;

- 18 isolated surface artefacts.
- 27 sites, comprising artefact scatters, hearths, knapping floors, quarry, grinding grooves.
- 2 potential archaeological deposits (PAD) with the potential to contain subsurface artefacts.

The majority of the sites identified were recorded within the floodplains (clay pans) landform unit. Each of the sites was given a score of overall scientific significance based on assessments of site content, condition and representativeness with:

- 4 sites were determined to be of high significance.
- 23 sites were of medium significance.
- 18 sites were of low significance.

Sites of high significance include:

- a quarry site.
- an artefact scatter, hearth, and 300m by 100m PAD.
- an artefact scatter, knapping floor, hearth, and 200m by 100m PAD.
- a quartzite grinding stone with four grinding grooves on the surface.

A total of 80 stone artefacts were identified, 64% of which were complete flakes, with the remaining artefacts consisting of multiplatform cores, proximal flake fragments, medial flake fragments, grinding stones, formal tools, mullers, and one single platform core. Fifteen artefacts displayed some form of retouch, particularly scalar retouch, demonstrating a potentially high degree of tool use and specific intent in the modification of flakes. The majority of the stone artefacts recorded were made of quartz (63%), while other raw materials included silcrete and quartzite (14% each) and chert (10%). The high percentage of artefacts made from quartz indicates that Aboriginal people were likely exploiting locally available quartz, with large quantities of quartz fragments and quartz outcrops

observed throughout the study area. However, the silcrete and chert artefacts were likely transported into the site, as know silcrete sources are located over 100km from the study area.

A further archaeological field survey was undertaken in September 2018 in areas of the proposed Broken Hill Cobalt Project 2018/19 exploration program. This survey found that isolated artefacts and open scatters were the dominant sites identified. The distribution and type of Aboriginal site identified at the Project site is shown in Figure 25.

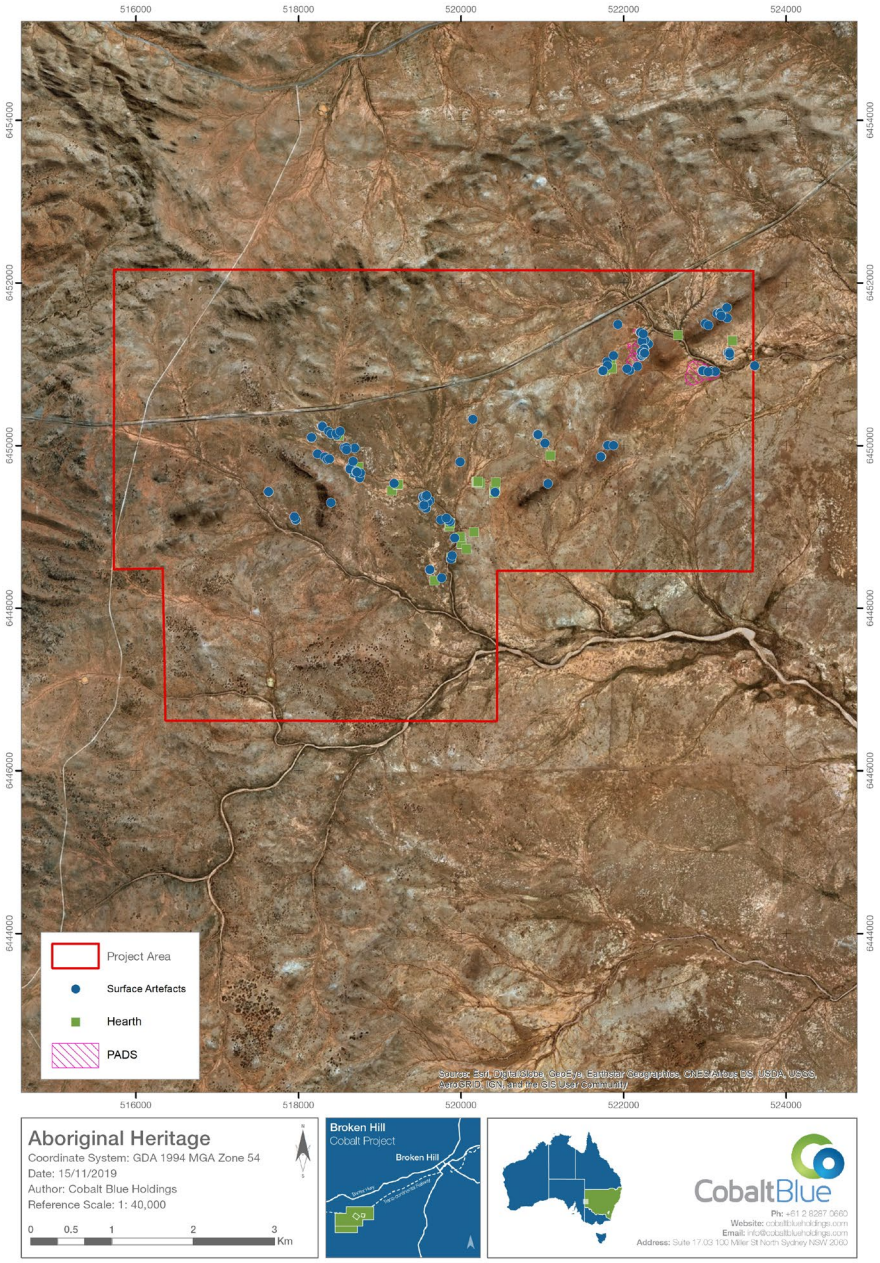


Figure 25: Aboriginal cultural heritage sites

Previous assessments conducted near the study area identified the following trends in artefact distribution and site type.

- Quartz outcrops are located throughout all landform units, with quarry sites directly related to them.
- Low ridges and undulating upland landforms contained lower instances of sites, with less variation in raw material and tool types, and generally lower site density, than in other landform units.
- Sites become smaller in size as distance from water-courses increases.
- The majority of sites recorded consisted of quartz artefacts.
- Larger site complexes with higher levels of tool type variation, and features such as ground ovens, are frequently located within drainage depression landforms and flats associated with creek lines.

The field survey results generally conformed to these trends and the predictive model created to inform it. The most important factor for site distribution in the Broken Hill area appears to be distance to water due to the climatic conditions of the area, which are characterised by extreme heat through the summer months, and prolonged dry periods. Sites and artefacts identified during the survey were located an average of 58m from a water course, with isolated artefacts located further from water sources (an average of 64m) than sites such as artefact scatters and hearths.

Key issues

The project would disturb the land surface and there is the potential for items of significance to the Aboriginal community to be impacted.

Proposed assessment approach

Detailed investigations would be undertaken to assess potential impacts on Aboriginal heritage. This would involve consideration of potential impacts at the mine site and infrastructure corridors.

The Aboriginal cultural heritage assessment would be undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010a) and the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (2011). This would include:

- Reviewing the AHIMS database and any relevant past studies.
- Consulting with Aboriginal stakeholders in accordance with *Aboriginal Cultural Heritage Consultation requirements for proponents 2010* (DECCW 2010b).
- Undertaking a field survey of representative areas of the disturbance footprint to identify places or items of Aboriginal cultural heritage significance.
- Assessing the significance of Aboriginal cultural heritage items or places.

- Developing measures to avoid, reduce and mitigate potential impacts.

5.7. Socio-economic impacts

The City of Broken Hill is the largest regional centre in far western New South Wales. It is located about 25km east of the Project site and 40 kilometres east of the NSW-South Australian border. The population of Broken Hill at the 2016 Census was 18,027. The peak population was 35,000 in 1915[2]. The population of the City has been in long term decline largely due to the downturn in the local mining industry. Whilst the mining and construction industries are important sectors of the Broken Hill economy, restructuring in the mining industry has had a significant impact on the population of Broken Hill, leading to substantial declines since the 1970s. Although still in decline, the rate of population decline has slowed in recent years.

The nearest large population centre is Mildura with nearly 70,000 residents. Mildura is located approximately 300 kilometres to the south of Broken Hill on the NSW-Victorian border. Mildura's population has grown strongly in the last decade, with people attracted by strong employment opportunities in local industries and reasonable housing costs.

The nearest capital city is Adelaide, approximately 500 kilometres to the southwest of Broken Hill. Due to its location, Broken Hill has strong cultural and historical connections with South Australia. Broken Hill is well connected to South Australia via the Barrier Highway and rail line to Port Pirie. Broken Hill operates in the Central Australian Time Zone. Figure 26 shows the relationship of Broken Hill to nearby regional centres and capital cities.

[2] https://www.travelin.com.au/articles/Broken-Hill-Historical-Timeline-01106

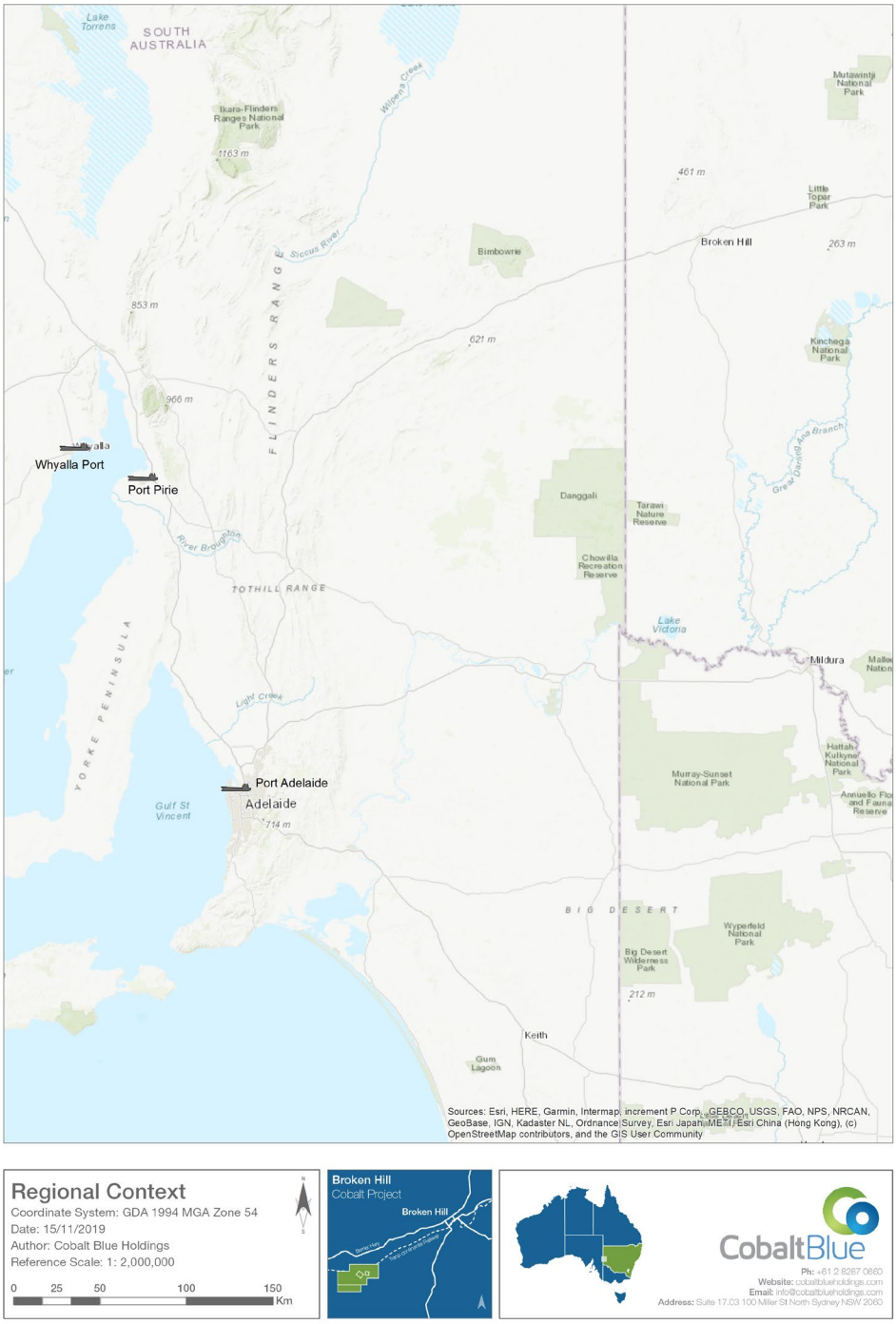


Figure 26: Broken Hill and it regional context

Broken Hill has a long and proud history as a significant mining centre. The town still has active silver, lead and zinc mines that have been worked for over a century; albeit with significantly reduced output today relative to its zenith. Broken Hill currently has an extensive range of locally based retail and service industries. These include medical, health, tourism, educational, welfare, artistic and retail facilities. Tourism is an important industry and Broken Hill's proximity to a range of National Parks

and attractions such as the Living Desert Sanctuary and Regional Art Gallery bring visitors that contribute to the local economy. The only sensitive residential receptors in the vicinity of the Project Area are two residences, located 8 km and 13 km to the west-northwest of the Project Area.

Stakeholder engagement undertaken by Cobalt Blue has identified significant support for the Project from the Broken Hill community in terms of the potential for additional employment, economic growth, skills development and retaining young people in Broken Hill, whilst factors that affect residents amenity such as dust, noise and blasting vibrations are avoided or minimised give the distance from the Project site to Broken Hill City.

Key issues

The Project would likely have significant positive social and economic benefits for Broken Hill by creating local employment opportunities and economic stimulus. At full production, it is estimated that total employee numbers will be approximately 410 full time equivalent positions. During construction it is estimated that 450 personnel will be required for approximately two years. Site personnel will preferably be based in Broken Hill (as opposed to fly in fly out). Where it is possible to do so, shift based employees will be bussed to site from town. Most of the permanent workforce is likely to be based in Broken Hill and would travel to the site daily. Any increase in population would partially offset the recent decline in population associated with a downturn in the regional mining industry. The project would expand employment opportunities in an industry sector that has a long history in Broken Hill and provide a substantial economic stimulus for local businesses.

Potential social impacts of the project relate primarily to workforce planning, and how that affects the demand for housing and accommodation as well as local services and infrastructure. The accommodation strategy for the Project will be centred upon using existing stock of under-utilised housing within the city limits. The scale of existing social infrastructure is large and well established and with an integrated management approach, sufficient housing is available to accommodate construction and operations/maintenance phases of the project. Other social impacts may be associated with changes to amenity, either in the immediate surrounds of the project site, or from associated transport infrastructure.

A key focus of the socio-economic impact assessment would be upon social impact management and the development of mechanisms to capitalise on the opportunities provided by the project to maximise local benefits. The project brings several economic development opportunities to Broken Hill.

The project's demand for skilled labour is unlikely to be initially met through local supply. As a result, the project may compete for its workforce with other energy and resources sector projects being developed in NSW as well as interstate.

Broken Hill College is a major campus of the Technical and Further Education (TAFE) Western College which offers a broad range of programs in general education, trades and creative studies. Similarly, the Country Universities Centre has a campus in Broken Hill. This provides opportunities to develop technical skills within the school leaving population. Providing training and employment

opportunities which slow the out-migration which is typically occurring within this age group is one potential social benefit of the project.

Proposed assessment approach

Potential socio-economic impacts may include changes to access and demand for local services and infrastructure, housing and accommodation, and social impacts associated with changes to amenity (i.e. as a result of potential impacts such as noise or air quality) at surrounding receptors.

The EIS would assess potential socio-economic impacts and would include:

- Social issues related to the project that were raised during implementation of the Stakeholder Engagement Strategy.
- Analysis of the impact the additional staff attracted to Broken Hill would likely have on access to, and demand for, local social services and infrastructure.
- A review of the EIS technical studies for air quality and noise that have the potential to impact on social amenity.
- Measures that would be implemented to avoid, reduce and mitigate predicted social impacts.
- A benefit-cost analysis which would be prepared that would identify and quantify the potential economic benefits and costs of the project.
- As the project is expected to impact on the broader regional economy, a regional economic impact analysis would also be undertaken. This would analyse impacts on the regional economy during construction, operation, decommissioning and rehabilitation and would consider issues such as labour market impacts due to direct and indirect employment. This would discuss the project's contribution to the regional and NSW economies.

The socio-economic impacts would be assessed in accordance with the Guidelines for Economic Assessment of Mining and Coal Seam Gas Proposals.

5.8. Consideration of Other Issues

5.8.1. Land and Agricultural Capacity

Land use throughout the region is predominantly agricultural and is dominated by sheep grazing. The Project Area is within Thackaringa pastoral station, with ancillary utilities infrastructure located on other pastural leases and some freehold land.

NSW Land and Soil Capability (LSC) mapping identifies land in the region to be nutrient limited, and therefore, classifies the land as 'low intensity grazing' (LSC Class 6 or 7). Class 6 land has very

severe limitations: it is incapable of sustaining many land use practices including cultivation, moderate to high intensity grazing and horticulture. Highly specialised practices can overcome some limitations for some high value products. Class 7 land has extremely severe limitations: land has severe limitations that restrict most land uses and generally cannot be overcome.

The project would change land use at the proposed mine site and result in land that is currently used for pastoral purposes no longer being available for agricultural production. Installation of ancillary infrastructure would also result in localised changes to land use during construction and operation.

The project also has the potential to indirectly alter land and livestock management, such as access to livestock drinking water, physical access for managing or moving stock related to pasture requirements, and/or if fencing requires re-configuration to ensure efficient operations for example.

A soil survey and agricultural assessment would be completed to determine agricultural capacity in accordance with the Strategic Regional Land Use Policy Guideline for agricultural impact statement guidelines. A desktop review would be undertaken to identify the preferred approach to the field soil sampling strategy.

The assessment would consider whether the project would reduce the available land area below a critical level required to sustain otherwise viable farming enterprises. This would require a financial analysis of current farming enterprises and an assessment of change in viability under the proposed land use changes. This would then be compared with the potential economic benefits from a mining land-use. The soil survey would also provide information that would be used to develop the Conceptual Mine Closure Plan.

5.8.2. Air quality and Greenhouse Gas

Baseline air quality monitoring in the form of dust deposition monitoring commenced at the Project site in November 2018. The location, installation and operation of the gauges complies with the relevant Australian Standard (AS/NZ3580.10.1 – Methods for sampling and analysis of ambient air – Determination of particulates - Deposited matter – Gravimetric method). The deposited insoluble dust in the gauges is being analysed by Australian Laboratory Services using NATA accredited methods on a regular basis.

A summary of air goals is provided in Table 5. NSW applicable ambient air quality standards are found in the Approved Methods for the Modelling and Assessment of Air Pollutants of in New South Wales (DECW 2005). The Federal advisory goal for fine particulates ($PM_{2.5}$) from the National Environment Protection (Air Quality) Measure also applies. The limits for dust deposition are a maximum incremental deposited dust value of 2 g/m^2/month (annually averaged) (see Table 5).

Table 5: Criteria for maximum increase and maximum deposited dust quantities (DECW, 2005)

Air pollutant	**Averaging period**	**Maximum increase in Deposited Dust level (from baseline)**	**Maximum Total Deposited Dust Level**
Deposited dust	Annual	2 g/m^2/month	4 g/m^2/month

Initial measurements of total insoluble matter collected at the Project site (albeit in a drought subject to frequent, naturally occurring dust storms) have demonstrated that ambient deposited dust levels are substantially in excess of the Maximum Total Deposited Dust Level specified in the Approved Methods, sometimes in the order of 6 g/m^2/month. The main potential issue associated with air quality would be dust generation due to activities such as:

- Clearing vegetation.
- Earthworks such as excavating topsoil and overburden, and loading, transporting and placing the material.
- Earthworks to construct process and utility infrastructure.
- Drilling and blasting.
- Dumping ore on ROM pad and ore handling.
- Crushing ore.
- Waste rock and tailings management.
- Wind erosion of stockpiles and other disturbed areas.
- Vehicle movements on unsealed roads.

All processing equipment would comply with the Protection of the Environment Operations (Clean Air) Regulations 2010 emission standards.

The EIS would include an air quality assessment that would be prepared in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (DEC 2005) and in consultation with the EPA. The air quality assessment would:

- Characterise the background air quality, including dust deposition and total suspended particulates. This would be based on data obtained from the monthly sampling program.
- Identify the nearest sensitive receptors (expected to be over ten kilometres from the mine).
- Assess potential air quality impacts on the nearest sensitive receptors.

- Compare the predicted dust impacts against relevant criteria for total suspended particulates as well as incorporating baseline air quality data for deposited dust that reflect existing conditions prior to mining, and assess dust impacts with/without active water based dust suppression that may consume substantial volumes of water for little benefit in local/regional amenity.
- Develop measures to avoid, reduce and mitigate potential impacts.

The EIS would describe and assess greenhouse gas (GHG) emissions likely to be generated by the project. This would include GHG embodied in materials or otherwise caused to be generated through the construction and operation of the project. The assessment would include:

- A GHG inventory of projected annual emissions for each relevant GHG with total emissions expressed in 'CO_2 equivalent' terms for the following categories:
  - Scope 1 – emissions which are direct emissions of GHG from sources within the boundary of the facility and as a result of the facility's activities.
  - Scope 2 – emissions of GHG from the production of electricity that the project would consume, but that are physically produced by another facility.
  - Scope 3 – emissions that are generated in the wider economy as a consequence of or business's activities. These are indirect emissions as they arise from sources that are not owned or controlled by that person or business but they exclude Scope 2.
  - An outline of the data collection and calculation procedures used to create the GHG.
  - emissions inventory.
  - A brief description of the method(s) by which estimates were made.
  - A description of proposed actions and measures for GHG abatement.

The GHG assessment would be prepared in accordance with the general principles of the following reference materials, as they represent current industry practice in Australian greenhouse gas accounting:

- The Greenhouse Gas Protocol (World Business Council for Sustainable Development, 2006).
- Life Cycle Assessment principles (ISO 14040 series).
- National Carbon Accounting Toolbox (Australian Government 2005).
- The Commonwealth Department of Climate Change and Energy Efficiency (DCCEE) National Greenhouse Accounts (NGA) Factors (2010).

5.8.3. Waste management (excluding waste rock and tailings)

A range of waste types would be generated during the construction, operational, decommissioning and rehabilitation stages of the project. Waste rock and process rejects are excluded from this section and are discussed as part of 5.1 Waste Management and Acid Mine Drainage.

The main waste types generated are expected to include:

- Construction waste:
  - Vegetation from site clearing, landscaping and ongoing maintenance (to be retained and used in site rehabilitation).
  - Excess soil or rock from civil earthworks cut activities (this would be stockpiled for reuse during rehabilitation works).
  - Packaging, surplus construction materials such as timber, concrete, gravel, metals, plastics, cabling off-cuts, cable reels and the like.
- Staff generated wastes:
  - Food and drink packaging (paper, cardboard, liquid paperboard, plastics, ferrous and non-ferrous metals, glass).
  - Office and administration waste.
  - Sewage (pump out or on -site disposal).
- Operations waste:
  - Waste oils, oily wastes, oily rags, solvents, lubricants and fuel waste.
  - Tyres.
  - Equipment waste.
  - Spent chemicals/resins and chemical containers.
- Decommissioning and rehabilitation:
  - Plant and equipment.
  - Crushed concrete and steel reinforcement.
  - Mining equipment.

Recyclables such as metals, paper products, glass would be collected and incorporated into off-site recycling streams where local recycling options are available. Oils, lubricants and waste petroleum products would be captured and provided to a waste management contractor for recycling and/or disposal. Other waste will be recycled where it is possible and cost effective to do so. All other wastes will be classified according to EPA Guidelines and disposed of at an appropriately licensed facility. An on-site landfill may be considered for the disposal of non-hazardous solids wastes. Plant and equipment will be sold or scrapped during decommissioning.

The EIS would characterise the likely waste types and quantities to be generated by the project. This will outline indication of the proposed storage, treatment, handling and final disposal options available. An assessment of waste management services and facilities at a local level will be

carried out to check that adequate waste management services and facilities are available for the types and quantities of waste expected to be generated.

The waste management options and opportunities for each of the wastes identified will be assessed for impacts on the environment through generation, storage, transport, handling and disposal. Where possible, disposal locations would be identified for wastes. Indicative reuse opportunities during the construction and operational stages of the project would be identified.

5.8.4. Traffic and transport

The mine site is located approximately 4 kilometres south of the Barrier Highway and is currently accessed via an unsealed road that was formed to enable access to the abandoned Triple Chance Mine. The Barrier Highway links Broken Hill to South Australia. The Barrier Highway is a two lane sealed road. The Broken Hill to Peterborough railway line is immediately adjacent to the Project Area (see Figure 1).

Potential traffic and transport impacts would be associated with an increase in the number of vehicles that would travel along the Barrier Highway, principally between the Project access point at the Triple Chance Mine Road / Barrier Highway intersection and Broken Hill. The project would involve the upgrade of the Triple Chance Mine Road between the highway and the Project site and this would entail a new intersection that would be constructed to RMS standards. An upgraded railway level crossing is also necessary and would be constructed to ARTC requirements. An internal road network would be constructed to accommodate staff and operational vehicle parking, loading and circulation requirements.

A rail siding and associated loading infrastructure would be constructed and operated adjacent to the existing rail line. The location of this rail siding would be confirmed as the design progresses, and it would be designed to comply with ARTC's requirements. The rail siding would be used to hold wagons while elemental sulphur and cobalt products are loaded, or site consumables such as diesel are unloaded.

The EIS would assess potential impacts on the road and railway networks and this would inform any additional transport infrastructure requirements. The assessments would be undertaken in accordance with relevant guidelines, including TfNSW, Broken Hill City Council, and ARTC.

5.8.5. Hazards and risks

The project would potentially transport, use or store a number of dangerous goods during the construction and operational stages, including though potentially not limited to; explosives (used during blasting), diesel and other hydrocarbons, processing chemicals and products such as cobalt sulphate and elemental sulphur.

A preliminary hazard assessment (PHA) would be undertaken in accordance with the requirements of SEPP33. The main objective of the PHA would be to show that the residual risk levels are acceptable in relation to the surrounding land use, and that any risk would be appropriately managed. This would be done by systematically:

- Identifying hazards and abnormal operating conditions that could give rise to hazards.
- Analysing all hazards in terms of their consequence (effects) to people, the surrounding land uses and environment and their probability (likelihood) of occurrence.
- Quantifying the analysis and estimate the resultant risks to surrounding land uses and the environment.
- Assessing the risks in terms of the location, land use planning implications and existing criteria and ensure that the proposed safeguards are adequate.

The PHA would be undertaken in accordance with Hazardous Industry Planning Advisory Paper No. 6 (HIPAP 6) and other related HIPAP documents, such as HIPAP 4 or HIPAP 12 (Department of Planning, 2011).

5.8.6. Visual

The Project is located approximately 25 km from the outskirts of Broken Hill and 4 km from the Barrier Highway, and is partly screened by hills between the Barrier Highway and the site. Whilst mine site infrastructure, lighting and IWLs may be visible from vehicles travelling on the Barrier Highway, it is unlikely that significant visual impacts will occur. On the completion of mining, infrastructure will be decommissioned and removed from the site, and waste emplacements will be rehabilitated to mimic the surrounding landform. A qualitative visual impacts assessment will be undertaken for the EIS.

5.8.7. Built Heritage

No known items of built heritage will be impacted by the Project. A review of the heritage provisions of the Broken Hill LEP and the NSW Heritage Register will be undertaken for the EIS.

5.8.8. Noise and vibration

The only sensitive residential receptors in the vicinity of the Project Area are two residences, located 8 km and 13 km to the west-northwest of the Project Area. An assessment of the potential for noise impact from the Project will be made in accordance with the EPA (2017) Noise Policy for Industry.

Similarly, it is not expected that amenity impacts from blasting vibration will occur. However, the Broken Hill – Peterborough Rail line is near the site. The impact of blasting on the rail line will be

determined in accordance with the ANZECC (1990) Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration, and in consultation with ARTC. Given that the railway line is in excess of 500m from the closest open cut pit, it is expected that peak particle velocity from blasting would be less than 25 mm/s, and that no impact to rail line infrastructure such as culverts would occur. Planned blasting will occur during day time hours. Blasting would be coordinated so that it does not coincide with rail movements in the immediate vicinity of blasting operations.

6. Summary and Conclusions

Cobalt Blue propose to construct and operate a greenfields open cut mining and processing operation that is located approximately 25 kilometres south west of Broken Hill in the far west of New South Wales. The operations will extract cobalt-pyrite ore and process this to manufacture an intermediate mixed cobalt-nickel hydroxide and/or high purity cobalt sulphate, elemental sulphur and potentially a low grade haematite product. Mining and processing activities will extend for ~20 years, with site decommissioning and rehabilitation to follow. The project is State Significant Development and will be determined under Part 4 of the NSW Environmental Planning and Assessment (EP&A) Act, 1979.

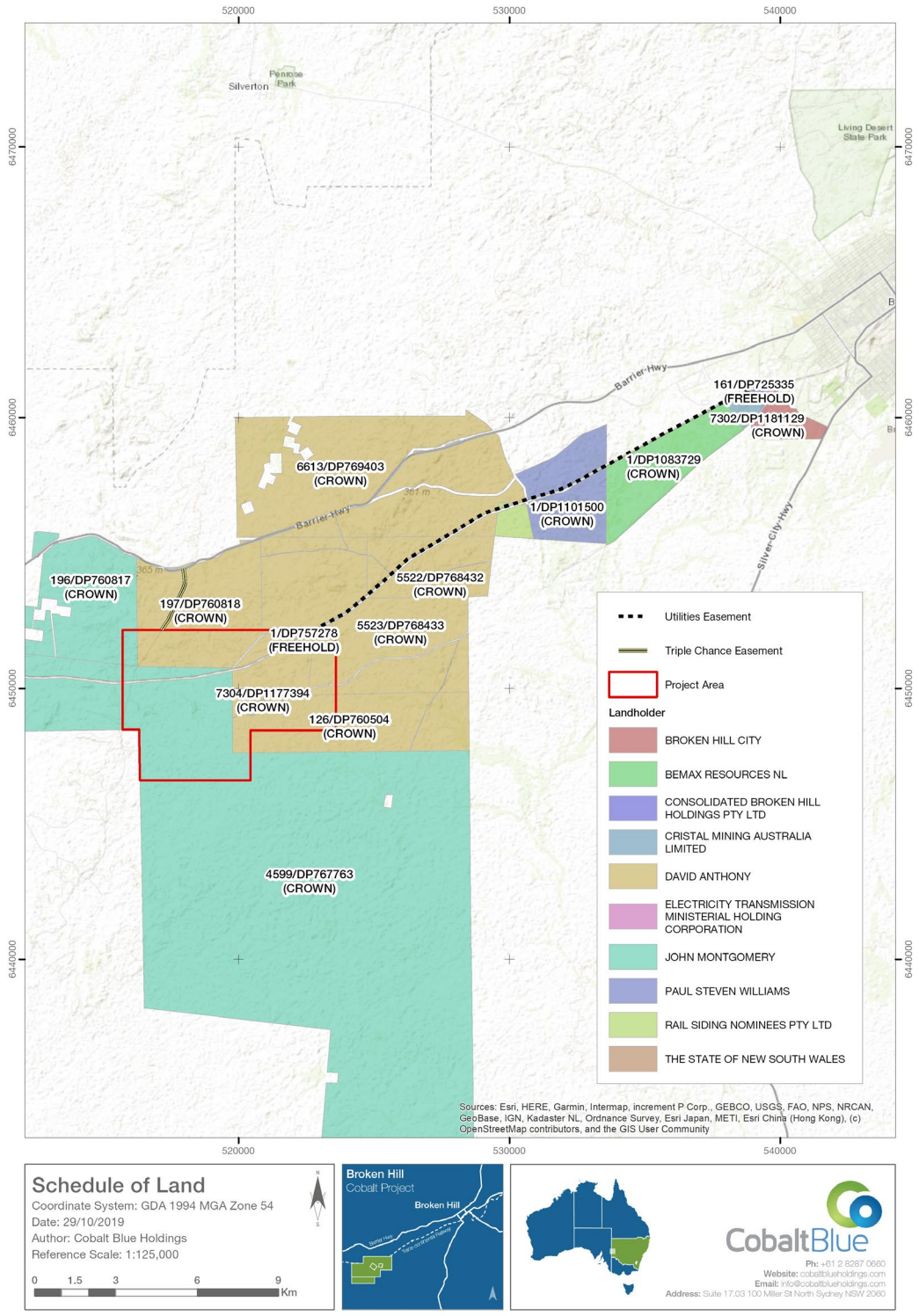
This Scoping Report provides a description of the Project, existing information on the environmental context, potential for environmental impacts, and feedback received during stakeholder engagement undertaken to date. The Scoping Report has been prepared in support of an application for the Secretary's Environmental Assessment Requirements (SEARs) for the Project. Cobalt Blue will prepare an Environmental Impact Statement in accordance with the SEARs.

7. References

AMIRA International (2002) ARD Test Handbook: Prediction & Kinetic Control of Acid Mine Drainage, AMIRA P387A. Ian Wark Research Institute and Environmental Geochemistry International Ltd., Melbourne.

Citi (2021) The ultimate guide to the cobalt market: 2021-2030.

Appendix A: Preliminary Schedule of Lands



Lot	DP	LGA	Land use
Project Area within EL6622, ML86 & ML87			
4599	767763	Unincorporated	Pastoral Lease
126	760504	Unincorporated	Pastoral Lease
7304	1177394	Unincorporated	Crown/Native Title *
197	760818	Unincorporated	Pastoral Lease
196	760817	Unincorporated	Pastoral Lease
1	757278	Unincorporated	Freehold
5523	768433	Unincorporated	Pastoral Lease
Utilities Easement			
5522	768432	Unincorporated	Pastoral Lease
6613	769403	Unincorporated	Pastoral Lease
2	1101500	Unincorporated	Pastoral Lease
1	1101500	Unincorporated	Pastoral Lease
1	1083729	Unincorporated	Pastoral Lease
6666	822054	Broken Hill	Freehold
161	725335	Broken Hill	Freehold
2	1102040	Broken Hill	Freehold
7302	1181129	Broken Hill	Crown

*Barkandji Traditional Owners #8 Native Title Determination

Appendix B: Social Impact Assessment Scoping Tool

Environmental Impact Statement (EIS) scoping worksheet for:			*Broken Hill Cobalt Project* hh								Date:	Oct-19	
What matters might be impacted?			**What activities might cause an impact?**	**What are the characteristics of the impact?**						**How will the impact be managed?**	**What are the community and other stakeholder views?**	**What level of assessment and engagement is required in the EIS preparation phase?**	
Social and environmental matters **I.e. natural or human assets or values aggregated at the level most appropriate for informing management and assessment requirements** ***Click on the matter for a description, or the link above for full glossary***			**Without any mitigation, is the proposal likely to impact on the matter?** ***(Select from list)***	**If there is a 'likely' impact:** **1. list the activities expected to cause the impact; and** **2. if applicable, list the receptor being impacted and its status.** *E.g. construction noise will be heard at nearby school* **If 'unlikely', briefly explain why. Has the impact been actively avoided through project design or site location?** ***(Manual entry)***	**Is the impact, without mitigation, expected to cause a material effect with regard to its...** ***(Answer 'Y', 'N' or '?')*** ***Click on characteristic for description, or the link above for further detail***				**Does the impact need assessment in the EIS?** ***(Auto fills)***	**Is the impact, without mitigation, expected to have a material cumulative effect with other impacts (including from other projects)?** ***(Select from list)***	**What safeguards and management measures are expected to be required to address the impact?** ***(Select from list)***	**Are there community or other stakeholder concerns regarding the impact or activity?** ***(Based on engagement with community and other stakeholders)*** ***(Select from list)***	**Expected level of assessment and/or engagement required** ***(Auto fills)***	**Relevant section in Scoping Report** ***(Manual entry)***
					extent?	**duration?**	**severity?**	**sensitivity?**						
What does the proposal mean for people?	AMENITY	acoustic	Unlikely	Nearest residential receiver in excess of 8km away.	N	N	N	N	No	No	Standard	No	Other Issue	5.8.8
		visual	Unlikely	Waste rock and tailings emplacemenmts, dust generated by mining (blasting, haulage). Visual impacts likely only to be experienced by community passing the site (approx 4 km away) on the Barrier Highway. It is unlikely that any residential premises will be adversely impacted.	N	Y	N	N	No	No	Standard	No	Other Issue	5.8.6
		odour	Unlikely	The mine and proces plant wil not generate offensive odours. Nearest residential receiver in excess of 8km away.	N	N	N	N	No	No	Standard	No	Other Issue	5.8.2
		microclimate	Unlikely	Nearest residential receiver in excess of 8km away. No significant change topography / microclimate expected.	N	N	N	N	No	No	Standard	No	Other Issue	5.8.2
		other - please specify												
	ACCESS	access to property	Likely	Access to the site will be upgraded to cater for project needs. No public access to the site currently exists. No receptors impacted.	N	N	N	N	No	No	Standard	No	Other Issue	5.8.4
		utilities	Likely	Power and water tranmission will be provided to site from existing utility networks at Broken Hill. Sufficient power and water is available for the Project. No receptors impacted. Scoped with landowners. General community concern about water consumption.	N	N	N	Y	No	No	Standard	Yes	Other Issue + Focussed Engagement	2.1.4 2.1.5
		road and rail network	Likely	Upgraded road access to the site and entry from Barrier Highway is required. A rail siding is also required adjacent to the ARTC main rail line. No receptors directly impacted.	N	Y	N	N	No	No	Standard	No	Other Issue	2.1.6 2.1.9
		offsite parking	Unlikely	On-site parking will be provided.	N	N	N	N	No	No	Standard	No	Other Issue	
		other - please specify												
	BUILT ENVIRONMENT	public domain	n/a										No assessment necessary - Worksheet only	
		public infrastructure	Unlikely	An upgraded interesction to the site entry at the Barrier Highway will be required. This is unlikely to imapcts on any receptors.	N	N	N	N	No	No	Standard	No	Other Issue	2.1.6
		other built assets	n/a										No assessment necessary - Worksheet only	
		other - please specify												
	HERITAGE	natural	n/a										No assessment necessary - Worksheet only	
		cultural	n/a	Will enable continuation of Broken Hill as a mining related city									No assessment necessary - Worksheet only	
		Aboriginal cultural	Likely	Several Aboriginal site will be impacted by the Proposal.	Y	Y	Y	Y	Yes	No	Project Specific	Yes	Key Issue + Focussed Engagement	5.6
		built	n/a										No assessment necessary - Worksheet only	
		other - please specify												
	COMMUNITY	health	Unlikely	The project is 25km from Broken Hill and it is unlikely that any aspects will directly impact community health	N	N	N	N	No	No	Standard	No	Other Issue	
		safety	Unlikely	The project is 25km from Broken Hill and it is unlikely that any aspects will directly impact community safety. Upgrades to site entry will ensure road safety and consideration of shift based group transport to site will be considered. Most heavy product transport will be by rail.	N	N	N	N	No	No	Standard	No	Other Issue	
		services and facilities	Unlikely	Employment created by the Project will arrest the decline in mining related jobs in Broken Hill. The resultant economic stimulation will assist maintain and enhanse regional services and facilities in Broken Hill.	N	N	N	N	No	No	Standard	No	Other Issue	5.7
		cohesion, capital and resilience	Unlikely	Greater employment oportunities as well as direct community enhansement provided by the Project will assist maintaining the economic prosperity in Broken Hill and the viability of the comminity.	N	N	N	N	No	No	Standard	No	Other Issue	5.7
		housing	Likely	Adequate housing stock exists in Broken Hill due to the ongoing downturn in mining related employment. Several other large construction projets are now complete. However, BHCC has suggested that adequate forewarning is povided to BHCC and community to develop appropriate housing response (eg, investment)	Y	N	N	N	No	No	Project Specific	Yes	Key Issue + Focussed Engagement	5.7
		other - please specify												
	ECONOMIC	natural resource use	Unlikely	The processing method enables the processing of this cobalt pyrite ore in a cost effective and sustainable manner to maximise the return for extracting the ore.	N	N	N	N	No	No	Standard	No	Other Issue	2
		livelihood	Unlikely	Substantial employment and economic stimulation in Broken Hill will occur due to the Project. The project will reduce the size of the existing grasing property. Cobalt Blue wil compensate accordingly.	N	N	N	N	No	No	Standard	No	Other Issue	2.2
		opportunity cost	Unlikely	The current landuse is low value grazing. The Proposed Project is many order of magnitude larger that the current activity.	N	N	N	N	No	No	Standard	No	Other Issue	2.7
		other - please specify												
		particulate matter	Likely	Mining related activities will generate dust. Nearest residential receiver in excess of 8km away. Minor impacts may be experience under adverse conditions. Broken Hill is often affected by wind blown dust, and dust has been raised by some community members and current land manager.	N	N	N	N	No	No	Standard	Yes	Other Issue + Focussed Engagement	5.8.2

Environmental Impact Statement (EIS) scoping worksheet for:			Broken Hill Cobalt Project hh								Date:		Oct-19	
What matters might be impacted?			What activities might cause an impact?	What are the characteristics of the impact?						How will the impact be managed?	What are the community and other stakeholder views?	What level of assessment and engagement is required in the EIS preparation phase?		
Social and environmental matters I.e. natural or human assets or values aggregated at the level most appropriate for informing management and assessment requirements *Click on the matter for a description, or the link above for full glossary*			Without any mitigation, is the proposal likely to impact on the matter? *(Select from list)*	If there is a 'likely' impact: 1. list the activities expected to cause the impact; and 2. if applicable, list the receptor being impacted and its status. *E.g. construction noise will be heard at nearby school* If 'unlikely', briefly explain why. Has the impact been actively avoided through project design or site location? *(Manual entry)*	Is the impact, without mitigation, expected to cause a material effect with regard to its... *(Answer 'Y', 'N' or '?')* *Click on characteristic for description, or the link above for further detail*				Does the impact need assessment in the EIS? *(Auto fills)*	Is the impact, without mitigation, expected to have a material cumulative effect with other impacts (including from other projects)? *(Select from list)*	What safeguards and management measures are expected to be required to address the impact? *(Select from list)*	Are there community or other stakeholder concerns regarding the impact or activity? *(Based on engagement with community and other stakeholders)* *(Select from list)*	Expected level of assessment and/or engagement required *(Auto fills)*	Relevant section in Scoping Report *(Manual entry)*
					extent?	duration?	severity?	sensitivity?						
What does the proposal mean for the natural environment?	AIR	gases	n/a	No emissions to air will occur.									No assessment necessary - Worksheet only	
		atmospheric emissions	Likely	Scope 1 & 2 GHG emissions will occur from operational activities including power consumption. The main product will be used in batteries thereby facilitating decarbonising of the economy.	N	Y	N	N	No	No	Standard	Yes	Other Issue + Focussed Engagement	5.8.2
		other - please specify												
	BIODIVERSITY	native vegetation	Likely	Vegetation clearing wll be required. No EECs wil be impacted.	Y	Y	N	N	Yes	No	Project Specific	Yes	Key Issue + Focussed Engagement	5.5
		native fauna	Likely	Barrier Range Dragon has been identified and will be impacted.	Y	Y	Y	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	5.5
		other - please specify												
	LAND	stability and/or structure	Likely	Voids and waste emplacements must be designed and constructed to be long term stable. Minor community impact. NSW Govt agency interest in final landform.	N	Y	Y	Y	Yes	No	Project Specific	Yes	Key Issue + Focussed Engagement	5.2
		soil chemistry	Likely	Waste rock and tailings have potential acid forming properties. Robust AMD management strategies are required to provide a long term stable, non-polluting landform.	N	Y	Y	N	Yes	No	Project Specific	Yes	Key Issue + Focussed Engagement	5.1
		capability	Likely	Mining activities and rehabilitated land may impact on current agricultural capability. At present, agricultural capability is low and restricted to low intensity sheep and goat grazing. It would be expected that land capability change will occur at the local scale and not materially affect regional agricultural production.	N	Y	N	N	No	No	Standard	No	Other Issue	5.8.1
		topography	Likely	Pit voids and waste rock/tailings emplacements will give rise to permanent local changes in topography.	N	Y	Y	Y	Yes	No	Project Specific	Yes	Key Issue + Focussed Engagement	5.2
		other - please specify												
	WATER	water quality	Likely	AMD from emplacement and voids. General site water quality issues. Localised impacts may occur.	N	Y	N	N	No	No	Project Specific	Yes	Key Issue + Focussed Engagement	5.3 5.4
		water availability	Likely	Water is available from Essential Water supply. On-site stormwater management. Will need Aquifer Interference and WAL. Will investiage using local groundwater that would be imapcted by mining for processing. Local groundwater is very poor quality but contains cobalt.	N	Y	N	N	No	No	Project Specific	Yes	Key Issue + Focussed Engagement	2.1.4 5.3 5.4
		hydrological flows	Likely	Ephemeral Creeks. Diversions required. No change to downstream flow regimes expected.	N	N	N	N	No	No	Project Specific	Yes	Key Issue + Focussed Engagement	5.3 5.4
		other - please specify												
What risks does the proposal face?	RISKS	coastal hazards	n/a										No assessment necessary - Worksheet only	
		flood waters	Likely	Project wil require creek diversions including flood protection.	N	N	Y	N	No	No	Standard	No	Other Issue	5.4
		bushfire	Unlikely	Bushfire risk is generally low due to sparse vegetation	N	N	N	N	No	No	Standard	No	Other Issue	
		undermining	n/a										No assessment necessary - Worksheet only	
		steep slopes	n/a										No assessment necessary - Worksheet only	
		Tailings facilities	Unlikely	Tailings are porposed to be incorporated into an Integrated Waste Landform by combining with waste rock. This forms a stable (physical and chemical) landform. Is not a Designated Dam under Dam Safety Act.	N	N	N	N	No	No	Project Specific	Yes	Key Issue + Focussed Engagement	5.1

Social impact assessment (SIA) scoping worksheet for:			*Broken Hill Cobalt Project*			Date:			
Scoping results from EIS Worksheet						**Is there a social impact?**		**What information will be required to assess the social imapct?**		
Social and environmental matters *Click on a matter below for brief description, or refer to full glossary*			**Outline of impact** *(Auto fill from EIS worksheet)*	**Is a material effect on the matter expected?** *(Auto fill from EIS worksheet)*	**Is there community or other stakeholder concerns regarding the impact or activity?** *(Auto fill from EIS worksheet)*	**With regard to the matter expected to be impacted, will there be a social impact?** *Select this cell for brief description, or click link above for further detail*		**Are impacts on the matter expected to require a non-SIA specialist study?** *(Auto fill from EIS worksheet, then manually enter non-SIA report type)*	**Will the non-SIA specialist study address the social impact?** *Click on link above for further detail on potential classifications* *(Select from list)*	**Level of assessment for the social impact in the SIA** *Click on link above for further detail on potential classifications* *(Auto fills)*
						Yes/No *(Select from list)*	**If yes, outline the social impact** *(Manual entry, if not already covered in column D)* **If no, outline why** *(Manual entry)*			
What does the proposal mean for people?	AMENITY	acoustic	Nearest residential receiver in excess of 8km away.	Yes	No	No		No	Yes - in part	No SIA required
		visual	Waste rock and tailings emplacemenmts, dust generated by mining (blasting, haulage). Visual impacts likely only to be experienced by community passing the site (approx 4 km away) on the Barrier Highway. It is unlikely that any residential premises will be adversely impacted.	Yes	No	No		No	Yes - in part	No SIA required
		odour	The mine and proces plant wil not generate offensive odours. Nearest residential receiver in excess of 8km away.	Yes	No	No		No	Yes - in part	No SIA required
		microclimate	Nearest residential receiver in excess of 8km away. No significant change topography / microclimate expected.	Yes	No	No		No	No	No SIA required
		other - please specify								
	ACCESS	access to property	Access to the site will be upgraded to cater for project needs. No public access to the site currently exists. No receptors impacted.	Yes	No	No		No	Yes - in part	No SIA required
		utilities	Power and water tranmission will be provided to site from existing utility networks at Broken Hill. Sufficient power and water is available for the Project. No receptors impacted. Scoped with landowners. General community concern about water consumption.	Yes	Yes	No		No	Yes - in part	No SIA required
		road and rail network	Upgraded road access to the site and entry from Barrier Highway is required. A rail siding is also required adjacent to the ARTC main rail line. No receptors directly impacted.	Yes	No	No		No	Yes - in part	No SIA required
		offsite parking						No		
		other - please specify								
	BUILT ENVIRONMENT	public domain								
		public infrastructure	An upgraded interesction to the site entry at the Barrier Highway will be required. This is unlikely to imapcts on any receptors.	Yes	No	No		No	Yes - in part	No SIA required
		other built assets								
		other - please specify								
	HERITAGE	natural								
		cultural								
		Aboriginal cultural	Several Aboriginal site will be impacted by the Proposal.	Yes	Yes	Yes	Aboriginal Heritage Impact Assess		Yes - fully	Desktop SIA
		built								
		other - please specify								
	COMMUNITY	health	The project is 25km from Broken Hill and it is unlikely that any aspects will directly impact community health	Yes	No	No		No	Yes - in part	No SIA required
		safety	The project is 25km from Broken Hill and it is unlikely that any aspects will directly impact community safety. Upgrades to site entry will ensure road safety and consideration of shift based group transport to site will be considered. Most heavy product transport will be by rail.	Yes	No	No		No	Yes - in part	No SIA required
		services and facilities	Employment created by the Project will arrest the decline in mining related jobs in Broken Hill. The resultant economic stimulation will assist maintain and enhanse regional services and facilities in Broken Hill.	Yes	No	No		No	Yes - in part	No SIA required
		housing	Greater employment oportunities as well as direct community enhansement provided by the Project will assist maintaining the economic prosperity in Broken Hill and the viability of the comminity.	Yes	No	Yes		No	Yes - fully	Desktop SIA
		cohesion, capital and resilience	Adequate housing stock exists in Broken Hill due to the ongoing downturn in mining related employment. Several other large construction projets are now complete. However, BHCC has suggested that adequate forewarning is povided to BHCC and community to develop appropriate housing response (eg, investment)	Yes	Yes	Yes	Housing consideration in social impact a		Yes - fully	Desktop SIA
		other - please specify								
	ECONOMIC	natural resource use	The processing method enables the processing of this cobalt pyrite ore in a cost effective and sustainable manner to maximise the return for extracting the ore.	Yes	No	No		No	Yes - in part	No SIA required
		livelihood	Substantial employment and economic stimulation in Broken Hill will occur due to the Project. The project will reduce the size of the existing grasing property. Cobalt Blue wil compensate accordingly.	Yes	No	No		No	Yes - in part	No SIA required
		business opportunity	The current landuse is low value grazing. The Proposed Project is many order of magnitude larger that the current activity.	Yes	No	No		No	Yes - in part	No SIA required
		other - please specify								

Social impact assessment (SIA) scoping worksheet for:			*Broken Hill Cobalt Project*			Date:				
Scoping results from EIS Worksheet						**Is there a social impact?**		**What information will be required to assess the social imapct?**		
Social and environmental matters *Click on a matter below for brief description, or refer to full glossary*			**Outline of impact** *(Auto fill from EIS worksheet)*	**Is a material effect on the matter expected?** *(Auto fill from EIS worksheet)*	**Is there community or other stakeholder concerns regarding the impact or activity?** *(Auto fill from EIS worksheet)*	**With regard to the matter expected to be impacted, will there be a social impact?** *Select this cell for brief description, or click link above for further detail*		**Are impacts on the matter expected to require a non-SIA specialist study?** *(Auto fill from EIS worksheet, then manually enter non-SIA report type)*	**Will the non-SIA specialist study address the social impact?** *Click on link above for further detail on potential classifications* *(Select from list)*	**Level of assessment for the social impact in the SIA** *Click on link above for further detail on potential classifications* *(Auto fills)*
						Yes/No *(Select from list)*	**If yes, outline the social impact** *(Manual entry, if not already covered in column D)* **If no, outline why** *(Manual entry)*			
What does the proposal mean for the natural environment?	AIR	particulate matter	Mining related activities will generate dust. Nearest residential receiver in excess of 8km away. Minor impacts may be experience under adverse conditions. Broken Hill is often affected by wind blown dust, and dust has been raised by some community members and current land manager.	Yes	Yes	No		No	Yes - in part	No SIA required
		gases								
		atmospheric emissions	Scope 1 & 2 GHG emissions will occur from operational activities including power consumption. The main product will be used in batteries thereby facilitating decarbonising of the economy.	Yes	Yes	No		No	Yes - in part	No SIA required
		other - please specify								
	BIODIVERSITY	native vegetation	Vegetation clearing wll be required. No EECs wil be impacted.	Yes	Yes	No		Biodiversity Impact Assessmer	Yes - fully	No SIA required
		native fauna	Barrier Range Dragon has been identified and will be impacted.	Yes	Yes	No		Biodiversity Impact Assessmer	Yes - fully	No SIA required
		other - please specify								
	LAND	stability and/or structure	Voids and waste emplacements must be designed and constructed to be long term stable. Minor community impact. NSW Govt agency interest in final landform.	Yes	Yes	No		Landform capability & rehabilitatio	Yes - fully	No SIA required
		soil chemistry	Waste rock and tailings have potential acid forming properties. Robust AMD management strategies are required to provide a long term stable, non-polluting landform.	Yes	Yes	No		Landform capability & rehabilitatio	Yes - fully	No SIA required
		capability	Mining activities and rehabilitated land may impact on current agricultural capability. At present, agricultural capability is low and restricted to low intensity sheep and goat grazing. It would be expected that land capability change will occur at the local scale and not materially affect regional agricultural production.	Yes	No	No		No	Yes - in part	No SIA required
		topography	Pit voids and waste rock/tailings emplacements will give rise to	Yes	Yes	No		Landform capability & rehabilitatio	Yes - fully	No SIA required
		other - please specify								
	WATER	water quality	AMD from emplacement and voids. General site water quality issues. Localised impacts may occur.	Yes	Yes	No		Water quality assessment	Yes - fully	No SIA required
		water availability	Water is available from Essential Water supply. On-site stormwater management. Will need Aquifer Interference and WAL. Will investiage using local groundwater that would be imapcted by mining for processing. Local groundwater is very poor quality but contains cobalt.	Yes	Yes	Yes		Water supply assessment	Yes - fully	Desktop SIA
		hydrological flows	Ephemeral Creeks. Diversions required. No change to downstream flow regimes expected.	Yes	Yes	No		Surface hydrology study	Yes - in part	No SIA required
		other - please specify								

Glossary of Matters			
What does the project mean for people?	**Matter**		**Meaning for purpose of EIS and SIA Worksheets**
	AMENITY	acoustic	Acoustic qualities, characteristics and attributes that people value about a place and contribute to its overall character or enjoyment. Includes interruption to human activity due to noise.
		visual	Visual qualities, characteristics and attributes people value about a place and contribute to its overall character or enjoyment. Includes privacy (being free from scrutiny or being observed in private settings, such as one's own home).
		odour	Odorous qualities, characteristics and attributes that interfere with the overall character or enjoyment of a place. Includes interruption to human activity due to odour.
		microclimate	Qualities, characteristics and attributes people value about the climate in a localised area or region (temperature, rainfall, wind, sunlight access).
	ACCESS	access to property	Includes vehicular, pedestrian and cyclist access to public and private property, and access to public and private property for people with disability.
		utilities	Access to, and availability of public utilities, including electricity, gas, reticulated water, sewerage, drainage and telecommunications.
		road and rail network	Existing road and rail network capacity, and traffic on State, Regional and Local Roads and at road intersections.
		offsite parking	Access to, and availability of, parking on the project site, offsite and in surrounding areas during construction and/or operation.
	BUILT ENVIRONMENT	public domain	Spaces and streets in and around cities, towns and villages that are publicly accessible and collectively belong to all. They are shared, communal spaces in which people recreate, play, socialise, commute, eat, watch, gather and celebrate.
		public infrastructure	Physical condition and structural integrity of roads, rail, wharves, bridges, dams, pavements, etc.
		other built assets	Physical condition and structural integrity of other built assets.
	HERITAGE	natural	Elements of the natural environment that are of significance to world, national, State or local heritage due to their natural, historical, scientific, cultural, social or aesthetic value.
		cultural	Places and objects that are of significance to world, national, State or local heritage due to their historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value.
		Aboriginal cultural	Places and objects (and associated practices) that are of significance to Aboriginal people.
		built	Elements of the built environment (buildings, infrastructure, precincts, streetscapes), that are of significance to world, national, State or local heritage due to their historical, cultural, social, archaeological, architectural, or aesthetic value.
	COMMUNITY	health	Physical and mental health and wellbeing.
		safety	Freedom from injury or harm (including crime), and exposure to safety risks.
		services and facilities	Availability of, and access to, services and/or facilities (e.g. public transport, education and training, healthcare, emergency services, justice, disability, aged care, waste, recreational, sport, arts and cultural, child and family services, postal, private sector goods and services).
		housing	Availability of, and access to, adequate housing, and people's choices about where they live.
		cohesion, capital and resilience	Cohesion can be understood as the bonds and relationships people have with their family, friends and the wider community that build trust, shared values, feelings of belonging, community participation and reciprocity. Capital consists of the networks and the shared norms, values and understandings that facilitate cooperation within and among communities. It is accumulated when people interact with one another, whether informally (for example, with family and friends) or more formally (for example, in groups and organisations in the wider community). Resilience relates to a community's ability to adapt to change, cope with unexpected crises, draw upon resources to cope with risks, maintain a good standard of living and support the wellbeing of its members.
	ECONOMIC	natural resource use	Availability of, and access to, natural resources for economic use, including minerals, water, forestry, soils, etc.
		livelihood	A person's ability to make a living.
		opportunity cost	The real marginal cost of a resource or action. It is the value forgone by using the resource or by acting in one way rather than another.

Glossary of Matters			
	Matter		**Meaning for purpose of EIS and SIA Worksheets**
What does the project mean for the environment?	AIR	particulate matter	Fine and coarse airborne particles including dust, dirt, soot, smoke, and liquid droplets.
		gases	Gases that cause air pollution and potential health problems including carbon monoxide, volatile organic compounds, ozone, nitrogen dioxide and sulfur dioxide.
		atmospheric emissions	Long-term change in the pattern of weather, which can cause changes in oceans, land surfaces and ice sheets.
	BIODIVERSITY	native vegetation	Vegetation native to NSW, including its value as corridors, habitat and food source.
		native fauna	Species, populations, and communities, including threatened, endangered, critically endangered.
	LAND	stability and/or structure	Physical properties of soils, structure and aggregate properties, and sub-soil rock formation.
		soil chemistry	Chemical characteristics of soil, affected by mineral composition, organic matter and environmental factors.
		capability	Inherent physical capacity of the land to sustain a range of land uses and management practices in the long term without degradation to soil, land, air and water resources.
		topography	Slope, elevation, aspect and size of the land.
	WATER	water quality	Suitability of surface water and groundwater for relevant environmental values (including human uses), e.g. aquatic ecosystems, primary industries (irrigation and general water uses, stock drinking water, aquaculture and human consumption of aquatic foods), drinking water, recreation, industrial water, and cultural and spiritual values.
		water availability	The quantity of surface water and groundwater available for water users and the environment.
		hydrological flows	The natural movement of water across the landscape or under the ground, seasonal wetting and drying regimes, tidal movements.
What risks does the project face?	RISKS	coastal hazards	Physical phenomena that expose a coastal area to risk of property damage, loss of life and environmental degradation.
		flood waters	Natural or man made flooding that might affect the project.
		bushfire	The potential for bushfire to impact on the project.
		undermining	Excavation of the earth beneath (e.g. from mining or tunnelling).
		steep slopes	Land the surface of which generally has a slope greater than 18 degrees from the horizontal.

Impact Rating Guide		
Characteristic	**Definition**	**Material effect examples (indicative only, not exhaustive)**
Extent	The geographical area affected by the impacts (or the number or propotion of people or population groups who are affected)	• Impacts beyond the site boundary • Impacts on moderate to large geographical areas (e.g. suburb or region, or larger) • Impacts affect a large proportion of a population group • Impacts will have ripple effects on multiple matters
Duration	The geographical area affected by the impacts (or the number or propotion of people or population groups who are affected)	• Permanent impact • Life of the project or longer • Specific project phase (or multiple) • Frequently occurring impact
Severity	Scale or degree of change from the existing conditions as a result of an impact.	• Scale or extent of change from existing condition is substantial • Will take substantial time and effort to reverse or aemeliorate • Ecological or community function, process, health, lifestyle or livelihood is expected to change substantially or be substantially disrupted / come to a halt
Sensitivity	Susceptibility or vulnerability of people, receivers or receiving environment to adverse changes caused by the impact, or the importance placed on the matter being affected. Attributes of sensitivity include: • conservation status • intactness • uniqueness or rarity • resilience to change and capacity to adapt • replacement potential • impacts on vulnerable people • of value or importance to the community.	• Disturbance of listed heritage, including Aboriginal cultrual heritage • Impacts on sensitive receivers (e.g. hospital, school, residential area) • Unique or widely recognised assets or values will be disturbed

Social Impacts - Definition		
In the context of this Scoping Tool, a social impact is a consequence experienced by people[#] due to changes associated with a project. As a guide[^], social impacts can involve changes to people's:		
Category	**Description**	**Links to Checklist of Matters**
Way of life	Including: • how people live, e.g. how they get around, access to adequate housing • how people work, e.g. access to adequate employment, working conditions and/or practices • how people play, e.g. access to recreation activities • how people interact with one another on a daily basis	ACCESS, HERITAGE, COMMUNITY, ECONOMIC
Community	Including its composition, cohesion and character, how it functions, and sense of place	BUILT ENVIRONMENT, HERITAGE, COMMUNITY
Access to and use of infrastructure, services and facilities	Whether provided by local, State or federal governments, or by for-profit or not-for-profit organisations or volunteer groups	ACCESS, BUILT ENVIRONMENT, COMMUNITY
Culture	Including shared beliefs, customs, values and stories, connections to land, places and buildings, and including Aboriginal culture and connection to country	HERITAGE, COMMUNITY
Health and wellbeing	Including physical and mental health[*]	COMMUNITY
Surroundings	Including access to and use of ecosystem services[+], public safety and security, access to and use of the natural and built environment and their aesthetic value and/or amenity[-]	AMENITY, BUILT ENVIRONMENT, HERITAGE, COMMUNITY, ECONOMIC, AIR, BIODIVERSITY, LAND, WATER
Personal and property rights	Including whether their economic livelihoods are affected, and whether they experience personal disadvantage or have their civil liberties affected	ACCESS, COMMUNITY, ECONOMIC
Decision-making systems	Particularly the extent to which they can have a say in decisions that affect their lives, and have access to complaint, remedy and grievance mechanisms	BROAD, OVERARCHING CONSIDERATIONS
Fears and aspirations	Related to one or a combination of the above, or about the future of their community.	

[#] 'People' includes individuals, households, groups, communities, organisations, and the NSW population generally.

[^] Adapted from the definition endorsed by the International Association of Impact Assessment and outlined in: Vanclay, F. (2003). International Principles for Social Impact Assessment. *Impact Assessment & Project Appraisal* 21(1): pp. 5-11.

[*] The World Health Organisation defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. For this Scoping Tool, wellbeing is a state in which people have their basic needs met, can realise their potential, can cope with the normal stresses of life, can work productively and fruitfully, and can participate in their community. See: Smyth, E. and Vanclay, F. (2017). The Social Framework for Projects: a conceptual but practical model to assist in assessing, planning and managing the social impacts of projects. I*mpact Assessment & Project Appraisal* 35:1, p. 78; Schirmer et al. (2016), *Wellbeing, resilience and liveability in rural and regional Australia: The 2015 Regional Wellbeing Survey* , University of Canberra, p. 23; and OECD. 2011. *How's life?: measuring well-being* . OECD Publishing, p. 18: http://dx.doi.org/10.1787/9789264121164-en.

[+] Ecosystem services include: provisioning services, such as food and water; regulating services, such as flood and disease control; supporting services, such as nutrient cycling, that maintain the conditions for life on Earth; and cultural services, such as spiritual, recreational, and cultural benefits. See: Millennium Ecosystem Assessment (2005). *Ecosystems and Human Well-Being: Our Human Planet: Summary for Decision Makers* . The Millennium Ecosystem Assessment Series, Volume 5, Island Press, Washington DC.

[-] When considering perceptions of adverse impacts on amenity, an evaluation must be made of the reasonableness of those perceptions. This evaluation involves 'the identification of evidence that can be objectively assessed to ascertain whether it supports a factual finding of an adverse effect on amenity…': *Telstra Corporation Ltd v Hornsby Shire Council* [2006] NSWLEC 133.

Key Terms		
Scoping step	**Term**	**Description**
Analysis of activities expected to cause or be linked to an impact on a matter, using the Checklist of Matters as a guide	Likely	There is a real chance or possibility that the adverse impact will occur.
	Unlikely	There is not a real chance or possibility that the adverse impact will occur, e.g. because it has been avoided.
	Not applicable	The matter is not relevant to the project.
Consideration of potential cumulative impacts	Cumulative impact assessment (CIA)	An assessment of overall effect of the impact in combination with other impacts or other project activities, or from other reasonably forseeable or known future projects.
Consideration of general form mitigation required	Standard	Measures to manage the effect of the impact that are known and routinely used on similar projects, and may not require separate specialist assessment.
	Project-specific	Measures that need a specialist assessment using an endorsed methodology or method unique to the project to establish the right measures to mitigate the effect of the impact.
	Unknown	Type of measure required requires further consideration and potential specialist assesssment.
Consideration of views and concerns of potentially affected people / community concern	Focussed engagement	Further engagement required to specifically address community concerns regarding impacts on a matter.
Level of assessment required for an impact on a matter in the EIS	Key Issue	Requires the preparation of a specialist report to assess impacts and design project-specific mitigation measures (typically attached as an appendix to the EIS).
	Other Issue	Can be addressed in the body of the EIS and can typically be managed through routine mitigation and management measures.
Level of assessment required for an impact on a matter in the SIA component of the EIS	Desktop	Another specialist study or section of the EIS will provide all the information and analysis needed to predict, evaluate and develop a response to the social impact, including relevant primary and secondary research, qualitative and quantitative data, and appropriate engagement with potentially affected people, to establish a baseline and support predictions. If this is the case, the SIA component of the EIS only needs to review the data and findings from the other sources through a SIA lens and cross-reference and integrate them into the overall social baseline and assessment.
	Standard	Most information and analysis needed to predict, evaluate and develop a response to the social impact will be provided by another specialist study or section of the EIS, but it will need to be supplemented with further evidence gathering and analysis to fill any gaps and obtain a complete picture from a SIA perspective.
	Comprehensive	Only limited or no information and analysis will be provided by another specialist study or section of the EIS. If so, the author/s of the SIA component of the EIS will need to undertake the evidence gathering and analysis needed to predict, evaluate and develop a response to the social impact.