Government of Western Australia
Department of Water and Environmental Regulation

Decision Report

Application for Works Approval

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

Works Approval Number	W3004/2025/1
Applicant	Pilgangoora Operations Pty Ltd
ACN	616 560 395
File number	APP-0026944
Premises	Pilgangoora Operations Mining tenements M45/1256, M45/511, M45/333, L45/417, L45/454, L45/614, G45/350, G45/351 MARBLE BAR WA 6760 As defined by the premises map attached to the issued works approval
Date of report	11 August 2025
Decision	Works approval granted

Alana Kidd

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Alana Kidd
Manager, Green Energy

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 W3004/2025/1 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

Pilgangoora Operations Pty Ltd currently holds licence L9056/2017/1 for categories 5, 6, 52, 54, 64 and 73 under Part V of the *Environmental Protection Act 1986* (EP Act).

On 20 December 2024, the applicant submitted an application for a works approval to the department under section 54 of the EP Act. The premises is the Pilgangoora Operations at Marble Bar, approximately 75 km south Port Hedland, for which the applicant holds EP Act licence L9056/2017/1.

The application is to undertake construction works and time limited operations (TLO) for:

- a new P2000 processing plant and supporting pipeline infrastructure;
- a tailings filtration plant to allow for the recovery of water from tailings sent to the existing processing plant and the new P2000 processing plant;
- a new heavy mining equipment (HME) area and two new sediment ponds to cater for relocation of the mine fleet maintenance facility;
- additional generators to increase the power generation capacity at the premises;
- a new wastewater treatment plant (WWTP) and spray field to process sewage related to the relocation of the mine fleet maintenance facility; and
- additional reagent storage tanks at the existing storage precinct.

The premises relates to the categories and assessed production/design capacities under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W3004/2025/1. 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 W3004/2025/1.

2.2.1 P2000 processing plant (category 5)

The P2000 processing plant will process ore at a rate of 9 million tonnes per annum (Mtpa), producing approximately 1 Mtpa of spodumene concentrate. Together with the existing processing plants, the P2000 processing plant will allow for an overall production rate of 2 Mtpa of spodumene at the premises.

The proposed processing operations are summarised in Table 1 and are shown in Figure 1.

Table 1: P2000 processing plant operation summary

Stage	Description
Crushing and ore sorting	Three-stage feed crushing with ore sorting, whereby crushed material will be screened and presented to the ore sorters for non-contact analysis and physical separation by air-jet. Ore sorter ejects will be stockpiled and rehandled to waste landforms, and ore will report to the crushed ore stockpile.
Ore grinding and classification	Ore from the secondary crusher will be transferred for grinding in a SAG mill and then into a ball mill operating in closed circuit.
Magnetic separation	Cyclone overflow from the ball mill will feed into a Low Intensity Magnet Separators (LIMS) for removal of any ferrous materials before transfer to the Wet High Magnetic Separators (WHIMS).
Tantalum recovery	The WHIMS magnetic stream will be processed through a tantalum recovery circuit via gravity separation (spirals and tables). The final tantalum concentrate will be loaded into bulk bags. Tantalum concentrate will be stored in bulk bags in the existing tantalum concentrate storage area onsite.
Desliming and mica pre-flotation	The WHIMS non-magnetic stream will be pumped to a deslime feed tank and pump to the desliming cyclones, whereby any overflows will be fed to the process tailings thickener for water recovery. The cyclone underflow will be pumped to a rougher flotation circuit for removal of mica and other gangue materials, whereby the concentrate will be pumped to process tails stream. Remainder of feed to the circuit will report to the spodumene flotation circuit.
Spodumene flotation	Conventional multi-stage flotation, including two roughing stages followed by three stages of cleaning to produce an upgraded spodumene concentrate and barren tailings stream.
Concentrate attritioning	Final concentrate from the spodumene flotation circuit will be pumped to agitated acid attritioning tanks which will be dosed with sulfuric acid, before being pumped to a dilution tank to raise the pH.
Concentrate thickening and dewatering	The final spodumene concentrate will be pumped to a concentrate thickener prior to filtration. The feed will be mixed with a flocculant and coagulant prior to discharge into the thickener to improve density characteristics. Thickener underflow will report to dewatering belt filters for final moisture reduction.
Concentrate storage	Dewatered spodumene concentrate will be conveyed to a covered concentrate load-out bunker adjacent to the existing concentrate handling pad.
Tails thickening and disposal	Thickened tailings will be pumped to the existing tailings storage facility.
Tails filtration	Alternative tailings disposal to the wet tailings facility. Thickened tailings will be pumped to the tailings filtration plant where the tailings will be filtered to a moisture content of 15- 20% (dry tails) and conveyed to a stockpile and rehandled to either the existing tailings storage facility or commingled within a waste rock landform.

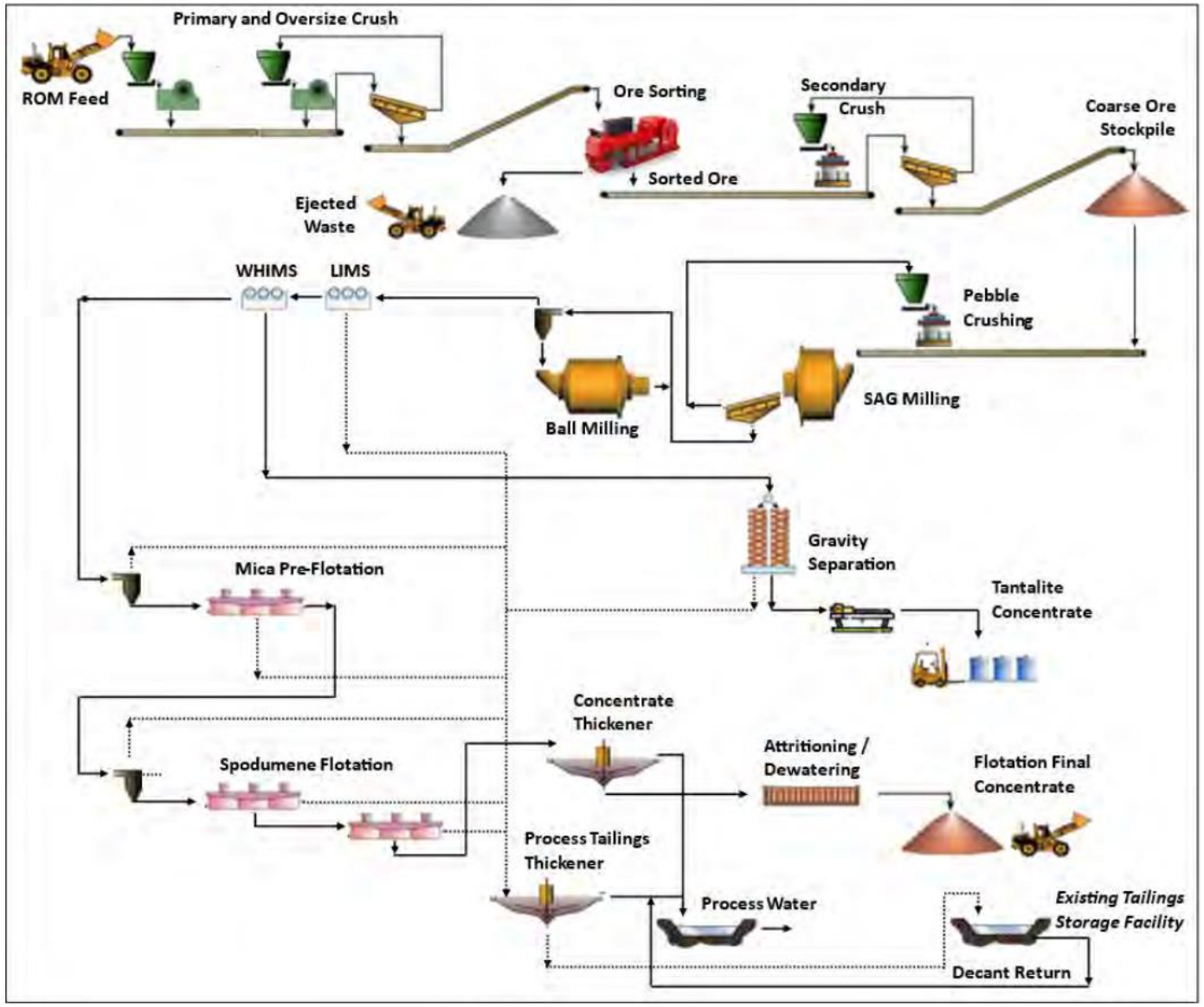

Figure 1: P2000 processing plant process flow diagram

Up to 6 Mtpa (dry) of wet tailings will be discharged from the P2000 processing plant to TSF3 (previously approved under W6859/2023/1) and will have a 40-50% density as per current operations. Wet tailings will be transferred by a 4 km overland pipeline to TSF3 or to the tailings filtration plant. Decant water will reflect the existing quality limits established in L9056/2017/1 and will be returned to the process water pond for re-use or will be used for dust suppression at the currently approved locations under L9056/2017/1. New tailings and decant water return pipelines from the P2000 processing plant will be placed within the bunded corridor for the existing pipelines, which was designed to be able to contain the additional pipelines.

A two-cell, HDPE lined process water pond with a total capacity of 20 megalitres (ML) will be constructed adjacent to the P2000 processing plant. Water will be supplied from groundwater and surface water sources that the applicant is currently approved to take water from (refer section 2.4.3), decant water, and reclaimed water from the tailings filtration plant.

Drainage design

A series of drainage channels direct drainage to an unlined sedimentation pond (Figure 2), which has been designed to hold all runoff from a 24 hour, 1 in 10 year storm event. Stormwater captured in the sedimentation pond will be reclaimed by a local pump arrangement with floating suction and will be transferred to the process water pond for use in ore processing. Overflow from the sedimentation pond will be directed to an existing creek through a daylight drain.

Land drains and a toe drain capture surface water runoff from the P2000 processing plant pad and the adjacent existing waste rock landform (Figure 3). The land drains direct runoff of the P2000 processing plant pad to the sedimentation pond, and the toe drain directs it to sumps which allow run-off to infiltrate into underlying soils. Overflow from the sumps is directed to the sedimentation pond.

2.2.2 Tailings filtration plant (category 5)

The tailings filtration plant will be used to dewater tailings to improve water efficiency at the premises. An overview of the filtration process is shown in Figure 4.

Tailings from both the existing processing plants and the proposed P2000 processing plant will be directed to the tailings filtration plant through a series of HDPE pipelines, with dewatered tailings proposed to be disposed of at the existing waste rock landforms (WRLs) (South WRL1, Pilgangoora Creek WRL, and Western WRL).

The water reclaimed from the filtration process will be directed to the existing 50 ML decant pond associated with TSF3, located within the L9036/2017/1 prescribed premises boundary. Water from the 50 ML decant pond may then be directed to the existing 5 ML dam, which was constructed to hold raw water and has a 500mm freeboard, for use in dust suppression at the premises. An overflow spillway is located on the southern side of the 5 ML dam and is directed towards Pilgangoora Creek. The 5 ML dam contains level monitoring to prevent overfill from the upstream external supply sources.

A horizontal belt vacuum filter system will be used to dewater tailings, with moisture content to be reduced to 15-20%. Tailings filter feed tanks sit adjacent to the dewatering filters and provide buffering capacity to the system.

A reclaim area of approximately two hectares is proposed to be located adjacent to the filter house and the waste dump for stockpiling the dewatered tailings prior to disposal at the WRLs with conveyors or by haul truck. The reclaim area will be bunded with an earthen bund and the area will be graded to the north to a sediment pond to retain surface water from rainfall. The sediment pond will be designed to hold all runoff from a 24 hour, 1 in 10-year rainfall event.

Post rainfall, surface water runoff into the sediment pond will be reclaimed by a local pump arrangement with floating suction and will be introduced into the tailings filtration facility as decant return water.

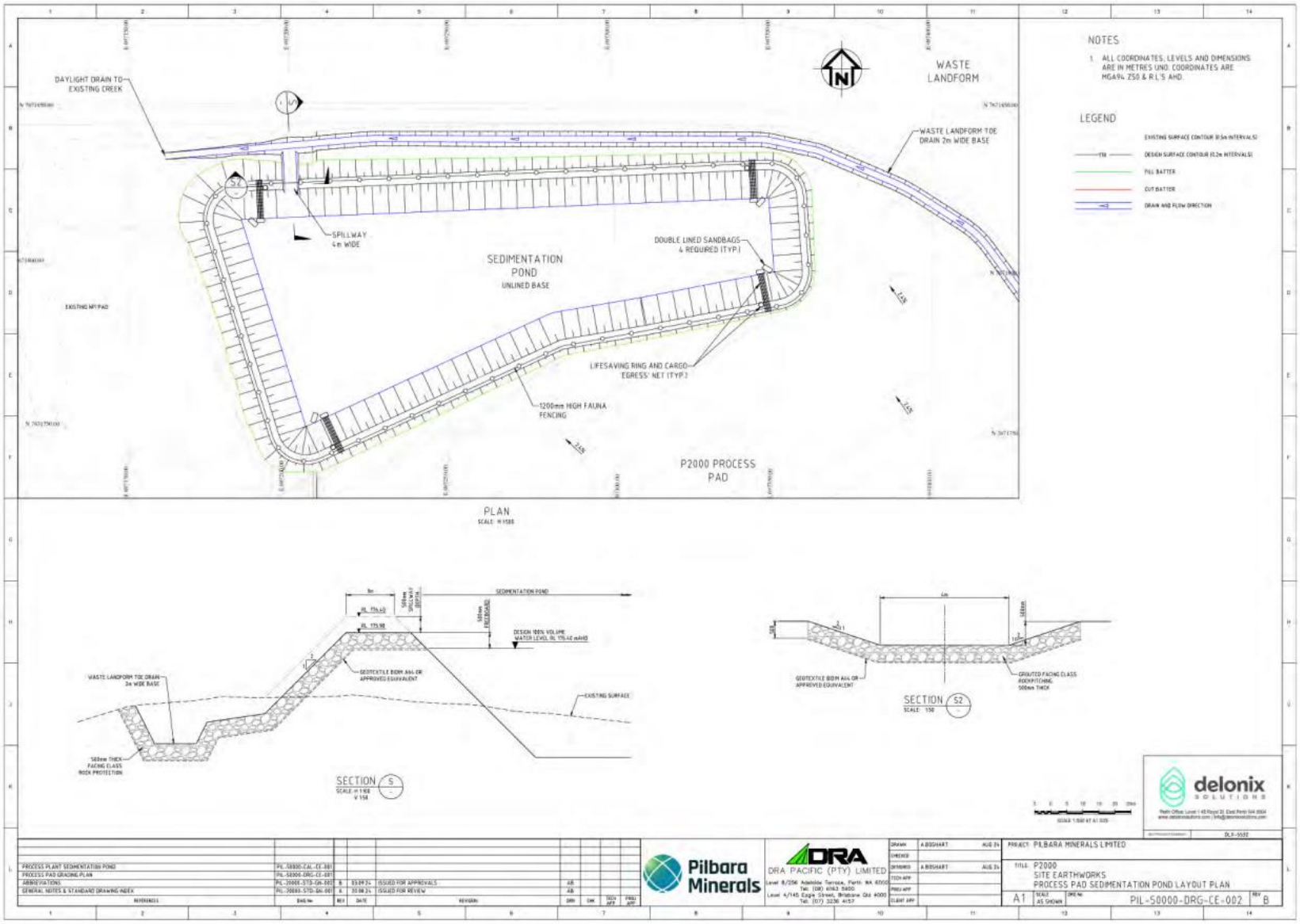

Figure 2: P2000 processing plant pad sedimentation pond

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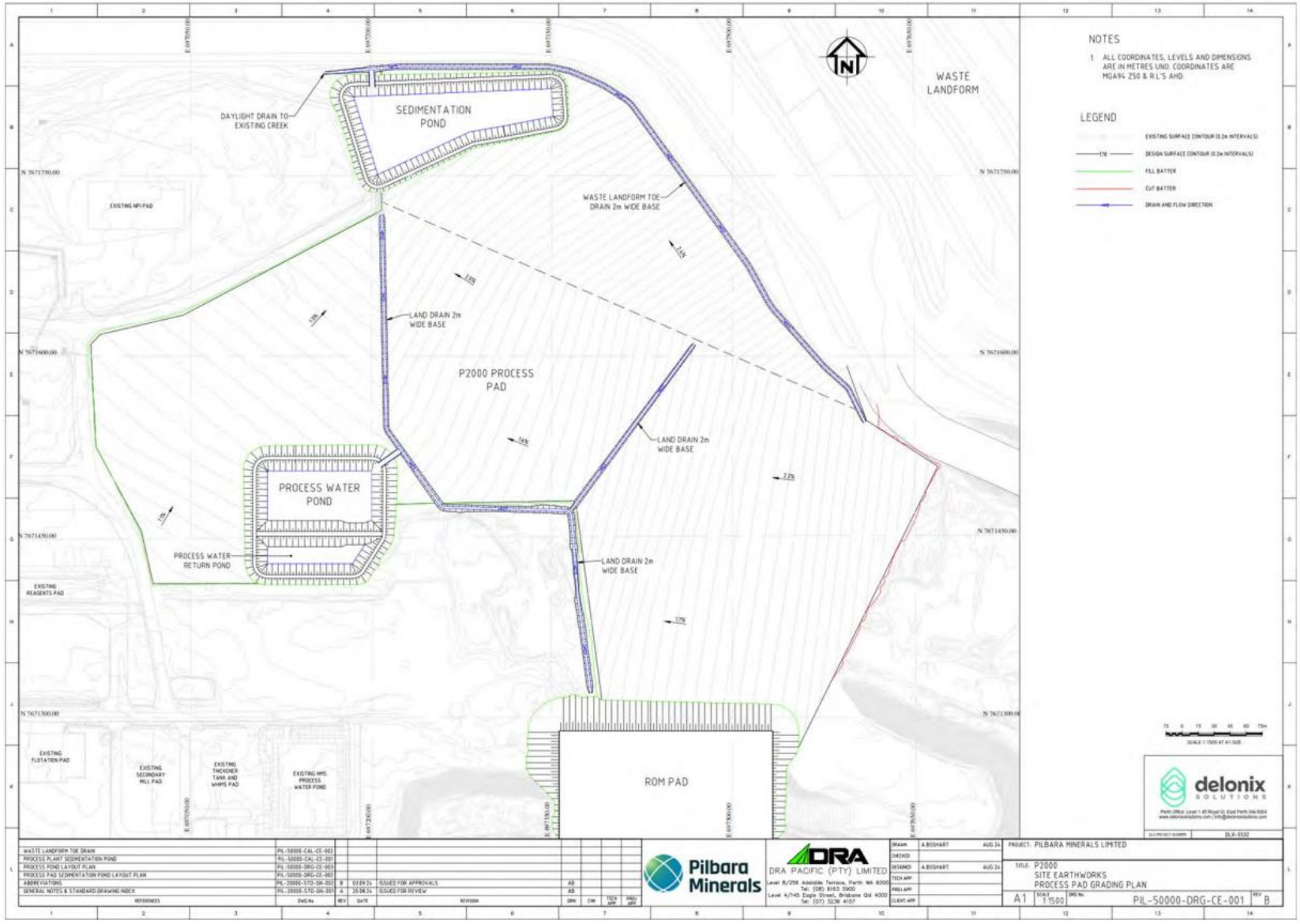

Figure 3: P2000 processing plant pad drainage layout

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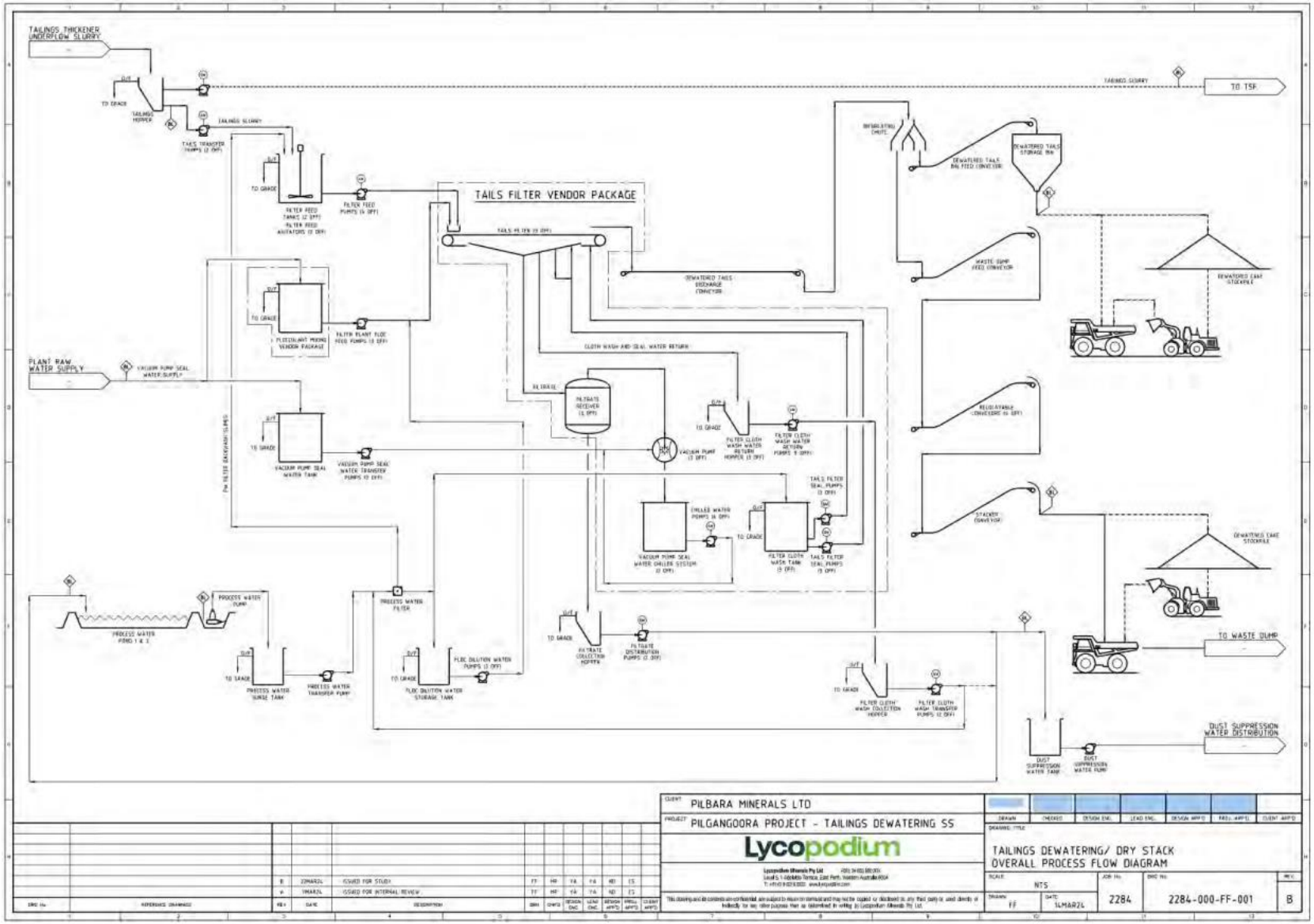

Figure 4: Tailings filtration plant process flow diagram

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2.2.3 HME area and sediment ponds (category 5)

The applicant is proposing to construct a new HME area to cater for the relocation of the existing mine fleet maintenance facility. Two new sediment ponds, both designed to hold all run-off from a 24 hour, 1 in 10-year storm event, will also be constructed. The HME pad is divided into two catchments with graded surfaces directed to sediment ponds to the west (pond 1) and the east (pond 2). A northern cut-off drain will collect and direct any external surface water away from the HME pad. The layout of the HME area and its drainage design is shown in Figure 5.

A centralised oily water separator (OWS), located at the HME wash bay in a concrete bunded area, will be a common facility receiving sump water pumped from other processing and operational infrastructure at the premises. The daily volumes of water treated at the OWS are expected to vary considerably, with operational wash requirements and water collection from bunds following rainfall. Incorporating a sludge drying bed and settling arrangement to minimise solids loadings, a centrifugal separator will then process the water into a recycled water supply for re-use in wash down. An oily water waste stream will also be produced through this process, which will be held in a 250 kilolitre (kL) storage tank for periodic removal from the premises by a licensed waste specialist via tanker. Operational maintenance of the separator will be undertaken in accordance with the manufacturer's specifications.

Pond 1 (Figure 6) has an area of 0.8 ha and a volume of 14,280 m^3, with capacity to hold 10,280 m^3 of runoff when considering the 500 mm freeboard. Pond 2 (Figure 7) has an area of 0.63 ha and a volume of 12,240 m^3, with capacity to hold 9,090 m^3 of runoff when considering the 500 mm freeboard.

Both sediment ponds are fed by land drains (2-metre-wide base) that discharge to the sediment ponds. The ponds will have an unlined base and are designed with spillways which discharge to Pilgangoora Creek. The spillway is engaged upon exceedance of the 500 mm freeboard that the ponds are designed to contain. The spillways will be constructed of grouted facing class rockpitching to 500 mm thick and underlain with Geotextile Bidim A64 or an approved equivalent. The geotextile will be securely anchored at 700 mm below the base of the ponds.

Post rainfall, surface water runoff into each sediment pond will be reclaimed by a local pump arrangement with floating suction and will be used in the HME washdown circuit as process water.

2.2.4 Electric power generation (category 52)

The applicant is proposing to install seven new Caterpillar 3520H natural gas generators to the previously approved power station (W6051/2017/1) to increase the power generation capacity by 19.5 megawatts (MW). Inclusive of the previously approved generators, the resulting power generation capacity at the premises will be 55.5 MW (from the current 20.9MW on licence L9056/2017/1). The gensets are modular and will be installed on the engine haul approved under works approval W6051/2017/1, which has sufficient capacity to contain the additional gensets.

The resulting power station genset configuration will be:

- 4x Cummins QSK78 diesel generators (2 MW each); and
- 19x Caterpillar 3520H natural gas generators (2.5 MW each).

The layout of the power station, once the new generators are installed, is shown in Figure 8.

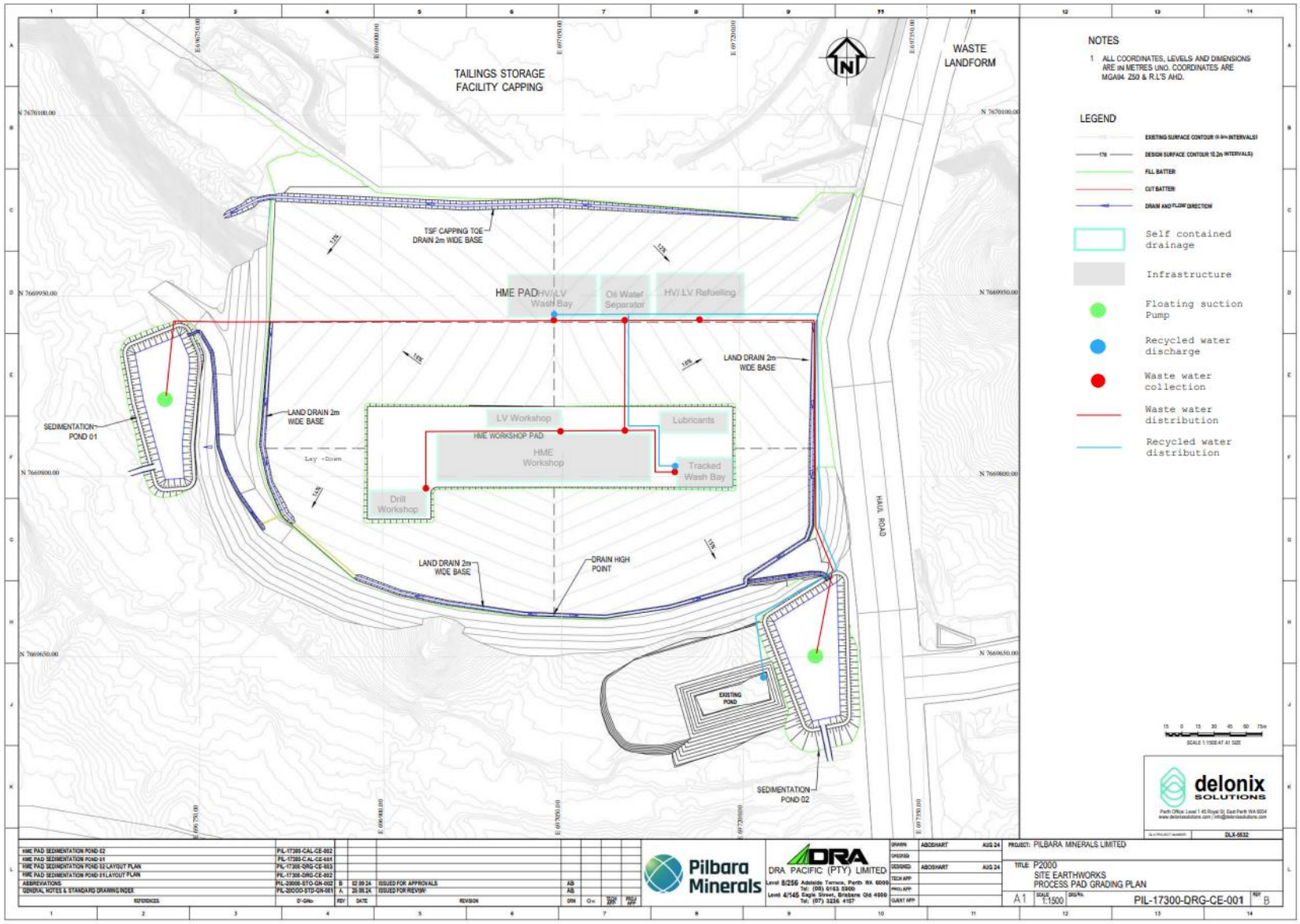

Figure 5: HME area layout

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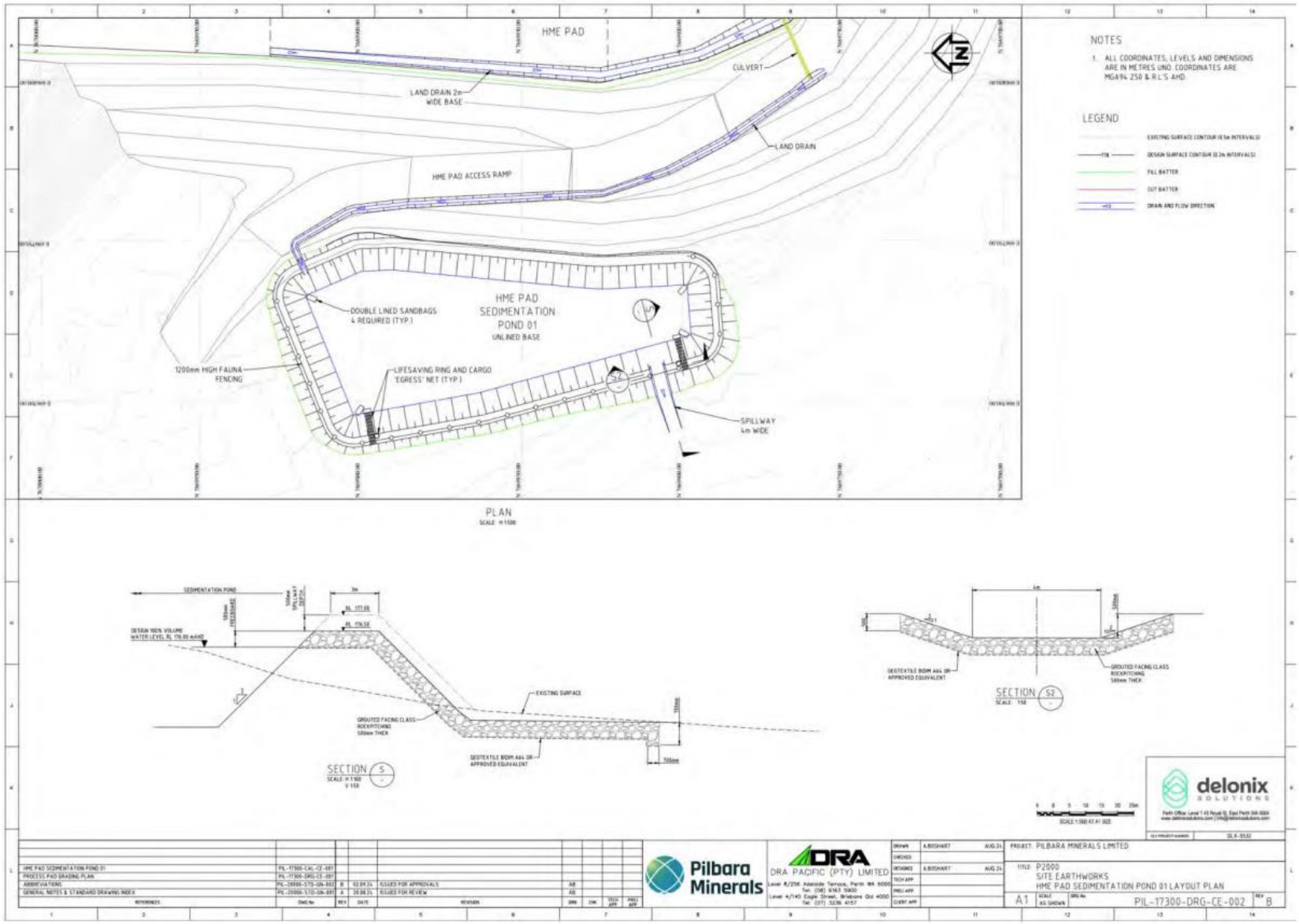

Figure 6: HME area sediment pond 1

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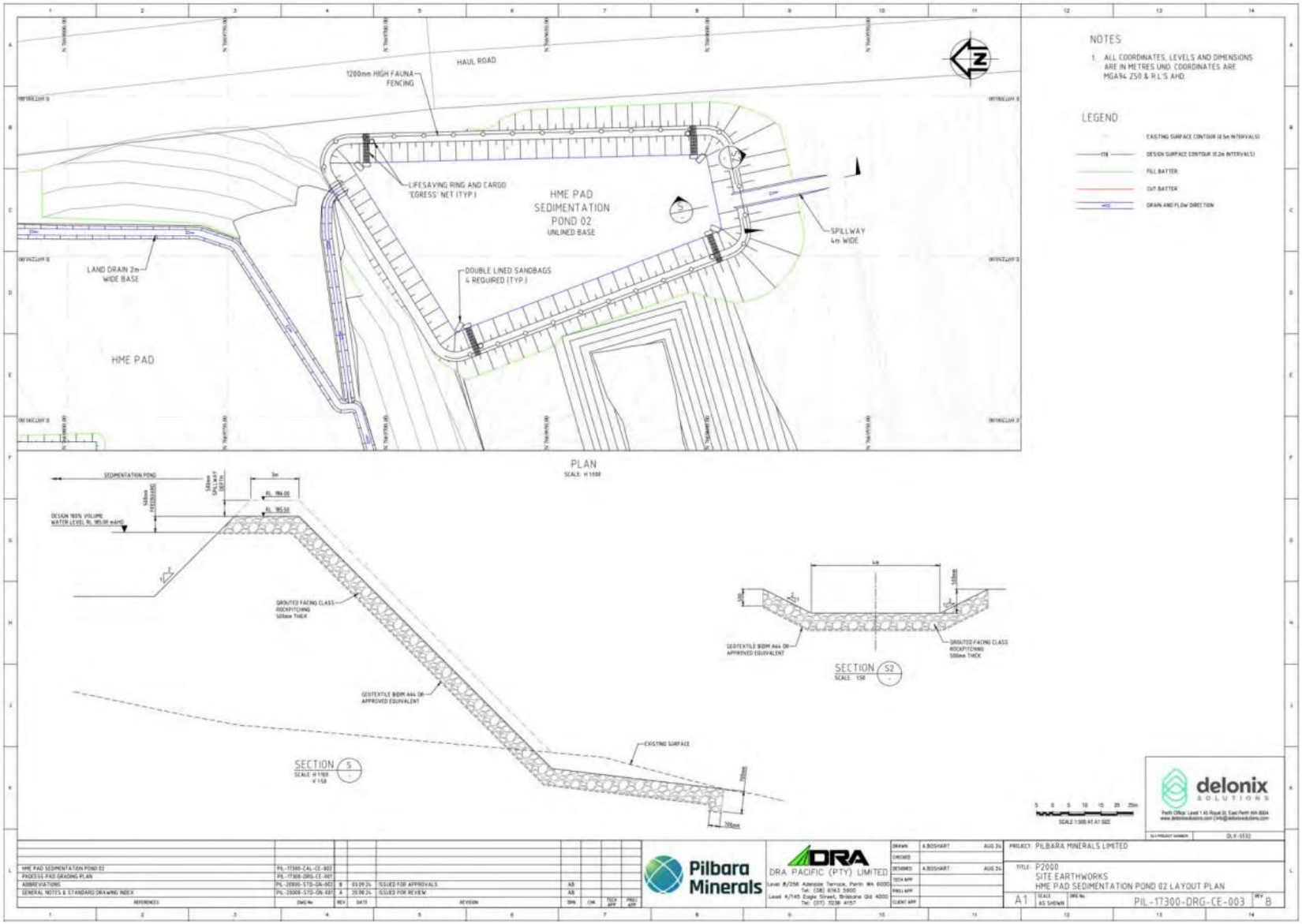

Figure 7: HME area sediment pond 2

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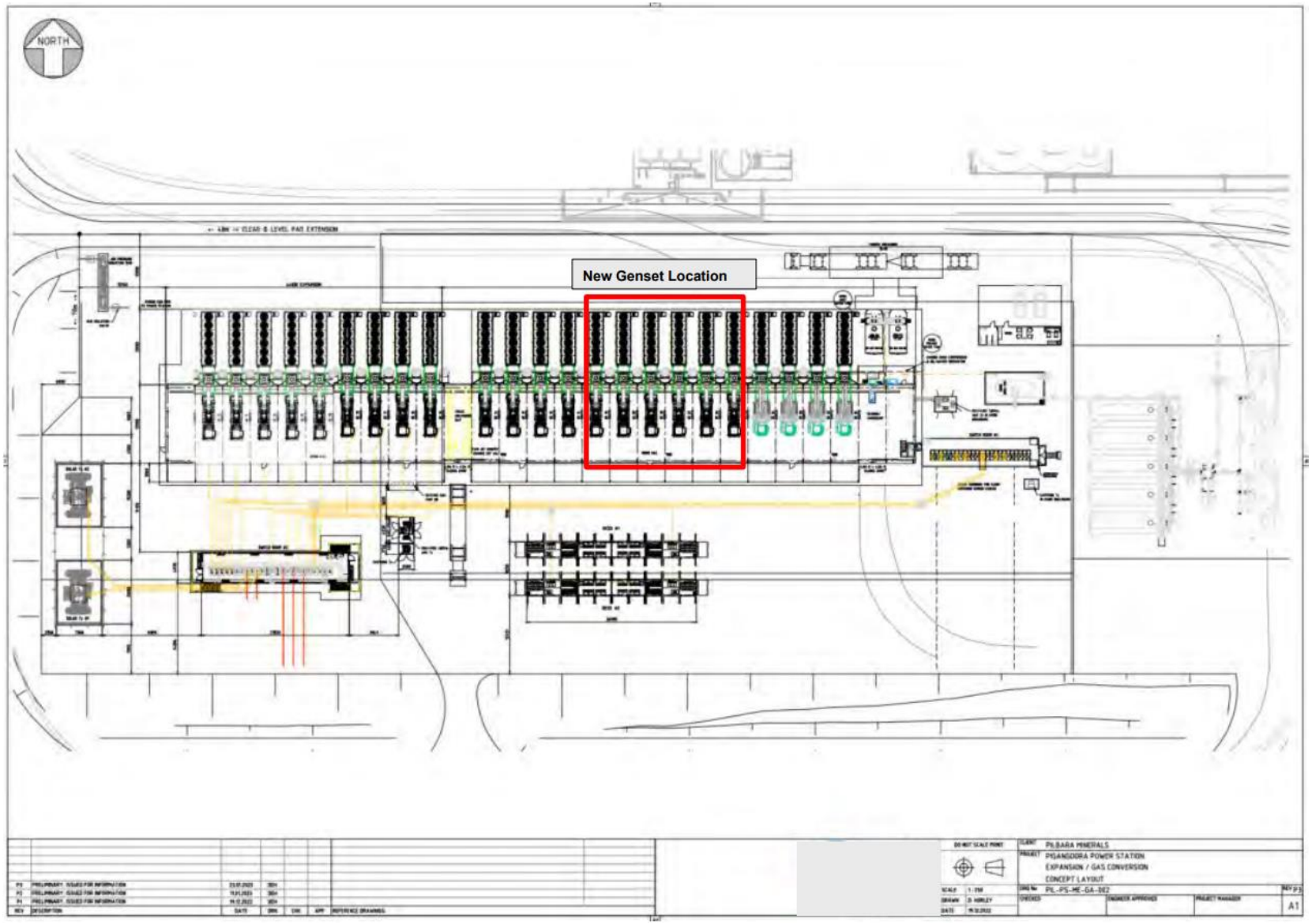

Figure 8: Final power station layout

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2.2.5 Wastewater treatment plant (category 54)

The applicant is proposing to install a new WWTP and spray field at the premises, which will be located adjacent to the existing WWTP and spray field.

The new WWTP design has been integrated with the design of the existing WWTP, and they will share the existing sludge tank, balance tank, and wash-water tank. The arrangement of the existing ("plant #1") and new ("plant #2") WWTP is shown in Figure 9.

The proposed WWTP is a Sequencing Batch Reactor plant with the ability to process up to 50 cubic metres (m^3) per day of wastewater, designed to accommodate 629 equivalent persons with a designated water use of 79 litres per person per day. Its installation will increase the total wastewater processing capacity at the premises to 375 m^3 per day.

Table 2 compares the expected quality of the treated effluent from the proposed 50 m^3 WWTP against the current treated effluent quality requirements outlined in L9056/2017/1.

Table 2: WWTP treated effluent quality summary

Design aspect	Unit	Expected quality[1]	L9056/2017/1 specification
Total Suspended Solids (TSS)	mg/L	<30	<30
Biochemical Oxygen Demand (BOD)		<20	<20
Total Nitrogen (TN)		<30	<30
Total Phosphorous (TP)		<8	<7.5
Residual free chlorine		0.5-2	0.2-2
pH	pH units	6.5-8.5	6.5-8.5
E.coli	cfu/100 ml	<1000	<1000

Note 1: Upon the establishment of sufficient biomass within the WWTP, approximately 6 weeks after first operating on live liquor.

The proposed 1.8-hectare (ha) spray field will consist of nine sprinklers that have a spray diameter of approximately 33 metres (m). Each pipe run will have three sprinklers, and each sprinkler will have a flushing point ball valve at the end of the run to allow flushing of the pipe run to maintain discharge of the treated effluent. All discharges from flushing the pipe runs will remain within the spray field due to the wind-rowed soil surrounding the spray field.

The arrangements of the existing ("plant #1 sprayfield") and new ("plant #2 sprayfield") spray fields are shown in Figure 10. The coordinates of the spray field are listed in Table 3.

Table 3: Spray field coordinates (GDA 2020, MGA Zone 50)

Spray field point	Easting	Northing
Northwest	695848.084	7672080.567
Northeast	695981.239	7672080.62
Southeast	695981.239	7671947.639
Southwest	695847.8	7671947.529

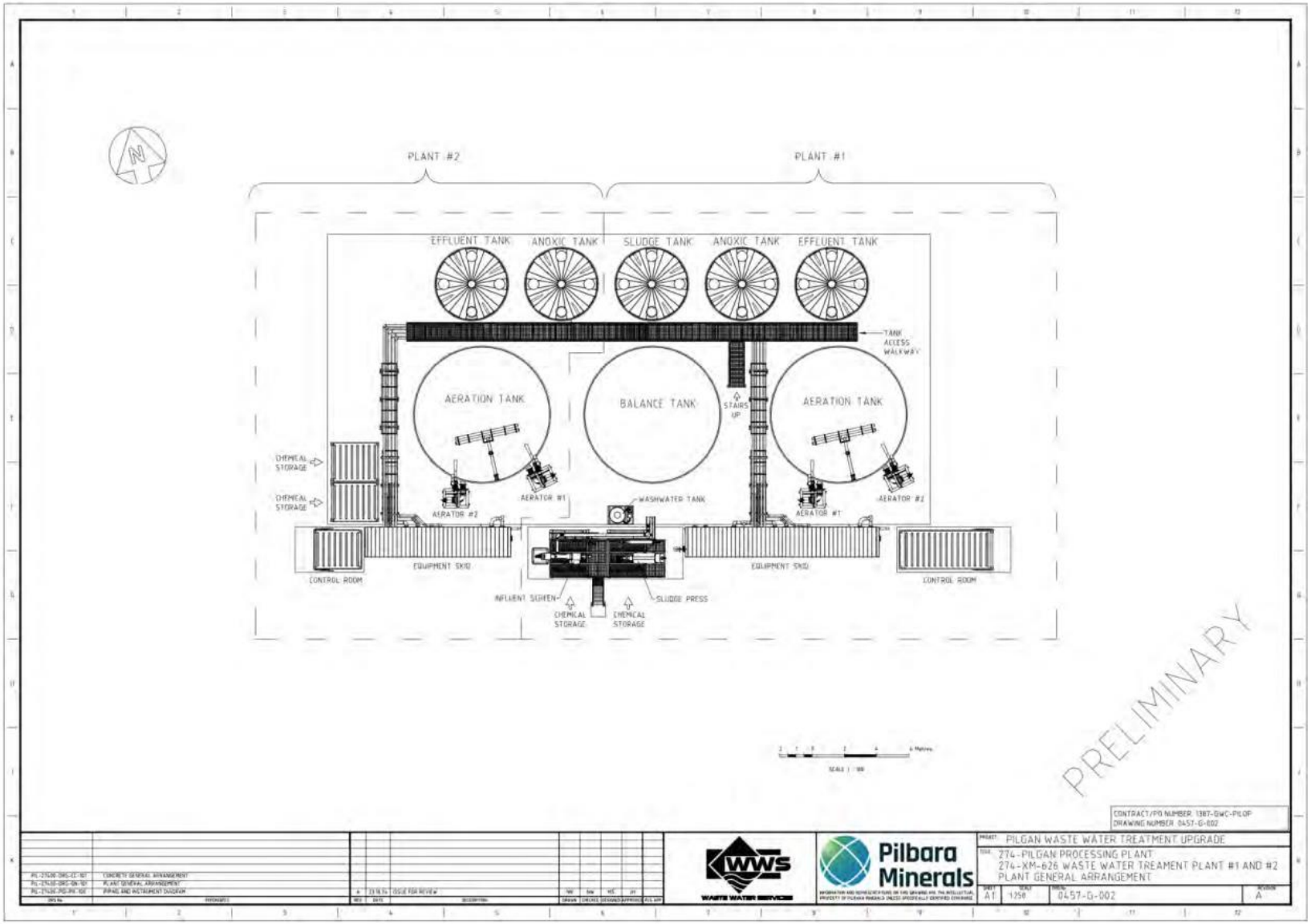

Figure 9: WWTP general arrangement

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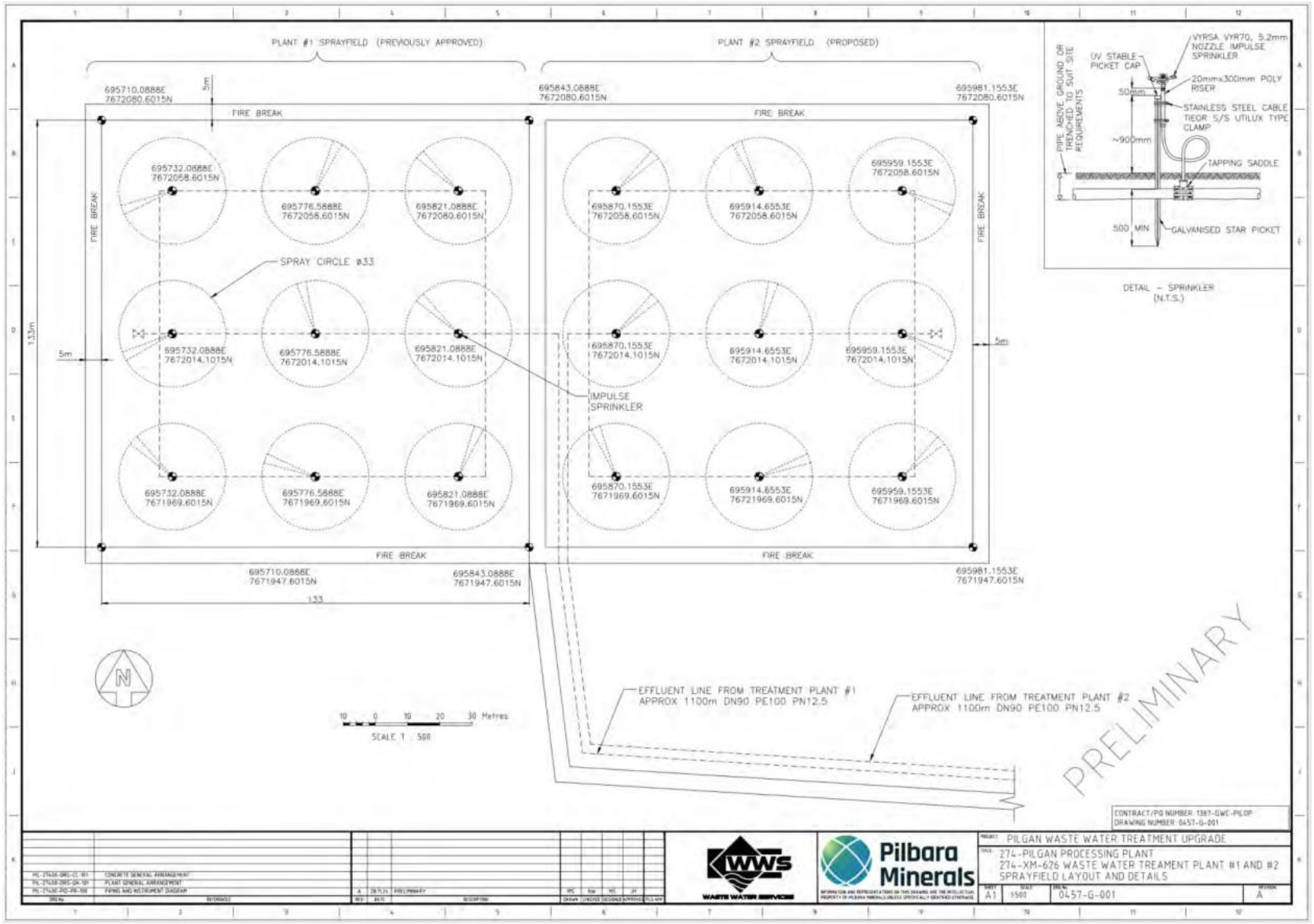

Figure 10: Spray field general arrangement

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2.2.6 Reagent storage tanks (category 73)

Additional reagent storage tanks are proposed to be installed at the previously approved (W6051/2017/1) storage precinct, including:

- 1x 150 m^3 mica pre-float bulk collector storage tank;
- 1x 20 m^3 mica pre-float live collector storage tank; and
- 4x 1 kL IBC for frother.

The proposed reagent storage tanks would provide an additional 174 m^3 of chemical storage capacity, increasing the total Category 73 storage capacity at the premises to 1,210 m^3. The previously approved storage precinct is of a sufficient size to contain the additional reagents and storage tanks.

A comparison of the previously assessed storage and consumption rates against the proposed storage and consumption rates (following installation of the infrastructure included in this application for a works approval) is shown in Table 4.

Table 4: Primary reagent storage and consumption

Reagent	Storage method	Unit	Stored quantity		Usage per day	
			Current	Proposed	Current	Proposed
Flocculent	Bulk dry silo	t	37.5	37.5	0.28	0.7
Soda ash			100	100	5.9	15
Sodium hydroxide (caustic soda) – 50% solution	Liquid	m^3	30	30	2	2
Sulfuric acid	Tanks		120	120	27.5	40
Coagulent			50	50	3.5	5
Flotation collector (oleic acid)			320	320	23	50
Hydrochloric acid – 32% solution			30	30	0.8	0.8
Pre-float mica collector			-	170	-	10
Frother	IBC		-	4	-	0.2

2.3 Existing infrastructure compliance status

The proposed works include the use of existing infrastructure approved under L9056/2017/1 and infrastructure approved for construction under multiple works approvals that has not yet been added to the licence. A summary of the compliance status of the relevant existing and previously approved infrastructure is outlined in Table 5.

Table 5: Existing and previously approved infrastructure compliance summary

Instrument	Existing/previously approved infrastructure	Relation to this application for a works approval	Compliance status
L9056/2017/1	Processing plants	Tailings from the existing processing plants to be directed to the tailings filtration plant.	The department determined that construction was compliant with no deviations. The processing plants are operational and included in the licence.
	Waste rock landforms (WRLs)	Dewatered tailings proposed to be disposed of at the existing waste rock landforms.	The WRLs (South WRL1[1], Pilgangoora Creek WRL, and Western WRL) have been constructed, but are not currently included on the licence. The WRLs have been approved for waste rock deposition through the applicant's Mining Proposals (Reg ID 126586 and 120223). The applicant has stated that they will apply for a new Mining Proposal to obtain approval to co-dispose waste and dewatered tailings at the WRLs. These will be marked as tailings disposal locations.
	5 ML dam	Reclaimed water from filtration plant proposed to be directed to the existing 5 ML dam.	The 5 ML dam has been constructed but is not currently included on the licence.
	WWTP and spray field	Proposed new WWTP will use the existing sludge tank, balance tank, and wash-water tank.	The department determined that construction was compliant with minor changes to stage 1 sprinklers and stage 2 WWTP containments. The WWTP and spray field are operational and included in the licence.
W6859/2023/1	TSF3[1]	Wet tailings from the P2000 processing plant are proposed to be discharged to TSF3.	The construction of TSF3, approved under the works approval, has not yet been completed and compliance has not been determined.
	Tailings and decant water pipeline corridor	New pipelines placed within the previously approved corridor.	The construction of the pipeline corridor approved under the works approval has not yet been completed and compliance has not been determined.
W6051/2017/1	Power station	Additional generators to be installed at previously approved engine haul at the power station	The installation/construction of the engine haul approved under the works approval (2023 amendment) has not yet been completed and compliance has

Instrument	Existing/previously approved infrastructure	Relation to this application for a works approval	Compliance status
		(2023 amendment).	not been determined. The works approval holder has advised that an Environmental Compliance Report (ECR) for the engine haul will be submitted to the department in late August 2025. The licence will need to be updated.
	Storage precinct and storage tanks	Additional reagent storage tanks to be installed at the storage precinct.	The construction of the storage precinct approved under the works approval has not yet been completed and compliance has not been determined.

Note 1: The department notes that South WRL1 and TSF3 are located outside of the L9056/2017/1 prescribed premises boundary.

2.4 Other relevant approvals

2.4.1 Native vegetation clearing permits

Native vegetation clearing permit CPS 8175/5 allows for the clearing of up to 1,730.1 ha of native vegetation on several mining tenements, including (but not limited to) M45/1256, M45/511, M45/333, L45/417, G45/350, and G45/351. The most recent amendment was granted on 1 April 2025.

Native vegetation clearing permit CPS 10388/2 allows for the clearing of up to 650 ha of native vegetation on several mining tenements, including (but not limited to) L45/614 and G45/351. The most recent amendment was granted on 17 April 2025.

The department notes that there is currently no approved native vegetation clearing permit, or application under assessment, relating to L45/454. The department also notes that the applicant is not proposing to construct or operate any infrastructure within L45/454 as part of this application for a works approval.

2.4.2 Mining proposals

The applicant has advised that the P2000 processing plant and associated infrastructure is defined as a 'Key Mine Activity' (Plant site) and that a Mining Proposal under the *Mining Act 1978* to include the additional proposed processing infrastructure will be sought. Provision will be made in the new Mining Proposal for 'Other Mine Activities' relevant to this application for a works approval, including WWTP and spray field, the drainage design and infrastructure related to the P2000 processing plant area and the HME pad, associated pipelines, and the tailings filtration plant.

An application for a Mining Proposal for the relevant activities was submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) in August 2025 and is currently under assessment.

The applicant also holds several existing Mining Proposals relevant to this application for a works approval, including Reg ID 126586 and Reg ID 120223. Amendments to these Mining Proposals, or a new Mining Proposal, will be sought to allow for the disposal of dewatered tailings within the WRLs.

2.4.3 Water licences and permits

The applicant currently holds multiple relevant approvals under the *Rights in Water and Irrigation Act 1914* (RiWI Act), including:

- 5C licences for groundwater abstraction and surface water harvesting (total of 7.24 gigalitres (GL) for pit dewatering, mineral processing, camp supply, dust suppression, and to facilitate other mining activities):
    - GWL183354(6);
    - GWL183717(3); and
    - SWL202597(1).
- 26D licences for construction of bores associated with abstraction of groundwater under a 5C licence:
    - CAW209111(1).
- Section 11/17/21 permits for interfering with bed and banks of a watercourse:
    - PMB209837(1); and
    - PMB207683(2).

The applicant submitted an application to the department on 11 March 2025 to increase the current 5C licence capacity, which is currently under assessment and expected to be finalised by the end of 2025.

2.4.4 WWTP and spray field approvals

The applicant sought approval from the Shire of East Pilbara and Department of Health (DoH) to construct and install the WWTP and spray field, and submitted an application on 28 November 2024. DoH approved the WWTP and spray field on 13 January 2025.

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 6 below. Table 6 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 6: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Construction and installation of infrastructure Vehicle movements and earthworks	Air/windborne pathway causing impacts to adjacent threatened and priority flora and native vegetation	**Proposed controls** • Use of water trucks for dust suppression.
Commissioning			
Category 54			
Spills and leaks of untreated influent, treatment chemicals or contaminated	Commissioning of the WWTP and spray field	Discharge to land causing death or decrease in health of nearby vegetation, or	**Proposed controls** • 300 mm high cleared windrow of soil to prevent surface water flows outside of spray field; • WWTP constructed on a concrete pad;

Emission	Sources	Potential pathways	Proposed controls
stormwater Treated effluent discharged via the spray field		impacts to surface water, groundwater and/or soils	• Treatment system designed with a suite of alarms and interlocks to detect excessive levels and shut off pumps; and • Chemical-dosing IBCs have individual bunds and dosing lines contained inside a sealed outer hose. **Proposed monitoring** • Monthly monitoring of treated effluent quality; and • Daily visual inspections of the WWTP.
Operation (including operation under TLO)			
Category 5			
Dust	Ore crushing, transfer and storage at P2000 processing plant	Air/windborne pathway causing impacts to adjacent threatened and priority flora and native vegetation	**Proposed controls** • Equipped with a functioning dust suppression system; • Use of water sprays for crushing and conveying activity, and located on all transfer points; • Conveyor transfers to be fully enclosed and incorporate dual head scrapers and skirting systems to contain and encapsulate dust and spillage; • Deluge system on the ROM bin activated by beam switches as a vehicle tips feed ore into the plant; • Waste stockpiles kept free of fines material (>6 mm only) to minimise risk of dust generation; • Coarse ore stockpile to contain suitable cover system at elevated levels to encapsulate and minimise dust emissions; • All large dry screens incorporate water sprays and/or dust covers; • Bunding incorporated around all wet circuit componentry; • Clean transfer points achieved with dual belt scrapers and skirting on loading points for all conveyors; and • Continuous dust suppression using water trucks on haul and access roads, the ROM, in pits and other open areas.

Emission	Sources	Potential pathways	Proposed controls
	Dewatered tailings stored at reclaim area and transferred to WRLs via conveyors or haul truck		**Proposed controls** • Transfer points on conveyors to contain dust suppression system that may include dust suppression sprays or dust covers.
Leaks and spills of hydrocarbons and chemicals, contaminating stormwater	Leaks and spills from the P2000 processing plant or tailings filtration plant	Overland run off causing impacts to adjacent threatened and priority flora and native vegetation, surface water, groundwater, and/or soils	**Proposed controls** • Any soil that becomes contaminated due to a spill will be collected and treated at the monster bioremediation pad; • Surface water on the P2000 processing plant pad captured in land and toe drains and directed to sediment ponds; • Sediment ponds to maintain a 500 mm freeboard; • Equipment will be situated within catchment bunds sized to 110% capacity of the largest vessel, with sump pumps for material recovery back to the process plant; and • Spill kits strategically located nearby to all hydraulic power packs and maintenance activities. **Proposed monitoring** • Monitoring of sediment pond overflow water quality following rainfall events when discharging.
	Servicing and maintenance of vehicles and equipment in the HME area		**Proposed controls** • Any soil that becomes contaminated due to a spill will be collected and treated at the monster bioremediation pad; • Graded surfaces to direct any surface water to sediment ponds; and • Sediment ponds to maintain a 500 mm freeboard.
Leaks and spills of tailings, decant water, and contaminated water	Tailings and decant water pipeline transferring tailings from the P2000 process plant to the TSF3 or the tailings filtration plant		**Proposed controls** • Pipelines to be constructed according to Australian Standards AS/NZS 2033, 4129, 4130 and 4131 for polyethylene pipes; • Pipelines to be located within bunded corridors for secondary spillage

Emission	Sources	Potential pathways	Proposed controls
(metals/ metalloids)			containment; • Pipelines equipped with leakage detection (flow and pressure monitoring) with automatic cutouts in the event of a pipeline failure; and • Where pipelines are constructed within road corridors, those roads to be bunded by earthen windrows to contain pipelines leaks.
	P2000 processing plant and tailings filtration plant		**Proposed controls** • Tailings directed to tailings feed tanks which are located within a bunded concrete pad sized to 110% capacity of the largest tank; • Feed tanks to be fitted with level exceedance alarms and automatic process control shut-offs back at the process plant to prevent overtopping; • Outdoor stockpiles to be bunded with pad graded to a sump to contain a 24 hour, 1 in 10 year storm event volume of surface water; • Equipment will be situated within catchment bunds sized to 110% capacity of the largest vessel, with sump pumps for material recovery back to the process plant; and • Spill kits strategically located nearby to all hydraulic power packs and maintenance activities.
Tailings decant water dewater discharge	Tailings decant water discharge to TSF3 tailings decant return water pond		**Proposed controls** • Tailings decant water to reflect quality limits established in TSF3 works approval W6859/2023/1.
Seepage or runoff of contaminated stormwater or tailings water from WRLs	Disposal of dewatered tailings at WRLs	Discharge to land causing death or decrease in health of nearby vegetation, or impacts to surface water, groundwater and/or soils	**Proposed controls** • Toe drains to be constructed at the base of WRLs to capture runoff and sediment, directing flows to sumps; and • Crest bunds will be incorporated at the top of the WRL and on back-sloping berms to retain water within the landform. **Proposed monitoring** • Monitoring bores to be installed around the perimeter of the WRLs to provide monitoring in accordance with the existing TSF monitoring suite.

Emission	Sources	Potential pathways	Proposed controls
Seepage or runoff of contaminated stormwater or tailings water from dewatered tailings stockpiles			**Proposed controls** • Stockpile area to be bunded with a pad graded to a sump to contain a 24 hours, 1 in 10 year storm event volume of water.
Seepage of reclaimed water through base of 5 ML dam	Storage of reclaimed water from tailings filtration process in 5 ML dam		No controls have been proposed.
Reclaimed water used for dust suppression	Use of reclaimed water from tailings filtration process for dust suppression		**Proposed monitoring** • Six monthly monitoring of decant water for the same parameters outlined in Table 7 of licence L9056/2017/1.
Electric power generation (category 52)			
Air emissions	Operation of additional diesel and natural gas generators	Air/windborne pathway causing impacts to nearby threatened and priority fauna	**Proposed controls** • The power station engine hall to have gas detectors installed as necessary to detect leakage and alarm / shut-down the facility.
Leaks and spills of hydrocarbons and chemicals		Overland run off causing impacts to adjacent threatened and priority flora and native vegetation, surface water, groundwater, and/or soils	**Proposed controls** • Located in a bunded area with a sump, oily water separator and waste oil collection tank to facilitate engine servicing, contain and retrieve spills.
Category 54			
Spills and leaks of untreated influent, treatment chemicals or contaminated	Operation of the WWTP and spray field	Discharge to land causing death or decrease in health of nearby vegetation, or	**Proposed controls** • 300 mm high cleared windrow of soil to prevent surface water flows outside of spray field; • WWTP constructed on a concrete pad;

Emission	Sources	Potential pathways	Proposed controls
stormwater Treated effluent discharged via the spray field		impacts to surface water, groundwater and/or soils	• Treatment system designed with a suite of alarms and interlocks to detect excessive levels and shut off pumps; and • Chemical-dosing IBCs have individual bunds and dosing lines contained inside a sealed outer hose. **Proposed monitoring** • Monthly monitoring of treated effluent quality; • Daily visual inspections of the WWTP; and • Twice-weekly on-site sampling of treated effluent, with any unusual results highlighted, the cause identified, and corrective action taken
Reagent storage tanks (category 73)			
Spills/leaks of stored chemicals	Storage of chemicals in additional tanks and IBCs	Discharge to land causing death or decrease in health of nearby vegetation, or impacts to surface water, groundwater and/or soils	**Proposed controls** • Reagent storage location is fully bunded and is able to contain 110 percent of the largest storage vessel within the compound.

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 7 and Figure 11 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 7: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
N/A	No human receptors located in the vicinity of the premises. Refer Figure 11.
Environmental receptors	**Distance from prescribed activity**
Native vegetation	There is a record of a Priority 3 flora species (*Vigna triodiophila*) occurring within the proposed prescribed premises boundary.

	No construction or operational activities are proposed in this area as part of the works approval application. Approval to clear in this area was previously granted under CPS 8175/5.
Groundwater	The application area is located within the Pilbara Groundwater Area. Groundwater is recharged by direct rainfall infiltration or by stream flow during episodic rainfall events. The recharge occurs mainly on or adjacent to the groundwater divide and along drainage lines (Pilgangoora Operations 2024). The nearest groundwater dependent ecosystem to the project is the Chinnamon Creek system, approximately 2 km south of the premises. The results of previous field investigations within the premises tenements indicate generally low permeability conditions across the site with several discrete features within the fresh bedrock (including adjacent to Pilgangoora Creek) reporting modest permeability. The groundwater level along the deposits typically ranges from about 170 mRL to 190 mRL, with a regional groundwater flow direction towards the west, away from the groundwater divide (Pilgangoora Operations 2024). Groundwater salinities in the area are typically fresh to slightly brackish, ranging from about 400 to 3,000 mg/L Total Dissolved Solids (TDS). This low salinity groundwater is typical of areas most affected by direct rainfall recharge, e.g. near catchment divides and within shallow alluvium. Higher salinity groundwater typically occurs lower down in catchments and possibly also within deeper fractured rock aquifers (Pilgangoora Operations 2024).
Surface water	The application area is located within the Pilbara Surface Water Area. The Pilgangoora Creek catchment is 18.1 km^2 and drains in a roughly east to west direction across the premises. This catchment ultimately reports to the Turner River downstream (west) of the premises (Pilgangoora Operations 2024). There are multiple surface water lines within the application area, which generally flow west towards Turner River, located approximately 20 km to the west. Pilgangoora Creek intersects the application area, and runs east to west. The applicant proposes that overflow from the HME area sediment ponds will be discharged into Pilgangoora Creek, and overflow from the P2000 processing plant pad into an ephemeral creek.
Aboriginal heritage site	Within the southern-most part of the proposed prescribed premises boundary (ID 7135 – Talkuwarrana). No construction or other activities proposed as part of this application for a works approval will occur in this area. Refer Figure 12.

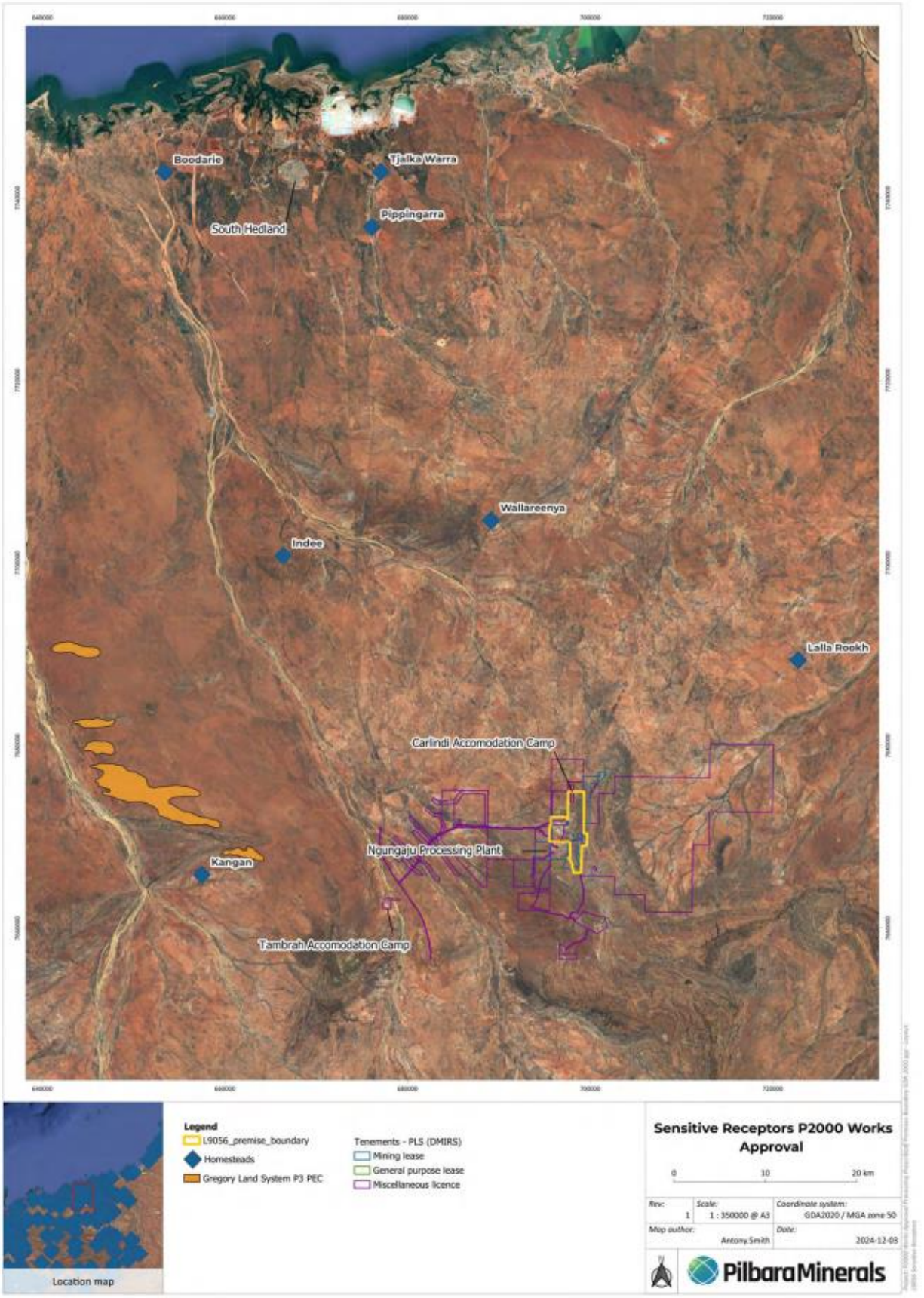

Figure 11: Locations of sensitive receptors

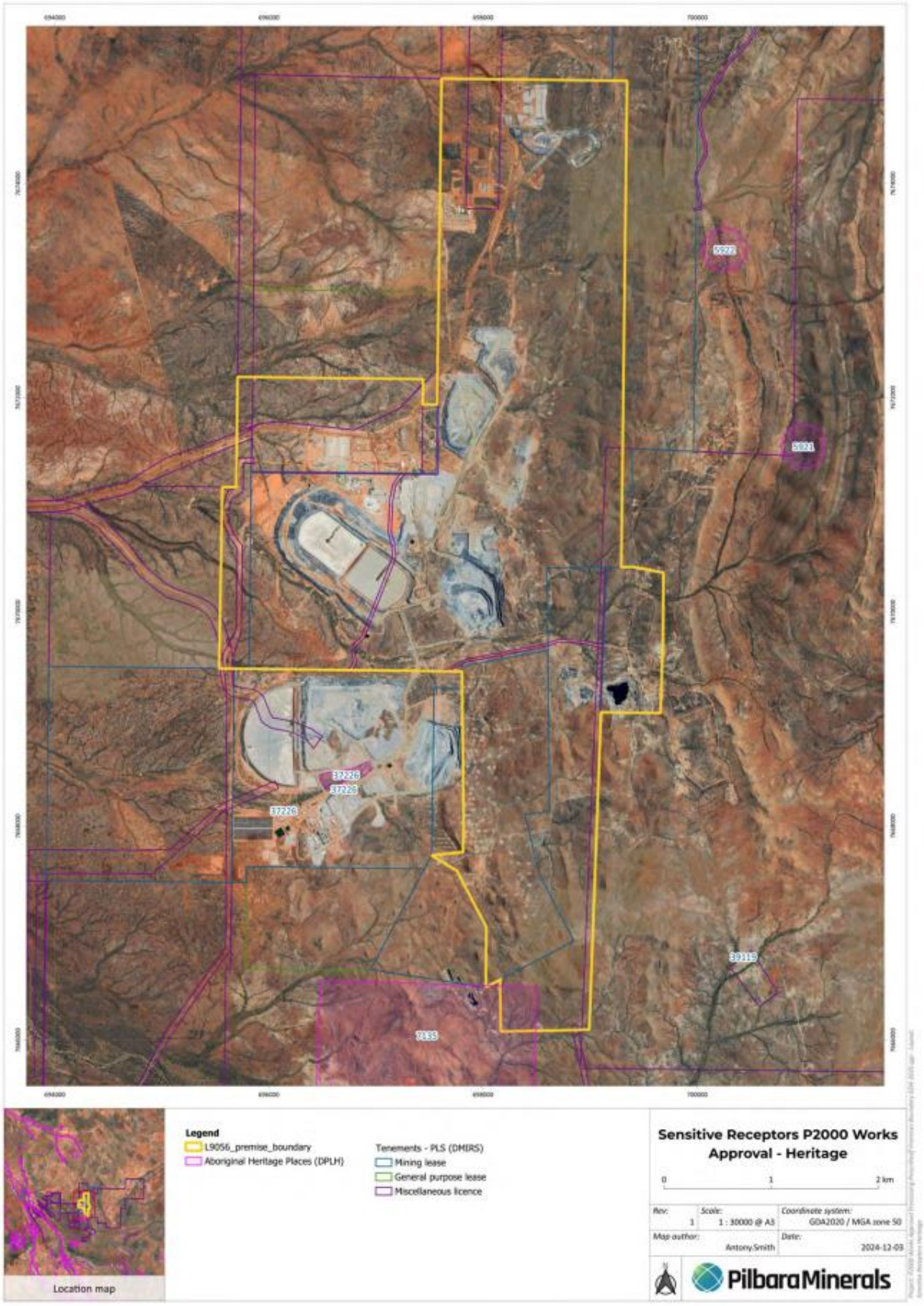

Figure 12: Locations of registered Aboriginal heritage places

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 8.

Works approval W3004/2025/1 that accompanies this decision report authorises construction, commissioning, and time-limited operations. The conditions in the issued works approval, as outlined in Table 8 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence amendment is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the infrastructure approved for construction under works approval W3004/2025/1 at the premises i.e. category 5, 6, 52, 54, and 73 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 amendment application.

Table 8: Risk assessment of potential emissions and discharges from the premises during construction, commissioning and operation under TLO

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								
Construction and installation of infrastructure Vehicle movements and earthworks	Dust	Air/windborne pathway causing impacts to nearby threatened and priority flora and native vegetation	Nearby threatened and priority flora and native vegetation	Refer to Section 3.1	C = Slight L = Possible **Medium Risk**	Y	N/A	N/A
Commissioning								
Category 54								
Commissioning of the WWTP and spray field	Spills and leaks of untreated influent, treatment chemicals or contaminated stormwater Treated effluent discharged via the spray field	Discharge to land causing death or decrease in health of nearby vegetation, or impacts to surface water, groundwater and/or soils	Nearby vegetation, surface water bodies (Pilgangoora Creek), groundwater (Pilbara Groundwater Area) and/or soils	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	N	Condition 1, 12, 13, 15-17 **Condition 1, 2, 14**	The applicant proposed controls and monitoring have been placed on the works approval as regulatory controls. Department controls: For consistency with the applicant's existing licence (L9056/2017/1), the department has included relevant controls from the licence in this works approval, including treatment criteria limits that align with the treatment criteria limits for the existing WWTP.
Operation ***(including under time-limited-operations)***								
Category 5								
Ore crushing, transfer and storage at P2000 processing plant	Dust	Air/windborne pathway causing impacts to nearby threatened and priority flora and	Nearby threatened and priority flora and native vegetation	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1, 22	The applicant proposed controls and monitoring have been placed on the works approval as regulatory controls.

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**				
Dewatered tailings stored at reclaim area and transferred to WRLs via conveyors or haul truck		native vegetation						
P2000 processing plant and tailings filtration plant	Leaks and spills of tailings, decant water, and contaminated water (metals/ metalloids), hydrocarbons, and chemicals	Overland run off causing impacts to adjacent threatened and priority flora and native vegetation, surface water, groundwater, and/or soils	Nearby vegetation, surface water bodies (Pilgangoora Creek), groundwater (Pilbara Groundwater Area) and/or soils	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	N	Condition 1, 22 **Condition 1, 22**	The applicant proposed controls and monitoring have been placed on the works approval as regulatory controls. Department controls: The applicant proposed that the sumps under the thickeners concrete slabs will have capacity equivalent to the maximum slurry bed. The department has included this as a control, however has specified that the sumps must have capacity equivalent to 110% of the maximum slurry bed to minimise the risk of overflow and spills. The department has also added a requirement for an alarm to be added to the tailings thickener to indicate if there is a leak, as well as regular inspections. This is consistent with the existing processing plant controls within licence L9056/2017/1. The applicant proposed that an earthen bund is installed around the tailings filtration plant area. The department has specified a minimum height for the bund (300 mm). The department has added a requirement for spill kits to be kept at the tailings filtration plant for use in the event of a leak or spill.
Servicing and maintenance of					C = Minor	N	Condition 1, 22	The applicant proposed controls and monitoring have been placed on the

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**				
vehicles and equipment in the HME area					L = Unlikely **Medium Risk**		**Condition 1, 22**	works approval as regulatory controls. Department controls: The department has specified a maximum TRH concentration (<15 mg/L) for treated hydrocarbon waste from the oily water separator. This is consistent with the existing oily water separator controls within licence L9056/2017/1.
Tailings and decant water pipeline transferring tailings and decant water					C = Moderate L = Possible **Medium Risk**	N	Condition 1, 22 **Condition 1, 22**	The applicant proposed controls and monitoring have been placed on the works approval as regulatory controls. Department controls: To ensure the pipelines are operating correctly and that there are no spills or leaks, the department has added a requirement for twice daily inspections as a regulatory control. This is consistent with the existing pipeline controls within licence L9056/2017/1.
Disposal of dewatered tailings at WRLs	Seepage or runoff of contaminated stormwater or tailings water from WRLs	Discharge to land causing death or decrease in health of nearby vegetation, or impacts to surface water, groundwater and/or soils	Nearby vegetation, surface water bodies (Pilgangoora Creek), groundwater (Pilbara Groundwater Area) and/or soils	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	N	Condition 1, 3-5, 10, 22-24, 31 **Condition 5-7, 36-39**	Refer to section 3.3
	Seepage or runoff of contaminated stormwater or tailings water from dewatered tailings stockpiles				C = Moderate L = Possible **Medium Risk**	Y	Condition 1, 22	Refer to section 3.3
Storage of reclaimed water from tailings filtration process	Seepage of reclaimed water and decant water through	Discharge to land causing death or decrease in health of nearby	Nearby vegetation, surface water bodies	Refer to Section 3.1	C = Minor L = Possible	N	Condition 1, 22, 23 **Condition 5-7, 25-**	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**				
and decant water from TSF3 decant water return pond in 5 ML dam	base of 5 ML dam	vegetation, or impacts to surface water, groundwater and/or soils	(Pilgangoora Creek), groundwater (Pilbara Groundwater Area) and/or soils		**Medium Risk**		**27, 36-39**	
Use of reclaimed water from tailings filtration process for dust suppression	Reclaimed water used for dust suppression	Discharge to land causing death or decrease in health of nearby vegetation, or impacts to surface water, groundwater and/or soils	Nearby vegetation, surface water bodies (Pilgangoora Creek), groundwater (Pilbara Groundwater Area) and/or soils	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	N	Condition 1, 22 **Condition 25-27**	Refer to section 3.3
Use of decant water from P2000 processing plant for dust suppression	Decant water used for dust suppression	Discharge to land causing death or decrease in health of nearby vegetation, or impacts to surface water, groundwater and/or soils	Nearby vegetation, surface water bodies (Pilgangoora Creek), groundwater (Pilbara Groundwater Area) and/or soils	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	N	Condition 1, 22 **Condition 25-27**	The applicant proposed controls are considered sufficient and have been placed on the works approval as regulatory controls. Department controls: To confirm the quality of the decant water, the department has added a requirement to monitor the decant water quality during time limited operations. Two samples are required to be taken approximately three months apart during time limited operations. The parameters to be sampled are the same as those currently outlined in licence L9056/2017/1 for decant water.
P2000 processing plant and HME area sedimentation ponds	Stormwater and potentially contaminated stormwater overflow	Discharge to land causing death or decrease in health of nearby vegetation, or impacts to surface water, groundwater	Nearby vegetation, surface water bodies (Pilgangoora Creek), groundwater (Pilbara	Refer to Section 3.1	C = Slight L = Possible **Low Risk**	Y	Condition 1, 22, 28	The applicant proposed controls are considered sufficient and have been placed on the works approval as regulatory controls.

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**				
		and/or soils	Groundwater Area) and/or soils					
Category 52								
Operation of additional diesel and natural gas generators	Air emissions	Air/windborne pathway causing impacts to nearby threatened and priority fauna	Nearby threatened and priority fauna	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 1, 22 **Condition 34, 35**	The applicant proposed controls are considered sufficient and have been placed on the works approval as regulatory controls. The plant will need to be maintained and operated as per the manufacturer's specifications. Additional controls: Monitoring in accordance with the operational licence will be required for compliance as part of the annual fee for the premises. To establish a baseline, the department has placed a requirement to monitor air emissions from the power station on the works approval as a regulatory control.
	Leaks and spills of hydrocarbons and chemicals	Overland runoff causing impacts to adjacent threatened and priority flora and native vegetation, surface water, groundwater, and/or soils	Nearby vegetation, surface water bodies (Pilgangoora Creek), groundwater (Pilbara Groundwater Area) and/or soils	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1, 22	The applicant proposed controls are considered sufficient and have been placed on the works approval as regulatory controls.
Category 54								
Operation of the WWTP and spray field	Spills and leaks of untreated influent, treatment chemicals or contaminated	Discharge to land causing death or decrease in health of nearby vegetation, or impacts to surface	Nearby vegetation, surface water bodies (Pilgangoora Creek),	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	N	Condition 1, 22, 23-25 **Condition 1, 2, 22**	The applicant proposed controls and monitoring have been placed on the works approval as regulatory controls. Department controls:

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**				
	stormwater Treated effluent discharged via the spray field	water, groundwater and/or soils	groundwater (Pilbara Groundwater Area) and/or soils					For consistency with the applicant's existing licence (L9056/2017/1), the department has included relevant controls from the licence in this works approval, including treatment criteria limits that align with the treatment criteria limits for the existing WWTP.
Category 73								
Storage of chemicals in additional tanks and IBCs	Spills/leaks of stored chemicals	Discharge to land causing death or decrease in health of nearby vegetation, or impacts to surface water, groundwater and/or soils	Nearby vegetation, surface water bodies (Pilgangoora Creek), groundwater (Pilbara Groundwater Area) and/or soils	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1, 22	The applicant proposed controls are considered sufficient and have been placed on the works approval as regulatory controls. The existing licence controls will also be applicable once the licence is amended.

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.

3.3 Detailed risk assessment for dewatered tailings disposal and reclaimed water reuse

3.3.1 Source

Tailings characterisation

To assess the likelihood for the potential release of harmful chemical constituents into tailings porewater, the applicant undertook the following geochemical tests on samples of tailings material from the two processing plants:

- a comprehensive analysis of their elemental composition, and a comparison of these concentrations with the Global Abundance Index (GAI) values for each element; and
- a determination of the acid-base account of the materials to assess whether they would be likely to release acidity and dissolved metals into tailings porewater.

The applicant determined that the results from the tests undertaken on the tailings samples indicates that the tailings are classified as Non-Acid Forming (NAF) based on the negligible sulfur contents, negative Net Acid Production Potential (NAPP) values and circumneutral net acid generation (NAG) pH results. Based on these results, the applicant determined there is no perceived risk of the tailings sample generating acid.

The applicant also submitted tailings samples for supernatant water testing to provide a preliminary indication of the water quality which may be encountered in the facility during operations. The applicant compared the results of the supernatant testing with reference water quality standards for release of water from mining operations and ANZECC/ARCANZ Guidelines (ANZECC/ARCANZ 2000) for livestock drinking water. The applicant found the supernatant water to be of reasonable quality with no exceedances however when compared with drinking water quality there were some elevated metal(loid)s.

L9056/2017/1 groundwater monitoring results

Under licence L9056/2017/1, the applicant is required to undertake regular groundwater monitoring at the premises and provide the results to the department each year. In the applicant's Annual Audit Compliance Report (AACR) for the 2023-2024 reporting period, the applicant advised of several parameters exceeding the concentration limits outlined in licence L9056/2017/1. These include:

- standing water levels at groundwater monitoring bores TMFMB01, TMFMB02, TMFMB04, TMFMB05, PMB001 and PMB002;
- TDS at groundwater monitoring bore PMB022;
- fluoride and vanadium at groundwater monitoring bore PMB022;
- sulfate, fluoride and vanadium at groundwater monitoring bore PMB022; and
- fluoride at groundwater monitoring bore PWE033.

The applicant has also notified the department of several exceedances between September 2024 and June 2025. The parameters and number of exceedances are:

- sulphate (SO_4), nine reported exceedances;
- TDS, nine reported exceedances;
- standing water levels, eight reported exceedances;
- fluoride, four reported exceedances;
- boron (dissolved), two reported exceedances; and

- vanadium, one reported exceedance.

The applicant has advised that exceedances in the standing water levels are likely a result of seepage from the TSF and groundwater recharge caused by rainfall over the wet season. Elevated concentrations of the other parameters was attributed to evapo-concentration of tailings water and interactions with groundwater due to seepage from the TSF.

The applicant identified a low tailings density as the cause of increased seepage from the TSF, and has undertaken measures to increase the percent of solids in tailings and deposit less water into the TSF. Seepage recovery bores have also been installed to allow for groundwater to be abstracted and reused for processing to lower standing water levels.

That applicant did not identify any environmental impacts that have occurred as a result of these exceedances.

Dewatered tailings

The applicant proposes to dispose of up to 9,500,000 tonnes per annum (dry) of dewatered tailings (15-20% moisture content) to TSF3 and the existing WRLs on an ongoing basis to reduce annual deposition rates into TSF3.

The applicant has completed a tailings storage density modelling assessment to understand the impacts of the increased throughput to the overall design and has evaluated a short-term and long-term sustained increase in tailings throughput to TSF3 alone without the disposal of dewatered tailings to WRLs. This contingency is intended to allow TSF3 to provide operational flexibility to cover the transitions between different WRLs and/or landform raises, as well as short-term strategies for equipment maintenance cycles.

The modelling indicated that a 5:1 waste:tailings blending ratio is an upper limit to the achievable blending ratio, which when considered against the life of mine planned waste volumes, provides sufficient material quantities to meet this ratio. A minimum deposition rate to TSF3 will be maintained for the purpose of the expected contingency operating cases and to also ensure that fugitive dust emissions from the TSF surface are minimised.

The outputs of the modelling are summarised in Table 9.

Table 9: Tailings storage density modelling results

Year	Total tailings produced at P2000 (Mt)	Waste supply (Mt)	Maximum tailings disposed to WRL (5:1 ratio) (Mt)	Minimum deposition of tailings to TSF3 (Mt)	Maximum tailings disposed to WRL (actual) (Mt)	Waste: tailings ratio
2029	9.50	76.85	15.37	1.00	8.50	9:1
2030	9.50	96.76	19.35	1.00	8.50	11:1
2031	9.50	81.57	16.31	1.00	8.50	10:1
2032	9.50	82.75	16.55	1.00	8.50	10:1
2033	9.50	83.21	16.64	1.00	8.50	10:1
2034	9.50	54.47	10.89	1.00	8.50	6:1
2035	9.50	83.9	16.78	1.00	8.50	10:1
2036	9.50	97.2	19.44	1.00	8.50	11:1

Year	Total tailings produced at P2000 (Mt)	Waste supply (Mt)	Maximum tailings disposed to WRL (5:1 ratio) (Mt)	Minimum deposition of tailings to TSF3 (Mt)	Maximum tailings disposed to WRL (actual) (Mt)	Waste: tailings ratio
2037	9.50	100.3	20.06	1.00	8.50	12:1
2038	9.50	100.04	20.01	1.00	8.50	12:1
2039	9.50	99.19	19.84	1.00	8.50	12:1
2040	9.50	102.24	20.45	1.00	8.50	12:1
2041	9.50	99.22	19.84	1.00	8.50	12:1
2042	9.50	89.98	18.00	1.00	8.50	11:1
2043	9.50	74.88	14.98	1.00	8.50	9:1
2044	9.50	56.86	11.37	1.00	8.50	7:1
2045	9.50	31.68	6.34	3.16	6.34	5:1

Reclaimed water

The applicant proposes to direct the water reclaimed from the tailings filtration plant into the 50 ML TSF3 decant water return pond, located within the L9036/2017/1 prescribed premises boundary, after which it may be redirected to an existing 5 ML dam, located within the L9056/2017/1 prescribed premises boundary, for temporary storage prior to reuse in dust suppression. The 5 ML dam was originally constructed to hold raw water for use in dust suppression and consists of a HDPE liner and maintains a 500 mm freeboard.

The applicant has advised that the quality of reclaimed water from the tailings filtration plant will reflect the quality of the decant water currently produced at the premises, which is approved for reuse in dust suppression under licence L9056/2017/1.

3.3.2 Pathway

Groundwater

The premises is located within the Pilbara Groundwater Area. The nearest groundwater dependent ecosystem to the project is the Chinnamon Creek system, approximately 2 km south of the premises.

The results of previous field investigations within the premises tenements indicate generally low permeability conditions across the site with several discrete features within the fresh bedrock (including adjacent to Pilgangoora Creek) reporting modest permeability (Pilgangoora Operations 2024). Groundwater flow at the site is towards the west, away from the groundwater divide located to the east of the premises and towards Pilgangoora Creek.

Groundwater salinities in the area are typically fresh to slightly brackish, ranging from about 400 to 3,000 mg/L Total Dissolved Solids (TDS). This low salinity groundwater is typical of areas most affected by direct rainfall recharge, e.g. near catchment divides and within shallow alluvium. Higher salinity groundwater typically occurs lower down in catchments and possibly also within deeper fractured rock aquifers (Pilgangoora Operations 2024).

Surface water

The premises is located within the Pilbara Surface Water Area and falls within the Pilgangoora Creek catchment area. The Pilgangoora Creek catchment is 18.1 km^2 and drains mainly in an east to west direction across the premises, with some flow to the north and south. This catchment ultimately reports to the Turner River downstream (west) of the premises (Pilgangoora Operations 2024).

There are multiple ephemeral creeks located within the catchment area and within the premises. These creeks are normally dry throughout the year, with flows generally only occurring between January to March following heavy rainfall events. Some disconnected pools may be present in the creek beds during the dry season if groundwater levels remain high enough (Pilgangoora Operations 2024).

3.3.3 Proposed management and monitoring measures

Refer to section 3.1.1 for the applicant's proposed management and monitoring measures.

3.3.4 Department assessment and regulatory controls

Dewatered tailings disposal

The closest receptors that may be sensitive to impacts from the disposal of dewatered tailings at the WRLs are Pilgangoora Creek and the groundwater in the area. As some of the WRLs are adjacent to Pilgangoora Creek, the consequence rating for impacts is considered 'moderate'. The extent of seepage through the WRLs is not expected to be significant given the low moisture content of the dewatered tailings and the climate of the area (including high evaporation rate), however the applicant has not advised that the WRLs are lined so the likelihood is considered to be 'possible'. The overall risk rating is therefore considered to be 'medium'.

Given the risk rating, the regulatory controls outlined in Table 10 will be placed on the works approval.

Table 10: Regulatory controls (dewatered tailings disposal)

Condition	Justification
1	The applicant proposed controls for the WRLs, including the construction of toe drains and crest bunds at the WRLs, have been added to the works approval as regulatory controls.
3, 4	The applicant proposed groundwater monitoring wells near the WRLs have been added to the works approval as regulatory controls.
5, 6, 7	To establish a baseline for the groundwater near the WRLs prior to the disposal of dewatered tailings, the department has added a requirement for a singular sampling event to be undertaken prior to commencement of time limited operations. A sample is required to be taken from the new groundwater monitoring wells constructed under this works approval, as well as from the applicant's existing groundwater monitoring wells west of the South WRL1. The parameters to be sampled are the same as those currently outlined in licence L9056/2017/1 for groundwater.
22, 24	The applicant proposed maximum disposal rate of dewatered tailings to the WRLs has been added to the works approval as a regulatory control.
36, 37, 38, 39	To determine whether there are impacts to groundwater occurring from the disposal of dewatered tailings at the WRLs, the department has added a requirement for regular monitoring of groundwater from the specified groundwater monitoring wells.

Condition	Justification
	Given the number of exceedances of the standing water level and the concentrations of several parameters outlined in section 3.3.1 recorded at multiple bores since September 2024, the department considers that monthly monitoring is required for key parameters. For other parameters, two samples are required to be taken approximately three months apart during time limited operations. The department notes that the applicant has identified a low tailings density and high water content as the cause of increased seepage from the TSF and the recorded exceedances. In addition to the WRLs, the applicant has stated that a portion of the dewatered tailings, which have a moisture content of 15-20%, will be disposed of at the TSF. This will result in an overall increase of tailings density in the TSF. Monthly monitoring of the relevant parameters will allow for any changes in groundwater monitoring results and parameter exceedances as a result of the disposal of dewatered tailings into the TSF to be clearly identified. This will provide further information on whether seepage due to a low tailings density and high water content is the potential cause of the recorded exceedances. Samples are required to be taken from the new groundwater monitoring wells constructed under this works approval, as well as from the applicant's existing groundwater monitoring wells west of the South WRL1. The parameters to be sampled are the same as those currently outlined in licence L9056/2017/1 for groundwater. The frequency of sampling will be reviewed at the licence application stage, once the results of the monitoring undertaken under this works approval are made available to the department.

Reclaimed water reuse

The closest receptors that may be sensitive to impacts from the discharge and reuse of reclaimed water are Pilgangoora Creek, groundwater, soils, and vegetation near the 5 ML dam and the proposed discharge points. As the quality of the reclaimed water will align with the quality of the existing decant water, the consequence rating for impacts is considered to be 'minor'. The extent of the dust suppression discharge area is across most of the L9056/2017/1 premises and includes locations adjacent to Pilgangoora Creek, so the likelihood is considered to be 'possible'. The overall risk rating is therefore considered to be 'medium'.

Given the risk rating, the regulatory controls outlined in Table 11 will be placed on the works approval.

Table 11: Regulatory controls (reclaimed water reuse)

Condition	Justification
5, 6, 7	To establish a baseline for the groundwater near the 5 ML dam prior to the discharge of reclaimed water, the department has added a requirement for a singular sampling event to be undertaken prior to commencement of time limited operations. Samples are required to be taken from some of the applicant's existing groundwater monitoring wells west and east of the 5 ML dam. The parameters to be sampled are the same as those currently outlined in licence L9056/2017/1 for groundwater. The department notes that under licence L9056/2017/1, regular groundwater sampling at the specified bores is already undertaken at varying frequencies for the required parameters. This condition has been set to ensure that there is a recent sample of all parameters prior to the commencement of time limited operations.
23	The department has specified where reclaimed water from the tailings filtration plant may be discharged to. Areas where reclaimed water may be discharged for dust suppression align with the

Condition	Justification
	authorised areas for discharge of decant water for dust suppression under licence L9056/2017/1.
24	The department has specified a discharge limit for reclaimed water directed to the 5 ML dam to ensure that the 500 mm freeboard at the 5 ML dam is maintained at all times.
25, 26, 27	The applicant advised that the quality of reclaimed water will align with the quality of decant water current produced at the premises, which is currently approved for reuse in dust suppression under licence L9056/2017/1. To confirm the quality of the reclaimed water, the department has added a requirement to monitor the reclaimed water quality during time limited operations. Two samples are required to be taken approximately three months apart during time limited operations. The parameters to be sampled are the same as those currently outlined in licence L9056/2017/1 for decant water. The frequency of sampling will be reviewed at the licence application stage, once the results of the monitoring undertaken under this works approval are made available to the department.
36, 37, 38, 39	To determine whether there are impacts to groundwater occurring from the discharge of reclaimed tailings to the 5 ML dam, the department has added a requirement for regular monitoring of groundwater from the specified groundwater monitoring wells. Two samples are required to be taken approximately three months apart during time limited operations. Samples are required to be taken from some of the applicant's existing groundwater monitoring wells west and east of the 5 ML dam. The parameters to be sampled are the same as those currently outlined in licence L9056/2017/1 for groundwater. The frequency of sampling will be reviewed at the licence application stage, once the results of the monitoring undertaken under this works approval are made available to the department.

4. Consultation

Table 12 provides a summary of the consultation undertaken by the department.

Table 12: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 6 March 2025.	None received.	N/A
Shire of East Pilbara advised of proposal on 27 February 2025.	None received.	N/A
Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) advised of proposal on 27 February 2025.	None received.	N/A

Department of Planning, Lands and Heritage (DPLH) advised of proposal on 28 February 2025.	DPLH replied on 13 March 2025, stating that no approvals under the *Aboriginal Heritage Act 1972* are required for the proposed activities. DPLH also advised that the applicant needs to contact the Aboriginal Heritage Conservation Team for their own advice prior to the commencement of works, given that the granting of the works approval will facilitate development in the area.	N/A
Department of Health (DoH) advised of proposal on 27 February 2025.	DoH replied on 19 March 2025, advising that: • The proposal is required to comply with the provisions of the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*; • All drinking water provided on site must meet the health-related requirements and risk management framework set out in version 3.7 of the Australian Drinking Water Quality Guidelines 2011; and • Any non-drinking water (i.e. water that is not intended or suitable for drinking) must be managed to ensure it cannot be confused with or contaminate the drinking water supply. The DoH recommended that: • An effective dust management plan be developed and implemented during proposed site works and during air drying of tailings; • The plants, once operational, comply with any regulatory air emissions, including greenhouse gases, to minimise impacts on the regional air shed; and • Best practice is employed with respect to managing air emissions when optimising systems, during equipment failures and other operations that may result in excessive emissions to air during the life of the plants.	The department recommends that that applicant contacts DoH for further information if they are unsure or have queries regarding DoH's advice and recommendations. The department also notes that the following DoH guidance material may be useful for the applicant: • Mine sites and exploration camps – drinking water supply; and • Mine sites exploration camps and construction villages – public health factors.
Nyamal Aboriginal Corporation advised of proposal on 27 February 2025.	None received.	N/A
Wallareenya Station advised of proposal on 27 February 2025.	None received.	N/A

Applicant was provided with draft documents on 9 July 2025.	The applicant provided a response to the draft documents on 30 July 2025. The applicant provided the further information requested by the department and had no further comments on the draft documents.	The department has amended the decision report and works approval with the additional information provided by the applicant.

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. Following compliance, TLO and application and approval for a licence amendment, the associated infrastructure may be operated.

References

1. Australian and New Zealand Environment and Conservation Council (ANZECC) 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Canberra, Australian Capital Territory.
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
4. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
5. Pilgangoora Operations 2024, *P2000 Works Approval – Supporting Information*.