Maritana Minerals Ltd

Version 1, Revision A

Processing Plant and Landfill Works Approval Application Supporting Document

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1. INTRODUCTION

Maritana Minerals Limited (Maritana) is proposing to convert the existing Processing Plant (Nickel) at Black Swan to a gold processing plant. The advantage of using the existing crushing and grinding circuit and TSF circuit and adding a new gold circuit to the brown fields site, rather than starting a new processing plant as a Greenfields site. As well as utilising the existing power, water, sewage, road networks and facilities.

The Black Swan Project (BSP) includes:

- Refurbishment of parts of the Processing Plant
- Construction of new Gold Circuit;
- A power station
- Reuse and raise the existing TSF 4 (formerly the Black Swan Disseminated (BSD-TSF).
- Converting Former TSF 3 into a landfill for non-putrescible waste.

Each of these items has different time frames for construction, commissioning, and operation; thus, the works approval has been split into parts with similar time frames.

The Processing Plant refurbishment and construction of the new gold circuit is the longest construction period (~1 year) and will commence with the demolition of some parts of the existing plant. To accommodate this waste and other waste scattered around site, Maritana proposes to convert the former evaporation cell at the Cygnet TSF's into a landfill for construction and mine waste (non-putrescible). The landfill will take material from across the site which will be stockpiled into like materials (i.e. Polypipe, concrete, steel),to allow items to be reused or recycled when the time is right. No putrescible waste will be disposed of on-site; putrescible and non-mining/processing waste will be disposed of at the Kalgoorlie Landfill Facility.

The power station and supporting fuel storage will be required before the end of the Processing Plant rebuild to power the commissioning of various circuits, and because it has a shorter build and commissioning time frames, it will be submitted as a separate Works Approval.

TSF4 is currently constructed to lift 4, with the outer layer of Lift 5 constructed from mine waste and has 2.5 Mt capacity and will not require a lift (Stage 5 internal walls) until early 2027 to avoid construction during operation, thus this will be a separate works approval or/and amendment of existing works approval W6793/2023/1, depending on Department of Water and Environmental Regulation (DWER) discussions.

Thus, this works approval application is for the Processing Plant and landfill required to support demolition and site cleanup. Other works approvals will be submitted as required. Figure 1 shows the approximate time frame for submission of Works approvals and License amendments.

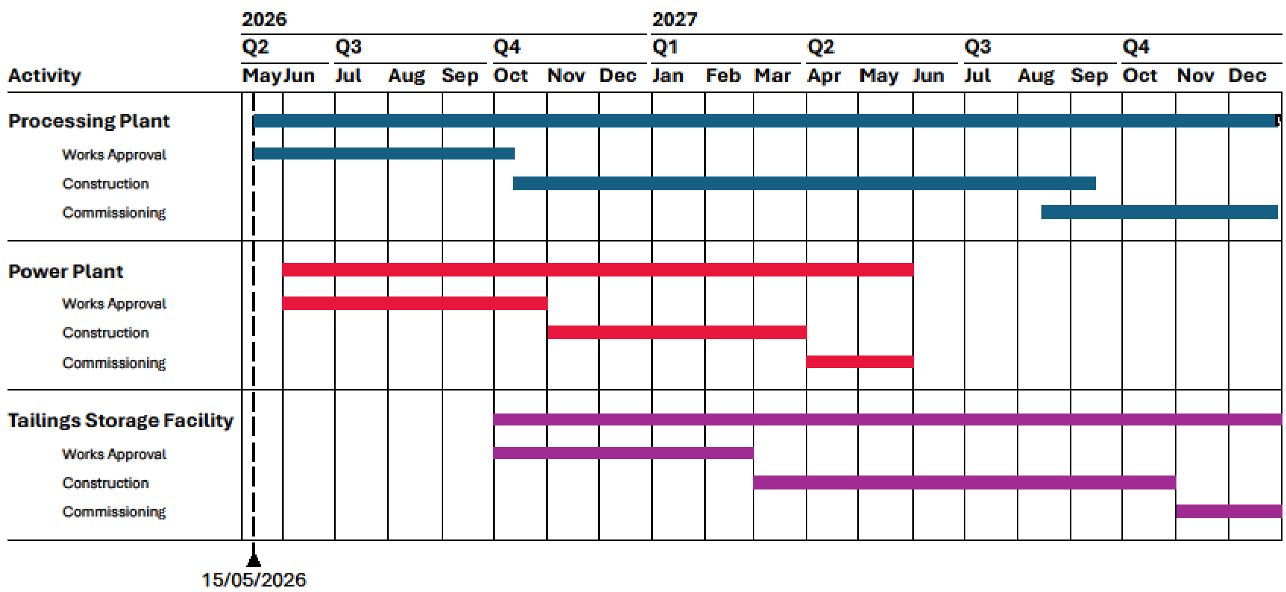

Figure 1: approximate time frames for Works Approvals

2. Background

The Black Swan Mine Site is located in the East Murchison region of Western Australia, approximately 50 km north of Kalgoorlie (Figure 2). The proponent of the project and holder of associated mining leases is Maritana, the owner of Poseidon Nickel Pty Ltd (Poseidon; Appendix A ASIC Statement). The site is currently accessed via Yarri Road from Kalgoorlie and is located within the Mt Vetters and Hampton Hill pastoral leases.

Development of the Black Swan site commenced in 1996 with the development of the Silver Swan Underground Mine, construction of a 60,000 tpa Nickel Processing Plant, the Silver Swan Tailings Storage Facility (SS-TSF, now TSF 1) and the Silver Swan Waste Rock Dump (SS-WRD). In 2007, the Cygnet Evaporation Pond and Cygnet TSF's (CTSF1A and CTSF2B, now TSF2A and B) were developed to dewater and mine the low-grade Cygnet ore body from the existing Silver Swan Underground Mine. The Processing Plant was upgraded to a capacity of 250,000 tpa to treat the blended ore from Silver Swan and Cygnet. This was followed by the mining of the Goslings orebody in 2002.

In 2003, the Black Swan Open Pit was commenced, along with the Black Swan TSF (BSD-TSF, now TSF4) and the integration of BSD-WRL, and the processing plant was upgraded to 2,200,000 tpa.

In 2008, the site was placed on care and maintenance due to adverse Nickel markets, and dewatering of the Silver Swan Underground continued in the expectation that mining would recommence when the Nickel market improved. However, in July 2024, the dewatering was ceased, and the site was sold to Maritana.

Maritana purchased the Black Swan Project (BSP) with the intent of converting the Nickel Processing Plant into a Gold Processing Plant, utilising the existing crushing and grinding circuits and adding gold flotation and smelting circuits. The supporting infrastructure, including roads, borefields, power, offices, workshops and the TSF 4, is planned to be upgraded where required and reused.

The Project area is located on Mining Tenement M27/200 and Mt Vetters Pastoral Station. Surrounding land use includes mining, exploration and pastoral activities. Mining is an established industry within the Kalgoorlie Region.

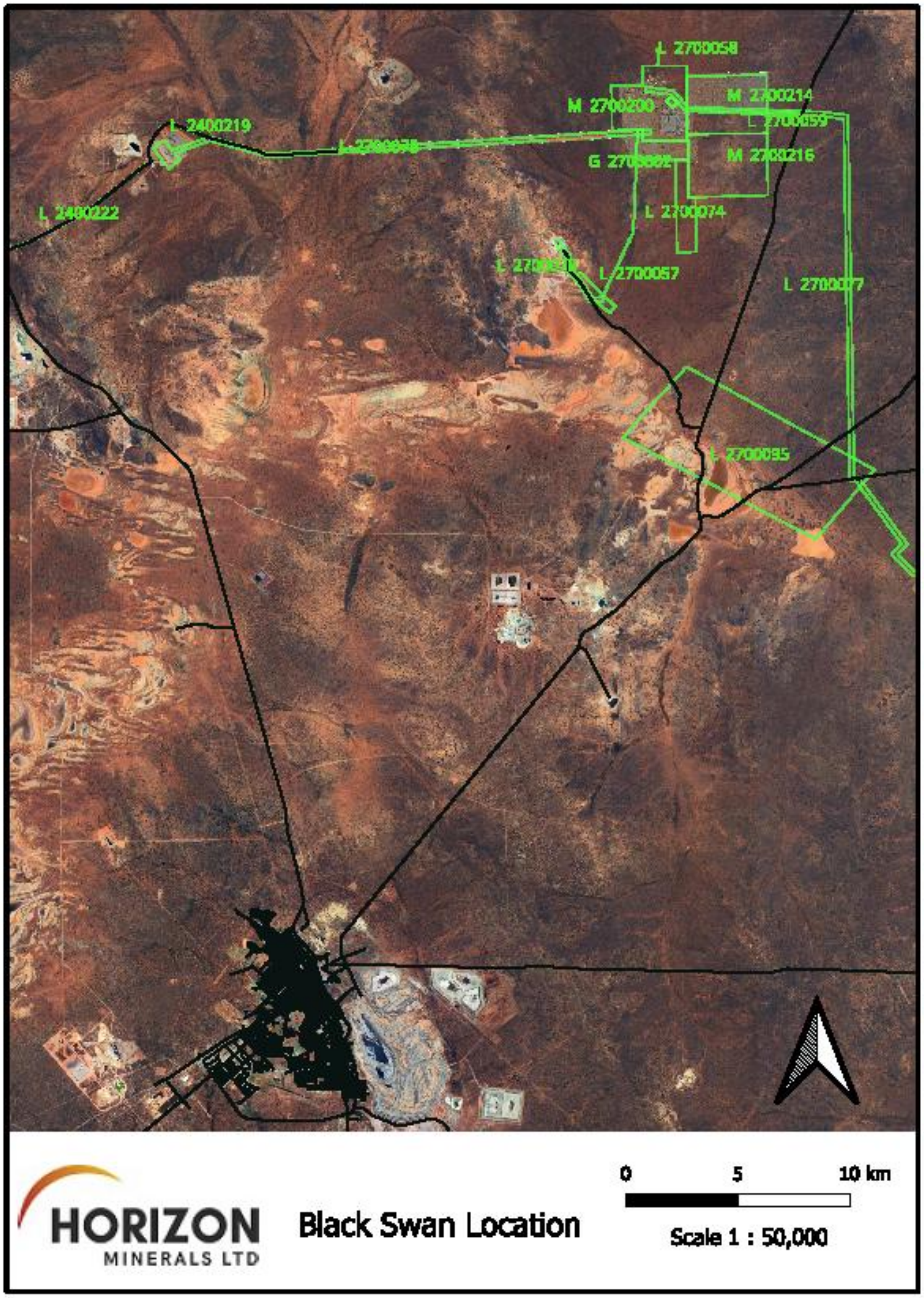

Figure 2: Location of the Black Swan Project

3. Environmental and social setting

3.1 Seasonal and climatic conditions

The Goldfields region has an arid climate, with cool winters and hot, dry summers, and rainfall in both the warm and cool seasons. The nearest Bureau of Meteorology (BOM) weather station to the Project is the Kalgoorlie-Boulder Airport (Station ID 012038), where temperature and rainfall data have been collected since 1939 (BoM, 2025).

The average maximum daily temperature at Kalgoorlie ranges from 33.7 °C (in January) to 16.9 °C (in July), while the average minimum daily temperature ranges from 18.4 °C (January) to 5.1 °C (July) (Figure 3). The daily evaporation rate ranges from 11.93 mm (January) to 2.5 mm (June).

The average number of rain days per year is 68. There is a 1% Annual Exceedance Probability (AEP) that Kalgoorlie will experience 50 mm for a 1 hr period, 157 mm for a 24-hr period and 210 mm for a 72-hr period (Figure 4, BoM 2025).

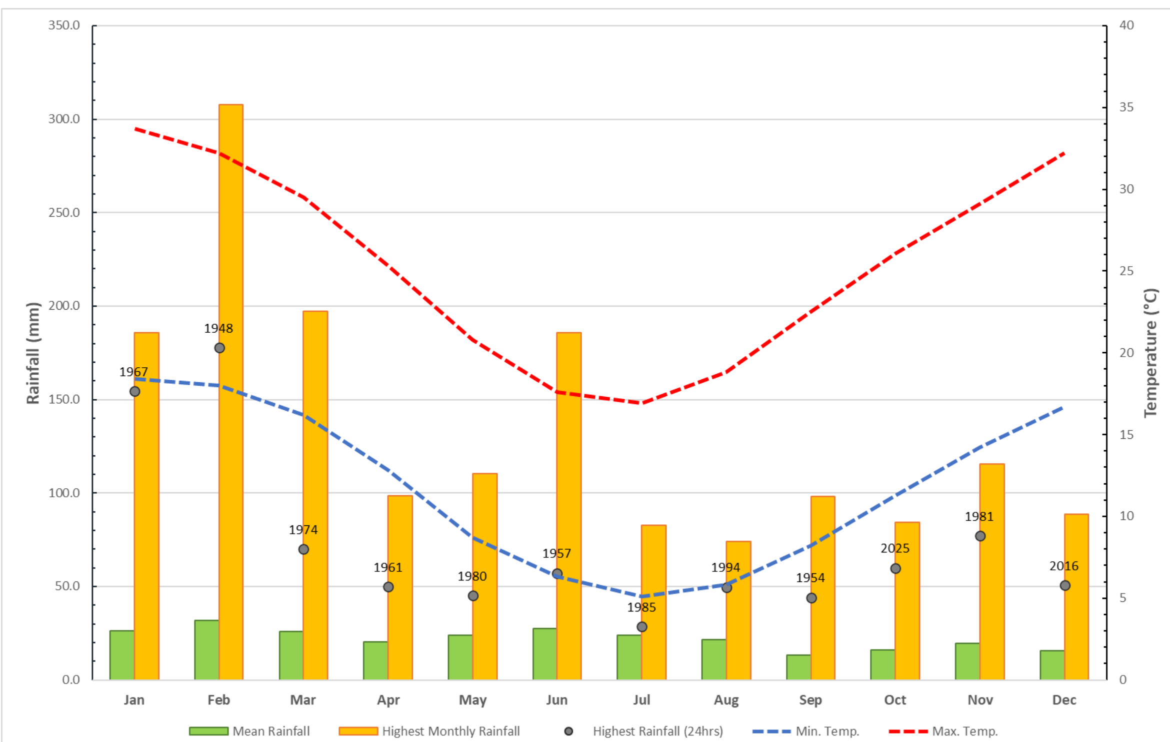

Figure 3: Mean Rainfall at Kalgoorlie-Boulder Airport Station (Station ID 012038; BOM 2025)

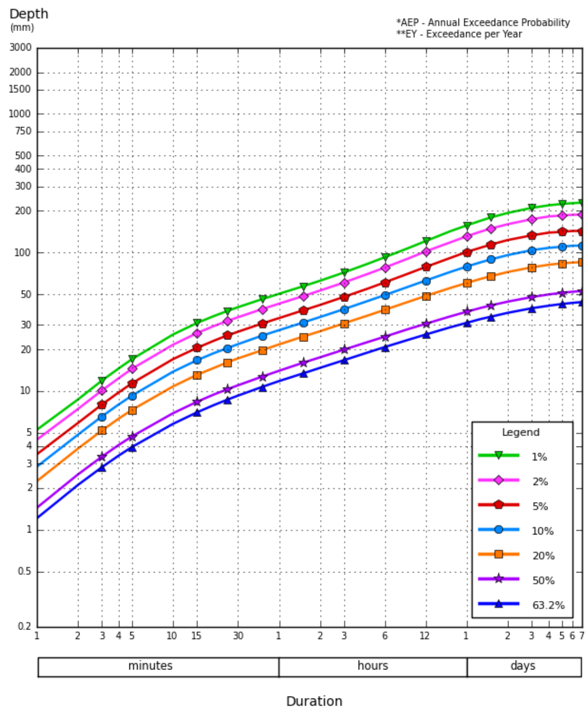

Figure 4: Calculated Intensity Frequency Duration (IFD) of Rainfall (BOM, 2025)2

3.2 Topographic relief and geomorphology

The topography of the region is undulating, with occasional low-hill ranges at Black Swan; however, it is more or less flat (Beard, 1990). Drainage lines in the area are ephemeral and poorly defined, with most drainage occurring by sheet flow; the general drainage pattern tends towards a salt lake system about 10 km south of Black Swan (Figure 1).

3.3 Heritage

The 1996 Silver Swan NOI ("Silver Swan Massive Sulphide Nickel Project" dated April 1996) states, “Surveys for ethnographic and archeological sites of significance to persons of Aboriginal descent were undertaken over the Project Area by McDonald Hales & Associates. No Sites were identified or recorded (McDonald Hales & Associates 1995,1996).”

Two further heritage Surveys have been carried out within the BSP area:

- October 2004 Ethnographic Survey of the proposed black Swan Mine Borefield extension, water pipeline and Powerline routes, Keith Lindbeck and Associates.
- October 2004 Report on Archaeological Investigation for Aboriginal Sites, Low Salinity Borefield extension and High Saline Pipeline Corridor from Federal Pit, G.S. Quartermaine.

No sites of significance to Aboriginal heritage were identified through surveys of M27/200 and M27/39, comprising the main Black Swan mining area (NPI, 1995 and MBS 2017), and none are recorded on the register of such sites maintained by DPLH under the Aboriginal Heritage Act. Quartermaine (2004) notes that the project area is generally flat and featureless, with low potential for archaeological sites; features with higher potential, such as lake margins, creek lines, and rock outcrops, are generally not represented.

Subsequent ethnographic and archaeological surveys for Black Swan have addressed ancillary infrastructure areas, including borefields and access/ service corridors. A number of sites in the wider area around Black Swan are presently recorded on the Aboriginal Cultural Heritage Inquiry System (ACHIS), several of which are relatively close to project infrastructure, including:

- 18331 “Black Swan One” (artefacts/ scatter) about 200 m from abstraction bore BSW12 and adjacent to the water pipeline corridor to Black Swan.
- 21723 “Black Swan Two” (artefacts/ scatter) about 170 m from abstraction bore BSW31.
- 21975 “Black Swan Camp” (artefacts/ scatter, man-made structure, camp), about 200 m from the road/pipeline corridor between Federal Pit and Black Swan.
- 21976 “Camp on Haul Rd from Mulgarri to Kanowna” (artefacts/ scatter, man-made structure, camp, other: Wiltja), about 150 m from the road/pipeline corridor between Federal Pit and Black Swan.
- 21310 “Paddington Isolated Finds” (artefacts/ scatter, other: 22 isolated finds; not a site), adjacent to the proposed access road from the Goldfields highway to Black Swan via Federal Pit (existing Broadarrow-Mulgarrie Rd).
- Several records associated with the “Gordon Road Clay Pan” (ceremonial) with buffer zones intersecting water supply infrastructure tenements L27/57 and L27/78.

No places of significance to state, national or European heritage as recorded in the Heritage Council of Western Australia's “Places Database” have been identified at Black Swan; the nearest such place is the townsite of Kanowna, approximately 24 km to the south (MBS, 2017).

2.2 Terrestrial environmental quality

The BSP area lies within the Eremaean Botanical Province of Western Australia (WA). Based on the Interim Biogeographic Regionalisation of Australia (IBRA, Version 7) (DCCEEW, 2020), the BSP area is located within the Murchison Bioregion. This bioregion is further divided into subregions, with the BSP area located within the Eastern Murchison (MUR01) subregion of the Murchison Bioregion (**Error! Reference source not found.**).

The landscape of the Murchison Bioregion comprises low hills, mesas of duricrust separated by flat colluvium and alluvial plains (DCCEEW, 2020). It is dominated by the Archaean (over 2500 million years ago) granite greenstone terrain of the Yilgarn Craton (DCCEEW, 2020). Alluvial soils and sands mantle the granitic and greenstone units of the Yilgarn Craton. These soils are shallow, sandy and infertile. Underlying the soils in low areas is a red-brown siliceous hard pan (Curry *et al*., 1994). The soils in the eastern half of the bioregion are typically red sands, calcareous red earth, duplex soil, and clays. There are 41 vegetation associations (hummock grasslands, succulent steppe, or low woodlands) that occupy at least 85 per cent of the bioregion's total area. The bioregion is rich and diverse in both its flora and fauna, but most species are wide-ranging and usually occur in adjoining regions (McKenzie, May and McKenna, 2002).

The Eastern Murchison subregion comprises the northern parts of the craton's Southern Cross and Eastern Goldfields Terrains and is characterised by internal drainage and extensive areas of elevated red desert sandplains with minimal dune development. Salt Lake systems are associated with the occluded paleodrainage system. Broad plains of red-brown soils and breakaway complexes, as well as red sandplains, are widespread. Vegetation is dominated by Mulga woodlands and is often rich in ephemerals, hummock grasslands, saltbush shrublands and Samphire shrublands (McKenzie, May and McKenna, 2002). The Eastern Murchison subregion comprises diverse mulga woodlands, which occur on low greenstone belts. The sand plains have red loamy earth and deep red sands, found on the sandy banks.

2.3 Soil Landscape Systems

The BSP area lies within the Kalgoorlie Province, located in the southern Goldfields between Paynes Find, Menzies, Southern Cross and Balladonia. The landscape consists of undulating plains (with some sandplains, hills and salt lakes) on the granitic rocks and greenstone of the Yilgarn Craton. Soils range from calcareous loamy earths and red loamy earths with some Salt Lake soils to red deep sands, yellow sandy earths, shallow loams and loamy duplexes. Vegetation communities are predominantly Eucalypt woodlands with some acacia-casuarina thickets, mulga shrublands, halophytic shrublands and spinifex grasslands (Tille, 2006).

The Kalgoorlie Province is further divided into six soil-landscape zones, with the survey area located within the Kambalda zone (265).

The Kambalda zone (265) is in the south-eastern Goldfields, between Menzies, Norseman, and the Fraser Range, and contains flat to undulating plains (with hills, ranges, some salt lakes, and stony plains) on greenstone and granitic rocks of the Yilgarn Craton. Soils consist of calcareous loamy earths and red loamy earths with salt lake soils and some red brown hardpan, shallow loams, and red sandy duplexes. Vegetation includes red mallee, blackbutt-salmon gum-gimlet woodlands with mulga and halophytic shrublands and some spinifex grasslands (Tille, 2006).

In accordance with soil landscape system mapping data (Government of Western Australia, 2019), the soil landscape zones are divided into soil landscape systems. The survey area is located within three landscape systems, as described in **Error! Reference source not found.** and shown in Figure 5.

Table 1: Soil landscape systems within the BSP area

Soil Landscape System	**Description**	**Extent within Survey Area**
Helag System (265 Hg)	Hardpan plains and central drainage tracts with mulga shrublands and minor chenopod shrublands.	285.5 ha (56.4%)
Illaara System (365 Il)	Plains with ironstone gravel or calcrete mantles supporting eucalypt woodlands and mulga-casuarina shrublands.	14.5 ha (2.9%)
Moriarty System (265Mo)	Low greenstone rises and stony plains supporting chenopod shrublands with patchy eucalypt overstoreys.	206 ha (40.7%)
Total		506 ha (100%)

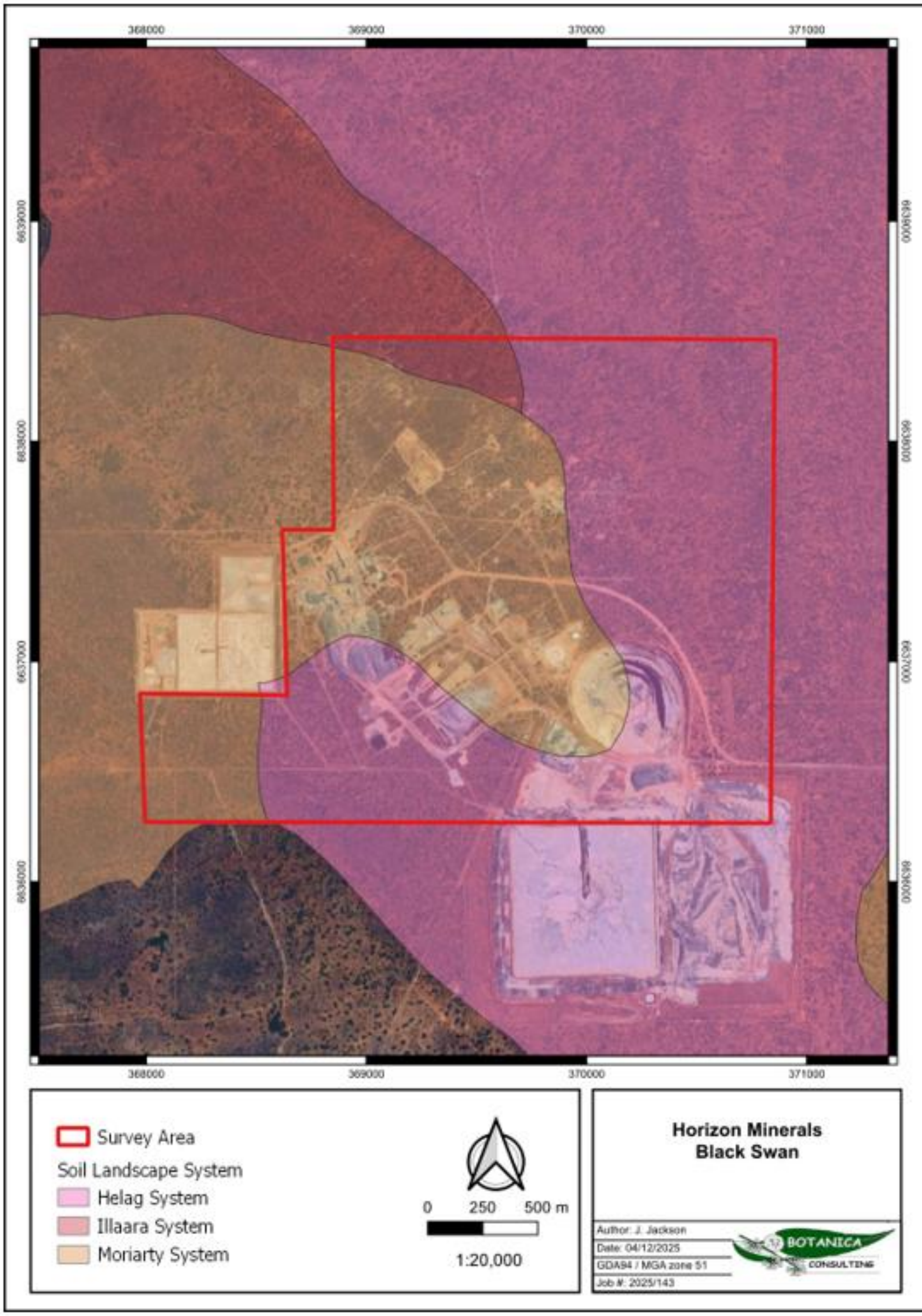

Figure 5: Map of soil landscape systems within the survey area

2.4 Soils

A study completed by Landloch 2007 (Landloch, 2008) analysed the natural soil profiles (at 0–10, 10–30, and 30– 60 cm intervals) at Black Swan and found that soils have low salinity, and are slightly acidic, with low CEC[1], indicative of kaolinitic clays and low organic carbon[2]; sodicity[3] was not considered a concern. Organic carbon and most plant nutrients were considered low; most trace elements important for plants were low to adequate.

Landloch noted very little variation in soil physicochemical properties and particle size distribution with depth and concluded that soil harvested to a depth of 0.5 m could provide a growth medium suitable for rehabilitation.

2.5 Regional Geology

Black Swan sits within the Archaean Norseman-Wiluna greenstone belt of the Yilgarn Craton (Jacobs, 2014). The region around Black Swan is underlain by felsic, intermediate, and ultramafic Archean rocks, originally layers of shale and greywacke alternating with volcanic lava layers, metamorphosed, and strongly folded; these rocks are generally weathered to depths of 30 to 40 mBGL, but up to 180 mBGL in mineralised areas, and overlain by thin Cainozoic deposits of clay, silt, sand, and ferricrete (Norlisk, 2013; Beard, 1978; MPI, 1995).

2.6 Surface water

Regional Hydrology

The Kalgoorlie area is located within a north-east trending ancient major drainage system comprising a network of ephemeral salt lakes, rivers, and tributary creek lines. The Project is situated within the Raeside-Ponton catchment, a 140,000 km^2 surface-water catchment area that drains in the southeast toward Lake Yindarlgooda, a saline, ephemeral lake system. Surface water expressions within the region are generally temporary and as a result of irregular, high rainfall climatic events, normally associated with rain-bearing depressions derived from cyclones emanating in the State's north-west.

Local Hydrology

The BSP area is generally flat with some slight relief. The absence of incised drainage channels indicates that the dominant drainage is sheet-flow runoff. Soil & Rock Engineering were commissioned to carry out a Hydrological Survey of the BSP in 1996 and

[1] Cation exchange capacity, indicative of a soil's ability to retain essential plant nutrients and buffer acidification.

[2] Indicative of soil organic matter, contributing to moisture and nutrient retention and availability, buffering capacity, and soil structure.

[3] Elevated sodium giving clays the tendency to disperse when wet, reducing soil stability and increasing erodibility

recommend water diversion structures for the Process plant and Underground Portal. It was found that surface water flows around the plant site from the north-east to the south, mainly between the plant site and SS-TSF/CN-TSF's. Existing surface water diversions are sufficient for the proposed plant modifications.

2.7 Groundwater

The weathered interval at Black Swan is clayey, and of low permeability; a zone of moderate permeability commonly occurs at the interface between fresh and weathered rock. Groundwater may also occur in fractures within slightly weathered and fresh rock, vuggy quartz veins, and in weathered bands within fresh ultramafic rocks in the mineralised zone (Rockwater, 2010).

Bores installed at the weathered/fresh rock interface could typically yield up to 50 m^3/day. Net abstraction for dewatering the Silver Swan underground workings during operations was about 600 m^3/day; net yield from the Black Swan open pit was "minor" and not recorded. Groundwater in the mine area is generally saline to hypersaline (20,000 to 50,000 mg/L TDS) at shallow depths, increasing in mineralised zones to over 130,000 mg/L TDS (Rockwater, 2010).

A shallow south-trending tributary of the Yindarlgooda palaeochannel lies to the east of the site (Figure 6). The palaeochannel is 50 to 100 m wide, with an aquifer in 2 to 6 m of sand overlain by ferricrete, calcrete and clay. Bores constructed in this aquifer generally yield 150 to 400 m^3/day, with salinity ranging from 42,000 to 72,000 mg/L TDS and increasing down-gradient (southwards) (Rockwater, 2010).

Monitoring indicates that borefield abstraction to date has been sustainable, with water quality generally remaining stable during pumping and groundwater levels recovering since the suspension of production (Rockwater, 2010). The Black Swan Pit was abandoned before reaching its full depth and is currently above the water table. Dewatering rates from the Silver Swan underground workings have reduced somewhat since production was suspended.

Some changes to groundwater levels and quality have been identified around the Black Swan TSFs, due to artificial recharge from porewater seepage, rainfall capture, and mine water infiltration, MineGeoTech (2014) notes that groundwater seeping into the Black Swan pit along major faults and contacts has previously been attributed to a significant leak in the floor of the TSF 4, but that the evidence for this is inconclusive.

No fresh or high-quality water resources or groundwater-dependent ecosystems requiring particular protection have been identified near Black Swan. There are no nearby groundwater users likely to be affected by groundwater impacts from the operations or closure of Black Swan. Subterranean fauna (Stygofauna and Troglofauna) have not been identified as significant at Black Swan; no PECs or TECs associated with stygofauna or stygofauna habitats are listed near the site.

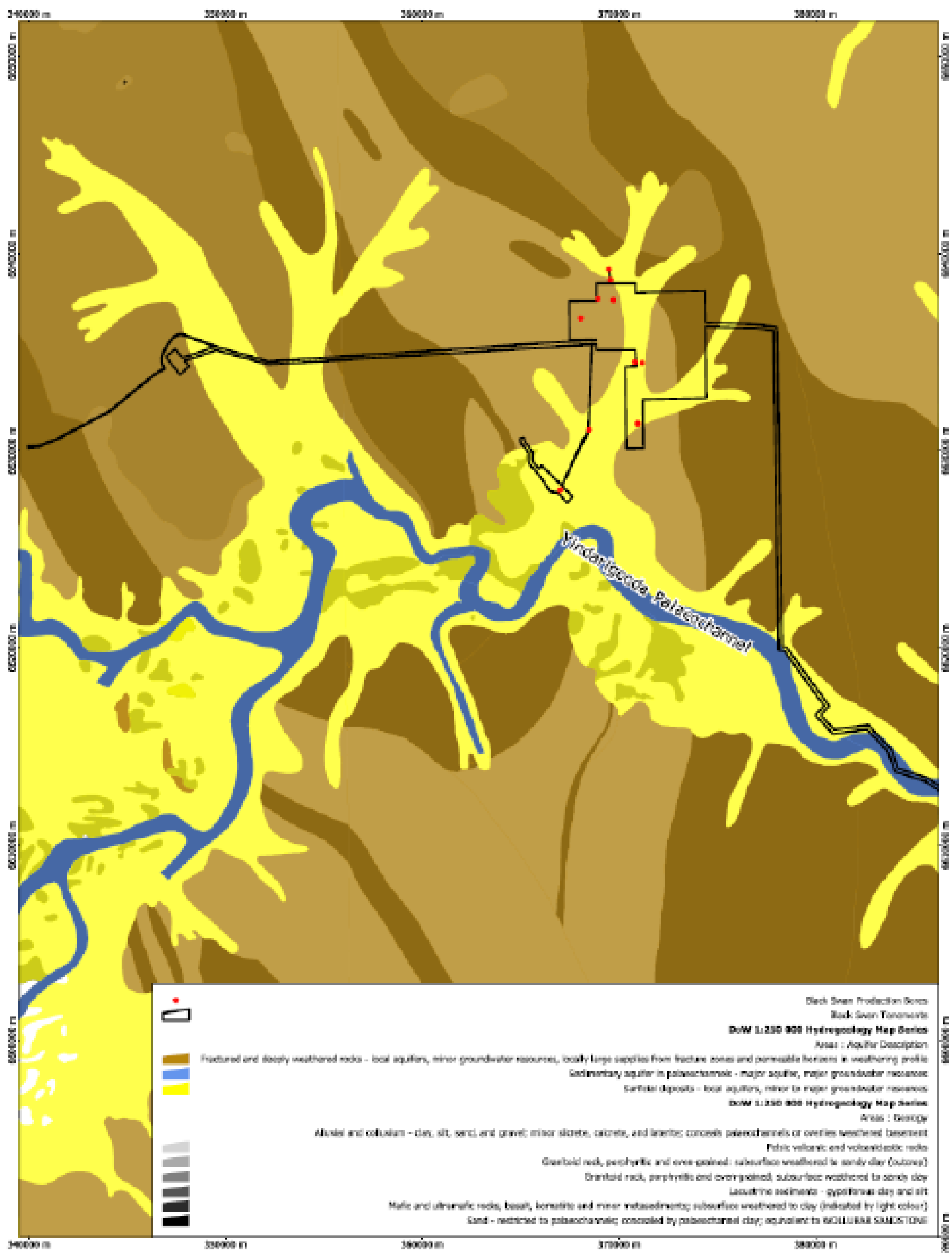

Figure 6: Groundwater Hydrogeology

2.8 Flora and Vegetation

Overview

The vegetation of the Murchison Bioregion is described by Tille (2006) as Mulga (*Acacia aneura*) shrublands and woodlands with gidgee (*A. pruinocarpa*), kurara (*A. tetragonophylla*), *A. linophylla*, bowgada (*A. ramulosa*), jam (*A. acuminata*), minniritchie (*A. grasbyi*), Senna spp. and Eremophila spp., which dominate the hardpan wash plains. Denser, taller mulga woodlands are found on groves, while the sandy banks support mulga, bowgada and kurara shrublands with an understorey of wanderrie grasses (Eragrostis and Eriachne spp. and *Monachather paradoxa*). Snakewood (*A. xiphophylla*), bluebush (Maireana spp.) and saltbush (Atriplex spp.) grow on the saline drainage tracts.

Vegetation

A number of specific vegetation associations have been identified from field surveys of the Black Swan tenements (Onshore, 2004; Armstrong, 2007); all are considered common, either locally or regionally. No threatened or priority ecological communities (TECs or PECs) as listed by DBCA are identified near the site. The area, like the wider region, has been extensively grazed over a long time, selectively depleting or removing the more palatable species.

The flora identified from field surveys of the Black Swan tenements is considered typical of the area, common, and widespread. The flora is dominated by eucalypts, acacias, and eremophilas (colloquially, emu bush or poverty bush); a number of ephemeral species representing *Asteraceae* (daisies) and *Poaceae* (grasses) would also be expected to occur (Onshore, 2004; Armstrong, 2007; Norlisk, 2013; MBS, 2017). No “declared rare” flora are recorded within 30 km of Black Swan; “priority” species are recorded in the wider area but have not been identified at the site (MBS, 2015).

A number of introduced weed species were identified from the field surveys; these species are generally common and widespread in the region, reflecting a long history of grazing and (to a lesser extent) prospecting. None of the weeds identified is a “declared” species requiring special management.

The most recent Flora and Vegetation survey (Botanica, 2023 and 2024) identified 10 vegetation types (Figure 7 and Table 2). This work is currently being extended to cover all of the Black Swan operating areas as part of Maritana’s Feasibility Studies into repurposing the Black Swan Plant; further updates will be included in the next MCP update.

2.9 Fauna

The habitats at Black Swan are considered common and widespread, and the fauna there are unlikely to be substantially different to that found in similar habitats in the region. A number of mature eucalypt trees are present around the site, with hollows that may be of some habitat value. A number of species of conservation significance (including malleefowl and several migratory species) may occur in the wider area, but are considered unlikely to use or rely on the habitats present at Black Swan (Onshore, 2004; Armstrong, 2007; Norlisk, 2013; MBS, 2017; ATA Environmental 2007, Botanica 2023).

Four broad-scale terrestrial faunal habitats (excluding cleared vegetation) were identified within the survey area. The extent of the identified fauna habitats and a summary description are provided in Table 3. A map of the fauna habitats is provided in Figure 8.

Table 4 provides a list of opportunistic observations of fauna species that were made during the field survey, with a total of nineteen fauna species observed.

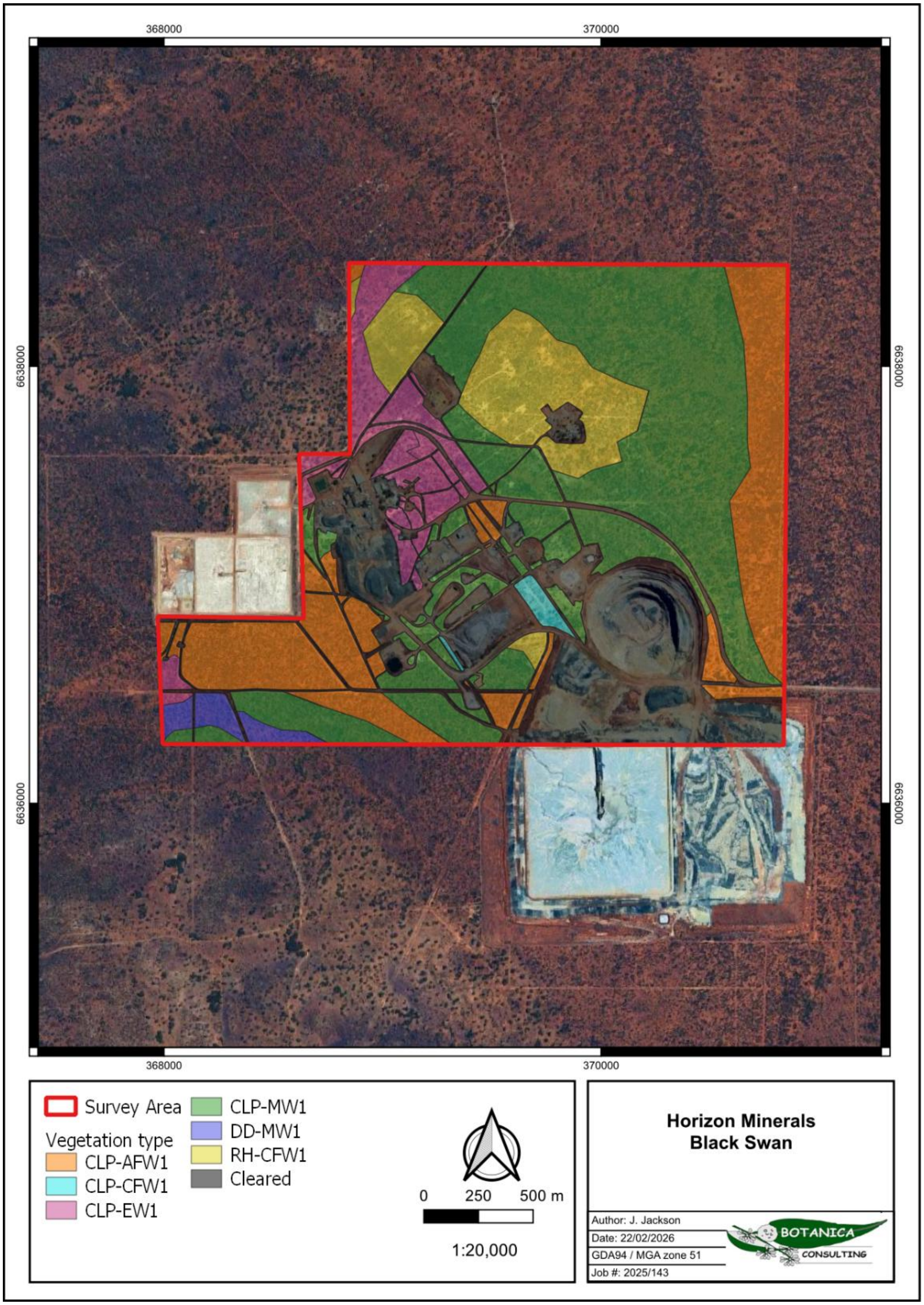

Figure 7: Botanica 2023 &2026 Flora Survey

Table 2: Summary of Vegetation types within the survey area

Landform	NVIS Vegetation Group	Veg Code	Vegetation Type	Area (ha)	Area (%)	Image
Rocky Hillslope	Casuarina Forests and Woodlands (MVG 8)	RH-CFW1	Low forest of *Casuarina pauper* over mid open shrubland of *Acacia duriuscula* over low open shrubland of *Westringia rigida* on rocky hillslope.	47.6	9.4	
Plain	Acacia Forests and Woodlands (MVG 6)	CLP-AFW1	Low forest of *Acacia incurvaneura* over mid open shrubland of *Eremophila scoparia* over low open shrubland of *Ptilotus obovatus* on clay loam plain.	88.8	17.5	

File Name:

Landform	NVIS Vegetation Group	Veg Code	Vegetation Type	Area (ha)	Area (%)	Image
Rocky Hillslope	Casuarina Forests and Woodlands (MVG 8)	RH-CFW1	Low forest of *Casuarina pauper* over mid open shrubland of *Acacia duriuscula* over low open shrubland of *Westringia rigida* on rocky hillslope.	1.3	0.8	
Plain	Acacia Forests and Woodlands (MVG 6)	CLP-AFW1	Low forest of *Acacia incurvaneura* over mid open shrubland of *Eremophila scoparia* over low open shrubland of *Ptilotus obovatus* on clay loam plain.	89.6	57.1	

File Name:

Landform	NVIS Vegetation Group	Veg Code	Vegetation Type	Area (ha)	Area (%)	Image
Plain	Eucalypt Woodlands (MVG 5)	CLP-EW1	Low woodland of *Eucalyptus salmonophloia* over mid open shrubland of *Eremophila scoparia* over low open shrubland of *Ptilotus obovatus* on clay loam plain.	34.2	6.7	
Plain	Mallee Woodlands and Shrublands (MVG 14)	CLP-MW1	Low mallee woodland of *Eucalyptus oleosa* over mid open shrubland of *Acacia hemiteles* over low open shrubland of *Ptilotus obovatus* on clay loam plain.	180	35.7	

Landform	NVIS Vegetation Group	Veg Code	Vegetation Type	Area (ha)	Area (%)	Image
Plain	Eucalypt Woodlands (MVG 5)	CLP-EW1	Low woodland of *Eucalyptus salmonophloia* over mid open shrubland of *Eremophila scoparia* over low open shrubland of *Ptilotus obovatus* on clay loam plain.	11.9	7.6	
Plain	Mallee Woodlands and Shrublands (MVG 14)	CLP-MWS1	Low mallee woodland of *Eucalyptus oleosa* over mid open shrubland of *Acacia hemiteles* over low open shrubland of *Ptilotus obovatus* on clay loam plain.	30	19.1	

File Name:

Landform	NVIS Vegetation Group	Veg Code	Vegetation Type	Area (ha)	Area (%)	Image
Plain	Casuarina Forests and Woodlands (MVG 8)	CLP-CFW1	Low forest of *Casuarina pauper* over mid open shrubland of *Acacia hemiteles* over low open shrubland of *Ptilotus obovatus* on clay loam plain.	3.1	0.6	
Drainage depression	Mallee Woodlands and Shrublands (MVG 14)	DD-MW1	Low mallee woodland of *Eucalyptus oleosa* over mid open shrubland of *Acacia tetragonophylla* over low open shrubland of Ptilotus obovatus in a drainage depression	7.8	1.5	

Landform	NVIS Vegetation Group	Veg Code	Vegetation Type	Area (ha)	Area (%)	Image
Cleared	Cleared (MVG 25)	CV	Cleared areas	144.5	28.6	
			Total	506	100	

Table 3: Summary of terrestrial fauna habitats within the survey area

Fauna Habitat	Description	Representative Fauna Attributes	Example Image
Fauna Habitat 1 Casuarina woodland on rocky hillslope Area= 47.6 ha (9.4%)	*Casuarina Pauper* woodland over *Acacia duriuscula* and *Scaevola spinescens* over Ptilotus and Westringia low shrubland on rocky slopes.	• Ground not suited to burrowing species. • Moderate diversity vegetation strata. • Low vegetation density and leaf litter. • Potential refuge for small fauna under rocks.	
Fauna Habitat 2 Acacia and/or Casuarina woodland on clay loam plain Area= 91.9 ha (18.1%)	Acacia and/or Casuarina woodland over Eremophila shrubland over mixed low shrubland on clay loam.	• Ground has low to moderate suitability to burrowing species, • Low diversity vegetation strata and low vegetation density, • Low levels of lower canopy and leaf litter.	

File Name:

Fauna Habitat	Description	Representative Fauna Attributes	Example Image
Fauna Habitat 3 Tall Eucalypt woodland on clay loam plain Area= 34.2 (6.7%)	Low woodland of *Eucalyptus salmonophloia* over mid open shrubland of *Eremophila scoparia* over low open shrubland of *Ptilotus obovatus* on clay loam plain.	• Ground has low to moderate suitability to burrowing species, • Low diversity vegetation strata and low vegetation density, • Low to moderate levels of leaf litter. • Some taller trees may support nesting avifauna.	
Fauna Habitat 4 Mallee woodland on clay loam plain and/or drainage depression. Area= 187.8 ha (37.2%)	Low mallee woodland of *Eucalyptus oleosa* over mid open shrubland of *Acacia hemiteles* over low open shrubland of *Ptilotus obovatus* on clay loam plain and/or drainage depression.	• Ground has low to moderate suitability to burrowing species, • Low diversity vegetation strata and low vegetation density, • Low to moderate levels of leaf litter.	

Fauna·Habitat¤	Description¤	Representative·Fauna·Attributes¤	Example·Image¤
Fauna·Habitat·5¶ ¶ Cleared¶ ¶ Area=· 144.5· ha· (28.6%)¶ ¤	Cleared· areas· including· roads,· tracks,·drains,·rubbish·dumps·and· gravel·pits.¤	•→ Very·low·potential·for·fauna·habitat¶ •→ Some·rubbish·may·provide·shelter·for·reptiles¤	

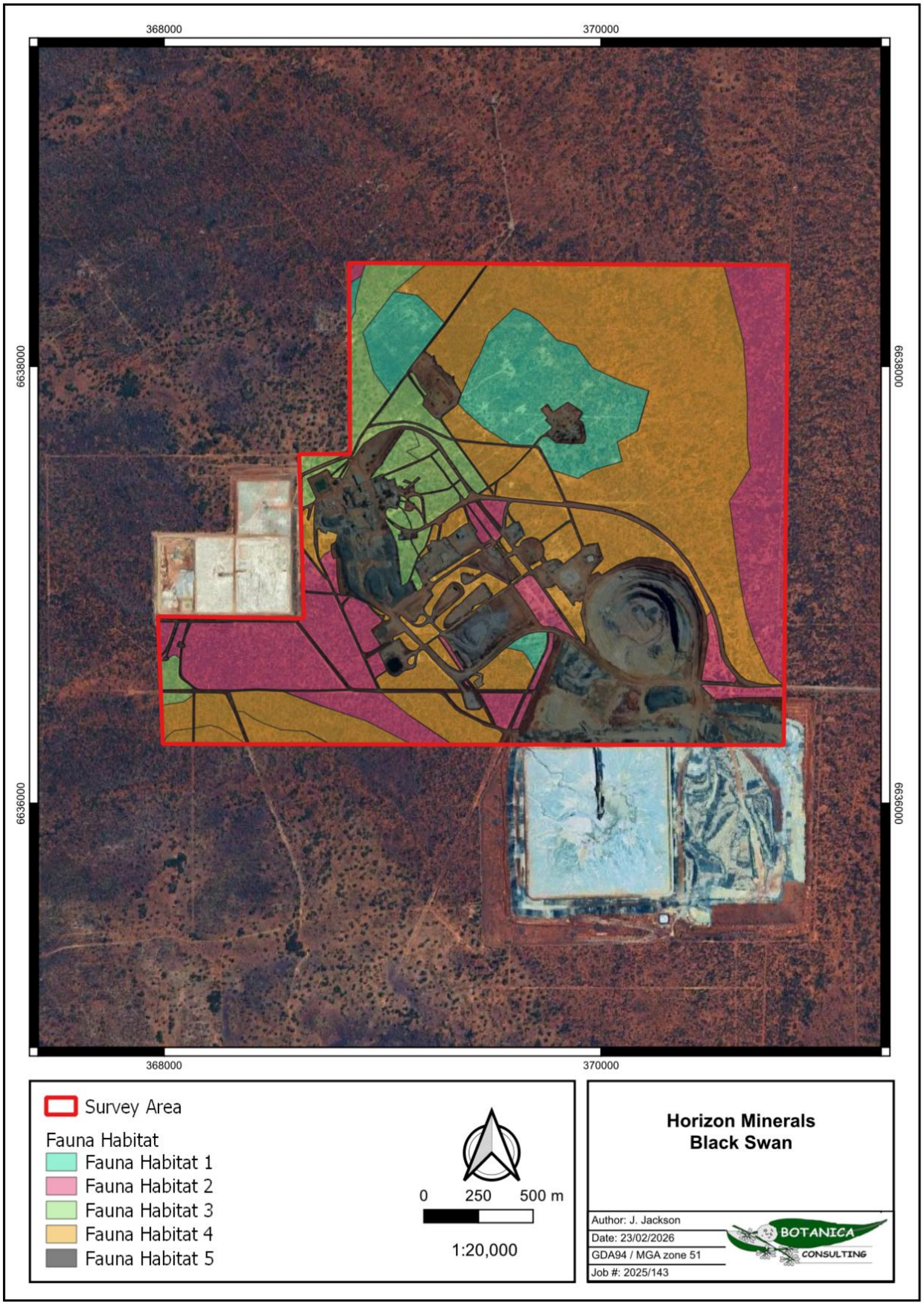

Figure 8: Botanica 2023 &2025 Fauna habitats within the survey area

Table 4: Fauna species observed during the field survey

Taxon	Common Name	Observation
Birds		
Acanthagenys rufogularis	Spiny-cheeked Honeyeater	Sighted
Acanthiza apicalis	Inland Thornbill	Sighted
Accipiter cirrocephalus	Collared Sparrowhawk	Sighted
Barnardius zonarius	Australian Ringneck	Sighted
Cheramoeca leucosterna	White-backed Swallow	Sighted
Colluricincla harmonica	Grey Shrike-thrush	Heard
Gymnorhina tibicen	Australian Magpie	Sighted
Lichmera indistincta	Brown Honeyeater	Sighted
Lichenostomus virescens	Singing Honeyeater	Sighted
Malurus splendens	Splendid Fairy-wren	Sighted
Oreoica gutturalis	Crested Bellbird	Heard
Pachycephala fuliginosa	Western Whistler	Heard
Pomatostomus superciliosus	White-browed Babbler	Sighted
Smicrornis brevirostris	Weebill	Sighted
Strepera versicolor	Grey Currawong	Sighted
Mammals		
*Bos taurus**	Cattle	Tracks and scat seen
*Oryctolagus cuniculus**	Rabbit	Tracks and scat seen
Reptiles		
Ctenophorus cristatus	Crested Dragon	Sighted
Tiliqua rugosa	Bobtail	Sighted

*Denotes introduced species

4 Processing Plant

The existing BSP Processing Facility was originally designed as a 60,000 tpa plant to treat the Silver Swan underground ore; it was later (2007) upgraded to 250,000 tpa with the addition of the Cygnet and Goslings orebodies, also mined underground. Then, from 2003 to 2,200,000 tpa to treat the Black Swan Open Pit. This legacy, particularly in the crushing and grinding circuit, has left redundant infrastructure that will be demolished during the processing plant refurbishment.

The Nickel flotation and production circuit will be retained for future Nickel ore processing if market conditions improve.

The processing plant consists of several circuits that make up the full processing facility, including:

- The Crushing and Grinding Circuit
- Gravity Concentration
- Leaching and Absorption circuit
- Gold recovery
- Tailings thickener and disposal
- Reagents, Fuel and oxygen

3.1 Crushing and Grinding Circuit

The ore is fed from the Run-of-Mine (ROM) Pad into the primary crusher via a static grizzly (600 mmm aperture) into the existing 80-tonne ROM bin using a front-end loader (FEL). From the ROM Bin ore will be fed to the jaw crusher, where it will be crushed to 151 mm. The product from the crushing circuit will be conveyed by the existing conveyor system to the coarse ore bin for storage prior to milling.

The existing coarse ore bin has a nominal capacity of 1,000 tonnes, which is sufficient for approximately 3.6 hours of milling (from full) when the crushing circuit is offline. Ore will be withdrawn from the bin onto the mill feed conveyor system by the existing variable speed apron feeder. Quicklime will be added directly onto the mill feed conveyor from an existing 150-tonne-capacity silo fitted with a variable-speed rotary valve. Quicklime will be needed to provide protective alkalinity in the leaching and adsorption circuit.

The ore will then be ground from 151 mm to 106 μm via the existing refurbished SAG Mill. The SAG mill will discharge into a trommel screen with a 12 mm aperture. Trommel oversize will be directed by the existing oversize chute to the modified recycle pebble conveyor. The existing pebble crusher, which will be relocated to the discharge end of the existing recycle pebble conveyor, will be fed via a new feed bin and vibrating feeder arrangement to facilitate choke feeding of the pebble crusher. The pebble crusher product will be discharged directly onto the pebble crusher discharge conveyor. A diverter gate upstream of the pebble crusher will allow ore containing tramp metal to be bypassed onto the pebble crusher discharge conveyor.

The combined SAG mill and ball mill trommel undersize will be pumped to the existing hydrocyclone cluster via the existing mill discharge hopper. The existing cyclone cluster consists of ten 370 mm diameter cyclones (six duty cyclones and four standby cyclones).

Cyclone underflow will report to the 5.5 MW ball mill, which will be charged with 50 mm grinding balls, via the existing feed chute. An existing cyclone underflow splitter box and valve arrangement will allow the grinding circuit to be operated in Single Stage SAG (SSAG) mode if required, whereby the cyclone underflow will be diverted back to the SAG mill if the ball mill is taken offline. Cyclone overflow will gravitate to the existing trash screen, while the cyclone underflow will be split between the ball mill and a new gravity circuit with dual Knelson concentrators.

One of the cyclone underflow launder outlets will be restricted (via an orifice plate) to control the flow to the gravity circuit, while the remainder of the cyclone underflow will return to the ball mill feed chute. The arrangement will provide the ability to adjust the proportion of the underflow treated by the gravity circuit to suit varying circulating loads.

3.2 Gravity, CIL and Gold Recovery circuit

The gravity circuit will consist of two new centrifugal concentrators treating up to 40% of the cyclone underflow stream following screening oversize via a new gravity scalping screen. Gravity concentrate will be leached in a vendor-supplied Acacia leach reactor to yield a pregnant solution from which precious metals will be recovered by electrowinning.

After screening to remove trash, the cyclone overflow stream from the grinding circuit will be pumped via a new pre-leach thickener feed hopper to a new 20 m pre-leach thickener, where it will be thickened before leaching. The gold-bearing pre-leach thickener underflow product will then be leached with cyanide in a leach-and-CIL circuit, providing a nominal pulp residence time of 25 hours.

The pre-leach thickener feed will be dosed with flocculant and thickened to 50% solids (w/w). The thickener underflow will be pumped by one of two centrifugal slurry pumps, arranged in a duty/standby configuration, to the first leach tank. The pre-leach thickener overflow will gravitate to the process water pond.

The leaching and adsorption circuit will consist of two 1,100 m^3 leach tanks and six 1,100 m^3 CIL tanks. The design will include the ability to bypass any single tank in the train should this be required, but not two consecutive tanks at the same time.

Cyanide will be staged dosed into the first leach tank via a distribution box and valve arrangement, and into the first and third CIL tanks as required. The first leach tank will be equipped with a centrifugal recirculation pump and an oxygen injection system to recirculate oxygenated slurry at a rate of approximately 1/3 of the leach tank volume per hour. Oxygen will also be injected down the agitator shafts of the two leach tanks, and provision will be made for down-shaft oxygen sparging on all the remaining CIL tanks. The leaching and CIL tanks will all be of a similar design so that the operating duty may be changed to allow for additional tanks to be installed in the future.

Loaded carbon from the first CIL tank will be pumped to the loaded carbon screen. Washed loaded carbon from the screen will gravitate into the acid wash column while the undersize slurry will return to the first CIL tank. Barren carbon from the regeneration kiln (or directly from the elution column) will be returned to the circuit via the barren carbon screen.

The carbon handling and gold recovery system will comprise the following:

- A 5-tonne capacity mild steel rubber-lined acid wash column.
- 5-tonne capacity SAF 2205 elution column.
- A 2,000 kW elution heater.
- A split AARL elution system with two 65 m^3 pregnant solution tanks and a 50 m^3 recycle elution tank.
- A 300 kg per hour regeneration kiln and associated quench tank.
- An eduction water system for carbon transfer.
- An electrowinning circuit with two 800 mm wide by 800 mm high electrowinning cells fitted
- with 12 cathodes and 13 anodes and supplied by a 1,500 A rectifier.
- A cathode washing station and plate and frame filter to recover precious metal precipitate.
- A smelting furnace and crucibles to produce gold doré, and

- A secure gold room with a vault and safe for the storage of bullion.

3.3 Tailings Circuit

Final tailings from the leaching and adsorption circuit will be screened to recover any carbon fines, then thickened in the existing tailings thickener before being pumped to the existing Tailings Storage Facility (TSF). Any carbon coming off the screen will be collected into carbon bags for subsequent treatment (by others). The tailings screen undersize slurry will gravitate to a new tailings hopper, from which it will be pumped to the existing tailings thickener by one of two centrifugal slurry pumps arranged in a duty/standby configuration.

The tailings thickener feed will be dosed with flocculant and thickened to 60% solids (w/w). The thickener underflow will be pumped to the TSF by one of two new centrifugal slurry pumps, arranged in a duty/standby configuration. The tailings thickener overflow will gravitate to the existing process water pond.

Decant return from the tailings storage facility will be returned to the existing process water pond.

3.4 Grinding Media and Reagents

The following process additives will be necessary to operate the processing facilities:

- Grinding Media.
- Flocculant.
- Quicklime.
- Sodium Cyanide.
- Oxygen.
- Carbon.
- Sodium Hydroxide.
- Hydrochloric Acid.
- Liquid Petroleum Gas (LPG), and
- Smelting Fluxes.

Grinding media and reagents will be delivered to site, mixed and dosed as outlined in Table 5.1.

Table 5: Details of Grinding Media and Reagent Systems

Process Reagent	New or existing	Packaging	Mixing	Storage	Addition
Grinding Media	Existing	Bulk	-	Bunker	Ball kibble and hoist

Quicklime	Existing	Bulk		150 t	Variable speed drive rotary valve
Flocculant	New	799 kg bags	New automated batching system 1,000kg bin, feeder, wetting head and 8 m3 agitated mixing tank	22 m^3	New Variable speed drive dosing pumps
Sodium Cyanide	New	26 t liquid solution in isotainers	-	220 m^3	Circulating pumps and dosing valves
Oxygen	New	Cryogenic liquid in road tankers	-	65.5 t	Reticulated to pre-oxidation and leach tanks
Carbon	New	500 kg bags			By Crane to CIL
Sodium Hydroxide	New	22.5 t liquid solution		30 m^3	Circulating pumps and dosing valves
Hydrochloric Acid	New	22.5 t liquid solution		30 m^3	Variable speed drive dosing pumps
Liquid Petroleum Gas	New	Bulk		30 m^3	Reticulated to elution and gold room areas
Smelting Fluxes	New	25 kg bags on a pallet		4 t	Manual mixing

3.5 Commissioning

The processing plant has a number of circuits that make up the plant -

Stage	**Activity**	**Feed Source**	**Target Period**
Pre-Commissioning	Mechanical completion checks, QA/QC sign-off, instrumentation loop checks, motor megger tests	N/A	Q2/Q3 2027
Dry Commissioning	Equipment run-in without process materials; calibration; interlock testing; control system validation	No feed	Q3 2027

Wet Commissioning	Introduction of water; process circuit testing; reagent system commissioning	Water only	Mid-Late 2027
First Ore Introduction	Staged introduction of Boorara stockpile ore; ramp-up of throughput; optimisation of grinding, leach and CIL performance	Boorara 460,000t stockpile	Late 2027
Performance Testing	Demonstration of design throughput, recovery and availability KPIs; process optimisation	Boorara + early Boorara restart ore	Late 2027 early 2028
Operational Handover	Formal handover from project team to operations; all systems stable	Multiple ore sources	Late 2027 / Early 2028
Ramp-Up to Nameplate	Progressive throughput increase to 1.5 Mtpa; full production operations	Multiple ore sources	2028

5 RO Plant

The existing RO plant is non-operational, outdated, and slated for demolition. A new RO plant will be installed behind the Existing process water dam, which will also be refurbished. The new RO plant will be fed with low-salinity water from the northern Borefield. The potable water produced will be used for the camp, offices, and the gold recovery circuit. Reject water (saline) will be disposed of in the Process Water Dam.

6 Process water dam

The existing process water dam will be relined and refurbished, and will receive water from the Black Swan Borefield, RO reject water and return water from the Tailings Storage Facility. It will have a 1:100-year rain event freeboard and be fitted with telemetry to ensure it is not overtopped.

7.0Landfill

The third cell of the Cygnet TSF-evaporation pond is an enclosed area that was never used as an evaporation cell, and during previous operations, it became a dumping ground for mine wastes (poly pipe, sediment from a small evaporation pond). Maritana plans to convert this area into a formal landfill for inert mine waste (Poly Pite, Steel, concrete, samples), which will be stored with like materials for future recycling or disposal. As well as serving as an area to clean up other areas of the Lease or receive demolition water from the refurbishment of the processing plant.

The inert nature of the materials to be deposited in the landfill makes it unlikely to pose a contamination risk. Groundwater is also saline (20,000 – 80,000 TDS) and 30-40m below ground level. There are no sensitive receptors within 20km of the landfill.

The landfill is protected from surface water flow by the walls of the TSF, only incidental rainfall will impact the landfill.

The Landfill Environmental Management Plan (Appendix B)

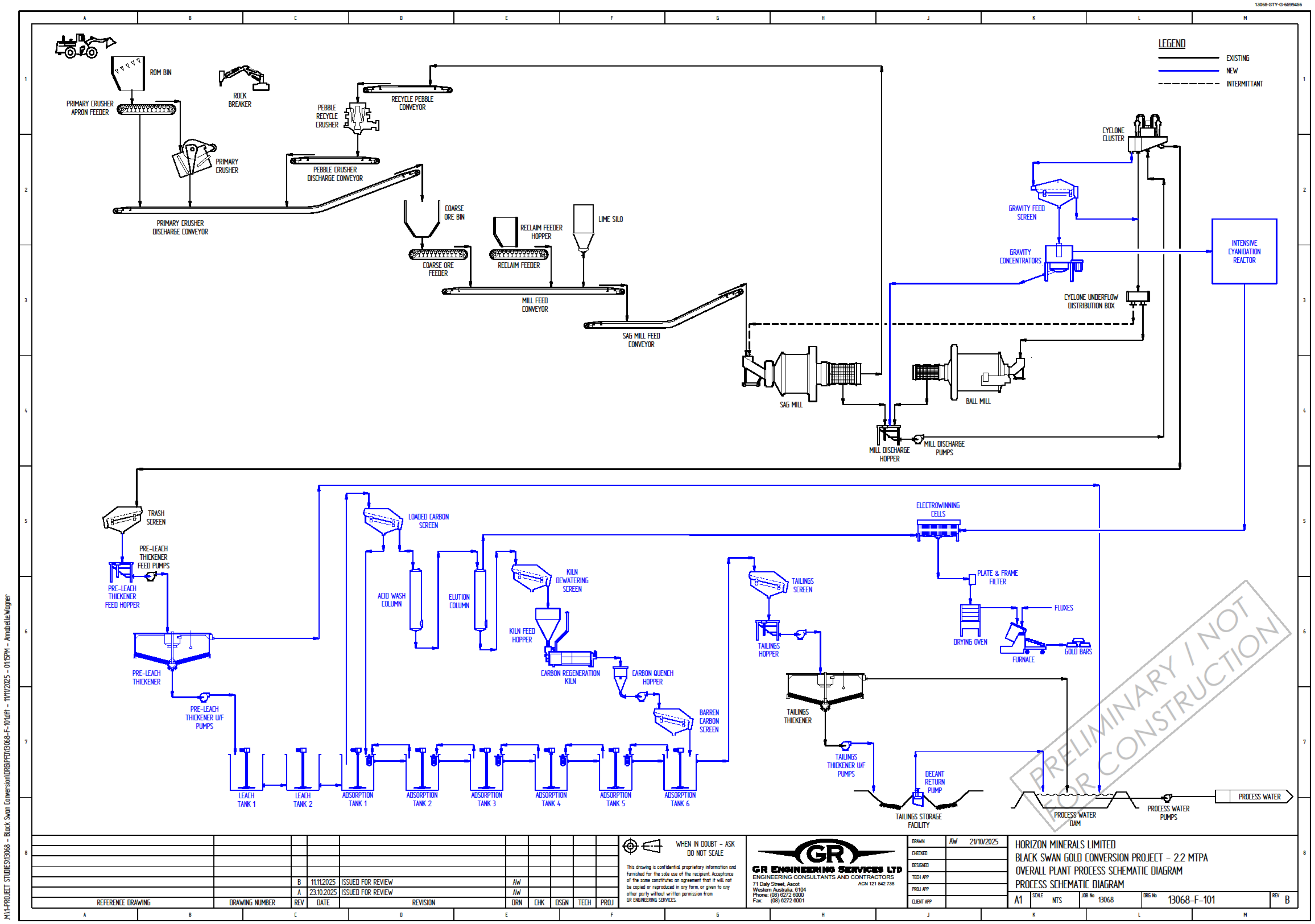

Figure 9: Process Flow Diagram exiting infrastructure black, new infrastructure blue.

8 Pollution Control

8.1 Dust

Plants shall be designed to minimise personnel exposure to dust. This may be achieved using enclosed dust-generating sources, water-spray systems, dust-collection systems, or a combination of these measures.

The ROM bin and new surge bin, will have dust-suppression misting sprays. Water addition to the ROM bin will be opened by activation of an FEL sensor. The Conveyor belts will have skirts to prevent dust lift off.

8.2 Bunding

Bunding shall be installed around all vessels containing process fluids where spillage may occur. Floor slabs within potential spillage areas shall be kerbed and graded to facilitate effective wash-down. Bunds shall provide a minimum 150 mm height from the top of the slab to the top of the kerb, and shall be provided with locally operated permanent sump pumps.

When using vertical cantilevered centrifugal sump pumps, the sump pit shall have a minimum depth of 600 mm, measured from the top of the surrounding slab to the bottom of the pit.

Where required by dangerous goods safety legislation, sump pumps will be fitted with a level switch for remote starting.

Where required under the Dangerous Goods Safety Act 2004 and regulations, the bunding will be sized such that it has 110% containment of the largest vessel and constructed to meet AS/NZS 4452 and AS 3780.

The whole processing plant will be contained within a secondary / stormwater runoff drainage system with drainage reporting to a sump where chemicals and sediment can be captured before any water is released to the environment.

8.3 Surface water and Stormwater Management

Water spills or overflow from ponds, tanks, ore slurry not contained by concrete bunds, and stormwater runoff will report to site drainage pond.

New processing plant facility site drainage to report to 4,300m^3 site drainage pond (Figure . Sized on the design basis of a 1 in 100-year AEP, 72-hour rain event using existing intensity-frequency-duration (IFD) data/chart, which can be expected to generate 227 mm of rainfall. With a runoff coefficient of 0.8.

The existing Crushing and grinding circuit is within the existing processing plant footprint and has existing drainage management with diversion bunds diverting sheet flow around the existing process plant footprint.

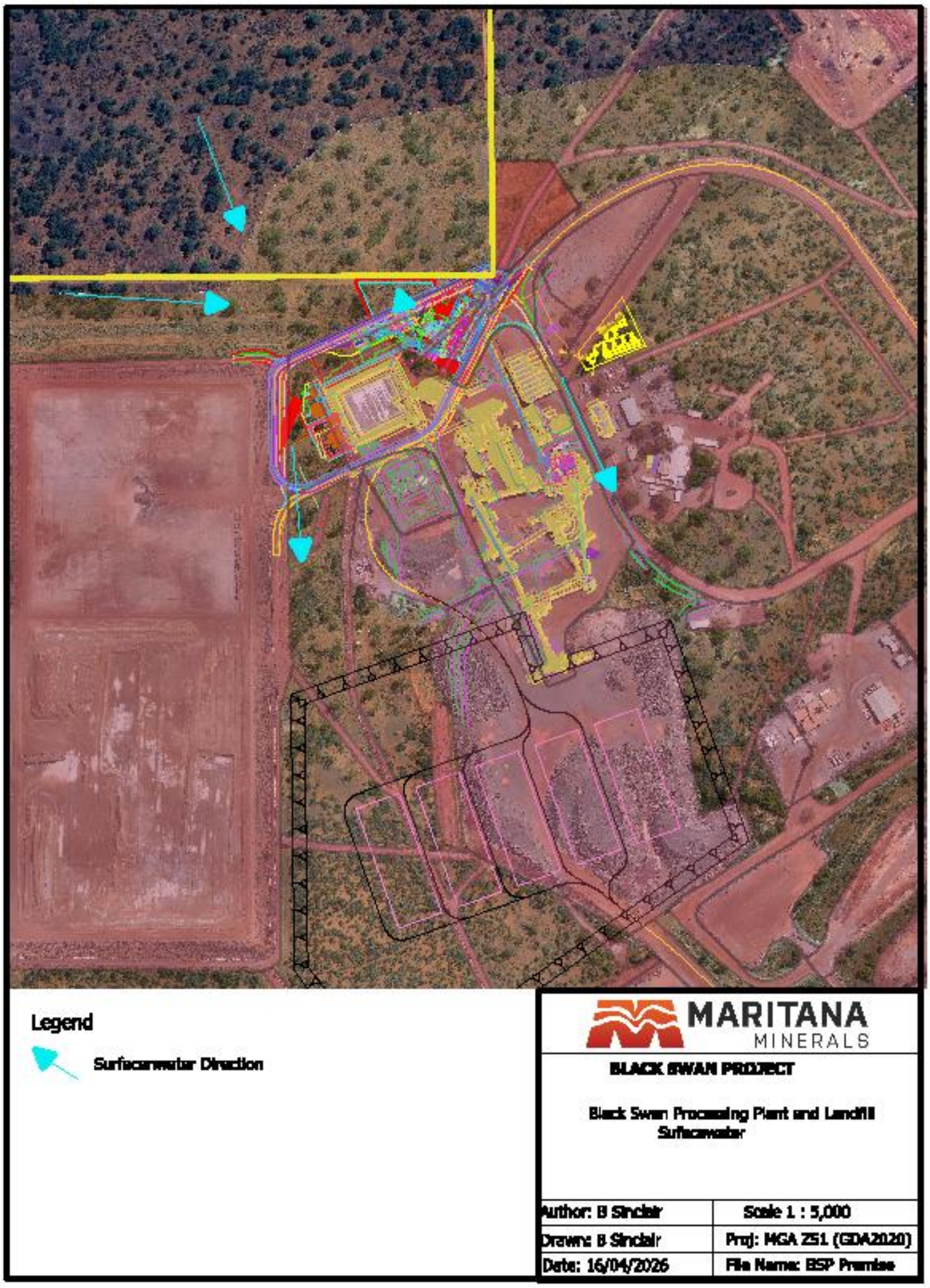

Figure 10: Surface Water and Stormwater Management