Application for Works Approval

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

Works Approval Number	W6693/2022/1
Applicant	Gascoyne Resources Limited
ACN	139 522 900
File number	DER2022/000185
Premises	Dalgaranga Gold Project M59/749 DAGGAR HILLS 6638 WA As defined by the premises maps attached to the issued works approval
Date of report	31 August 2022
Decision	Works approval granted

A/MANAGER, RESOURCE INDUSTRIES
REGULATORY SERVICES
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, commissioning, and operation of the premises. As a result of this assessment, works approval W6693/2022/1 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

Background

The Dalgaranga Gold Project (Project) is in the Murchison region of Western Australia, approximately 57 kilometres (km) northwest of Mount Magnet (Figure 1).

The Project mines approximately 2.8 million tonnes (Mt) of ore per annum. Ore mined from Gilbeys and Golden Wings deposits are transported to the ROM pad for crushing and grinding at the dry processing plant, with gold production by a carbon-in-leach (CIL) gold processing plant. Tailings are deposited at the existing Gilbeys Tailings Storage Facility (TSF) and Golden Wings in-pit TSF.

Current Application

On 27 April 2022, Gascoyne Resources Limited (applicant) submitted a works approval application to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

The application is to undertake works relating to the construction, commissioning, and time limited operations of Stage 2 of the Golden Wings in-pit TSF (TSF) and realignment of the existing tailings discharge and return pipelines at the premises (Figure 2).

The premises relates to the category and assessed production / design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6693/2022/1. 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 2020a) are outlined in works approval W6693/2022/1.

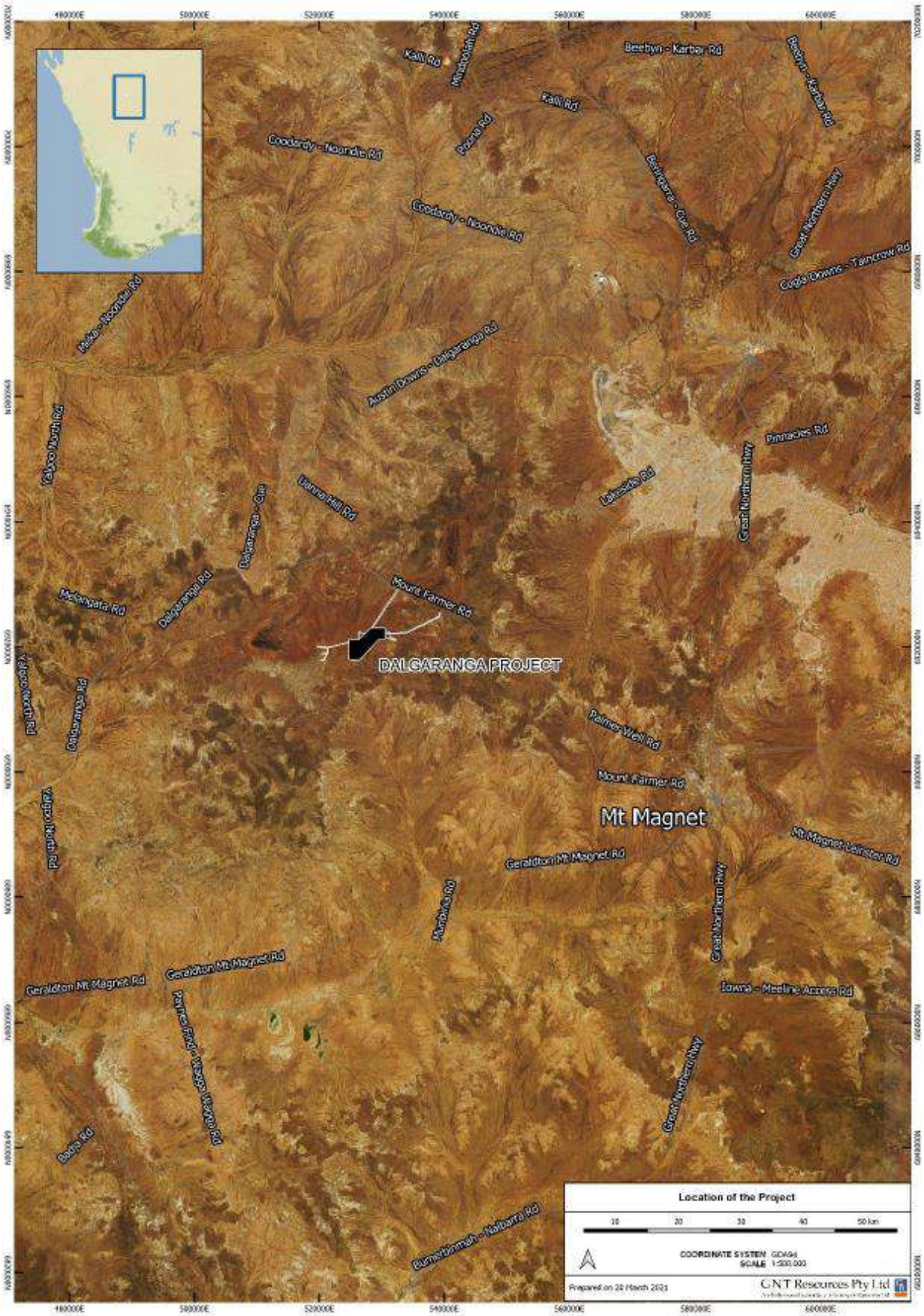

Figure 1: Prescribed premises location

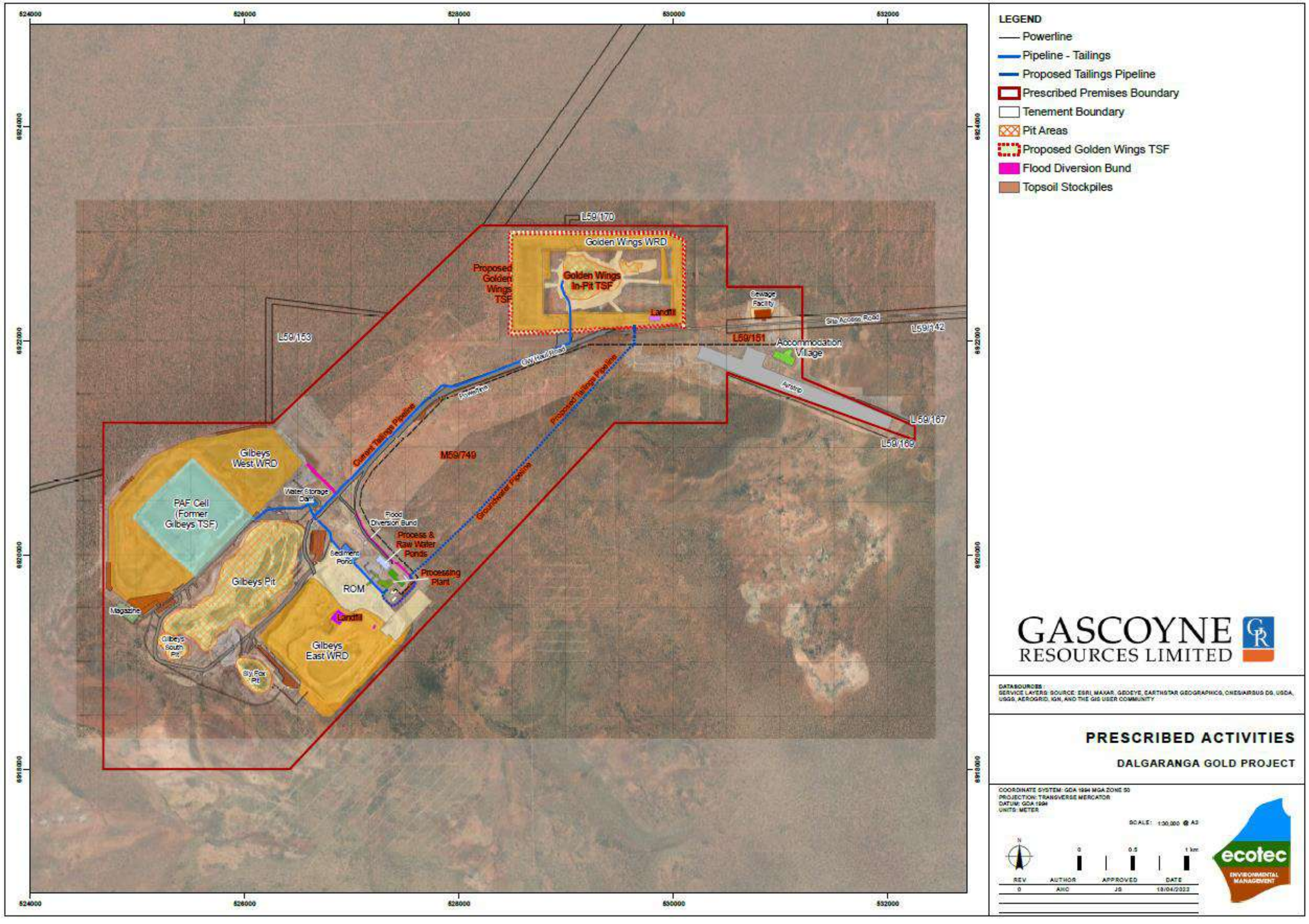

Figure 2: Site layout within the prescribed premises boundary

2.2.1 Infrastructure and operation aspects

The deposition of tailings into the TSF started in March 2021 and is expected to reach storage capacity around April 2023. To increase the capacity at the TSF, the applicant proposes to construct an above ground, four-sided paddock style TSF over the top of the existing facility. The walls of the TSF will be constructed from clayey mine waste from the designated waste dumps and / or open-cut pits and deposited tailings. The entire basin area will be proof rolled with an in situ clayey soil layer of 300 millimetres (mm) thickness and a compacted clayey soil layer of the same thickness at the south-east corner of the facility where sandy and gravelly soil is present (Tetra Tech Coffey Pty Ltd (Tetra) 2022c)). The compacted clay liner will achieve a density ratio greater than 95% of the maximum dry density in accordance with Australian Standard (AS) 1289.11. The base of the TSF will also be constructed to produce a permeability of 1 x 10^{-8} metres per second (m/s).

The TSF will be constructed in eight separate stages commencing with Stage 1 embankment at crest reduced level (RL) 436 metres (m) to the final Stage 9 crest RL 459 m over a 10-year period for an operational life of approximately 11 years. The final external footprint will be approximately 145 hectares (ha) with an internal basin area of approximately 73 ha. The TSF storage capacities and timeframes for each staged embankment raise are presented in Table 1 below.

Table 1: TSF storage capacities

Stage	Crest RL (m)	Storage Area (m^2)	Storage volume (Mm^3)	Storage capacity (Mt)	Cumulative storage capacity (Mt)	Storage life (years)	Cumulative storage life (years)	Storage life (years)	Cumulative storage life (years)
						Base case (2.8 Mtpa)		Upper case (3 Mtpa)	
1	436.0	755,860	3.19	4.47	4.47	1.60	1.60	1.49	1.49
2	439.0	783,600	2.06	2.89	7.36	1.03	2.63	0.96	2.45
3	442.0	811,700	2.32	3.24	10.61	1.16	3.79	1.08	3.54
4	445.0	840,150	2.40	3.36	13.97	1.20	4.99	1.12	4.66
5	448.0	868,950	2.48	3.48	17.44	1.24	6.23	1.16	5.81
6	451.0	898,110	2.57	3.60	21.04	1.28	7.51	1.20	7.01
7	454.0	927,620	2.65	3.72	24.76	1.33	8.84	1.24	8.25
8	457.0	957,480	2.74	3.84	28.59	1.37	10.21	1.28	9.53
9	459.0	979,610	1.87	2.62	31.21	0.94	11.15	0.87	10.40

The embankment will be zoned and will comprise of Zone A, an 8 m wide crest (upstream zone) of compacted clayey mine waste and Zone B, a downstream zone of traffic-compacted general mine waste. A transition Zone B1 will be constructed to act as a filter function between the two zones and will be comprised of traffic-compacted select / transitional mine waste (well graded, maximum particle size no greater than 300 mm).

A gravity-driven underdrainage pipe system has been included in the TSF design that comprises of 'central' and 'perimeter' underdrainage pipework and will be placed above the prepared foundation base. The system has been designed to store seepage water, increase tailings density, increase water return to the processing plant, and reduce the phreatic surface through the embankment.

A cut-off trench with a 4 m wide base will be constructed beneath the Stage 1 perimeter embankment, then backfilled with compacted clayey mine waste to restrict lateral seepage beneath the embankment.

The completed upstream embankment face will be covered with a geotextile layer as well as at

the proposed spigot locations (nominally at 20 m intervals) around the perimeter embankment to reduce erosion.

The TSF has been designed to contain rainfall associated with a 1 in 100-year, 72-hour storm event whilst maintaining a 500 mm freeboard. The TSF does not receive rainfall run-off from an upstream catchment.

A temporary floating pontoon pump will be installed and operated at the end of the decant accessway until the tailings beach is fully developed. A central decant tower / structure will then be constructed within the TSF for the recovery of supernatant water. Water from the TSF will be removed via a dedicated pump installed at the tower and the return water will be pumped back to the processing plant. The decant accessway will be comprised of traffic compacted mine waste.

Tailings will be pumped to the TSF via the existing tailings discharge and return pipelines that will be relocated from the Gilbey's TSF to the Golden Wings TSF. The pipelines will be located within bunded open trenches to capture any potential leaks and be identified during daily visual inspections of the pipelines. Supernatant water will return via the return water pipeline to the existing Process Water Pond for use in the Processing Plant.

The TSF layout and general arrangement is presented in Figure 3, Figure 4, Figure 5, and Figure 6.

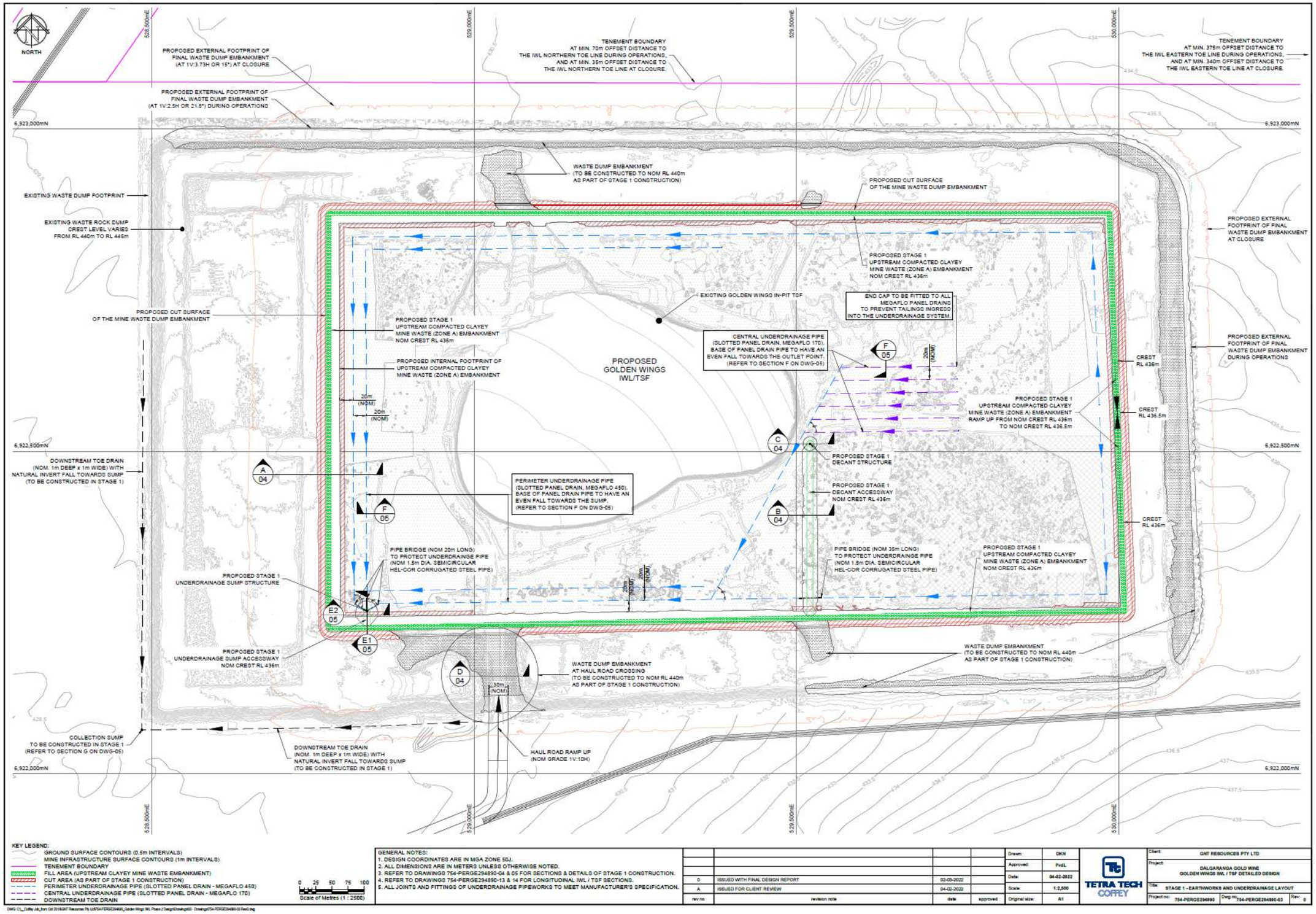

Figure 3: Golden Wings TSF design - Stage 1 and underdrainage system

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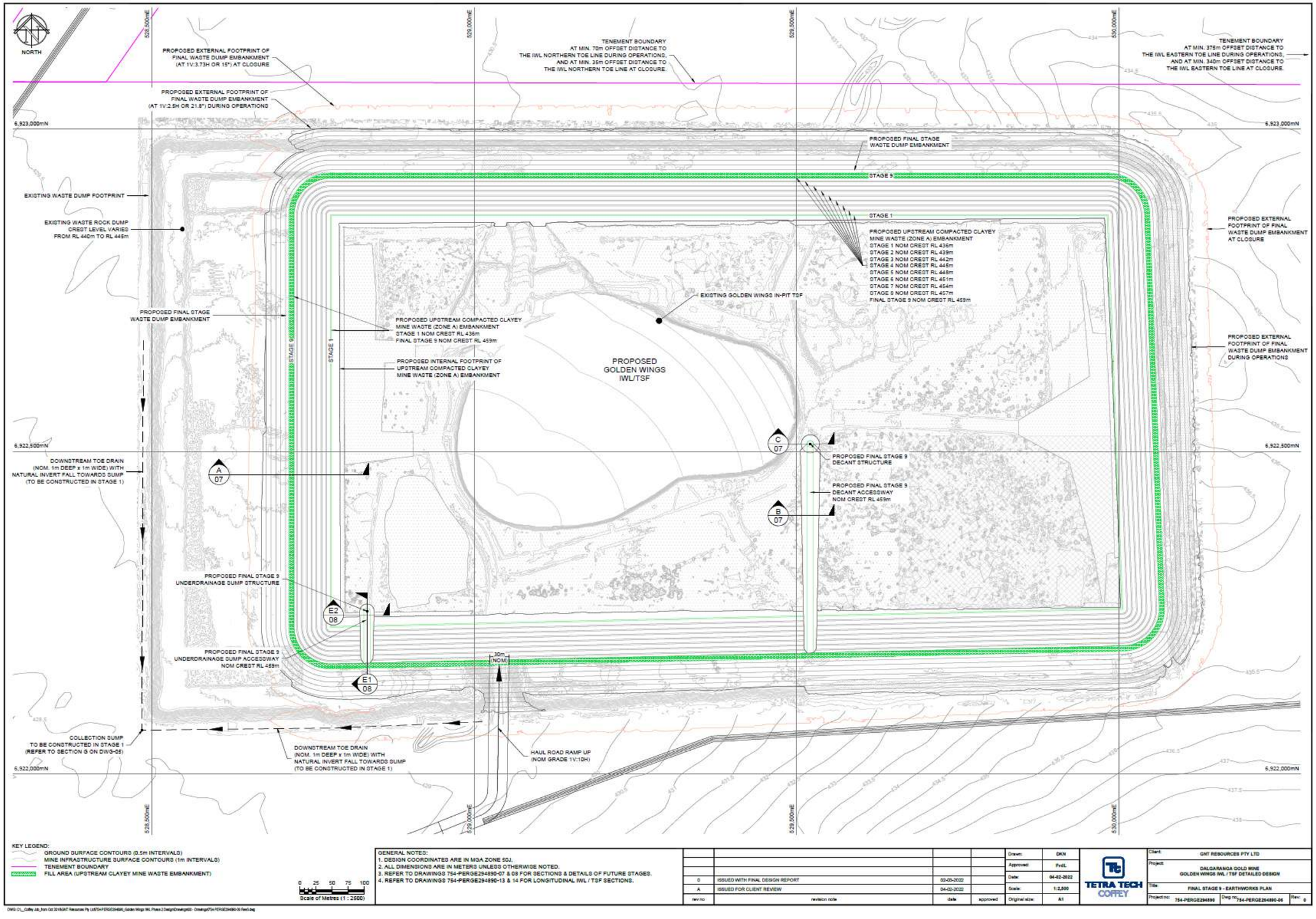

Figure 4: Golden Wings TSF design – final Stage 9

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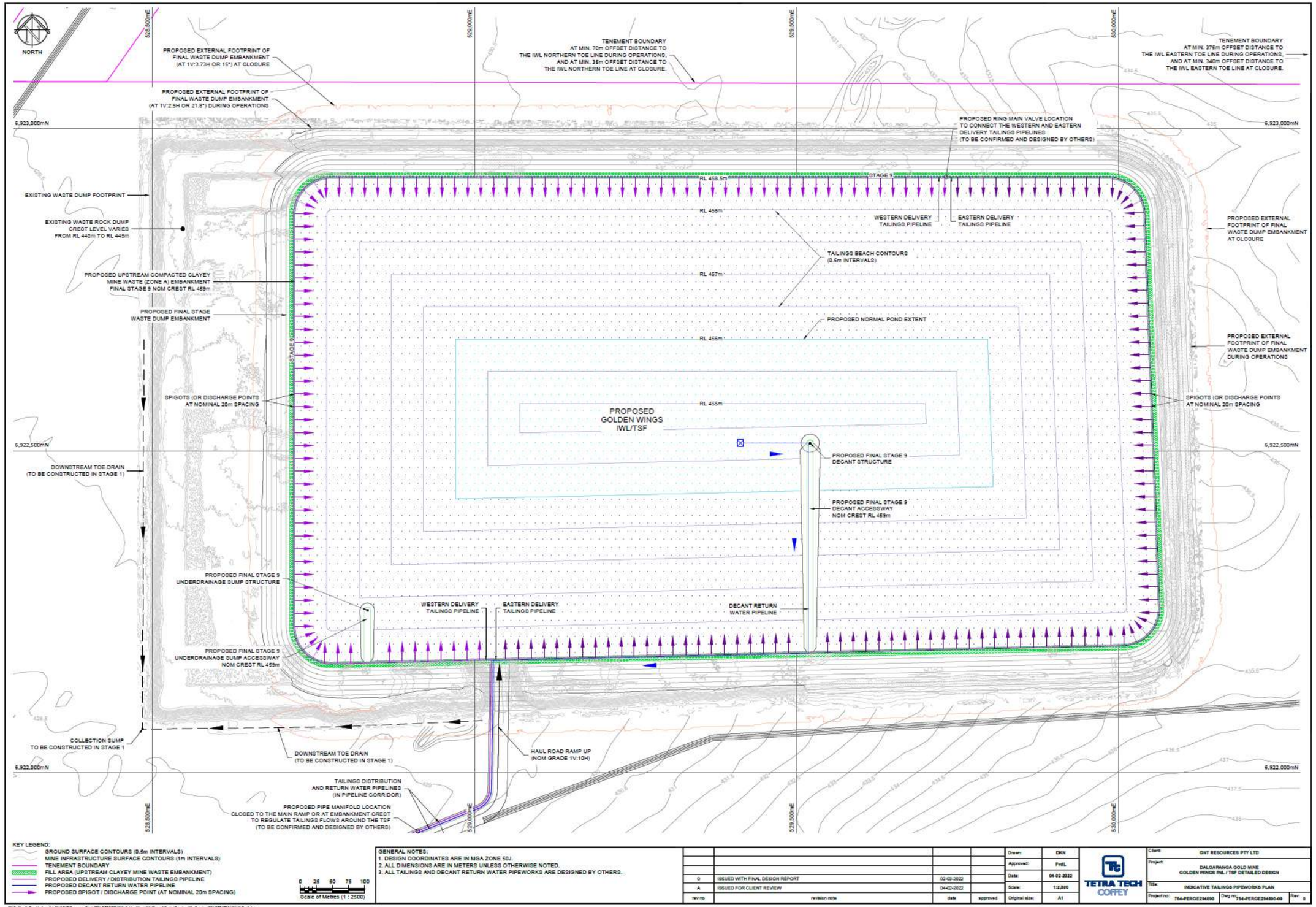

Figure 5: Golden Wings TSF design – spigot locations and indicative pipework

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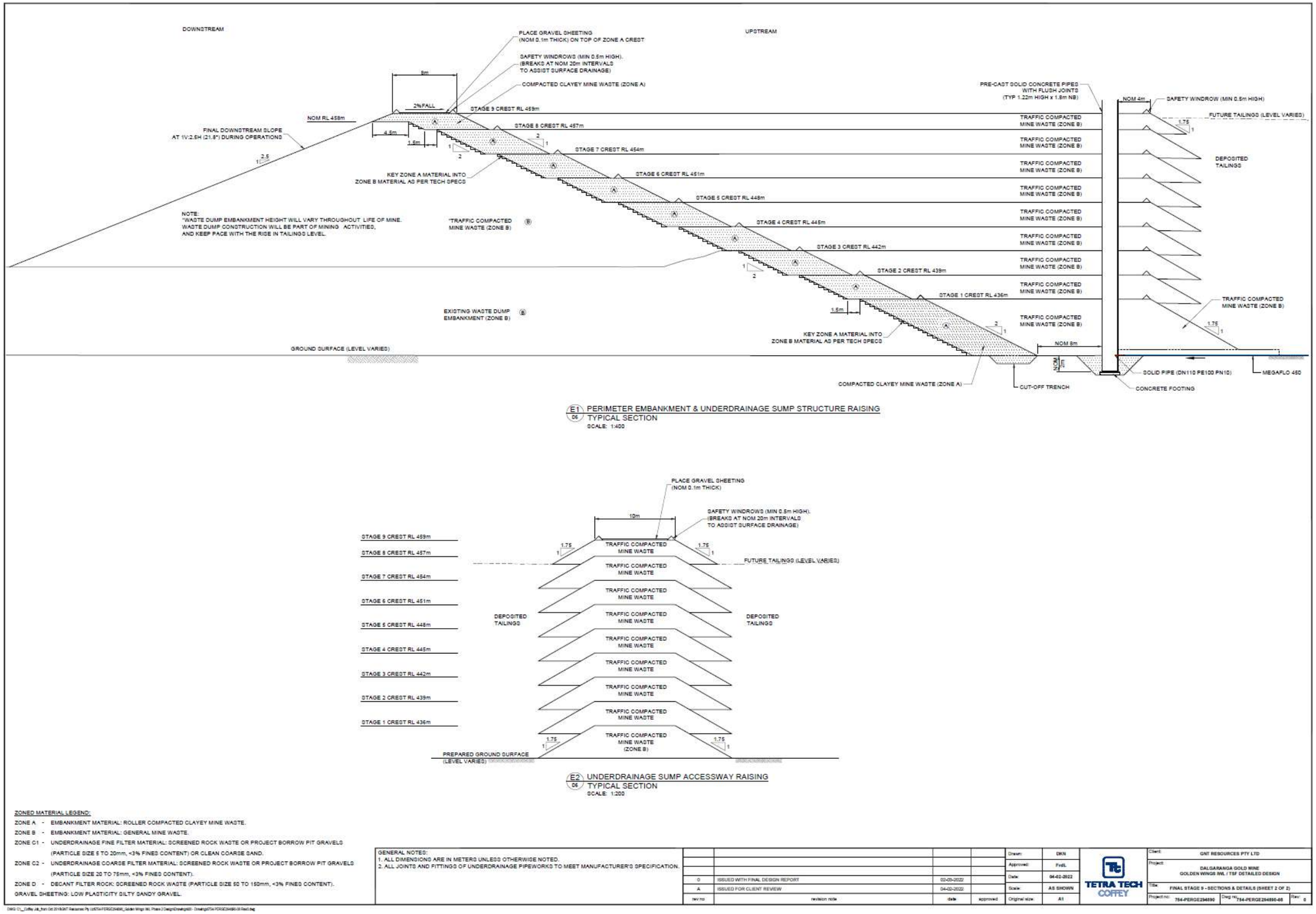

E1 / 06 PERIMETER EMBANKMENT & UNDERDRAINAGE SUMP STRUCTURE RAISING
TYPICAL SECTION
SCALE: 1:400

E2 / 06 UNDERDRAINAGE SUMP ACCESSWAY RAISING
TYPICAL SECTION
SCALE: 1:200

ZONED MATERIAL LEGEND:

ZONE A - EMBANKMENT MATERIAL: ROLLER COMPACTED CLAYEY MINE WASTE.
ZONE B - EMBANKMENT MATERIAL: GENERAL MINE WASTE.
ZONE C1 - UNDERDRAINAGE FINE FILTER MATERIAL: SCREENED ROCK WASTE OR PROJECT BORROW PIT GRAVELS (PARTICLE SIZE 5 TO 20mm, <3% FINES CONTENT) OR CLEAN COARSE SAND.
ZONE C2 - UNDERDRAINAGE COARSE FILTER MATERIAL: SCREENED ROCK WASTE OR PROJECT BORROW PIT GRAVELS (PARTICLE SIZE 20 TO 75mm, <3% FINES CONTENT).
ZONE D - DECANT FILTER ROCK: SCREENED ROCK WASTE (PARTICLE SIZE 50 TO 150mm, <3% FINES CONTENT).
GRAVEL SHEETING: LOW PLASTICITY SILTY SANDY GRAVEL.

GENERAL NOTES:
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
2. ALL JOINTS AND FITTINGS OF UNDERDRAINAGE PIPEWORKS TO MEET MANUFACTURER'S SPECIFICATION.

rev no	revision note	date	approved
0	ISSUED WITH FINAL DESIGN REPORT	02-05-2022	
A	ISSUED FOR CLIENT REVIEW	04-02-2022	

Drawn: DKN
Approved: FvdL
Date: 04-02-2022
Scale: AS SHOWN
Original size: A1

TETRA TECH COFFEY

Client: GNT RESOURCES PTY LTD
Project: DALGARANGA GOLD MINE GOLDEN WINGS IML / TSF DETAILED DESIGN
Title: FINAL STAGE 9 - SECTIONS & DETAILS (SHEET 2 OF 2)
Project no: 754-PERGE294890 Dwg no: 754-PERGE294890-08 Rev: 0

Figure 6: Golden Wings TSF design – embankment raises

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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 2020a).

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, commissioning, and operation which have been considered in this decision report are detailed in Table 2 below. Table 2 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 2: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Clearing of ground Movement of vehicles and equipment Realignment of existing tailings discharge and return pipelines TSF construction	Air / windborne pathway	• operate a water cart on unsealed roads and in areas of disturbance for dust suppression • land clearing will be undertaken progressively and only when it is required • land clearing and handling of topsoil will be avoided during windy conditions (where practicable)
Leaks and spillage of environmentally hazardous material (hydrocarbons)	Use and storage of hydrocarbons used during construction activities	Direct discharge to land and infiltration to groundwater	• hydrocarbons and other chemicals with be appropriately stored in accordance with relevant legislation and Australian Standards • a register will be maintained for stored hydrocarbons and other chemical and the storage locations • any spills will be cleaned up immediately and contaminated soil / material will be disposed of

Emission	Sources	Potential pathways	Proposed controls
			appropriately • waste oil and hydrocarbon contaminated wastes (filters, rags, hydrocarbon absorbent material) are stored in appropriate containers and disposed off site by a licensed service provided at an appropriate facility • spill response kits and training to site personnel will be provided on site
Contaminated stormwater		Stormwater runoff Gravity flow overland	• stormwater will be diverted away from catchment areas and drainage lines • surface water runoff will be diverted away from hardstand areas and roads associated with the construction of the TSF • bunding, drainage, and containment will be constructed and maintained to prevent potentially contaminated surface water (including stormwater) from reaching the surround environment
Commissioning			
Accidental discharge of tailings to land	Commissioning of tailings discharge and return pipelines	Direct discharge	• tailings pipelines will be placed in V drains to contain any potential spillage • tailings delivery pipeline and return water line between the process plant and TSF within bunds will be maintained • daily inspection of the tailings pipelines with be undertaken for integrity and potential leaks • commissioning of the flow meters and telemetry fitted on the TSF decant return water lines to check functionality • commissioning of pipelines fitted with pressure transmitters at both ends of the pipeline with alarms to identify flow pressure variation to check functionality • any spills will be cleaned up immediately and contaminated soil / material will be disposed of appropriately • spill response kits and training to site personnel will be provided on site
Time-limited Operation			
Dust	Storage of tailings at the TSF	Air / windborne pathway	• TSF surface will be kept moist through continuous rotation of the tailings discharge via a ring of spigots around the upper perimeter • dust suppression controls will be investigated, if the TSF surface becomes excessively dry and dries out post tailings deposition. Dust controls include, but not limited to – partial capping of suitable areas with rock or application of a polymer binding product

Emission	Sources	Potential pathways	Proposed controls
Accidental discharge of tailings to land	Operation of tailings discharge and return pipelines	Direct discharge	• V drains will be maintained to contain any potential spillage • tailings delivery pipeline and return water line between the process plant and TSF within bunds will be maintained • daily inspection of the tailings pipelines with be undertaken for integrity and potential leaks • maintain and operate the flow meters and telemetry fitted on the TSF decant return water lines • maintain and operate the pipelines fitted with pressure transmitters at both ends of the pipeline with alarms to identify flow pressure variation • any spills will be cleaned up immediately and contaminated soil / material will be disposed of appropriately • spill response kits and training to site personnel will be provided on site • bird deterrent devices will be used, as per the current operation Licence conditions. Frequency and timing of use will be altered to reduce the risk of the birds inhabiting.
Seepage from tailings consisting of: dissolved solids, acidified water, metal enriched water, and arsenic and cyanide	Storage of tailings at the TSF	Seepage through the embankment walls and base to the surrounding soils and underlying groundwater	• maintain and operate the TSF as per the current operation Licence conditions and operating manual • 10 groundwater monitoring bores will be installed around the Golden Wings TSF perimeter (see Figure 7) and baseline groundwater quality data collected over at least two monitoring occasions. The bores will then be monitored quarterly thereafter • eight paired vibrating wire piezometers (VWPs) will be installed with the TSF embankment to monitor phreatic surface with monitoring undertaken at least monthly via data loggers • quarterly groundwater monitoring will be undertaken as per Licence conditions (L9013/2016/1) • seepage interceptor trench at the toe of the south-eastern embankment will be maintained to capture any seepage • spigotting will be carried out to maintain the supernatant pond around the centre of the TSF (as practical) • pumping of groundwater from recovery bores will be undertaken where groundwater levels are <2.5 mbgl • in the event the system is no longer effective at increase tailings density, the water return to the processing plant will be optimised to minimise the size of the decant pond and hence

Emission	Sources	Potential pathways	Proposed controls
			seepage through the tailings • in the event the cut-off trench is no longer effective, grouting may be used to reduce seepage from localised areas • in the event of the toe drain no longer effective due to silting, a mechanical clean out / mucking out of the drain will occur to ensure the ongoing effectiveness of the drain
Tailings overtopping / spillage from the TSF embankment		Direct discharge	• total freeboard of a minimum of 500 mm (minimum operational freeboard of 300 mm and beach freeboard of 200 mm) will be maintained • daily inspection of the freeboard • temporary use of a floating pontoon pump to recover water and pump back to the process plant maintain the decant ponds as far away from the walls as practically possible • water pooling will be minimised through continuous recovery of water from the TSF surface via the decant

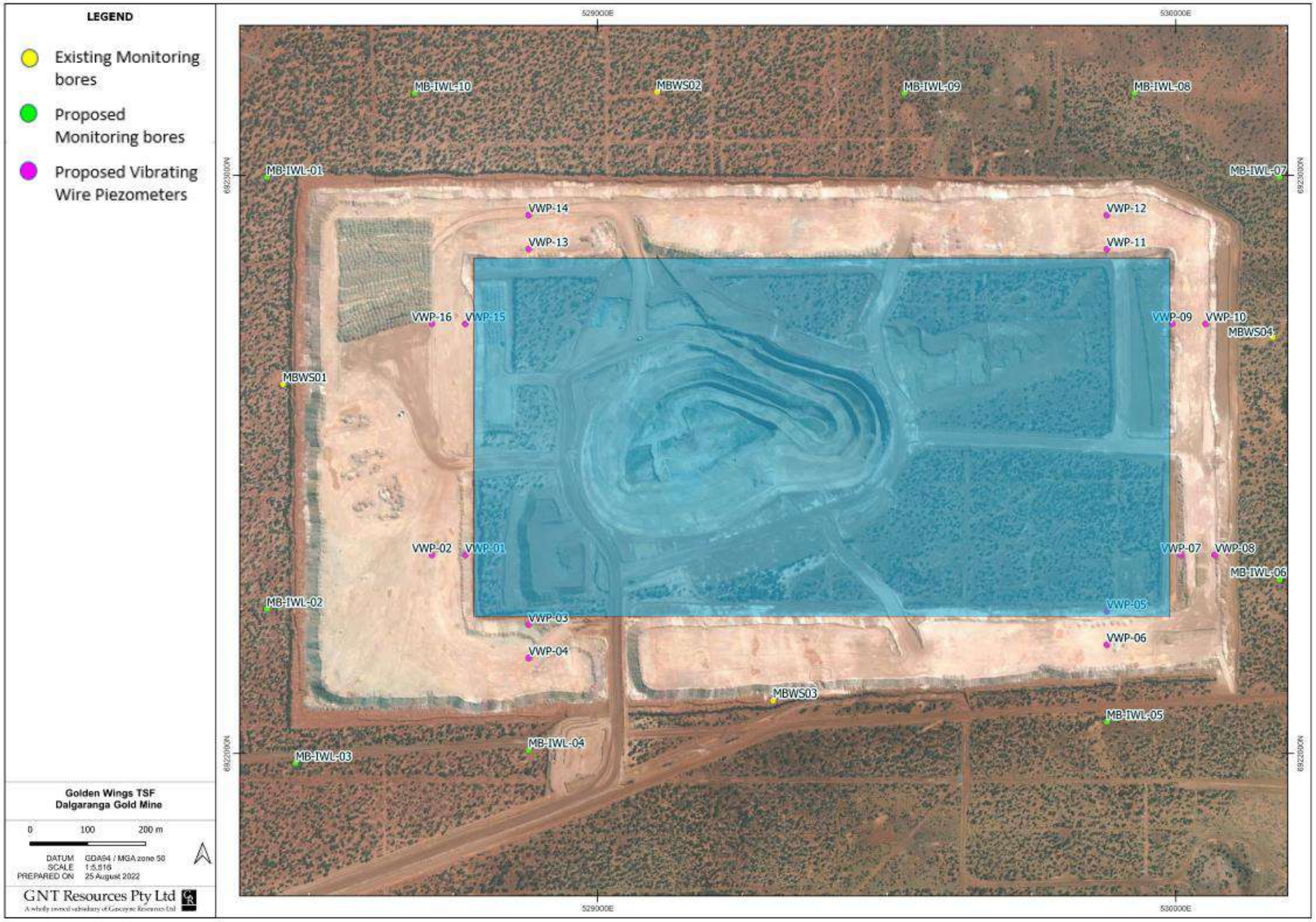

Figure 7: Existing and proposed groundwater monitoring bore and VWP locations

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020a), 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 3 and Figure 8 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 2020b)).

Table 3: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	**Distance from prescribed activity**
Murrum Homestead Boogardie Homestead Mt Farmer Homestead	All homesteads are located more than 22 km of the prescribed premises boundary **Screened out receptors due to distance from prescribed activity.**
Environmental receptors	**Distance from prescribed activity**
RIWI Act 1914 East Murchison Groundwater Area	Within the Prescribed Premises boundary. Distance to groundwater 8.7 to 15 mbgl
Priority Flora (No Threatened Flora nearby)	1. *Cyanicula fragrans* P3 – approximately 10 km south of the Prescribed Premises boundary 2. *Psammomoya grandiflora* P2 – approximately 11 km north-west of the Prescribed Premises boundary Note: no priority flora were recorded during flora and vegetation surveys in 2016 (Native Vegetation Solutions) and 2021 (Ecotec) within the Prescribed Premises boundary. **Screened out receptors due to distance from prescribed activity**
Threatened and Priority Fauna	1. Peregrine falcon (*Falco peregrinus*) Specially Protected – within the Prescribed Premises boundary 2. Night parrot (*Pezoporus occidentalis*) Endangered under the EPBC Act and Critically Endangered under the BC Act – approximately 17 km north-west of the Prescribed Premises boundary
Aboriginal heritage places	1. Site ID 486 Yowertharra claypan – approximately 1.3 km south-east of the Prescribed Premises boundary

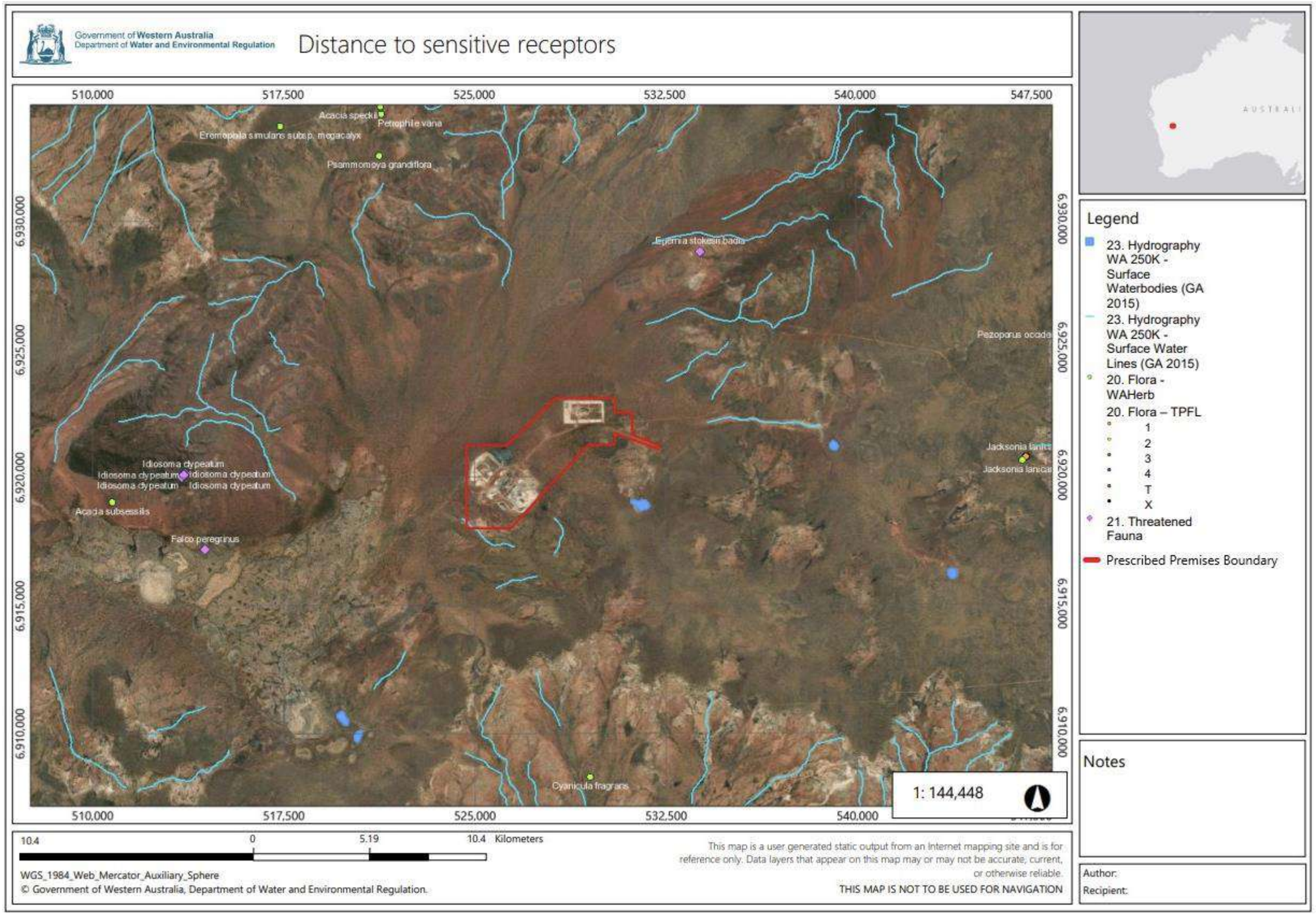

Figure 8: Distance to sensitive receptors

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020a) 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 4.

Works approval W6693/2022/1 that accompanies this decision report authorises construction, commissioning, and time-limited operations. The conditions in the issued works approval, as outlined in Table 4 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. 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 existing licence (L9013/2016/1).

Table 4: 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								
Clearing of ground Movement of vehicles and equipment Realignment of existing tailings discharge and return pipelines Golden Wings TSF Stage 2 construction including groundwater monitoring bores	Dust	Air / windborne pathway Causing impacts to health and amenity	Priority flora	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	Condition 1, 2, 3, 4, 5	Construction activities for the TSF to be generally located as identified in the submitted application. Standard administration and reporting requirements
	Leaks and spillage of environmentally hazardous materials (hydrocarbons) from vehicles and equipment	Direct discharge to surrounding soils causing disruption of normal ecosystem function and seepage through soils to groundwater causing contamination.	Surrounding soils Groundwater	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	Condition 1, 3, 4, 6, 7, 11, 12, 15, 22, and 23	Construction activities for the TSF to be generally located as identified in the submitted application. Standard administration and reporting requirements
	Contaminated stormwater	Stormwater runoff Gravity flow overland	Surrounding soils Groundwater	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	Condition 1, 3, 4, 6, 7, 11, 12, 15, 22, and 23	Construction activities for the TSF to be generally located as identified in the submitted application. Standard administration and reporting requirements
Commissioning								
Commissioning of tailings discharge and return pipelines	Accidental discharge of tailings and return water to land	Direct discharge Increased concentration of certain elements (including WAD CN) in soils causing disruption of normal ecosystem function with secondary impacts to native fauna Contamination of underlying groundwater	Soil Priority flora Native fauna Groundwater	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	Condition 1, 4, 9, 10, 11, 12, 15, 16, 22, and 23	Tailings discharge and return pipelines to be generally located as identified in the submitted application. Standard administration and reporting requirements

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**				
Time-limited operation								
Operation of tailings discharge and return pipelines	Accidental discharge of tailings and return water to land	Direct discharge Increased concentration of certain elements (including WAD CN) in soils causing disruption of normal ecosystem function Pooling of contaminated TSF water causing impacts on local fauna	Soil Native vegetation Native fauna Groundwater	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	N	Condition 9, 10, 11, 12, 15, 16, 22, and 23	Refer to Section 3.3
Discharge into Golden Wings TSF via discharge points	Seepage from storage of tailings consisting of dissolved solids, acidified water, metal enriched water, and arsenic and cyanide	Seepage through embankment walls and base resulting in a change in the groundwater chemistry and water level Localised surface expression of groundwater causing soil contamination and impacts to local fauna Groundwater mounding	Soil Priority flora Native fauna Groundwater	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	N	Condition **17**, **18**, 19, **20, 21,** 22, **23,** and **24**	Refer to Section 3.3
	Tailings overtopping / spillage from the TSF	Direct discharge Increased concentration of certain elements (including WAD CN) in soils causing disruption of normal ecosystem function Pooling of contaminated TSF water causing impacts on native fauna	Soil Priority flora Native fauna Groundwater	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	N	Condition **17**, **18**, 19, **20, 21,** 22, **23,** and **24**	Refer to Section 3.3

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**				
		Soil contamination Smothering of native vegetation						

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

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

3.3 Detailed risk assessment – seepage from Golden Wings TSF

3.3.1 General characterisation

Seepage from the TSF may leach tailings contaminants to the soil or groundwater, including soluble metals, metalloids, and cyanide species. Contaminants in the tailings depend on the geochemical composition of the ore and the chemicals used in the process circuit (such as cyanide). Tailings characteristics are discussed in further detail below.

Leaching of tailings through the base and outer perimeter of the TSF to groundwater has the potential to impact on the beneficial uses of groundwater and cause groundwater mounding. At the TSF, depth to groundwater ranges from 8.7 to 15 mbgl. Soils are mainly shallow acid read earths and shallow earthy loams, slightly to moderately clayey. Groundwater and the potential emissions and proposed controls are discussed in the sections below.

Lateral movement of seepage through the embankment to the ground has the potential to contaminate soil and impact nearby vegetation through inundation and toxicity of contaminants. There are no conservation significant ecological communities, flora, or fauna, drainage lines, or surface water features on the premises or local vicinity.

Seepage analyses modelling was undertaken in 2022 (Environmental Geochemistry International (EGI) 2022 where seepage rate was estimated to be 19.0 metres cubed per day (m^3/day) during the Stage 1 Embankment with underdrainage to 110.2 m^3/day at Stage 9 Embankment with underdrainage. Seepage modelling and the potential emissions and proposed controls are discussed in the sections below.

Tailings geochemistry characteristics

The applicant proposes to deposit waste fines into the TSF at a slurry density of approximately 45% solids and it is expected to achieve an initial settled/dry density between approximately 1.2 and 1.3 tonnes per cubic metre (t/m^3). An air-dried density of 1.4 t/m^3 can be achieved with appropriate water management but is not expected during times of rainfall when the tailings remain saturated.

A geochemical assessment of an ‘ex-mill’ tailings slurry sample undertaken by Graham Campbell and Associates (GCA) (2021) indicated the following characteristics:

- Contained mostly plagioclase, phengite, and quartz with subordinate iron-biotites;
- Particle size grading for pyrite ranges from sub-micrometres (µm) to µm;
- Tailings-solids sample classifies as potentially acid forming (PAF), reflective of ‘accessory-sulphides’ corresponding to a Cr(II)-Reducible-S value of 1.84% (mostly as pyrite-S) in a gangue containing 'accessory-siderite';
- Slight enrichments were recorded for Arsenic (As), Antimony (Sb), Selenium (Se), Molybdenum (Mo), and Bismuth (Bi), but fall within the range typical of tailings-solids obtained from oxide- and fresh-ores at gold deposits; and
- The weak acid dissociable cyanide (WAD CN) concentration was 44.0 milligrams per litre (mg/L) which is below the International Cyanide Management Code of 50 mg/L.

The metal content of tailings from Golden Wings TSF (from GCA 2021) is shown in Table 5 below.

Table 5: Tailings geochemistry

Analyte/Parameter	Unit	Value	Analyte/Parameter	Unit	Value
pH	-	8.3	Silver (Ag)	mg/L	0.008
Electrical Conductivity (EC)	µS/cm	4,570	Sodium (Na)		746.4
Total Dissolved Solids (TDS)		3,271	Sulfate (SO_4)		1,210
Ammonia (NH^3-N)	mg/L	0	Zinc (Zn)		0.027
Bicarbonate (HCO^3 (as Calcium Carbonate ($CaCO^3$))		117	Aluminium (Al)	µg/L	90
Calcium (Ca)		185.01	Antimony (Sb)		293
Carbonate (CO^3 (as $CaCO^3$))		5	Arsenic (As)		9.54
Chlorine (Cl)		904	Barium (Ba)		37.2
CN (free)		9	Bismuth (Bi)		0.025
CN (weak acid dissociable (WAD))		44	Cadmium (Cd)		0.115
Copper (Cu)		29.8	Chromium (Cr)		6.2
Cyanide (CN (total))		52	Cobalt (Co)		2.15
Fluorine (F)		1.2	Lead (Pb)		0.5
Hydroxide (OH (as $CaCO^3$))		<1	Manganese (Mn)		30.1
Iron (Fe)		<0.01	Molybdenum (Mo)		320.9
Magnesium (Mg)		9.64	Phosphorus (P)		22
Mercury (Hg)		0.55	Strontium (Sr)		1,790
Nickel (Ni)		17.05	Thorum (Th)		0.008
Nitrate (NO^3-N)		10	Titanium (Ti)		0.074
Potassium (K)		123.9	Uranium (U)		2.632
Silicon (Si)		4.03	Vanadium (V)		1.09

3.3.2 Hydrogeology

Geotechnical investigation undertaken by Tetra (2022a and b) identified subsurface geology via borehole drill logs to a depth of 15 mbgl. The subsurface material identified was clayey sand, over gravelly material (lateritic caprock), and then clayey materials (saprolitic clay/saprolite). At the base of the lateritic caprock unit there was a 1 to 2 m thickness of fine to medium sands and gravels, which may appear as a transitional unit. The stratigraphic sequence at the Golden Wings TSF is summarised in Table 6.

Table 6: Summary of generalised stratigraphic sequence.

From (m)	To (m)	Description
0.0	0.3 – 0.5	Clayey Sand, low plasticity, red-brown, loose (becoming medium dense - dense below 0.3m). Minor fine rootlets.
0.3 – 1.2	6.0 – 9.0	Lateritic caprock, medium to coarse grained, red-brown, weak to moderately strong, sporadic quartz and minor voids, sub-horizontal fracturing.
6.0 – 11.0	8.0 – 12.0	Sand and Gravel, medium sand, fine to medium gravels, red-brown, dense – very dense, weakly cemented in places. Some subangular quartz fragments.
6.0 – 9.0	15.0	Saprolitic Clay / Saprolite[1], medium to high plasticity, yellow-brown, sometimes bleached / pallid, very stiff to hard, sporadic lateritic gravels.

Note[1]: With exception to two boreholes where saprolitic clay was reached at a nominal depth of 2 mbgl.

EGI 2022 noted there are likely four main hydro-stratigraphic units, HU1 (saprolite), HU2 (transition zone), HU3 (fracture zone aquifer), and HU4 (fresh bedrock) beneath the Golden Wings TSF. The hydro-stratigraphy of the Dalgaranga area is presented in Figure 9.

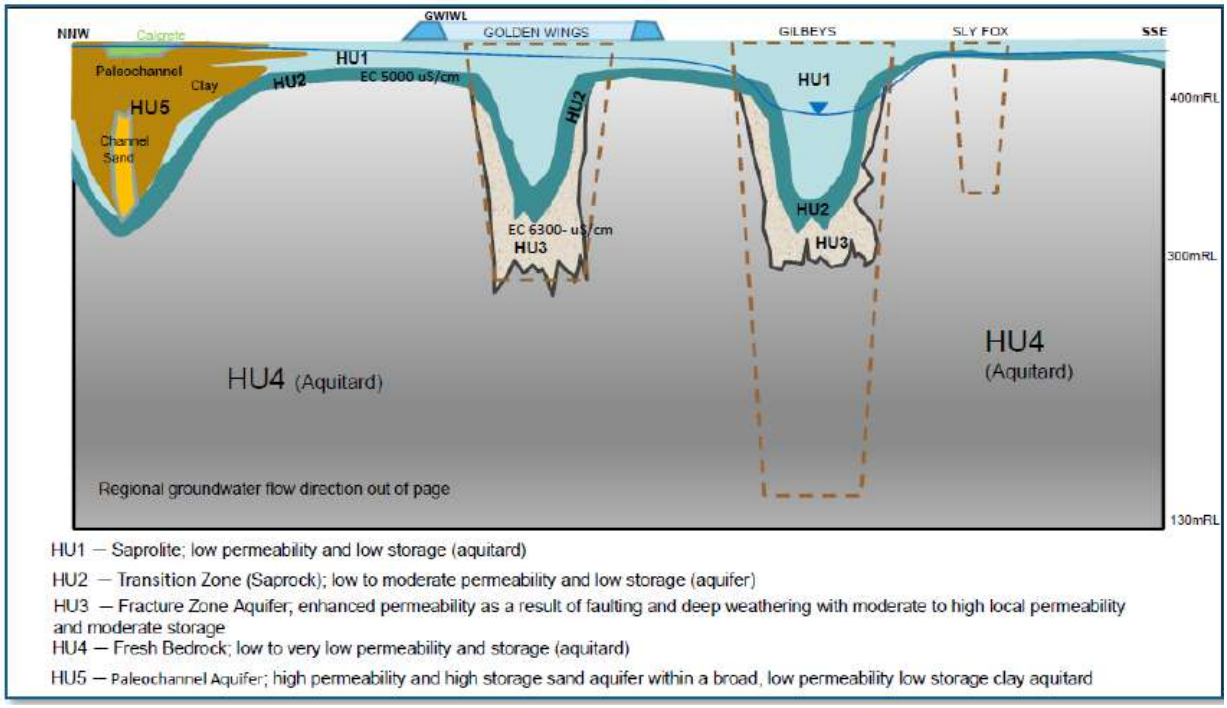

Figure 9: Conceptual hydrogeology at Dalgaranga

Hydrological investigations at the Dalgaranga Project were undertaken by Groundwater Resource Management (GRM) in 2018 and reported that groundwater occurrence near the mines is predominantly associated with fractured rock aquifers and the transition zone between weathered and fresh rock.

Results from field investigations indicated the fracture rock aquifers at Golden Wings have significant yields (up to 30 L/s) when first intersected during drilling. However, yields reduce to 5 to 6 L/s in response to pumping, suggesting limited aquifer extents and/or modest hydraulic conductivities in the general rock mass (GRM 2018).

Modelling

Seepage analyses modelling was undertaken by EGI in 2022 to assess the potential impacts to the surrounding environment associated with operation and closure of the proposed Golden Wings TSF at the Dalgaranga gold mine.

Seepage modelling selected was SEEP/W with CTRAN/W for the fate and transport of contaminants aspects of the modelling. Four hydro-stratigraphic layers were used as part of the modelling based on borehole data. The estimated seepage rate during the Stage 1 Embankment (Crest RL 436 m) with underdrainage was approximately 19.0 m^3/day and increased at Stage 9 Embankment (Crest RL 459 m) with underdrainage to 110.2 m^3/day.

The modelling indicated groundwater mounding and recession underneath the Golden Wings TSF and changes to groundwater level at the outer perimeter of the TSF (EGI 2022). These potential impacts are discussed in further detail under Section 3.3.4.

Furthermore, EGI (2022) stated that WAD-CN and other metals (including but not limited to; arsenic, antimony, selenium, molybdenum) will not be detected outside the TSF footprint, as well as no significant change to the groundwater salinity levels. This is due to low hydraulic gradients, drains, and hydraulic conductivity of the tailings.

The department has considered the limitations of the modelling and information provided but supports the principle conclusion of the modelling exercise that the extent of groundwater contamination from the Golden Wings TSF will be limited to the vicinity of the facility. However, the department considers additional controls will be required for the potential groundwater mounding effects on vegetation and dependent fauna near the TSF. The proposed additional controls are detailed under Section 3.3.5.

3.3.3 Groundwater

Groundwater level at Golden Wings in-pit recorded in 2018 was about 26 mbgl, most likely in response to slow recover of the depression in the water table from mining. The groundwater level at the TSF was reached at depths of 8.7 to 15 mbgl during the geotechnical investigations (Tetra 2022b).

Several livestock drinking water bores are located within the region and were constructed to a depth of about 5 to 8 mbgl. The nearest active bore to the TSF is more than 5 km away. The Euro well located within 2 km of the TSF near Gilbey's pit is no longer in use.

Groundwater monitoring

The monitoring program for the Golden Wings TSF includes four existing groundwater (shallow) monitoring bores and an additional 10 bores that will be installed and constructed around the TSF as presented in Figure 7. Groundwater monitoring controls are discussed in further detail in section 3.3.5.

3.3.4 Potential adverse impact from the emission

Groundwater mounding, recession and water level

The seepage modelling undertaken has indicated that:

- tailings deposited will create a decant pond where underlying soils will become saturated;
- tailings deposition in the first few months will create groundwater mounding underneath the TSF due to the percolation of water through the unsaturated zone below the saturated soils;
- a rapid rise in the groundwater mound will connect the saturated zone to the decant pond that in turn connects the groundwater mound to the decant pond;
- full saturation between the decant pond and groundwater system will be achieved within less than six months;
- the groundwater mound under the decant pond will decline at a slow rate once deposition ceases and there is a low-zero infiltration cap in place. The slow rate reflects the on-going of unsaturated tailings above the water table;
- a minor mound will likely remain past 100 years from the cessation of tailings deposition, despite a faster recede in the initial years;
- during the rise and decline of the groundwater mound, it is predicted that the groundwater level on the outer perimeter remains below the invert of the outer perimeter drain. Curvature of groundwater equipotential lines indicate potential for variation in local ground conditions that may cause flow to occur in the under-drains; and
- long-term groundwater levels may rise in the vicinity of the outer perimeter and that the under-drains may decrease in efficiency or no longer acts as drains. If this were to occur, the groundwater mound would flatten out past the predict modelling that may result in a shallower water table. In this instance the toe drain should maintain a maximum

groundwater elevation at the same RL as the invert of the drain.

3.3.5 Works approval holder controls

The controls to reduce and/or prevent seepage at the TSF will be constructed and operated as set out in Table 7.

Table 7: Works approval holder's controls for seepage at the TSF

Site infrastructure		Description	Construction and operation details	Location
	Controls for seepage			
TSF		Embankment raises	• for all stages (Stages 1 to 9) of the TSF, a geotextile layer (approximately 1.5 m wide) will be placed under each tailings discharge spigot location to prevent erosion of the wall • downstream constructed wall will comprise of three zones: – Zone A will be constructed as an 8 m thick, compacted, clayey mine waste, low permeable barrier – Zone B will be constructed from general mine waste, where Zone B1 will act as a filter function between Zone A and B	Figures 3,4, 5, and 6
		Clay liner	• constructed in situ clayey soil layer of 300-millimetre (mm) thickness will be ripped, moisture conditioned, and proof rolled over the entire basin area to produce a permeability of 1 x 10^{-8} m/s or less • a 300 mm compacted clayey soil layer will be formed at the south-east corner where sandy and gravelly soils are present • the base will be compacted to achieve a minimum 95% Standard Maximum Dry Density (AS 1289.5.1.1)	Figures 3,4, 5, and 6
		Decant system	• a central tower structure and pump will be constructed to remove supernatant water and return the water directly to the Process Water Pond • the water recovery system has a minimum capacity of 200 m^3/hr	
		Underdrainage system	• a gravity-driven underdrainage pipe system will be constructed comprised of two sets of pipes: – one around the inside perimeter of the dam; and – second to the east of the existing in pit TSF • the system is designed to collect	

Site infrastructure		Description	Construction and operation details	Location
			seepage water from the deposited tailings, increase tailings density, maximise water to return to the plant, and reduce the phreatic surface • in the event the system is no longer effective at increase tailings density, the water return to the processing plant will be optimised to minimise the size of the decant pond and hence seepage through the tailings	
		Cut-off trench	• 4 m wide cut-off trench will be constructed below Zone A with a nominal depth of 1 mbgl • in the event the cut-off trench is no longer effective, grouting may be used to reduce seepage from localised areas	
		Toe drain and collection sump	• an external toe drain will be constructed for the south-west corner of the TSF to collect any seepage water that will be diverted to a collection sump to be pumped back into the TSF tailings beach • in the event of the toe drain no longer effective due to silting, a mechanical clean out / mucking out of the drain will occur to ensure the ongoing effectiveness of the drain	
		Tailings discharge	• multiple spigots will be located at nominal 20 m intervals around the perimeter of the embankment crest	

3.3.6 Consequence

Seepage resulting in groundwater impacts

If seepage can migrate to the groundwater at the premises, the impacts may result in low level onsite impacts due to seepage water impacting predominately down gradient from the Golden Wings TSF about within 100 to 500 m of the TSF. Livestock bores within the region are shallow (less than 5 m in depth) and the nearest active bore for livestock use is approximately 5 km away from the TSF. Therefore, the Delegated Officer considers the consequence to be **Minor**.

Seepage causing groundwater mounding in surface impacts

If seepage causes mounding beneath the Golden Wings TSF, which will result in surface water expression outside the TSF footprint, then the impacts may result in mid-level onsite impacts. This includes a rise of water into the root zone of nearby vegetation causing death and vegetation up taking contaminated water from the groundwater mound. Therefore, the Delegated Officer considers the consequence to be **Moderate**.

3.3.7 Likelihood

Based on the site-specific permeability behaviour and confirmation of the seepage pathways at the proposed TSF location, the Delegated Officer considers the likelihood of seepage to groundwater and groundwater causing surface expression as **Possible**.

3.3.8 Overall rating

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix detailed in the *Guidance Statement: Risk Assessments* (DWER 2020b) and determined that the overall rating for the risks from seepage at the TSF as **Medium**.

3.3.9 Regulatory controls

Additional controls

Condition 2, construction and installation of groundwater monitoring bores and the associated monitoring and reporting requirements (condition 5, 8, 9, 10, 18, 19, 20, 21, 22, and 23) were included to monitor changes in ambient groundwater parameters and potential seepage at the Golden Wings TSF.

Operational requirements

Maintenance and operation requirements have been included for the TSF and tailings discharge and return pipelines. Operational requirements for the Processing Plant and Process Water Pond are under Licence L9013/2016/1.

Monitoring requirements

The works approval requires the following monitoring requirements:

- Daily ambient meteorological monitoring from the installed meteorological unit near the TSF;
- Monthly monitoring in field for SWL, TDS, and pH at the 14 groundwater monitoring bores around the TSF;
- Quarterly monitoring of groundwater quality at the 14 groundwater monitoring bores around the TSF;
- Quarterly monitoring of wet tailings fines during operations;

- The volume of tailings discharged to the TSF; and
- The volume of water recovered from the TSF.

Justification

All 14 groundwater monitoring bores will monitor groundwater levels and ambient groundwater quality against set triggers and limits for those parameters specified and the remaining water quality parameters against the 95% level of species protection, ANZG 2018 water quality criteria (ANZG 2018). Standing water level will be monitored monthly and the groundwater samples collected quarterly for analysis as per the existing licence (L9013/2016/1) conditions.

Monitoring of ambient groundwater levels and quality is required to determine if the SWL is changing, or water quality is deteriorating indicating seepage from the TSF.

Monitoring of the waste fines is required to indicate potential changes in quality that may result in downstream impacts.

Monitoring of tailings discharged, and volume of water returned is required for determining the water balance and for comparison with seepage modelling provided in the application.

During groundwater level and quality monitoring, if any changes are detected, the Applicant may be required to install seepage recovery bores.

Inspections

The works approval requires the following inspections undertaken as per the works approval conditions:

- freeboard to confirm capacity is available;
- check integrity of the spigots or any malfunction;
- location and size of the decant pond;
- check integrity of the cut-off trench and toe drain;
- check integrity of pipelines, V drains, and bunding;
- flow meters, telemetry, and pressure transmitters;
- integrity of VWPs; and
- general integrity of the embankment and perimeter containment embankment.

Justification

Daily and weekly visual inspections of containment infrastructure and pipelines are required during operations and the applicant is required to keep records of visual monitoring undertaken.

Reporting

The works approval requires the following reports to be submitted:

- Critical Containment Infrastructure Report
- Environmental Construction Report
- Groundwater Monitoring Bores Construction Report
- Environmental Commissioning Report
- Time Limited Operations Report

Justification

Reporting requirements are necessary to meet compliance conditional requirements of the

works approval and for the TSF and associated infrastructure to be transferred onto the existing Licence L9013/2016/1.

4. Consultation

Table 8 provides a summary of the consultation undertaken by the department.

Table 8: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 4 July 2022	None received	N/A
Local Government Authority advised of proposal on 28 June 2022	None received	N/A
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 28 June 2022	DMIRS replied on 14 July 2022 advising on geotechnical aspects of the Golden Wings TSF embankment raises. Refer to appendix 1.	Refer to appendix 1.
Applicant was provided with draft documents on 22 August 2022	The applicant provided comments on the draft documents and is detailed under appendix 2.	Refer to appendix 2.

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. ANZG 2018, *Australian and New Zealand guidelines for fresh and marine water quality.* Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines.
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020a, *Guideline: Risk Assessments*, Perth, Western Australia.
4. DWER 2020b, *Guideline: Environmental Siting*, Perth, Western Australia.
5. Environmental Geochemistry International (EGI) 2022, *Hydrogeological Modelling for Dalgaranga Golden Wings IWL.* Unpublished report prepared for GNT Resources, April 2022.
6. Graeme Campbell & Associates (GCA) 2021, *Dalgaranga Gold Project: Geochemical Characterisation of 'Ex-Mill' Tailings-Slurry Sample and Implications for Tailings Management.* Unpublished report prepared for GNT Resources, April 2021.
7. Groundwater Resource Management (GRM) 2018, *Dalgaranga Gold Project Hydrogeological Study Final Report.* Unpublished report prepared for GNT Resources, May 2018.
8. Rockwater Pty Ltd 2017, *Dalgaranga Project – Surface Water Assessment for Golden Wings and Gilbey's Pits, Mine Infrastructure and Road Crossings*. Unpublished report for Gascoyne Resources Limited, February 2017.
9. Tetra Tech Coffey Pty Ltd (Tetra) 2022a, *Dalgaranga Gold Mine Golden Wings Integrated Waste Landform – IWL/TSF Detailed Design.* Unpublished report prepared for GNT Resources, March 2022.
10. Tetra 2022b, *Dalgaranga Gold Mine Golden Wings Integrated Waste Landform – IWL/TSF Geotechnical Investigation.* Unpublished report prepared for GNT Resources, March 2022.
11. Tetra 2022c, *Dalgaranga Gold Mine Golden Wings Integrated Waste Landform – IWL/TSF Stage 1 Construction.* Unpublished report prepared for GNT Resources, March 2022.

Appendix 1: Summary of DMIRS geotechnical review summary

Item	Summary of DMIRS's comment	Department's response
1.	Status of the Mining Proposal (version 9, revision 0) for Golden Wings above-ground TSF raise is that it is still under assessment.	Noted.
2.	TSF subsurface includes 0.5m sands, >5.5m of laterite to gravel. It appears there will be the potential for seepage from the TSF that includes PAF tailings. • Ensure that quality control results/reports for the foundation works of the TSF are included in the construction report. • Describe any detrimental impact the location/staged operation of the in-pit TSF has to the effectiveness of the underdrainage system for the paddock TSF. • Based on wording in the design report and in design drawings {'A geotextile layer will be placed over the completed upstream embankment face and at the proposed spigot locations around the perimeter embankment (nominally at 20 m intervals) to limit embankment erosion during operations} it appears that stage 1 is the only stage to not be fully lined with geotextile (drawing 754-PERGE294890-04 with a perimeter embankment typical section vs perimeter embankment at spigot location typical section). Given the stage 1 embankment appears to be the only one to not be fully geotextile lined and hence of a higher permeability, comment on any impact to the embankment. • Ensure an updated surface water assessment that demonstrates impact to the whole of site	Condition 4(a) relates to providing quality control results for the foundation base works in the critical containment infrastructure report. The department has requested in section 3.1, Table 4 to provide control measures in the event that the drainage system no longer is effective to reduce/prevent seepage. Tetra (2022c) indicates that a geotextile layer will be placed over the perimeter embankment face and at spigot locations for stage 1 embankment construction. Condition 1, Table 1 and condition 15, Table 5 refers to the construction and maintenance of the geotextile layer. Surface water assessment was undertaken by Rockwater (2017) and the department deems this suitable for this works approval assessment.
3.	DMIRS response to the Department requesting any concerns or issues identified that may be beneficial for the assessment of the works approval application: • tailings geochemistry used in the TSF design is not current (2020) • the deposited density used (1.4 t/m^3) does not match the currently inferred density (1.2 t/m^3) • unknown current solid content in tailings • elevated metals found in the tailings deposited into Golden Wings in-pit TSF: Cu - 29.8 mg/L, Ni - 17.05 mg/L,	The tailings geochemistry and analysis of tailings water for the TSF design were undertaken by GCA in 2021 (GCA 2021). See section 2.2.1. The current solid content in tailings is 45%. Initial settled/dry density is approximately between 1.2 and 1.3 t/m^3. An air-dried density of 1.4 t/m^3 can be achieved with appropriate water

Item	Summary of DMIRS's comment	Department's response
	Zn - 0.027 mg/L, Hg - 0.55 mg/L and nitrate. These parameters were not used in the hydrogeochemical model, only CN, TDS and sulphate • no analysis of tailings water provided • the in-pit TSF will reach capacity next year - only two years of operation. The original design was for 4.7 years. • tailings sample for geotech parameters are from 2016 • return of decant water back to TSF is not recommended • the entire base of the TSF (around in pit) should have impermeable layer given the surface soil layer is composed of sandy soils as per design report • "*An in situ clayey soil layer of 300 mm thickness will be proof rolled over the entire basin area to limit seepage losses*." But permeability is missing, to be specified in the Works approval to be at 10^{-8} m/s.	management but is not expected during times of rainfall when the tailings remain saturated. The hydrogeochemical model undertaken by EGI (2022) used parameters WAD-Cn, arsenic, and sulphate to represent potential generation and movement of products of sulphide oxidation. Decant water will be returned to the Process Water Pond as indicated in section 3.1, Table 4.

Appendix 2: Summary of applicant's comments on risk assessment and draft conditions

Condition / Section	Summary of applicant's comment	Department's response
Works Approval		
Condition 1, Table 1	Table 1 – dot point 2. For all stages of the dam, a geotextile layer (approximately 1.5m wide) will be placed under each tailings discharge spigot to prevent erosion of the wall	Updated dot point as per applicant's request.
Condition 1, Table 1	Table 1 Item 10. An updated figure is attached to this document (GWTSF Bores.pdf)	Updated figure 8 with the updated figure provided by the applicant.
Condition 15, Table 6	Table 6 Item 7. VWPs have been included in the updated figure - GWTSF Bores.pdf	As above.
Definitions table	Table 10 Annual Period. A 12-month period commencing from 1 November until 31st October of the immediately following year.	Updated definition to include the specified dates.
Decision Report		
Section 3.1.1, Figure 7	An updated Figure 7 is attached that shows the Golden Wings TSF only (pers comms Licensing Officer), with its monitoring bores and vibrating wire piezometer locations (GWTSF Bores.pdf).	Updated figure 7 with the updated figure provided by the applicant.
Section 3.3.5, Table 7	Decant system. The water recovery system has a minimum capacity of 200 m^3/hr	Updated the minimum capacity of 200 m^3/hr for the decant system.
Section 3.3.5, Table 7	Under drainage System. In the event that the under drainage system is no longer effective at increasing tailings density, the water return to the processing plant will be optimised to minimise the size of the decant pond and hence seepage through the tailings.	Updated with the additional control provided by the applicant in the decision report and works approval. Also included in section 3.1.1, Table 2.
Section 3.3.5, Table 7	Cut-off trench. In the event that the cut-off trench is no longer effective grouting may be used to reduce seepage from localised areas	Updated with the additional control provided by the applicant in the decision report and works approval. Also included in section 3.1.1, Table 2.
Section 3.3.5, Table 7	Toe drain and collection sump. In the event of the toe drain becoming ineffective due to silting, mechanical clean out / mucking out of drain will occur to ensure the ongoing effectiveness of the drain	Updated with the additional control provided by the applicant in the decision report and works approval. Also included in section 3.1.1, Table 2.
Section 4, Table 8	Consultation. Applicant was provided with the draft documents on 22 August 2022.	Updated.

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		27 April 2022			
Applicant and Premises details					
Applicant name/s (full legal name/s)		Gascoyne Resources Limited			
Premises name		Dalgaranga Gold Project			
Premises location		M59/749 DAGGAR HILLS 6638 WA			
Local Government Authority		Shire of Mount Magnet			
Application documents					
HPCM file reference number:		DER2022/000185			
Key application documents (additional to application form):		Attachment 1A_GAS DMP M59-749 GrantNotice 23Sep13 Attachment 2 – Dalgaranga_Mine_Site_Layout_20220426 Attachment 3B – ActivityDetail 27-04-22 Attachment 5 – Stakeholder Register Attachment 6A – EmissionsDischarges Attachment 7 – Siting and Location 27-04-22 Attachment 8 – Appendices Attachment 10 – ProposedFeeCalculation(2)			

Scope of application/assessment	
Summary of proposed activities or changes to existing operations.	Construction of Stage 2 of the Golden Wings TSF ('paddock-type' facility) and the realignment of the existing tailings discharge and return pipelines. Installation and construction of 10 monitoring bores constructed around the TSF in-pit. Environmental commissioning will be required for the tailings delivery and decant water return pipelines, as well as for the discharge points within the TSF. Stage 1 tailings discharge will operate whilst the construction of stage 2 is occurring. Once commissioning phase of the new tailings pipeline and spigot system of the TSF is completed, time limited operations will commence. Operation activities will be consistent with the existing Licence (L9013/2016/1).

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: premises on which – (a) metallic or non-metallic ore is crushed, ground, milled or otherwise processed; or (b) tailings from metallic or non-metallic ore are reprocessed; or (c) tailings or residue from metallic or non-metallic ore are discharged into a containment cell or dam.	3.0 million tonnes per annum (Mtpa)	

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 ☒ Not a significant proposal	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: N/A EPA Report No: N/A
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No: N/A

Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☐ No ☒	Certificate of title ☐ General lease ☐ Expiry: Mining lease / tenement ☒ Expiry: 22/09/2034 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: 7240/4 Approximately 24 ha of native vegetation will be cleared in preparation of the TSF floor. This area will be specified in MP no. 9 application to be submitted in May 2022. An additional 2 ha area will be cleared for the installation of 10 observation monitoring bores.
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 Licence not required.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☒ No ☐	Application reference No: Not provided Licence/permit No: N/A 26D application, 10 observation bores are required to be installed and constructed. Several observation and production bores will be decommissioned.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☐ No ☒	Name: East Murchison Groundwater Area Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☒ Regional office: Mid-West Gascoyne
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 ☐	*Environmental Protection (Unauthorised Discharges) Regulations 2004*
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☒ No ☐	Unauthorised discharge of about 1,300 litres of diesel fuel from the Accommodation village. Classification: Possibly contaminated – investigation required (PC–IR) Date of classification: 22 October 2018 ICMS: 46115 (20 July 2017)