Application for Works Approval

Part V Division 3 of the *Environmental Protection Act 1986*

Works Approval Number	W6671/2022/1
Applicant	Nifty Copper Pty Ltd
ACN	074 145 636
File number	DER2022/000098
Premises	Nifty Copper Project M271SA TELFER WA 6762 As defined by the premises maps attached to the issued works approval
Date of report	04 August 2022
Decision	Works approval granted

Sonya Poor
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Date: 2022.08.04 09:54:55 +08'00'

Sonya Poor
A/MANAGER, RESOURCE INDUSTRIES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the premises. As a result of this assessment, works approval W6671/2022/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) has considered and given due regard to its regulatory framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Application summary and overview of premises

On 08 March 2022, the applicant submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

The application is to undertake construction works for an open pit operation with use of heap leach pads and the SX-EW Plant at Nifty Copper Project at the premises. The premises is approximately 150 km east of Nullagine and 200 km east south-east of Marble Bar.

The premises relates to the categories and assessed production / design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6671/2022/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in works approval W6671/2022/1.

The Nifty Copper Project (the project) has most recently been operated as an underground mine and concentrator to produce copper concentrate for shipping. The project also comprises a historical open pit oxide mine, heap leach and solvent extraction / electrowinning SX-EW Plant to produce copper plates. Some of this existing infrastructure will be refurbished for use and some new infrastructure will be incorporated so that above ground mining and processing to provide copper plates can recommence. Refer to Table 1 for a summary of infrastructure to be used.

Table 1: Summary of Infrastructure and Activities

Infrastructure / Activity	Existing	New
Pit	Retained and expanded.	Extended in oxide and transitional material including removal of all areas of underground subsidence.
Heap Leach	Existing Heap Leach material relocated.	New Heap Leach to the south of existing. Old Heap Leach will be renovated, relined and recommissioned.
Solvent Extraction (SX) Plant	Retained.	Refurbished.
Electrowinning (EW) Plant	Decommissioned and rehabilitated.	Relocate EW plant equipment retained. Place on new concrete footings and bunding. Refurbish equipment as required and commission.

Infrastructure / Activity	Existing	New
Run of Mine (ROM) Pad/crusher	ROM and primary crusher retained.	Use existing. New modular crushing facility.
Agglomerator	Retained.	Combination of refurbish and new facility.
Product	Historically copper plate and copper concentrate.	Final product Copper Plate. Concentrate discontinued.

The Process

Ore will be mined and trucked to the crushing and screening facilities. It will be crushed and screened using the Jaw Crusher and new Mobile Crushing System. Ore is then fed into an agglomeration facility and stacked with feed hoppers on heap leach pads. The heap leach process is divided into two separate phases. During Phase 1 the ore is mixed with fresh leaching solutions and raffinate return, then the resultant lixivated leachate is collected in an Intermediate Liquor Storage (ILS) Pond. During Phase 2 the ILS solution is irrigated on the stacked ore, if the resultant lixivated leachate meets the required grade the leachate is collected in a Pregnant Liquor Storage (PLS) Pond. If the leachate does not meet the required grade it is transferred back to the ILS Pond where it is used to irrigate the stacked ore until the required grade is achieved. PLS pond liquor is transferred to the SW and EW Plants for copper extraction.

The residual liquor from the SX and EW Plants will return to the heap leach process as raffinate, stored in the Raff Pond and returned to Phase 1 heap leach pads. Any runoff exceeding the capacity of the SX and EW Plants, ILS and PLS Ponds will overflow to Environmental Ponds. Water collected from these ponds will be pumped back into the heap leach circuit. Refer to Figure 1 for the process flow diagram of the heap leach process.

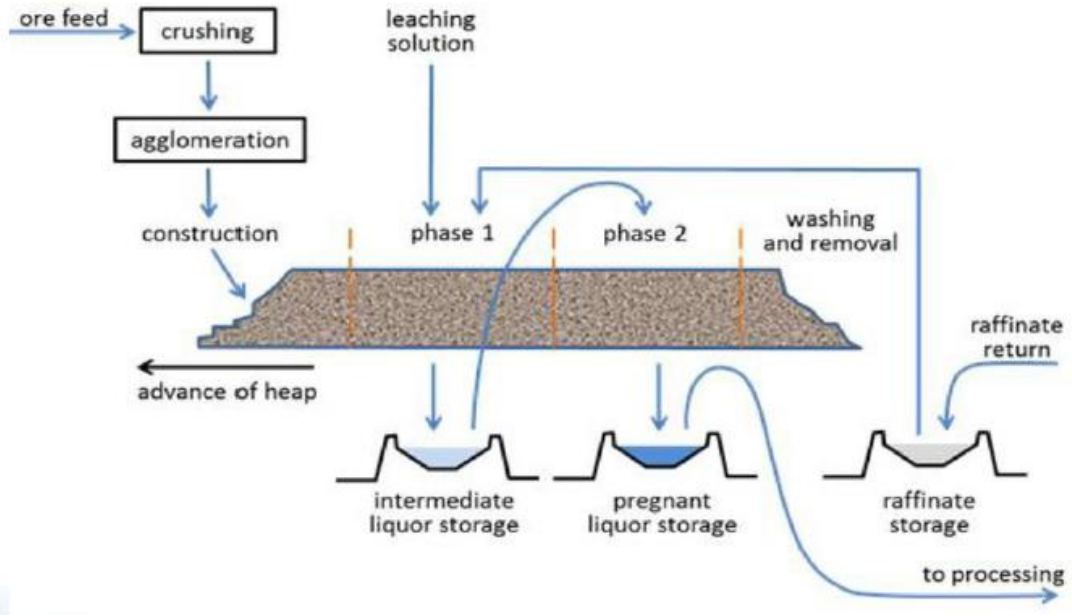

Figure 1: Heap leach process flow diagram.

The SX Plant receives an impure solution from the heap leach process containing dissolved copper and extracts that copper into a synthetic and relatively pure solution from which the metal

can be electrowon. The EW Plant forms a solid metal from that copper solution by electrical deposition. Direct Current is passed from anodes to cathodes depositing the copper at the surface of the cathode. The plates are then stripped from the cathode ready for shipping.

The infrastructure used throughout the processing is described in the below sections.

2.2.1 Crushing facilities

The majority of the existing crusher is beyond economical repair. The only component suitable for refurbishment and recommissioning is the Jaw Crusher.

A new Mobile Crushing System, with a production output of 2,331,000 tonnes per annum (tpa) will be incorporated. The refurbished Jaw Crusher will be located on a mobile platform to compliment the additional Mobile Crushing System, to crush and stack fresh oxide ore.

Therefore, the crushing facilities will consist of the following:

- Existing refurbished Jaw Crusher on mobile platform;
- Cone crushers;
- Double deck screen plant;
- Conveyors
- Agglomerator; and
- Stacker.

A second Crushing System will be included to maximise the recovery of the copper and facilitate the relocation of the existing heap leach pad material. It will have a production output of 4,995,000 tpa. The second Crushing System will consist of the following:

- Cone crusher;
- Double deck screening plant;
- Conveyors;
- Agglomerator; and
- Stacker.

2.2.2 Heap leach facilities

The existing heap leach facilities will not be incorporated into this project. Brand new heap leach facilities will be constructed for this project. These will consist of the following:

- Heap leach cells;
- Intermediate Leach Solution (ILS) transfer ponds;
- Pregnant Leach Solution (PLS) transfer ponds;
- Raffinate Pond; and
- Environmental ponds and drainage system.

Refer to Figure 2 and Figure 4 for the heap leach process design and facilities layout.

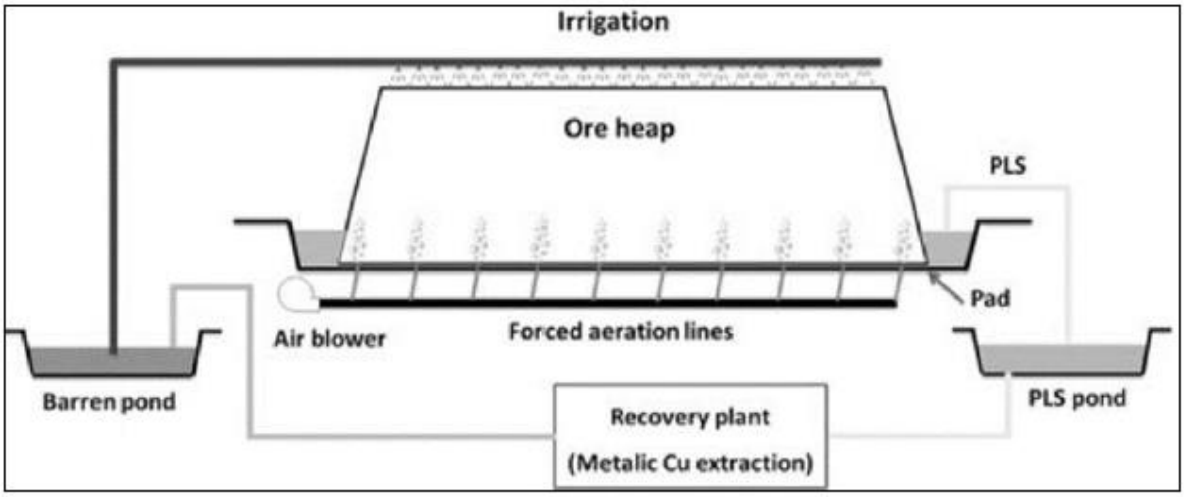

Figure 2: Heap leach process design

2.2.3 SX Plant

The SX Plant will be refurbished and recommissioned. Some new infrastructure will be incorporated as part of this process.

The following existing infrastructure will be refurbished:

- Strip Settlers, mixers and associated piping valves;
- Extraction Settlers, mixers and associated piping and valves;
- Tanking;
- Wash Settler, mixers and associated piping and valves;
- Large diameter, provided it passes engineering testing; and
- Diluent tankage.

The following infrastructure will be newly incorporated:

- Modular tanks for acid storage;
- Majority of pumps will be replaced;
- Majority of motors and instrumentation;
- Dump pond adjacent to SX Plant; and
- Any item that does not meet the required standard or fails while testing.

2.2.4 EW Plant

The EW Plant will include:

- EW cells;
- Cathodes and anodes;
- Rectifier and associated components;
- Electrolyte circulation system;
- Electrolyte circulation tank; and
- Cathode Stripping Machine.

The EW Plant will be refurbished and recommissioned. Some new infrastructure will be incorporated as part of this process.

The following existing infrastructure will be refurbished:

- Overhead Crane and rails;
- Cathode tanks;
- Bus Bar;
- EW tank house (shed structure); and
- Rectiformer Transformer.

The following infrastructure will be newly incorporated:

- Foundations and critical containment infrastructure;
- Rectifier and associated components;
- Cathodes and Anodes;
- Electrical instrumentation and lighting;
- Cathode Stripping Machine;
- Circulation tank;
- Majority of pumps will be replaced;
- New roof sheeting and side wall cladding; and
- Any item that does not meet the required standard or fails while testing.

2.2.5 Groundwater monitoring network

The groundwater monitoring network is shown in Figure 3. Table 2 shows the current status of groundwater quality at Nifty as sampled in December 2021. The results are compared to Investigative Trigger Values (IVT) developed by the Applicant. These IVTs represent the most conservative values for non-potable groundwater use, livestock drinking water or short-term irrigation.

The results in red indicate trigger values for ITV. Two sampling points, YNC58d and YNC58s, triggered the ITV for Total Dissolved Solids (TDS) and sulphate. The YNC58 monitoring bores are immediately south of the heap leach western ponds.

Table 2: Nifty Groundwater Quality

Analyte	pH	TDS	Sulfate as SO4	Aluminium	Arsenic	Cadmium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Zinc	Iron
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection limit	0.01	10	1	0.01	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.01	0.005	<0.05
Investigative Trigger Value	<6 or >8.5	6,000	2,000	5	0.1	0.1	1	0.1	10		1		3	<0.05
NORC16	7.60	2,430	730	<0.01	0.001	<0.0001	0.007	<0.001	0.003	0.003	0.026	<0.01	<0.005	<0.05
THRC1439	7.37	1,740	213	<0.01	0.001	<0.0001	<0.001	<0.001	0.016	0.001	<0.001	<0.01	0.006	<0.05
YNC214s	7.58	1,820	462	<0.01	<0.001	<0.0001	<0.001	<0.001	0.002	<0.001	<0.001	<0.01	<0.005	<0.05
YNC58d	6.95	7,090	3,640	<0.01	<0.001	<0.0001	0.002	<0.001	4.800	<0.001	0.002	<0.01	<0.005	<0.05
YNC58s	7.22	5,810	2,970	<0.01	<0.001	0.0003	0.117	<0.001	2.320	<0.001	0.010	<0.01	0.024	<0.05
YNC59d	6.78	2,730	968	<0.01	0.003	0.0004	0.016	<0.001	0.116	<0.001	0.005	<0.01	0.016	<0.05
YNC59s	7.62	3,080	1,100	<0.01	0.002	<0.0001	0.004	<0.001	0.003	<0.001	<0.001	<0.01	<0.005	<0.05
YNC60d	7.40	5,460	2,150	0.01	0.01	0.0001	0.017	<0.001	0.006	0.002	<0.001	<0.01	0.008	<0.05

Eight new groundwater monitoring bores will be installed in the vicinity of the proposed heap leaching area as per Table 3 and Figure 3:

Table 3: New groundwater monitoring bores

Bore name	Northing	Easting
MB18	7602940.6	351152.7
MB19	7602655.8	351700.8
MB20	7602366.2	352382.0
MB21	7602037.5	353062.6
MB23	7602663.9	353680.4
MB24	7603081.8	352462.7
MB25	7604330.3	354904.9
MB22	7602081.2	353789.2

Figure 3: Nifty Monitoring Bore Locations

These bores are proposed to be installed in December 2022 and to be sampled on a quarterly basis. As commissioning of the new heap leach is planned for June 2023, there should be three sampling events prior to commissioning.

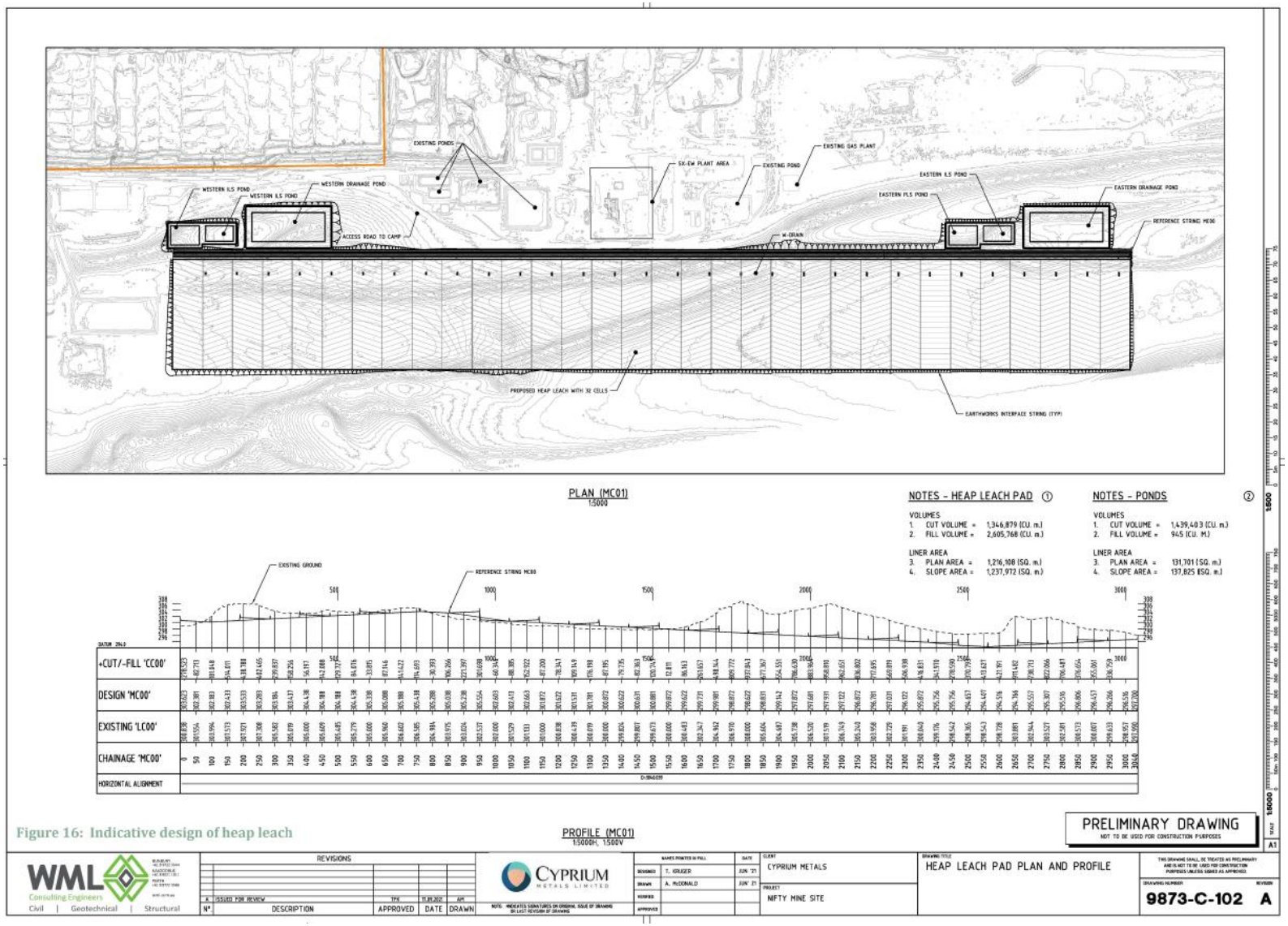

Figure 16: Indicative design of heap leach

Figure 4: Heap leach facilities layout

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk Assessments* (DWER 2020).

To establish a risk event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this decision report are detailed in Table 4 below. Table 4 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 4: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Movement of vehicles / machinery during construction Construction of new processing infrastructure including heap leach facilities	Air / windborne pathway	Minimise clearing of vegetation to prevent dust occurrence. • Water will be applied to any roads, Heap Leach Pads or cleared areas that pose a dust risk. Dust suppressant will be added where required; • Vehicle speed limits are implemented on site; • Areas will not be disturbed until they are required to be used, and the area to be disturbed will be minimised, where practicable; • Opportunistic inspections for dust emissions will be undertaken during construction of the Project to ensure dust control measures are being implemented and are effective; • If excessive visible dust emissions are noted then an assessment of the source will be made and additional water will be applied to key source areas, or alternative treatments applied; • The potential for high-risk weather conditions for dust emissions (i.e. windy conditions) will be monitored and extra water applied in preparation; • An incident reporting system will be maintained to assist in managing all

Emission	Sources	Potential pathways	Proposed controls
			environmental incidents such as excessive dust emissions; and • Construction duration three months**.**
Noise			• Construction work will comply with the *Environmental Protection (Noise) Regulations 1997*; and • Construction duration three months**.** **Emission screened out due to distance to sensitive receptors.**
Hydrocarbons / chemicals	Storage and refueling of vehicles / machinery	Direct discharges from leaks / spills	• Hydrocarbons and chemicals will be stored in bunded facilities compliant with *Australian Standard AS 1940:2017 The Storage and Handling of Flammable and Combustible Liquids – Western Australia*; • All hydrocarbon or chemical storage facilities will be fitted with spill kits; • Fuel will be stored in self-bunded tanks; • Refuelling of immobile or semi-mobile equipment will be conducted using a service vehicle fitted with a spill kit; • Light vehicle refuelling facilities will be conducted in a dedicated area; • Any spills will be controlled, contained and cleaned up in accordance with a spill management procedure; • Vehicle washdown areas will be fitted with oil-water separator; and • Dangerous goods risk assessments will be conducted, where required.
Commissioning and Operation			
Dust	Dust lifted off from mobile crushing facilities, ore stacking and sitting on heap leach pads during high wind events	Air / windborne pathway	• Minimise clearing of vegetation to prevent dust occurrence. • Water sprays will be utilised at the crushing and screening stations, tipping areas, conveyor transfer points and stockpiles. • Water Carts may be used to minimise dust lift-off from the Heap Leach Pad at HLF south; • Opportunistic inspections for dust emissions will be undertaken during construction of the Project to ensure dust control measures are being implemented and are effective;

Emission	Sources	Potential pathways	Proposed controls
			• If excessive visible dust emissions are noted then an assessment of the source will be made and additional water will be applied to key source areas, or alternative treatments applied; • The potential for high-risk weather conditions for dust emissions (i.e. windy conditions) will be monitored and extra water applied in preparation; and • An incident reporting system will be maintained to assist in managing all environmental incidents such as excessive dust emissions.
Noise	Heap leach pumps and stacking machinery, EW plant, mobile crushing facility and power generation		Compliance with the *Environmental Protection (Noise) Regulations 1997*. **Emission screened out due to distance to sensitive receptors.**
Copper rich solution	Leachate through heap leach pads lining	Direct discharges	• Heap leach liners are lined with high density polyethylene (HDPE); • Geosynthetic Clay Liner (GCL) will be installed on the new constructed heap leach pads prior to the installation of the HDPE liner. The GCL liner will be installed by suitably qualified and experienced contractor. Quality Assurance / Quality Controls will be conducted in accordance with the Engineering Standards developed by a suitable third party underpinned by American Society for Testing and Materials (ATSM); • A 500-600 mm cushion/protection layer will be placed on the liner to preserve the liners integrity prior to any stacking activity. The cushion layer will consist of a fine material which will prevent puncturing of the liner. The cushion layer will be installed on the heap leach HDPE liner once the QA/QC has confirmed the liner has been installed in accordance the technical specification requirements. The purpose of the sand cushion layer is to provide permanent ballast to protect the heap leach liner from wind uplift, and protect the integrity of the liner from UV degradation during placement of waste rock. The sand cushion layer shall be constructed from suitably graded sand material, selected so as to not cause damage to the HDPE liner; • Leak detection survey will be carried out on completion on the installed HDPE liner,

Emission	Sources	Potential pathways	Proposed controls
			involving an electric current to measure current flow to identify any anomalies that might be caused due to short circuits through holes / leaks in the HDPE liner; • Vacuum and air pressure testing will be carried out to confirm welding compliance; • Heap leach liners will be inspected at the start of each stacking activity; • The heap leach liners and containment pads will be visually inspected daily for any visible seepage or damage; and • Groundwater monitoring bores will be installed near the heap leach facilities to identify any changes to groundwater levels and/or quality that may indicate seepage, leaks or tears in the liners.
	Spills / leaks from pipelines	Direct discharges	• Heap leach pipelines will be inspected at the start of each shift; • Heap leach pipelines will be installed in v-drains or bunded as appropriate to ensure that any uncontrolled discharges from pipe or fitting failure can be contained and drain to the ILS, PLS or environmental ponds; • Flow sensors will be fitted to the heap leach pipelines to allow leaks to be detected and trigger the shut-down of pumps; and • The heap leach delivery pipes and containment corridor will be visually inspected daily for any visible leakage or damage.
	Overtopping of ponds	Direct discharges	• Sufficient freeboard for ponds will be maintained to prevent overtopping, using a pump with automatic level correction; • Use of bunding to divert stormwater into environmental ponds; • Direct all potentially contaminated stormwater to environmental ponds prior to incorporate into heap leach process; • Clean and maintain environmental ponds as required to maintain capacity; and • The ponds, pumps and valves will be inspected regularly for leaks through the embankments.
	Leachate through base and embankments of	Seepage	• Consist of duel containment ponds with a Leak Collection and Recovery System (LCRS);

Emission	Sources	Potential pathways	Proposed controls
	ponds		• All ponds are lined with two layers of HDPE with a layer of Hypernet in between; • Separation between the two HDPE liners allows for any leaked solution to report to a purpose built sump; • The LCRS sump is a monitoring system with a riser pipe installed to allow for periodical inspection and testing; • The ponds, pumps and valves will be inspected regularly for leaks through the embankments; and • Leak detection system incorporated into the design.
	Process solution leaks / spills at the SX-EW Plant	Direct discharges	• Infrastructure designed with containment bunds or sumps to contain all leaks and spills; • Bunds designed to retain process solutions; • Sumps and bunds lined with HDPE or epoxy to prevent degradation to the concrete structures from the low pH solutions; and • Sumps fitted with level sensors and linked to process control system to automatically pump the solution.
	Process solution leachate through SX containment walls	Direct discharges	• Infrastructure must be designed with containment bunds or sumps to retain all leaks and spills; • Bunds must be designed to retain process solutions; • Sumps and bunds must be lined with HDPE or epoxy to prevent degradation to the concrete structures from the low pH solutions; • Sumps must be fitted with level sensors and linked to process control system to automatically pump the solution; • All containment bunds checked against Australian design standards to retain all tank volumes and required contingencies; • All existing containment bunds and sumps will be inspected by a suitable engineer to identify any structural damage from geotechnical instability and/or previous chemical erosion. All areas identified will refurbished to meet AS 3600:2018 and AS 3735-2001;

Emission	Sources	Potential pathways	Proposed controls
			• Sumps collect any solution within the bunds and will return the solution into the process stream with sump pumps controlled through the plant control system and set to automatically activate when trigger levels are met; • All sumps and bunds will be Hydrotested to 100% capacity with clean potable water prior to the application of surface protectant. Post application of the surface protectant all areas will undergo further hydrotesting at 100% capacity to ensure surface protectant has provided adequate sealing; and • The surface protectant, or coating, will be chemically and mechanically non-reactive to hydrocarbons in a low pH solution.
	Process solution leachate through EW containment walls	Direct discharges	• Infrastructure must be designed with containment bunds or sumps to retain all leaks and spills; • Bunds must be designed to retain process solutions; • Sumps and bunds must be lined with HDPE or epoxy to prevent degradation to the concrete structures from the low pH solutions; • Sumps must be fitted with level sensors and linked to process control system to automatically pump the solution; • EW in new location with new purpose-built sumps and containment engineered to allow for electrolyte catchment; • All containment bunds checked against Australian design standards to retain all tank volumes and required contingencies; • All containment bunds and sumps will be inspected by a suitable engineer to meet Australian Standard 3600:2018 and AS3735; • Sumps collect any solution within the bunds and will return the solution into the process stream with sump pumps controlled through the plant control system and set to automatically activate when trigger levels are met; • All sumps and bunds will be Hydrotested to 100% capacity with clean potable water prior to the application of surface protectant. Post application of the surface protectant all areas will undergo further

Emission	Sources	Potential pathways	Proposed controls
			hydrotesting at 100% capacity to ensure surface protectant has provided adequate sealing; and • The surface protectant, or coating, will be chemically and mechanically non-reactive to hydrocarbons in a low pH solution.
	Overspray from the SX-EW Plant	Air / windborne pathway	• New technology available for acid mist mitigation will be implemented; • Floating objects to be used to create a mechanical interface to help suppress the acid mist; • Floating beads, spheres (mist balls) and cylinders are to be used to cover the free surface of the electrolyte and reduce the area for bubbles to burst and slow the rise of bubbles reducing the aeration on burst; • Chemical surfactants will be used; and • Rectiformer amps will be reduced to the lowest practical setting to reduce the amount of oxygenation.
Contaminated surface water runoff	Rainfall surface water runoff at heap leach facilities	Direct discharges mixed with rainwater	• Separate clean and potentially contaminated stormwater where possible; • Use of bunding to divert stormwater into environmental ponds; • Direct all potentially contaminated stormwater to environmental ponds prior to incorporate into heap leach process; • Clean and maintain sedimentation basins, sediment traps and Environmental Ponds as required to maintain capacity; • The site will be inspected for erosion after significant rainfall events; and • Groundwater monitoring bores will be installed near the heap leach facilities to identify any changes to groundwater levels and/or quality that may indicate any change after rainfall events.
Sulphuric Acid	Spills / leaks in the vicinity of the Sulphuric Acid tanks	Direct discharges	• Sulphuric acid tanks and unloading facilities will be localised to the addition point, reducing the need for extend piping; • In the event of acid required to be piped extended distances, the piping design will entail the transport pipe to be fully enclosed within HDPE pipe to contain any spills;

Emission	Sources	Potential pathways	Proposed controls
			• HDPE outer piping to have drain points to allow for periodical checks to be carried out for leaks; • Delivery hose is not under pressure and gravity feeds to the priming tank; and • Priming tank designed to hold the entire product remaining in the pipework on the discharge side of the pump. On completion of the transfer, the pump is stopped and all liquid drains freely back to the priming tank, including any residue from the road tanker hose.
	Sulphuric acid corrosion of tanks resulting in containment issues	Direct discharges	• Tanks designed to meet the requirements of the *Australian Standard 3780-2008 The storage and handling of corrosive substances*; and • Layout designed to ensure all product is delivered and there is no waste or residue product outside of the containment bund.
	Sulphuric acid overspray on the heap leach pads	Air / windborne pathway	• Dripper to be installed rather than wobbler or other spray applicator to be used on the heap leach pads; and • Dripper line is specialised to operate with low pH solution and method eliminates risk oof overspray and fumes.
Sediment laden / potentially contaminated stormwater	Laydown areas, processing plant etc. following rainfall events	Direct discharges	• Areas will not be disturbed until they are required to be used, and the area to be disturbed will be minimised, where practicable; • Stormwater will be captured within sediment basin catchment ponds once constructed; and • The site will be inspected for erosion after significant rainfall events.

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020), the Delegated Officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Table 5 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental Siting* (DWER 2020)).

Table 5: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	**Distance from prescribed activity**
There are no residential receptors within a 30 km radius of the prescribed premises.	
Environmental receptors	**Distance from prescribed activity**
Initial desktop studies conducted by Western Botanical identified 26 conservation significant flora species occurring within 110 kilometres of the Study Area. This comprised one Threatened Flora, ten Priority 1, three Priority 2, eleven Priority 3 and one Priority 4 species. A further assessment of the likelihood of each of these 26 species occurring in the Study Area was also undertaken. Two species were considered as Probably occurring within the Study Area while an additional nine considered Possibly occurring. The field survey conducted by Western Botanical (2021) identified no threatened species but six priority flora during the regional search. Four Priority Flora within the Study Area and two outside the Study Area. A review of the four species within the Study Area was also undertaken to provide local context of their extent outside the Study Area within a 5,000 ha buffer area.	Within 110 kilometers of the Study Area.
Twelve Vegetation Associations were recognised in the Nifty Study Area. These Vegetation Associations fell into four broad groups strongly reflective of the landforms occupying the Study Area. These landforms included 1) Sand Dunes, 2) Sandplains & Swales, 3) Stony Plains & Low Hills, and 4) Claypan Playas. No Threatened Ecological Communities were found within the Project Study Area (Western Botanical, 2021). No Priority Ecological Communities were found within the Project Study Area (Western Botanical, 2021).	Nifty Study Area.
Biota Environmental Sciences (Biota) has undertaken a targeted fauna survey, comprising desktop study, fauna habitat description, targeted searches, and an assessment of likelihood of occurrence of significant fauna (Biota, 2021). The desktop study identified 29 species listed as significant (Threatened or Priority fauna). During the field survey, 67 species of vertebrate fauna were recorded, including seven terrestrial mammal species, eight bat species, 37 bird species, 14 reptile species and one amphibian species.	Nifty Study Area.

Of the species identified within the desktop study only *Macrotis lagotis* (Bilby) and *Notoryctes caurinus* (Northern Marsupial Mole) have been recorded during surveys (Figure 34). The records are summarised as a total of three observations within the study area, one Bilby through identification of tracks and two Northern Marsupial Mole through identification of digging and burrowing.	
No public drinking water source areas are located within the Prescribed Premises area. The pre-existing pit is underlain by former underground workings. These old workings have historically acted as a sump to ground water and assisted in controlling the phreatic surface. Currently there is no dewatering and these workings are expected to flood. Once processing operations are commenced the underground workings will be dewatered again as a source of water for the mine and the processing of ore in the Heap Leach operation through to the SX/EW plant. This will maintain the water level below the bottom of the pit floor.	Prescribed Premises Area. Standing Water Level (SWL) of the groundwater is impacted by previous mine dewatering and a cone of depression has formed around the mine that is relatively steep within the open pit and extends beyond the pit, not the footprints of the waste rock dump and heap leach facility. In summary, the SWL around the heap leach facility, sulphuric acid tanks and SX/EW Plant varies from <10 mbgl to the south west, 40 mbgl at the sulphuric acid tank, 70 mbgl at the SX/EW Plant and 90 mbgl on the northern end of the existing heap leach.
The Project sits within the internally draining Sandy Desert basin. The Sandy Desert basin has no rivers of note or any relatively small creeks. There are drainages that are ephemeral and only carry runoff following significant rainfall events (high intensity cyclones and tropical depressions) typically during summer months (GRM, 2012). The Great Sandy Desert is a flat region dominated by sand dunes around 13 m in height. The sandy soil and flat nature of the region means surface runoff very rarely occurs, nor are there well defined water courses. The nearest defined watercourses to the Project are associated with the foothills of Mt McPherson and these fade out in the sand dunes at the base of the hills, about seven kilometres to the south-west of the Project. In rare severe rainfall events surface water sheetflow can occur in some areas and temporary lakes form in hollows between the dunes (GRM, 2021).	The Project is approximately 6 km to the east and outside of Pilbara Surface Water Area proclaimed under the RIWI Act.

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 6.

Works approval W6671/2022/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 6 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises i.e. Categories 5 and 7 activities. A risk assessment for the operational phase has been included in this decision report, however licence conditions will not be finalised until the department assesses the licence application.

Table 6: Risk assessment of potential emissions and discharges from the premises during construction, commissioning and operation

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Movement of vehicles / machinery during construction Construction of new processing infrastructure including heap leach facilities	Dust	Air / windborne pathway	Vegetation	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	N/A	N/A
Storage and refueling of vehicles / machinery	Hydrocarbons / chemicals	Direct discharges from leaks / spills	Vegetation and soils	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	N/A	N/A
Commissioning and Operation (including time-limited-operations operations)								
Dust lifted off from mobile crushing facility, ore stacking and sitting on heap leach pads during high wind events	Dust	Air / windborne pathway	Vegetation	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1, Table 1 Design and construction / installation requirements Requirement for refurbishment of existing Jaw Crusher and dust suppression incorporated into crushing systems design.	N/A
Pipelines between the heap leach pads, ponds, sulphuric acid tanks, SX Plant, EW Plant.	Acidic copper rich solution	Direct discharges from leaks / spills	Vegetation and soils	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	Y	Condition 1, Table 1 Design and construction / installation requirements Requirement for the use of corrosive resistant materials, bunding of pipelines, flow sensors, automation etc.	N/A
Heap leach pads	Acidic copper rich solution	Overspray	Vegetation and soils	Refer to Section 3.1	C = Moderate L = Unlikely	Y	Condition 2, Table 2 Critical containment infrastructure design and construction	N/A

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
					Medium Risk		requirements Requirement for remediation of existing heap leach, design requirements, HDPE lining, alarms, bunding, dripper requirements etc.	
		Seepage through the liner	Groundwater mounding and contamination	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 2, Table 2 Critical containment infrastructure design and construction requirements Requirement for remediation of existing heap leach, design requirements, HDPE lining, alarms, bunding, dripper requirements etc.	N/A
ILS Transfer Ponds (ILS1, ILS2, ILS3, ILS – storage pond) PLS Transfer Ponds (PLS1, PLS2) Environmental Ponds (Enviro1, Enviro2) Raffinate Pond Stormwater Ponds (Stormwater Pond 1, Stormwater Pond 2)	Acidic copper rich solution	Overtopping to soils and vegetation	Vegetation and soils	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 2, Table 2 Critical containment infrastructure design and construction requirements Requirement for freeboard to be maintained.	N/A
		Seepage through base and embankments causing groundwater mounding and contamination	Groundwater	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 2, Table 2 Critical containment infrastructure design and construction requirements Requirement for containment HDPE liners design.	N/A
Sulphuric Acid Tanks	Sulphuric acid	Leaks / spills from tank integrity issues	Vegetation and soils Groundwater	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	Y	Condition 2, Table 2 Critical containment infrastructure design and construction requirements Requirement for design to meet corrosive substances standards, bunding, HDPE etc.	N/A

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
SX Plant	Acidic copper rich solution	Overspray, fumes	Vegetation and soils	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	Y	Condition 2, Table 2 Critical containment infrastructure design and construction requirements Requirement for containment designs, bunding, HDPE, sensors etc.	N/A
		Seepage	Groundwater	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 2, Table 2 Critical containment infrastructure design and construction requirements Requirement for containment designs, bunding, HDPE, sensors etc.	N/A
EW Plant	Acidic copper rich solution	Overspray, fumes	Vegetation and soils	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	Y	Condition 2, Table 2 Critical containment infrastructure design and construction requirements Requirement for containment designs, bunding, HDPE, sensors etc.	N/A
		Seepage	Groundwater	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 2, Table 2 Critical containment infrastructure design and construction requirements Requirement for containment designs, bunding, HDPE, sensors etc.	N/A

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk Assessments* (DWER 2020).

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

4. Consultation

Table 7 provides a summary of the consultation undertaken by the department.

Table 7: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 09 May 2022	None received	N/A
Local Government Authority advised of proposal on 06 May 2022	No comments received from Shire of East Pilbara	N/A
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 06 May 2022	No comments received.	N/A
Department of Jobs, Tourism, Science and innovation advised of proposal on 06 May 2022	JTSI responded on 02 June 2022 stating that the Applicant would be required to submit a State Agreement Proposal pursuant to clause 9 of the Western Mining Corporation Limited (Throssell Range) agreement Act 1985 for approval by the Minister for State Development in respect to any development whereby the company significantly modifies, expands or otherwise varies its activities.	DWER advised the Applicant on 08 June 2022, who informed DWER that they had submitted a draft Amendment Proposal to JTSI as per their process and have a meeting scheduled with them.
Applicant was provided with draft documents on 08 July 2022	Applicant provided comments 03 August 2022 Refer to Appendix 1	Applicant provided comments 03 August 2022 Refer to Appendix 1

5. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Cyprium Metals Limited, Nifty Project Works Approval Submission 08/03/2022, Subiaco,

Western Australia.

5. Cyprium Metals Limited, Response - NOTIFICATION: APPLICATION FOR A WORKS APPROVAL (WXXXX/2022/1) - REQUEST FOR FURTHER INFORMATION 08/04/2022, Subiaco, Western Australia.
6. Cyprium Metals Limited, Draft Works Approval and Draft Decision Report response - REF W6671/2022/1 and DER2022/000098 03/08/2022, Subiaco, Western Australia.

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment	Department's response
Condition 1, Table 1	New Mobile Crushing System • Jaw Crusher to be sent for refurbishment prior to reinstallation onsite Please also enable in-situ refurbishment. Please amend to: Jaw Crusher to be refurbished prior to commissioning.	Updated as requested.
Condition 2, Table 2	Heap Leach Pads • All potentially contaminated stormwater must be **direted** to Environmental Ponds Typographical error. Should read as: All potentially contaminated stormwater must be **directed** to Environmental Ponds	Updated as requested.
	Storage capacity: ○ ILS1 127,300 m^3 (existing); Should read as: ILS1 27,300m^3	Updated as requested.
	○ PLS – storage pond 16,111 m^3 (new); Should read as: PLS – storage pond 12,753 m^3	Updated as requested.
	Sulphuric Acid Tanks • Delivery hose is not under pressure and shall gravity feeds the priming tank	Updated as requested.

Condition	Summary of applicant's comment	Department's response
	Sentence should read: Acid tank priming tank is gravity fed via delivery hose from acid delivery truck	
	<u>SX-EW Plant</u> Refurbishment of the existing SX Plant to include: • All containment bunds checked against Australian design standards to retain all tank volumes and required contingencies. • All existing containment bunds and sumps will be inspected by a suitable engineer to identify any structural damage from geotechnical instability and/or previous chemical erosion. All areas identified will refurbished to meet Australian Standard 3600:2018 and AS3735. • Sumps collect any solution within the bunds and will return the solution into the process stream with sump pumps controlled through the plant control system and set to automatically activate when trigger levels are met. • All sumps and bunds will be Hydrotested to 100% capacity with clean potable water prior to the application of surface protectant. Post application of the surface protectant all areas will undergo further hydrotesting at 100% capacity to ensure surface protectant has provided adequate sealing. • The surface protectant, or coating, will be chemically and mechanically non-reactive to hydrocarbons in a low pH solution. <u>EW plant</u> • EW in new location with new purpose-built sumps and containment engineered to allow for electrolyte catchment. • All containment bunds checked against Australian design standards to retain all tank volumes and required contingencies. • All containment bunds and sumps will be inspected by a suitable engineer to meet Australian Standard 3600:2018 and AS3735. • Sumps collect any solution within the bunds and will return the solution into the process stream with sump pumps controlled through the plant control system and set to automatically activate	Updated as requested.

Condition	Summary of applicant's comment	Department's response
	when trigger levels are met. • All sumps and bunds will be Hydrotested to 100% capacity with clean potable water prior to the application of surface protectant. Post application of the surface protectant all areas will undergo further hydrotesting at 100% capacity to ensure surface protectant has provided adequate sealing. • The surface protectant, or coating, will be chemically and mechanically non-reactive to hydrocarbons in a low pH solution.	
Condition 9	The works approval holder may only commence environmental commissioning of an item of infrastructure identified in condition 0:	Updated to condition 10.
Condition 10	HLF South and HLF North Operations require sequential stacking. Ensure commissioning focus on containment infrastructure.	Updated as requested.
Condition 17	ILS, PLS, Environmental Ponds, Stormwater Ponds and Raffinate Pond Dot Point 1: • Sufficient freeboard for ponds must be maintained to prevent overtopping, using a submersible pump with automatic level correction; Just needs to say pumps, not submersible. Pumps will be level controlled.	Updated as requested.
Schedule 1, Maps	Figure does not show the premises boundary.	Updated as requested.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY					
Application type					
Works approval	☒				
Licence	☐	Relevant works approval number:		None	☐
		Has the works approval been complied with?		Yes ☐ No ☐	
		Has time limited operations under the works approval demonstrated acceptable operations?		Yes ☐ No ☐ N/A ☐	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?		Yes ☐ No ☐	
		Date Report received:			
Renewal	☐	Current licence number:			
Amendment to works approval	☐	Current works approval number:			
Amendment to licence	☐	Current licence number:			
		Relevant works approval number:		N/A	☐
Registration	☐	Current works approval number:		None	☐
Date application received		08/03/2022			
Applicant and Premises details					
Applicant name/s (full legal name/s)		Nifty Copper Pty Ltd			
Premises name		Nifty Copper Project			
Premises location		M271SA TELFER WA 6762			
Local Government Authority		Shire of East Pilbara			
Application documents					
HPCM file reference number:		DWERDT573412			
Key application documents (additional to application form):		Application Form Supporting Documentation Flora and Vegetation Assessment Fauna Assessment Restart Mining Proposal			
Scope of application/assessment					
Summary of proposed activities or changes to existing operations.		Works approval Construction of an open pit operation with use of heap leach pads and the SX-EW Plant at Nifty Copper Project at the premises.			

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Proposed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 5: Processing or beneficiation of metallic or non-metallic ore	9,600,000 tonnes of ore per year	N/A
Category 7: Vat or in situ leaching of metal	30,000 tonnes of copper metal per year	N/A

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes ☐ No ☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	Certificate of title ☐ General lease ☐ Expiry: Mining lease / tenement ☒ Expiry: Other evidence ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	Approval: Expiry date: If N/A explain why?
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☒ No ☐	CPS No: CPS9493 and CPS6225/3
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	Application reference No: N/A Licence/permit No: N/A CPS clearing permits.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☒ No ☐	Application reference No: N/A Licence/permit No: GWL102247(9) and GWL66212(7)

Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☐ No ☒	Name: N/A Type: N/A Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☒ Regional office: N/A
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☒
Is the Premises subject to any other Acts or subsidiary regulations (e.g. *Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx*)	Yes ☒ No ☐	*Western Mining Corporation Limited (Throssell Range) Agreement Act 1985* *Mining Act 1978*
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	N/A
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	N/A
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☒ No ☐	Classification: 'Possibly Contaminated – Investigation Required'. Date of classification: Preliminary Site Investigations have been completed by the previous owners and reported to DWER Further site investigations and remedial actions, where required, are expected to be completed for the Project as the Proposal is implemented and old infrastructure removed.