

Aragon Resources Pty Ltd (ACN 114 714 662)

L8103/1999/3 Works Approval Application Supporting Documentation

TSF2 Construction to 525mRL & Callies In-Pit Tailings Storage Facility Construction Fortnum Gold Project

April 2025

Company Aragon Resources Pty Ltd (100% owned subsidiary of Westgold Resources Pty Ltd	
Mining Tenements (Mineral Field 52)	M52/6, M52/95, M52/96, M52/98, M52/99, M52/132, M52/133, M52/125, M52/5 and L52/172
Mining Area	Fortnum Gold Operations

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1. INTRODUCTION

1.1 Overview

Aragon Resources Pty Ltd (Aragon), a wholly owned subsidiary of Westgold Resources Limited, operates the Fortnum Gold Operation (FGO), encompassing the Fortnum and Horseshoe Projects. This document outlines an application for a Works Approval to construct TSF2 above current approved height of 520 metres reduced level (mRL) to a final height of 525 mRL and Callies In-Pit Tailings Storage Facility (CPTSF) at FGO. The proposed raise of current TSF2 will occur in staged lifts to have a final maximum height of 525 mRL and will cover an area of 55.58 hectares (ha). The proposed CPTSF will have a maximum height of 500 mRL and cover an area of 11.40 ha. These facilities will be located within the Prescribed Premises Boundary as defined in the *Environmental Protection Act 1986* (EP Act) Licence L8103/1993/3.

1.2 Licensee and Occupier

All correspondence should be forwarded by post or email to the contact details in Table 1.



1.3 Instrument History

Operations at FGO recommenced in May 2011, resulting in the re-issuance of EP Act licence L8103/1989/3. Initially granted to Aragon in November 2015, the current licence authorises a 1,100,000 tonne per annum processing facility (Category 5), 3,137,253 tonne per annum mine dewatering (Category 6), a 500 tonne per annum landfill (Category 89), and 200,000 tonne per annum material screening (Category 12). A summary of previous licence modifications is presented in Table 2.

Instrument	Issued	Description	
W5297/2012/1	24/12/2012	An embankment lift to above ground Tailings Storage Facility 2 (TSF2).	
W5297/2013/1	10/10/2013	Dewatering the pit lakes from Tom's and Yarlarweelor Pits and discharge into Yarlarweelor Creek.	
L8103/1989/3	26/05/2011	Licence re-issue. Premises was under care and maintenance for years.	
L8103/1989/3	23/11/2015	Changed occupier from Grosvenor Gold Pty Limited to Aragon Resources Pty Ltd.	
L8103/1989/3	19/05/2016	Licence re-issue with extension to licence duration to 14 June 2035. Amended to include recent works completed at Fortnum through Works Approval W5491/2013/1, and to increase the throughput for category 5.	
L8103/1989/3	15/12/2016	Amendment Notice 1: Licence Holder initiated amendment to increase the capacity of the TSF2 by lifting the height of the embankments at both cells. In addition to this: changes to dewatering program and discharge between the Starlight, Tom's Callie's	

Table 2: Instrument History



Instrument Issued Description		Description
		South, Eldorado and Trev's Pits as well as continuing a final discharge to the Yarlarweelor Creek.
L8103/1989/3	5/10/2018	Amendment Notice 2: Licence Holder initiated amendment to include tenement M52/6 within the Prescribed Premises. Dewatering of approximately 637,253 tonnes to be removed from the existing pit lake and removal of groundwater inflows during mining operations. Also to construct a new pipeline to convey water from Nathan's Pit to the existing water pipeline network located in the main mining hub (within tenement M52/132). Dewater from Nathan's will primarily be discharged/stored in Tom's Pit and used for processing and dust suppression. Premises boundary.
L8103/1989/3	26/02/2019	Amendment Notice 3: Licence Holder initiated amendment to discharge tailings to an existing pit known as Tom's Pit.
L8103/1989/3	17/04/2020	DWER initiated amendment to consolidate/amalgamate separately issued amendment notices 1 to 3 in the Licence.
L8103/1989/3	28/10/2020	Amendment Notice 4: Category 5 - increase in the production capacity to 1,100,000 tonnes per annual period relating to reprocessing of tailings for the production of paste fill; Category 89 - increase in production capacity to 300 tonnes per annual period relating to the construction and operation of Yarlarweelor WRL landfill; Category 12 I addition of category relating to the operation of a mobile crusher; and, Disposal of tyres at Starlight pit and Toms in-pit TSF.
L8103/2018/1	11/11/2021	Amendment Notice 5: Category 5 - construction of Eldorado In-Pit TSF. Category 6 - Allow discharge of dewater from Labouchere Pit to Nathan's Pit and Callies's North Pit to Callies South Pit.
W6969/2024/1	10/01/2025	Amendment Notice 6: Category 5 - construction of Nathans In-Pit TSF.

1.4 Location, Tenure and Site Layout Plans

The Fortnum Project is situated 850 kilometres (km) northeast of Perth and 150 km northwest of Meekatharra, within the Shire of Meekatharra. Located at the northern boundary of the Gascoyne and Murchison regions of Western Australia (Figure 1), the Project encompasses the tenements listed in Table 3. An overview of the Project area is provided in Figure 2.

Mining Tenement	Holder	Mining Area	Area (ha)	Expiry
L52/172	Aragon Resources Pty Ltd	Nathans	16.30	26/04/2038
M52/5	Aragon Resources Pty Ltd	Labouchere	464.85	19/04/2025
M52/6	Aragon Resources Pty Ltd	Nathans	479.60	19/04/2025
M52/95	Aragon Resources Pty Ltd	Fortnum	649.30	07/02/2030
M52/96	Aragon Resources Pty Ltd	Fortnum	682 .70	07/02/2030
M52/98	Aragon Resources Pty Ltd	Fortnum	910.60	07/02/2030
M52/99	Aragon Resources Pty Ltd	Fortnum/Nathans	486 .1 5	07/02/2030
M52/125	Aragon Resources Pty Ltd	Regent	309.80	29/12/2030
M52/132	Aragon Resources Pty Ltd	Fortnum	698.20	10/05/2031
M52/133	Aragon Resources Pty Ltd	Fortnum	879.70	10/05/2031

Table 3: Details of Mining Tenure Listed on L8103/1989/3





Figure 1: Fortnum L8103 Prescribed Premises Regional Location



Figure 2: L8103 Prescribed Premises Boundary



2. PRESCRIBED PREMISES ACTIVITIES

The currently approved and proposed prescribed premises activities for this works approval application and subsequent L8103/1989/3 amendment application are listed in Table 4.

Category Number	Category Description	Approved Production or Design Capacity	Proposed Premises Production or Design Capacity	Proposed Amendment
5	Processing or beneficiation of metallic or non-metallic ore	1,100,000 tonnes per annual period	1,100,000 tonnes per annual period	Addition of: • CPTSF • TSF2 raise to 525mRL Construction activities, discharge location and operation of associated supporting infrastructure.
6	Mine dewatering: premises on which water is extracted and discharged into the environment to allow mining of ore	3,137,253 tonnes per annual period	3,137,253 tonnes per annual period	No change requested.
89	Putrescible landfill site: premises on which waste is accepted for burial	300 tonnes per annual period	300 tonnes per annual period	No change requested.
12	Screening etc. of material	20,000 tonnes per annual period	20,000 tonnes per annual period	No change requested.

Table 4: L8103/1989/3 Approved and Proposed Prescribed Premises Activities

2.1 Category 5: Processing or Beneficiation of Ore

Aragon seeks approval to construct a new in-pit TSF at the Callies' Pit (CPTSF) within the Fortnum mining area on tenement M52/132, and; raise the height of the existing TSF2 facility from the current approved 520mRL to a proposed final height of 525mRL. The facility is located on tenements M52/96 and M52/132.

Fortnum TSF2 is scheduled to reach capacity in December 2026 at the current approved final height. With the new proposed increase of final height, it is anticipated that TSF2 will not reach capacity until 2028. The proposed CPTSF will serve as secondary tailings storage for the Fortnum Processing Facility along with the Nathans In-Pit TSF when capacity of TSF2 is reached.

2.1.1 Callies' In-Pit TSF (CPTSF)

Located 1 km south of the Fortnum Processing Facility, the CPTSF will be constructed within the existing Callies' Pit. The facility will have an area of approximately 11.40 ha. Based on an annual ore processing rate of 0.85 million tonnes per annum (Mtpa), in-situ tailings density of 1.4 tonnes per cubic metre (tonnes/m³) and a storage capacity of 2 million tonnes (Mt), the CPTSF will accommodate tailings for 2.4 years. Geotechnical assessments have confirmed the stability of the existing pit walls and access ramp for use as the CPTSF embankments. Detailed geotechnical and design information is provided in the CPTSF geotechnical and design construction report (TailCon, 2025) (Appendix B).

Tailings will be conveyed to the CPTSF via a bunded high-density polyethylene (HDPE) pipeline. Spigots will be installed to optimise deposition and facilitate controlled discharge. Similarly, tailings are conveyed to TSF2 via a HDPE pipeline with spigots installed to optimise deposition and control discharge.

Water from CPTSF will be recovered from a decant pond initially formed near the access ramp following deposition from the northwest and southwest spigot. Subsequent tailings deposition from the west and north spigot points will gradually displace the decant pond towards the east and southeast as the pit fills. Spigots will be operated in a clockwise sequence until deposition is complete. A floating suction pump will extract water from the supernatant within the CPTSF decant pond for return to the Fortnum Processing Facility. The anticipated return water flow rate is 1,500 m³ to 2,400 m³ per day. As tailings levels increase, the pump will be repositioned along the access ramp.

Aragon proposes to install four monitoring bores CMB1, CMB2, CMB3 and CMB4 around the CPTSF perimeter to enable monitoring of facility performance.

2.2 TSF2

TSF2 operates as the active TSF at the Fortnum project, located approximately 1 km south-west of the processing facility. The facility consists of two separate cells. Deposition occurs to one cell at a time which allows upstream lifts on the opposite cell. Aragon has approval to complete upstream lifts to both TSF2 cells to 520mRL and is seeking approval to increase the final height to 525mRL. Geotechnical assessments have confirmed that stockpiled laterite material and reclaimed tailings are suitable for use to construct upstream embankments for the proposed lift of TSF2. Detailed geotechnical and design information is provided in the Fortnum Gold Operation – TSF2 RL525m Concept Design, found in Appendix B.

Water from TSF2 is recovered from a decant pond formed around a central decant ring, subsequent tailings deposition occurs will occur from all cardinal directions in a clockwise sequence containing the water around the central decant until deposition is complete. The return water flow rate from TSF2 is approximately 2,300 m³per day from the decant.

There are seven monitoring bores (Creek Bore, Junction Bore, MB1, MB2, MB3, MB4 & MB5) installed around TSF2 to monitor the performance of the facility. Aragon proposes to continue to utilise these bores to monitor performance of the facility.

3. OTHER APPROVALS

3.1 Mining Act 1978

The Fortnum Mining Proposal and Mine Closure Plan (REG ID 12969), which includes the Nathans In-Pit Tailings Storage Facility project, was approved under the *Mining Act 1978* on 17 January 2025. Aragon is currently preparing a revised Mining Proposal and Mine Closure Plan (REG ID 126920). This document will be submitted to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) for evaluation prior to the initiation of construction and discharge activities at the CPTSF and raise of TSF2 to 525mRL. Submission to DEMIRS is scheduled for April 2025.

3.2 Environmental Protection Act 1986 (Native Vegetation Clearing)

Native vegetation clearing for the CPTSF and associated infrastructure is authorised under Native Vegetation Clearing Permit (NVCP) Purpose Permit 6837/2. Valid until 31 January 2026, this permit covers the Fortnum mining area and related transport corridors. The NVCP is provided in Appendix I.

3.3 Rights in Water and Irrigation Act 1914

Aragon holds a *Rights in Water and Irrigation Act 1914* water abstraction licence (GWL 159877(12)), which authorises the combined extraction of up to 3,700,000 kilolitres from pits and production bores at the Fortnum Project, including the Callies Pit. An amendment application for this licence (GWL 159877(13)) to include the approved but not constructed Regent-Messiah pits is currently being prepared for submission to DWER.

There are currently 223,960 kL of water in Callies Pit. Prior to construction and discharge activities at the CPTSF, this stored water will be pumped to the process water pond for use in the Fortnum gold processing facility. There will be no discharge to the environment.

Water recovered from the CPTSF will be recycled within the processing circuit and therefore excluded from the groundwater abstraction allocation. While localised groundwater seepage is anticipated around the facility, it will be monitored through water recovery and the proposed monitoring bore network. The water abstraction licence GWL 159877(12) is provided in Appendix I.

3.4 Local Government

No local government approvals are required to undertake the proposed activities.

4. STAKEHOLDER ENGAGEMENT

A register of Stakeholder Engagement for the Fortnum operations is presented in Appendix A.

5. SENSITIVE RECEPTORS

The nearest town to the project is Meekatharra, situated 150 km southeast of Fortnum. The closest residences are the Milgun and Yarlarweelor homesteads, located 25 km north and 42 km west of the project area, respectively. The Yulga Jinna Aboriginal Community is 40 km southeast.

No negative social impacts are anticipated from the proposed licence amendment. A list of residential and socially sensitive locations is provided in Table 5, while sensitive environmental receptors are identified in Table 6 and Figure 3.



Residential and Social Sensitive Premises	Distance from Prescribed Premises
Milgun Station and Homestead	25 km north (Homestead)
Yarlarweelor Station and Homestead	42 km west (Homestead)
Yulga Jinna Aboriginal Community	40 km south-east

Table 5: Socio-Economic Receptors and Distance from Prescribed Premises Boundary

Table 6: Environmental Receptors and Distance from Prescribed Premises Boundary

Sensitive Premises	Distance from Prescribed Premises
Milgun Central Calcrete groundwater assemblage Robinson Range (Priority 1)	133 km to buffer
Robinson Range BIF (Priority 1)	A portion lies within the buffer
Milgun South Calcrete groundwater assemblage Robinson Range (Priority 1)	14 km to buffer
Frederick Land System (Priority 3)	4 km to buffer
Bubbagundy Land System (Priority 3)	15 km to buffer
Labouchere Well Water Reserve R1196	15 km north-east
Native Vegetation (Priority 1, Priority 3)	1km
Yarlarweelor Creek	3 km south
Minor Non-Perennial Water Courses	1 km east
Gascoyne River	40 km north
Murchison River	50 km south
Former Pastoral Station	15 km south



Figure 3: Fortnum L8103 Sensitive Receptors

6. EXISTING ENVIRONMENT

6.1 Hydrogeology

The Project is situated within the Proterozoic Bryah Basin, an area characterised by folded and faulted geological structures between the Archean Pilbara and Yilgarn Cratons (Golder Associates, 2012). The region's geology comprises sandstone, shale, greywacke, conglomerate, and basalt formations (Tille, 2006).

Groundwater in the Fortnum area is primarily hosted within fractured rock aquifers exhibiting low hydraulic conductivity (Rockwater, 2018) and (Rockwater, 2021). These aquifers are associated with geological features such as fractures, faults, and contact zones between different rock types. Shallow, unconfined aquifers also exist within colluvial and calcrete deposits up to 30 m thick.

More permeable zones linked to orebodies have developed in areas with significant geological deformation, such as the jasperoid units at the Yarlarweelor Pit (O'Bryan and Associates, 2006) and sheared gold-bearing quartz reefs within the Labouchere Formation (Elias, 1980). A quartzite ridge in the Labouchere Formation, approximately 1.5 km west of the project, also hosts a water supply borefield (Gleneagle Gold Limited, 2006). Conversely, lithologies without significant structural deformation, like siltstone and greywacke, exhibit low conductivity. Pressure injection tests conducted by Coffey & Partners (1989) at the TSF2 site revealed very low hydraulic conductivities, indicating minimal groundwater inflow to pits in the Fortnum region. This finding aligns with observations at Tom's (Rockwater, 2018), El Dorado (Rockwater, 2021a), Regent-Messiah (Rockwater, 2021c) and Nathans's (Rockwater, 2021).

Groundwater flow in the vicinity of the Fortnum Project generally moves northward towards the Gascoyne River (Rockwater, 2024). A conceptual hydrogeological model is presented in Figure 4.



Figure 4: Fortnum Conceptual Hydrogeological Model

6.1.1 Process Solution Chemistry

A representative process solution water sample from the Fortnum operation was collected in February 2024 and analysed at a NATA-accredited laboratory. The analysis indicates an alkaline pH, brackish total dissolved solids (TDS), and low levels of heavy metals across all measured parameters. These water quality characteristics are typical of tailings water expected within the CPTSF and TSF 2.

Detailed results are presented in Table 7, with the full laboratory report provided in Appendix C.

Analyte Name	Units	Result
pH**	pH Units	10.8
Conductivity @ 25 C	µS/cm	3300
Total Dissolved Solids Dried at 175-185°C	mg/L	2100
Arsenic	μg/L	8
Antimony	μg/L	5
Boron	μg/L	640
Cadmium	μg/L	0.2
Chromium	µg/L	1
Cobalt	μg/L	44
Copper	μg/L	16000
Iron	μg/L	190
Lead	μg/L	<1
Manganese	μg/L	<1
Nickel	µg/L	65
Selenium	μg/L	86
Thallium	μg/L	<1
Zinc	μg/L	110
Mercury	mg/L	<0.00005
Sodium, Na	mg/L	58 0
Potassium, K	mg/L	35
Calcium, Ca	mg/L	24
Magnesium, Mg	mg/L	<0.1
Total Hardness by Calculation	mg CaCO3/L	59
Carbonate Alkalinity as CO3	mg/L	83
Bicarbonate Alkalinity as HCO3	mg/L	<5
Sulphate, SO4	mg/L	380
Chloride, Cl	mg/L	520
Nitrate Nitrogen, NO ₃ as N	mg/L	18
Nitrite, NO ₂ as NO ₂	mg/L	2.6
Nitrate, NO ₃ as NO ₃	mg/L	81
Total Cyanide	mg/L	98
Weak Acid Dissociable Cyanide (WADCN)	mg/L	91
Hexavalent Chromium, Cr6+	mg/L	0.011

Table 7: Fortnum Tailings Solution Water Quality February 2024

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Fortnum Processing (Fortnum Tailings









6.1.2 Callies Pit Local Groundwater Quality

The results from water samples collected from Callies Pit indicate a sodium-chloride water type with a moderately alkaline pH. TDS levels are classified as brackish but suitable for cattle consumption. Heavy metal concentrations are low.

The water quality characteristics observed in the Callies Pit (Table 8, Figure 7, Figure 8) are representative of natural groundwater conditions in the area. The full laboratory report is provided in Appendix C.







Figure 8: Callies Pit pH (Lab)

Table 8: Callies Pit Groundwater Quality

Analyte	31/01/2016	19/07/2017	14/10/2018	10/10/2019	13/10/2020	14/10/2021	23/10/2022	17/10/2023	20/10/2024	12/01/2025
Alkalinity (Total) (mg CaCO3/L)	140		120	140						
Alkalinity Bicarbonate as HCO3 (mg/L)	170	180	130	83	58	120	120	5	120	97
Alkalinity Carbonate as CO3 (mg/L)	1	1	4	44	1	1	1	1	1	1
Aluminium (Dissolved) as Al (mg/L)				0.005						
Ammonia/Ammonium as NH3 (mg/L)										
Antimony (Dissolved) as Sb (mg/L)			0.001		0.001	0.002	0.002	0.002	0.002	0.001
Arsenic (Dissolved) as As (mg/L)			0.001	0.001	0.001	0.001	0.001	0.001	0.0013	0.001
Benzene (µg/L)						0.001	0.001	0.5	1	1
Boron (Dissolved) as Bo (mg/L)					0.32	0.79	0.62	0.61	0.53	0.45
Cadmium (Dissolved) as Cd (mg/L)			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
Calcium (Dissolved) as Ca (mg/L)	34	40	31	27	35	99	74	70	75	61
Chloride (Dissolved) as Cl (mg/L)	140	140	200	320	99	240	210	160	200	160
Chromium (Dissolved) as Cr (mg/L)			0.008	0.013	0.001	0.001	0.001	0.001	0.0009	0.0007
Chromium Hexavalent as Cr6+ (mg/L)	<0.001	0.001			0.001	0.011	0.002	0.001	0.001	0.001
Cobalt (Dissolved) as Co (mg/L)			0.003	0.001	0.001	0.001	0.001	0.001	0.0005	0.0005
Conductivity (@ 25 C, Lab) (µS/cm)	862		1100	1900	920	2100	1700	1100	1600	1300
Copper (Dissolved) as Cu (mg/L)	0.001		0.001	0.005	0.005	0.007	0.001	<0.004	<0.0012	<0.002
Cyanide (WAD) (mg/L)								<0.004	<0.004	<0.004
Cyanide (Total) (mg/L)								<0.004	<0.004	<0.004
Iron (Dissolved) as Fe (mg/L)			0.005	0.005	0.046	0.005	0.005	0.005	0.017	0.006
Lead (Dissolved) as Pb (mg/L)	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
Magnesium (Dissolved) as Mg (mg/L)	26	28	34	56	17	44	36	35	34	26
Manganese (Dissolved) as Mn (mg/L)				0.001	0.029	0.036	0.046	0.007	0.033	0.01 6
Mercury (Dissolved) as Hg (mg/L)				0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
Nickel (Dissolved) as Ni (mg/L)	0.001		0.001	<0.001	<0.001	<0.005	<0.003	<0.002	<0.002	<0.002
Nitrate as N (mg/L)					36		260	1.5	45	36
Nitrate as NO ₃ (mg/L)			45	100	160	81	260	6.6	200	160
Nitrite as NO ₂ (mg/L)			0.3	1	3.1	5.2	5	7.5	3.5	4.9
pH (Lab) (units)	8	8	8.4	9.2	7.8	8.1	8	8.1	8.2	8.2
Potassium (Dissolved) as K (mg/L)	16	16	17	23	10	24	19	19	19	15
Selenium (Dissolved) as Se (mg/L)			0.003	0.009	0.003	0.005	0.005	0.008	0.006	0.005
Sodium (Dissolved) as Na (mg/L)	97	110	120	220	80	190	160	180	170	130
Sulphate as SO4 (mg/L)	120	110	130	210	100	250	220	150	240	200
Thallium (Dissolved) as Tl (mg/L)					<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
ZINCCC										

·		Callies Bore
Analyte	Units	20/10/24
Alkalinity (Total) (as CaCO3)	mg/L	230
Alkalinity Bicarbonate as HCO3	mg/L	170
Alkalinity Carbonate as CO3	mg/L	<1
Antimony (Dissolved) as Sb	µg/L	<1
Arsenic (Dissolved) as As	µg/L	< 0 .5
Boron (Dissolved) as Bo	µg/L	66 0
Cadmium (Dissolved) as Cd	µg/L	0.42
Calcium (Dissolved) as Ca	mg/L	43
Chloride (Dissolved) as Cl	mg/L	170
Chromium (Dissolved) as Cr	mg/L	<0.5
Chromium Hexavalent as Cr6+	µg/L	<0.001
Cobalt (Dissolved) as Co	µg/L	0.8
Conductivity (@ 25 C, Lab)	μS/cm	1100
Copper (Dissolved) as Cu	µg/L	8
Cyanide (WAD)	mg/L	<0.004
Cyanide (Total)	mg/L	<0.004
Iron (Dissolved) as Fe	µg/L	59
Lead (Dissolved) as Pb	µg/L	< 0 .5
Magnesium (Dissolved) as Mg	mg/L	30
Manganese (Dissolved) as Mn	µg/L	190
Mercury (Dissolved) as Hg	mg/L	<0.00005
Nickel (Dissolved) as Ni	µg/L	1
Nitrate as N	mg/L	7.9
Nitrate as NO ₃	µg/L	<0.2
Nitrite as NO ₂	mg/L	36
pH (Lab)	pH Units	7.7
Potassium (Dissolved) as K	mg/L	16
Selenium (Dissolved) as Se	µg/L	140
Sodium (Dissolved) as Na	mg/L	130
Sulphate as SO4	mg/L	160
Thallium (Dissolved) as Tl	µg/L	<0.5
Total Dissolved Solids	mg/L	670
Zinc		

Table 9: Callies Existing Bore Groundwater Quality, November 2024

6.1.3 Local Bore Groundwater Quality

Water samples collected from existing monitoring bore Callies Bore in November 2024 were analysed (Table 9), indicating a pH ranging from fresh to slightly alkaline, with TDS classified as fresh suitable for human consumption. Heavy metal concentrations were low.

These water quality characteristics are representative of natural groundwater conditions in the area. The full laboratory reports are provided in Appendix C.



6.1.4 Interaction of Tailings/Process Solution and Local Groundwater at CPTSF

Groundwater inflow to Callies Pit is predicted to be low, with rates significantly below 350 m³ per day. Consequently, seepage from the pit is expected to be minimal. Initially, groundwater will flow into the pit due to higher surrounding water levels (Rockwater, 2021). As tailings deposition progresses, sealing of joints and fractures will reduce groundwater seepage into the surrounding rock.

Once the pit water level equilibrates with surrounding levels, limited localised seepage may occur northward and southward along more permeable mineralised zones. Groundwater levels within Callies's Pit are illustrated in Figure 9.



Figure 9: Callies Pit Groundwater Levels

There is no anticipated risk of seepage reaching any nearby station bores or wells. The closest water sources are Kinder Bore (2.9 km west), Carlyons Well (5.2 km southwest), and Sams Well (11 km northeast) (Figure 13).

6.1.5 TSF 2 Local Bore Groundwater Quality

Water samples collected from existing monitoring bores at TSF 2 in November 2024 were analysed (Figure 10, Figure 11, Figure 12, Table 10), indicating a pH ranging from fresh to slightly alkaline, with TDS ranging from fresh to potable quality at Creek and Junction Bores, with brackish to not suitable for human or cattle consumption at other sites. Heavy metal concentrations were low.

These water quality characteristics are representative of natural groundwater conditions in the area. The full laboratory reports are provided in Appendix C.





Figure 10: TSF 2 Monitoring Bores Water Quality-TDS



Figure 11:TSF 2 Monitoring Bores Water Quality-Conductivity





Figure 12:TSF 2 Monitoring Bores Water Quality-pH

Table 10: TSF 2 Existing Bore Groundwater Quality, November 2024

Analyte	Units	M1	M2	M3	M4	M5	Creek Bore	Junction Bore
Alkalinity (Total) (as CaCO3)	mg/L	820	98	150	810		270	270
Alkalinity Bicarbonate as HCO3	mg/L	100	61	210	110		190	190
Alkalinity Carbonate as CO3	mg/L	<1	<1	<1	<1		<1	<1
Antimony (Dissolved) as Sb	µg/L	<1	<1	<1	<1		<1	<1
Arsenic (Dissolved) as As	µg/L	0. 9	< 0. 5	< 0. 5	3.4		5.1	4.4
Boron (Dissolved) as Bo	µg/L	86 0	310	1100	93 0		670	670
Cadmium (Dissolved) as Cd	µg/L	< 0.0 5	< 0.0 5	<0.05	0.06		<0.05	<0.06
Calcium (Dissolved) as Ca	mg/L	160	18	26	160		46	46
Chloride (Dissolved) as Cl	mg/L	410	110	89	570		220	220
Chromium (Dissolved) as Cr	µg/L	1.4	1.0	`150	0.9		3.1	4.1
Chromium Hexavalent as Cr6+	mg/L	<0.001	<0.001	0.14	<0.001		0.002	0.004
Cobalt (Dissolved) as Co	µg/L	400	1. 9	33	68 <mark>0</mark>		2.6	2.3
Conductivity (@ 25 C, Lab)	μS/cm	2700	36 0	9 70	3400		1300	1300
Copper (Dissolved) as Cu	µg/L	0.8	2.7	0.8	2.2		2.1	<0.5
Cyanide (WAD)	mg/L	0.006	<0.004	<0.004	<0.004		<0.004	<0.004
Cyanide (Total)	mg/L	0.12	0.006	0.016	0.18	DPV	<0.004	<0.004
Iron (Dissolved) as Fe	µg/L	28	6	6	77	Divi	10	10
Lead (Dissolved) as Pb	µg/L	0.5	< 0 .5	< 0. 5	< 0. 5		0.8	<0.5
Magnesium (Dissolved) as Mg	mg/L	99	13	20	100		38	39
Manganese (Dissolved) as Mn	µg/L	22	20	11	31		3	4
Mercury (Dissolved) as Hg	mg/L	<0.00005	<0.00005	<0.00005	<0.00005		<0.00005	<0.0005
Nickel (Dissolved) as Ni	µg/L	<1	<1	<1	<1		<1	<1
Nitrate as N	mg/L	7.3	7.6	11	55		17	17
Nitrate as NO ₃	µg/L	32	33	49	240		<0.2	<0.2
Nitrite as NO ₂	mg/L	<0.2	<0.2	<0.2	<0.2		76	76
pH (Lab)	pH Units	8	7.9	8.1	7.8		7.9	7.6
Potassium (Dissolved) as K	mg/L	29	10	16	29		17	17
Selenium (Dissolved) as Se	µg/L	3	3	3	19		4	4
Sodium (Dissolved) as Na	mg/L	250	66	130	400		150	150
Thallium	µg/L	< 0. 5	< 0. 5	< 0. 5	< 0. 5		<0.5	<0.5
Total Dissolved Solids		1900	36 0	63 0	2500		800	790
Zinc	µg/L	5	4	2	9		8	3

6.1.6 Interaction of Tailings/Process Solution and Local Groundwater at TSF2

Groundwater seepage from TSF 2 is predicted to be low, with any seepage plumes expected to be slow moving with velocities on the order of 1m/year to 10m/year (Peter Clifton & Associates, 1995). Groundwater levels of TSF 2 monitoring bores are illustrated in Figure 13.

There is no anticipated risk of seepage reaching any nearby station bores or wells (Peter Clifton & Associates, 1995). The closest water sources are Kinder Bore (2.9 km west), Carlyons Well (5.2 km southwest), and Sams Well (11 km northeast) Figure 3.



Figure 13: TSF 2 monitoring bores groundwater level

6.2 Hydrology

Fortnum is situated within the upper reaches of the Gascoyne River catchment, encompassing an area of 80.4 km². Regional surface water drainage flows northward and westward towards the Gascoyne River and Yarlarweelor Creek, respectively. The area is characterised by ephemeral creek lines with shallow, discontinuous channels primarily dominated by mulga vegetation.

No identified beneficial users of surface water exist within the vicinity of the CPTSF or TSF 2. While the surrounding pastoral leases support cattle, their water supply is derived from groundwater extracted through bores and wells located outside the project boundary. The nearest residential community, Yulga Jinna, is approximately 38 km southeast of Fortnum.

A review of available environmental reports (Golder Associates, 2012) did not identify any groundwaterdependent ecosystems (GDEs) at risk from groundwater abstraction at Fortnum. Given the absence of sensitive receptors in the vicinity, the proposed activities are not anticipated to significantly impact GDEs or beneficial groundwater users.

Callies's Pit is located on a relatively flat, elevated terrain within the central mining area, within this area there are no drainage lines that could significantly impact pits and associated infrastructure (Rockwater, 2020). Drainage from surface runoff within area is characterised as wide shallow sheet flow (Rockwater, 2020). Hydrological analysis (Figure 10) indicates that a 1-in-100-year flood event would not impact Callies's Pit. The maximum predicted flood depth is 1.85 m with a velocity of 1.78 m/s.



TSF 2 is located on a relatively flat elevated terrain, drainage within area is characterised as wide sheet flow (Rockwater, 2020). Hydrological analysis (Figure 14) indicates that a 1-in-100-year flood event would not impact TSF 2. The maximum predicted flood depth is 3.38 m with a velocity of 1.55 m/s (Rockwater, 2020).

Surface water diversion bunds, waste rock dumps and the pit abandonment bund will serve as a barrier to surface water flow across the CPTSF and TSF 2 footprint. The proposed in-pit TSF and raises to TSF 2 embankments is not expected to modify local hydrological conditions or impact the ephemeral creek lines in the area.

An overview of the local surface water environment of CPTSF and TSF 2 in relation to existing infrastructure is shown on Figure 14.



Figure 14: Surface Water Setting in Relation to TSF2 and CPTSF

6.3 Flora and Fauna

Minimal additional vegetation clearing is anticipated for the development of associated infrastructure for CPTSF and TSF 2 embankment raises. Consequently, the project is unlikely to significantly impact local or regional flora biodiversity.

6.3.1 Flora

A combined Level 1 flora and vegetation reconnaissance survey and targeted flora survey was conducted in the Nathan's area by Maia Environmental Consultants (Maia) in 2016 (Appendix E). The desktop assessment identified no threatened flora species and four priority species within 30 km: *Eucalyptus semota* (P1), *Solanum reclusum* (P1, endemic), *Eremophila obliquisepala*, and *Maireana prosthecochaeta* (both P3). Eight additional priority species were identified on adjacent tenements. The field survey recorded 212 plant taxa but no threatened species. Seven priority species were identified within 30 km of the project, including two considered locally significant: *Indigofera gilesii* and *Goodenia berringbinensis*. Neither species will be directly impacted by the project.

The study area is dominated by *Acacia* shrublands and woodlands, with one potential Robinson Range vegetation (banded iron formation) Priority 1 PEC community located more than 1.5 km from the site. These vegetation types are considered locally and regionally common.

A Native Vegetation Clearing Permit (CPS 6837/2), valid until 31 January 2026, authorises the clearing of up to 400ha for infrastructure development within the Fortnum mining area and associated transport corridors (Appendices I).

6.3.2 Fauna

Previous database searches by (Rapallo, 2012) indicate no records of conservation significant fauna species known from the local area (20 km radius). Recent desktop searches (50km buffer) revealed Listed Threatened Species in the Matters of National Environmental Significance as shown in Table 11 (Department of Climate Change, Energy, the Environment and Water, 2025), whilst a desktop search of the Augustus subregion, (Department of Biodiversity Conservation and Attractions, 2025) identified 38 priority fauna species, none identified within 50km of the PPE.

The likelihood of species of conservation significance from the desktop search occurring in the project area based on species profile (Department of Climate Change, Energy, the Environment and Water, 2025) and habitats occurring in the project is included in Table 11.

The closest Level 1 terrestrial fauna survey to the prescribed premise boundary (PPB) is by (Rapallo, 2012) which includes an area just west of the Fortnum Gold Mine (See Appendix E). Relevant information is summarised here and in Table 11. The reconnaissance survey recorded fifty species of vertebrate fauna, and at least seven taxa of invertebrate fauna. Six vertebrate fauna species of Local Significance (as defined by Davis 2012, in (Rapallo, 2012)) were recorded, these were the Black Kite (Milvus migrans), Spotted Harrier (Circus assimilis), Inland Dotterel (Charadrius australis), Red-backed Kingfisher (Todiramphus pyrrhopygius), the Black-faced Woodswallow (Artamus cinereus), and the Australian Pipit (Anthus australis).

Table 11: Conservation Significant Fauna Within and Up to 40km from Premise Boundary (DCCEEW, 2025)

Scientific Name	Common Name	Class	Species or Habitat Presence	EPBC Act Threatened Category	Migratory Status	WA Status	Habitat in PPE
Calidris ferruginea	Curlew Sandpiper	Bird	Possible	Critically Endangered	Migratory	Critically Endangered	Migratory – Suitable breeding or foraging habitat is unlikely within the PPB.
Macroderma gigas	Ghost Bat	Mammal	Possible	Vulnerable	Non- Migratory	Vulnerable	Project area does not contain species' preferred habitat. Unlikely to occur, and unlikely to be impacted by the project.
Pityrodia augustensis	Mt Augustus Foxglove	Plant	Known	Vulnerable	N/A	Vulnerable	Not recorded during flora survey.
Liopholis kintorei	Great Desert Skink, Tjakura, Warrarna, Mulyamiji, Tjalapa, Nampu	Reptile	Possible	Vulnerable	Non- Migratory	Vulnerable	Common in the arid zone of central and western Australia. Habitat is unlikely within the PPB.
Rhinonicteris aurantia (Pilbara form)	Pilbara Leaf-nosed Bat	Mammal	Possible	Vulnerable	Non- Migratory	Vulnerable	Project area does not contain species' preferred habitat. Unlikely to occur, and unlikely to be impacted by the project.
Calidris acuminata	Sharp-tailed Sandpiper	Bird	Possible	Vulnerable	Migratory	Vulnerable	Migratory – Suitable breeding or foraging habitat is unlikely within PPB.
Falco hypoleucos	Grey Falcon	Bird	Possible	Vulnerable	Non- Migratory	Vulnerable	Rare visitor to the region, project area contains suitable hunting habitat, but no nesting habitat. Species unlikely to be impacted by the project.
Aphelocephala leucopsis	Southern Whiteface	Bird	Known	Vulnerable	Non- Migratory	Vulnerable	Project area does not contain species' preferred habitat. Unlikely to be impacted by the project.
Motacilla flava	Yellow Wagtail	Bird	Possible	No Listing	Migratory	Migratory	
Actitis hypoleucos	Common Sandpiper	Bird	Possible	No Listing	Migratory	Migratory	
Motacilla cinerea	Grey Wagtail	Bird	Possible	No Listing	Migratory	Migratory	Migratory – Suitable breeding or foraging
Charadrius veredus	Oriental Plover, Oriental Dotterel	Bird	Possible	No Listing	Migratory	Migratory	habitat is unlikely within PPB.
Calidris melanotos	Pectoral Sandpiper	Bird	Possible	No Listing	Migratory	Migratory	

7. ENVIRONMENTAL IMPACTS AND MANAGEMENT

7.1 CPTSF Construction (Category 5)

7.1.1 Background

Seven TSFs are approved at Fortnum: Nathan's TSF (decommissioned and rehabilitated), TSF1 (decommissioned and rehabilitated), TSF2 (currently active with 22 months remaining capacity), Nathans In-pit TSF (approved but not constructed) Tom's In-pit TSF (decommissioned), El Dorado In-pit TSF (decommissioned), and TSF3 (approved but not constructed).

The CPTSF will have a cumulative storage capacity of 2 million tonnes to accommodate an annual tailings deposition rate of 0.85 Mtpa at a dry density of 1.4 t/m³. The facility is designed for a 2.4-year lifespan.

Minimal vegetation clearing is required for the CPTSF, primarily to support associated infrastructure. Existing infrastructure will be adapted to accommodate the tailings deposition pipeline and water return line. Additional infrastructure, such as powerlines, may also be installed.

Based on the DMP Code of Practice (DMP, 2013), the CPTSF has been classified as a Category 3 (low) hazard due to the anticipated minor impact on environmental, heritage, and asset values. The detailed design report is provided in Appendix B.

7.1.2 Design Features

Key design parameters for the CPTSF include:

- Pit geometry: A pit rim elevation of 500.5 mRL and a current depth of 443m below ground level. The water level, currently at approximately 470mRL, will be dewatered prior to tailings deposition.
- Lining and drainage: No liner or underdrainage system is required (TailCon, 2025). Seepage is anticipated to be minimal, primarily occurring during the initial operational phase while the tailings level is below the water table. The low permeability of the pit walls, combined with the sealing effect of tailings deposition, will mitigate seepage.
- Tailings deposition: Tailings will be deposited via four spigot points around the pit rim, forming beaches with an approximate 1% slope. An initial deposition phase from the south spigot will establish a decant pond near the access ramp. Subsequent deposition will follow a clockwise pattern, replicating a paddock-style TSF, causing the decant pond to progressively migrate along the access ramp as the pit fills. This method eliminates the need for additional civil works and facilitates tailings consolidation.
- Water management: A decant facility will be installed to recover supernatant water for recycling at the Fortnum Processing Facility. The pump will be adjusted as tailings and supernatant levels rise within the facility.
- Infrastructure: Tailings delivery and return water pipelines will utilise the existing dewatering pipeline corridor. Flowmeters will be installed on both tailings delivery and return water pipelines. Flowmeters will be regularly tested and calibrated in accordance with manufacturer's instructions.
- Transition: Tailings deposition at TSF2 will continue until the CPTSF is commissioned.

The CPTSF design adheres to (ANCOLD, 2012) and DEMIRS guidelines and will be governed by an Operations, Maintenance, and Surveillance Manual (OMSM) developed prior to commissioning. A civil engineer will approve the facility before operation. The design incorporates an appropriate factor of safety. Detailed design specifications are outlined in Appendix B.

7.1.3 Seepage Control Features and Investigation

The CPTSF design does not include seepage control measures beyond the decant and return water system (TailCon, 2025). The estimated volume of recycled water (supernatant) returned to the processing plant is between 1,600 m³ and 2,400 m³ per day.

Seepage from the CPTSF is anticipated only during the operational phase when the tailings level is below the water table. Initially there will be low seepage rates (less than 350 m³ per day) during active tailings deposition due to the low permeability of the pit walls. As tailings deposition progresses, the sealing of water-bearing fractures will further reduce seepage (TailCon, 2025). Once tailings deposition ceases, groundwater levels will gradually return to pre-mining conditions.

During discharge/dewatering activities, water levels in Callie's Pit have remained consistent at approximately 470mRL. Regional groundwater flow is generally northward, with a component of flow southwest towards Yarlarweelor Creek. Any potential seepage from Callies's Pit would likely flow southward or westward towards surrounding pits. There are no nearby bores or wells that could be affected by potential seepage.

7.1.4 Seepage Monitoring

Four groundwater monitoring bores will be established around the perimeter of the proposed CPTSF, as recommended by Tailcon (TailCon, 2025). These bores will be monitored quarterly to assess groundwater levels and quality for any potential changes resulting from seepage. Monitoring bore locations are indicated in Figure 16 and Figure 18.

7.1.5 Surface Water Control Features

A surface water assessment conducted by Rockwater in 2020 (Appendix D) determined that the flat, undulating terrain of the Fortnum area minimises the risk of surface runoff adversely impacting mine infrastructure during major rainfall events. To further mitigate this risk, an abandonment bund wall constructed to DEMIRS guidelines exists around the CPTSF to prevent stormwater ingress.

7.1.6 Freeboard

The following considerations were made regarding freeboard criteria and requirements for a 'Very Low' Dam spill consequence category (DSCC) TSF (Section 2.1):

- There is no minimum water storage requirement, however (TailCon, 2025) has adopted the DEMIRS minimum requirement that a 1:100 annual exceedance probability (AEP) 72-hr storm even duration storm event can be temporarily stored on top of the facility.
- The catchment area is approximately 11 ha (110,000 m²), which includes the impoundment and embankment crest area.
- The calculated maximum storm water volume is 14,029 m³.
- Provision of a minimum of 0.5m total freeboard comprising minimum operational freeboard (vertical height between the tailings beach and embankment crest) of 300 mm and a minimum beach freeboard of 200 mm plus and allowance for the 1% AEP 72-hour event of 210 mm, for a total freeboard of 0.5 m.

The design assumes correct operational controls are adhered to and that water is continually removed from the facility, such that minimum freeboard allowances are maintained.



Figure 15: CPTSF Freeboard

To ensure that seepage is understood and the CPTSF supernatant is maintained below 0.5 m (the sum of a 0.5 m total freeboard comprising of a 0.3 m beach freeboard and 0.2 m 1% AEP 72-hour event freeboard (TailCon, 2025)), surrounding monitoring bores will be monitored and quarterly tailings RL surveys will be completed. This monitoring program aligns with the monitoring requirements of existing TSF2, which is currently in use. Further details regarding the proposed monitoring locations, program and analysis can be located under section 7.1.10.

7.1.7 Dust

To mitigate dust generation during CPTSF construction, a water cart will be on-site for regular dust suppression. This measure will help prevent airborne dust, improving visibility and protecting worker health. While dust generation from tailings beaches is anticipated to be minimal due to the formation of a saline crust, ongoing monitoring will be conducted.

7.1.8 Tailings Deposition Infrastructure

Tailings deposition infrastructure is summarized and depicted in Figure 18. Tailings will be transported from the Fortnum plant to the CPTSF via a reinforced HDPE pipeline. Pipelines will be constructed within a v-drain, which will act as primary containment, preventing spills from spreading beyond the immediate pipeline corridor. Scour pits will be installed as required at strategic locations along the pipeline route to provide secondary containment. These pits will be designed to hold any accumulated spill volume sufficient for a period prior to detection during routine inspections and subsequent remediation. Additionally Flow meters will be installed on both tailings delivery and return water pipelines to record the volume of water discharged to and returned from the CPTSF, data will be received via wireless telemetry and loss of flow will trigger inspection of infrastructure.

Four spigot points constructed of HDPE will be strategically placed around the pit rim to allow controlled tailings deposition and formation of tailings beaches with an approximate 1% slope. Initially, tailings will be deposited from the south spigot to establish a decant pond near the access ramp. Subsequently, a clockwise rotation of spigot usage will be employed to distribute tailings evenly and gradually displace the decant pond along the access ramp as the pit fills.

Tailings deposition will commence below natural groundwater level, once the pit has been dewatered. A schematic representation of the proposed tailings pipeline infrastructure is presented in Figure 16 and detailed in Appendix B.



7.1.9 Decant System

Surface water will be extracted from the CPTSF using a decant facility equipped with a floating suction pump located near the existing pit ramp. This system will remove water from the supernatant pond. The estimated return water flow rate ranges from 1,600 to 2,400 m³/day. As tailings and water levels increase, the pump will be repositioned along the access ramp.

Maintenance access for the pump will utilise the existing pit ramp Figure 16. The location of the decant pond will be dynamically adjusted through the controlled deposition of tailings from the spigot points, rotating clockwise around the pit perimeter throughout the facility's lifespan. Recycled water will be pumped directly to the processing plant for reuse.



Figure 16: Indicative CPTSF Layout



7.1.10 Monitoring

Daily inspections will be conducted on pipelines, pumps, valves, and equipment to identify any operational issues, leaks, or wear. Regular visual inspections of freeboard levels, perimeter embankments, and potential fauna will contribute to proactive risk management. An annual technical review will assess infrastructure integrity for signs of settling, cracking, or erosion. High-resolution surveys using an unmanned aerial vehicle (UAV) will be conducted to monitor TSF surface conditions for changes.

To monitor groundwater levels and quality around the CPTSF, four additional monitoring bores will be installed as recommended by Tailcon (TailCon, 2025). Monitoring bore locations and program are outlined in Table 12, Table 13 and Figure 17.

Monitoring Bore	Status	Easting (GDA2020 MGA Zone 50)	Northing (GDA2020 MGA Zone 50)
CMB1	Proposed	636334	7197074
CMB2	Proposed	636544	7196774
СМВЗ	Proposed	636348	7196500
CMB4	Proposed	636213	7196847

Table 12: CPTSF Proposed Monitoring Locations

Aragon proposes the monitoring bore schedule for the facility as summarized in Table 13. This is consistent with the existing schedule at TSF2.

Monitoring Points	Parameters	Units	Limits	Frequency
	Standing Water Level (SWL)1	mAHD	-	
	рН	-	-	
	Major ions – Na, K, Ca, Mg, HCO3, SO4, Cl	mg/L	-	
	Nitrate-nitrogen (NO3-N)	mg/L	-	
	Total Dissolved Solids (TDS)	mg/L	-	
	Cyanide (total)4	mg/L	-	
CMB1, CMB2, CMB3, CMB4	Arsenic (As) Antimony (Sb) Boron (B) Cadmium (Cd) Chromium (Cr) - including hexavalent chromium (Cr VI) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Manganese (Mn) Mercury (Hg) Nickel (Ni) Selenium (Se) Thallium (Tl) Zinc (Zn)	mg/L	-	Quarterly (January, April, July, October)

Table 13: CPTSF Proposed Monitoring Program



Figure 17:CPTSF & TSF2 Infrastructure

7.2 TSF 2 Raise To 525mRL Construction (Category 5)

7.2.1 Background

Seven TSFs are approved at Fortnum: Nathan's TSF (decommissioned and rehabilitated), TSF1 (decommissioned and rehabilitated), TSF2 (currently active with 22 months remaining capacity), Nathans In-pit TSF (approved but not constructed) Tom's In-pit TSF (decommissioned), El Dorado In-pit TSF (decommissioned), and TSF3 (approved but not constructed).

The proposed staged raises of TSF2 to 525mRL will have a cumulative storage capacity of 2.4 million tonnes to accommodate an annual tailings deposition rate of 0.85 Mtpa at a dry density of 1.4 t/m³. The facility is designed for a 2-year lifespan.

Minimal vegetation clearing is required for TSF2 as existing infrastructure to facilitate deposition is already in place and operational.

Based on the DMP Code of Practice (DMP, 2013), TSF2 is classified as a Category 1 (medium) hazard due to the potential impact on environmental, heritage, and asset values. The concept design is provided in Appendix B.

7.2.2 Design Features

Key design parameters for the lift of TSF 2 embankments to a final height of 525mRL include:

- Dam geometry: embankment elevation in staged lifts to a final height of 525mRL. Perimeter embankments of the further raises will have a tentative geometry comprising a flattened downstream slope of 1V:4.5H, an upstream slope of 1V:2H, and a minimum crest width of 6 m. This configuration will maintain an overall slope of 1V:4H on the facility for the final landform. No step-in is to be added to the facility after the RL518m bench to ensure stability of the facility as it is raised further. The perimeter embankments will be raised using dry tailings borrowed from the impoundment area. Selected mine waste rock (Rip-Rap) will be used to provide an erosion protection capping on the downstream slope of the perimeter.
- Lining and drainage: TSF2 has an underdrainage system on the western wall, to capture seepage that flows into seepage pond, this water is then pumped back to the TSF, which is then pumped back via the decant to process water ponds for reuse through the mill (TailCon, 2025). Seepage is anticipated to be minimal.
- Tailings deposition: Tailings will be deposited via multiple spigot points around the embankment crest, forming beaches with an approximate 1% slope. An initial deposition phase from the south spigot will establish a decant pond near the access ramp. Deposition will follow a clockwise pattern, causing the pond to centralise around the decant.
- Water management: A central decant facility will be installed to recover supernatant water for recycling at the Fortnum Processing Facility. The pump will be fixed within a central decant ring.
- Infrastructure: Tailings delivery and return water pipelines will utilise the existing dewatering pipeline and pipeline corridor. Flowmeters will be installed on both tailings delivery and return water pipelines. Flowmeters will be regularly tested and calibrated in accordance with manufacturer's instructions.
- Transition: Tailings deposition at TSF2 will continue to final approved height of 520mRL until the proposed embankment lift to 525mRl is approved by governing authorities, if approval is not granted facility will not exceed current approved height.

The TSF2 design adheres to (ANCOLD, 2012) and DEMIRS guidelines and will be governed by an Operations, Maintenance, and Surveillance Manual (OMSM) developed prior to commissioning. A civil engineer will

approve the facility before operation. The design incorporates an appropriate factor of safety. Detailed design specifications are outlined in Appendix B.

7.2.3 Seepage Control Features and Investigations

TSF2 has an underdrainage system, comprising an upstream toe drain and filter material, was constructed adjacent to the perimeter of the starter embankments. The underdrainage network is gravity driven with outfalls connected to an external recovery sump located to the southwest of Cell 2 (Tailcon, 2024). The estimated volume of recycled water (supernatant) returned to the processing plant is between 1,600 m³ and 2,400 m³ per day.

Seepage from the TSF 2 is anticipated to be minimal (Tailcon, 2024) (Soil & Rock Engineering, 1995).

7.2.4 Seepage Monitoring

Seven groundwater monitoring bores exist around the perimeter of TSF2. These bores are currently monitored in accordance with approved prescribed premise licence L8103/1989/3 to assess groundwater levels and quality for any potential changes resulting from seepage. Monitoring bore locations are indicated in Figure 16 and Figure 18.

7.2.5 Surface Water Control Features

A surface water assessment conducted by Rockwater in 2020 (Appendix D) determined that the flat, undulating terrain of the Fortnum area minimises the risk of surface runoff adversely impacting mine infrastructure during major rainfall events.

7.2.6 Freeboard

The following considerations were made regarding freeboard criteria and requirements for a 'very low' Dam spill consequence category (DSCC) TSF (Tailcon, 2025):

- There is no minimum water storage requirement, however future detailed designs will adopt the DEMIRS minimum requirement that a 1:100 annual exceedance probability (AEP) 72-hr storm even duration storm event can be temporarily stored on top of the facility.
- The catchment area is approximately 16.8Ha (168,000 m²), which includes the impoundment and embankment crest area.
- The calculated maximum storm water volume is 68,500 m3.
- Provision of a minimum of 0.5m total freeboard comprising minimum operational freeboard (vertical height between the tailings beach and embankment crest) of 300 mm and a minimum beach freeboard of 200 mm plus and allowance for the 1% AEP 72-hour event of 210 mm, for a total freeboard of 0.5 m.

The design assumes correct operational controls are adhered to and that water is continually removed from the facility, such that minimum freeboard allowances are maintained.





Figure 18:TSF2 Freeboard

To ensure that seepage is understood and the CPTSF supernatant is maintained below 0.5 m (the sum of a 0.5 m total freeboard comprising of a 0.3 m beach freeboard and 0.2 m 1% AEP 72-hour event freeboard (TailCon, 2025)), surrounding monitoring bores will be monitored and quarterly tailings RL surveys will be completed. This monitoring program aligns with the existing monitoring requirements of TSF2, which is currently in use. Further details regarding the proposed monitoring locations, program and analysis can be located in section 7.2.10.

7.2.7 Dust

To mitigate dust generation during TSF2 construction, a water cart will be on-site for regular dust suppression. This measure will help prevent airborne dust, improving visibility and protecting worker health. While dust generation from tailings beaches is anticipated to be minimal due to the formation of a saline crust, ongoing monitoring will be conducted.

7.2.8 Tailings Deposition Infrastructure

Tailings deposition infrastructure is summarized and depicted in Figure 17. Tailings are currently transported from the Fortnum plant to TSF2 via a reinforced HDPE pipeline. Pipelines are constructed within a v-drain, which will act as primary containment, preventing spills from spreading beyond the immediate pipeline corridor.

Multiple spigot points constructed of HDPE are strategically placed around the perimeter embankment crest to control tailings deposition, allowing for the formation of tailings beaches with an approximate 1% slope. Tailings will be deposited in a clockwise rotation of spigot usage to distribute tailings evenly and gradually centralise decant pond to maximise return water flow.

Schematic representation of the proposed tailings pipeline infrastructure is presented in Figure 17 and detailed in Appendix B.

 WESTGOLD

7.2.9 Decant System

Water will be removed from tailings deposited in TSF2 via a central decant on the supernatant pond. The decant consists of a floating shallow water suction intake (Turret) that connects to a skid mounted pump, with access provided by a causeway. The estimated return water flow rate is between 1,600 and 2,400 m³/day. Recycled water will be pumped directly to the processing plant for reuse.

7.2.10 Monitoring

Daily inspections will be conducted on pipelines, pumps, valves, and equipment to identify any operational issues, leaks, or wear. Regular visual inspections of freeboard levels, perimeter embankments, and potential fauna will contribute to proactive risk management. An annual technical review will assess infrastructure integrity for signs of settling, cracking, or erosion. High-resolution surveys using an unmanned aerial vehicle (UAV) will be conducted to monitor surface conditions of the TSF.

To monitor groundwater levels and quality around TSF2 it is proposed to utilise the monitoring schedule in L8103/1989/3.Monitoring bore locations and program are outlined in Table 14, Table 15 and Figure 17.

Monitoring Bore	Status	Easting (GDA2020 MGA Zone 50)	Northing (GDA2020 MGA Zone 50)
M1	Existing	636304	7197446
M2	Existing	63594 0	7196970
M3	Existing	63553 0	7196975
M4	Existing	635 0 85	7197020
M5	Existing	635 0 95	7197543
(FTR246D) Junction Bore	Existing	635 07 5	7197904
(FTR 266D) Creek Bore	Existing	635 0 64	7196950

Table 14: TSF 2 Existing/Proposed Monitoring Locations



Monitoring Points	Parameters	Units	Limits	Frequency	
	Standing Water Level (SWL)1	mAHD	-		
	рН	-	6-9		
	Major ions – Na, K, Ca, Mg, HCO3, SO4, Cl	mg/L	-		
	Nitrate-nitrogen (NO3-N)	mg/L	-		
	Total Dissolved Solids (TDS)	mg/L	4000		
	Cyanide (total)4	mg/L	0.8		
M1, M2,M3,M4,M5, (FTR 246D) Junction Bore, (FTR266D) Creek Bore	Arsenic (As) Antimony (Sb) Boron (B) Cadmium (Cd) Chromium (Cr) - including hexavalent chromium (Cr VI) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Manganese (Mn) Mercury (Hg) Nickel (Ni) Selenium (Se) Thallium (Tl) Zinc (Zn)	mg/L	-	Quarterly (January, April, July, October)	

Table 15: TSF 2 Proposed Monitoring Program

8. RISK ASSESSMENT

The risk assessment criteria is based on the DEMIRS risk assessment guidance, this guidance is shown in Table 16, Table 17, Table 18 below. Risk assessments for this licence amendment is included below in Table 19 and Table 20.

Level	Descriptor	Expected Frequency	Description	Probability
1	Rare	Once in 15 years	Highly unlikely, but it may occur in exceptional circumstances	0-10%
2	Unlikely	At least once in 10 years	Not expected, but there's a slight possibility it may occur at some time	11 – 40%
3	Possible	At least once in 3 years	The event might occur at some time as there is a history of infrequent occurrences of similar issues with similar projects/ activities	41 – 60%
4	Likely	At least once per year	There is a strong possibility the event will occur as there is a history of frequent occurrence with similar projects/activities	61 – 90%
5	Almost certain	More than once per year	The event is expected to occur at some time as there is a history of continuous occurrence with similar projects / activities	91 – 100%

Table 16: Likelihood Categories

Table 17: Consequence Categories

Environmental Factor	Insignificant (A)	Minor (B)	Moderate (C)	Major (D)	Severe (E)
Biodiversity	None or insignificant impact to ecosystem component (physical, chemical or biological) expected with no effect on ecosystem function	Moderate to minor impact to ecosystem component (physical, chemical or biological) Minor off-site impacts at a local scale	Minor and short- term impact to high value or sensitive ecosystem expected Off-site impacts at a local scale	Long-term impact to significant high value or sensitive ecosystem expected Long-term impact on a wide scale Adverse impact to a listed species expected	Irreversible impact to significant high value or sensitive ecosystem expected Irreversible and significant impact on a wide scale Total loss of a threatened species expected
Water Resources	Low impact to isolated area without affecting any use of the water.	Contained low impact with negligible effect on the use of the water.	Uncontained impact that will materially affect the use of the water, but able to be rectified in short-term.	Extensive hazardous impact requiring long-term rectification	Uncontained hazardous impact with residual effect
Land Degradation	Negligible impact to isolated area.	Contained low impact, not impacting on any environmental value.	Uncontained impact, able to be rectified in short-term without causing pollution or contamination	Extensive hazardous impact requiring long-term rectification	Uncontained hazardous impact with residual effect
Air Quality	No detectable impact	Contained low impact	Uncontained impact that will	Extensive hazardous	Uncontained hazardous impact



Environmental Factor	Insignificant (A)	Minor (B)	Moderate (C)	Major (D)	Severe (E)
		not impacting on any environmental value.	materially affect an environmental value, but able to be rectified in short-term.	impact on an environmental value requiring long-term rectification	with residual effect
Mine Closure	Site is safe, stable a non-polluting and post mining land use is not adversely affected	The site is safe, all major landforms are stable, and any stability or pollution issues are contained and require no residual management. Post-mining land use is not adversely affected.	The site is safe, and any stability or pollution issues require minor, ongoing maintenance by end land-user	The site cannot be considered safe, stable or non-polluting without long- term management or intervention. Agreed end land- use cannot proceed without ongoing management.	The site is unsafe, unstable and/ or causing pollution or contamination that will cause an ongoing residual effect. The post mining land use cannot be achieved.

Table 18: Risk Assessment Matrix

	Insignificant (A)	Minor (B)	Moderate (C)	Major (D)	Severe (E)
Rare (1)	Low	Low	Low	Moderate	Moderate
Unlikely (2)	Low	Low	Moderate	Moderate	High
Possible (3)	Low	Moderate	Moderate	High	High
Likely (4)	Low	Moderate	High	Extreme	Extreme
Almost certain (5)	Low	High	High	Extreme	Extreme

Table 19: CPTSF Risk Assessment

Risk Event						Risk Rating				
Sources/Activities	Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts	Controls	Consequence Rating	Likelihood Rating	Risk	Reasoning	
Category 5: Processing or beneficiation of metallic or non-metallic ore										
Construction of CPTSF infrastructure	Dust	Native vegetation in the vicinity of CPTSF Infrastructure.	Particulate matter (fugitive dust).	Dust deposition on native vegetation species can potentially lead to poor vegetation health.	If local wind speeds are conducive to elevated dusting, construction works will be paused until conditions improve.	Insignificant	Rare	Low	Sufficient controls are in place to minimise dust emissions.	
Tailings delivery to CPTSF	Tailings, decant water	Soil and native vegetation in the vicinity of CPTSF and pipeline infrastructure.	Direct discharge to soil.	Reduced quality or contamination of soil, sediment, or surface water runoff. Reduced vegetation health or death.	duced quality or contamination of soil, Scheduled inspections. Mo diment, or surface water runoff. Scheduled inspections. Mo duced vegetation health or death. Scheduled inspections. Mo	Moderate	Unlikely	Low		
Decant water return		Groundwater and groundwater dependent ecosystems.	Infiltration to soils and local aquifers.	Reduced quality or contamination of soil, sediment, and surface water.	spill for a period equal to the time between routine inspections.	Minor	Rare	Low		
Storage of tailings material in CPTSF	Leachate seepage	Local aquifers. Groundwater dependent ecosystems.	Infiltration to local aquifers.	Reduced quality or contamination of groundwater. Raised groundwater levels (groundwater mound).	No Threatened Ecological Communities (TECs) nearby. Priority Ecological Community too far away to be affected (PECs). Priority flora will not be directly affected.	Minor	Unlikely	Low	The proposed controls in this licence amendment as considered industry standard and similar to those applied at the previously operated Tom's and El Dorado In- Pit TSFs, which have proven to manage the potential risk appropriately.	
		Native vegetation in the vicinity of CPTSF.	Increasing groundwater levels.	Impacts to the health and survival of vegetation (waterlogging / increased salt concentrations). Local vegetation is dominated by <i>Acacia</i> shrublands and woodlands. Robinson Range vegetation (banded iron formation) Priority 1 PEC communities are located greater than 1.5km away. <i>Indigofera gilesii</i> and <i>Goodenia</i> <i>berringbinensis</i> are locally significant species but will not be directly affected.	Minimal seepage expected due to limited flow pathways. Ongoing quarterly sampling at new CPTSF monitoring bores for the parameters defined in Table 13. Maintenance of decant return pump. Quarterly survey of freeboard and tailings deposition.	Moderate	Unlikely	Moderate		
	Tailings	Drainage lines in the vicinity of CPTSF.	Overtopping of the CPTSF after excessive rainfall.	Contaminated surface water flows.	Operation of facility within the NPTSF Operations, Maintenance and Surveillance Manual. Ongoing survey controls and monitoring to ensure that a minimum top of embankment freeboard of 1.0m is maintained. Extent limited by existing pit safety bund, abandonment bund.	Moderate	Rare	Low		
		Soil and native vegetation in the vicinity of CPTSF.	Overtopping and unplanned discharge of tailings.	Localised contamination of soil and reduced vegetation health.	Operation of facility within the CPTSF Operations, Maintenance and Surveillance Manual. Ongoing survey controls and monitoring to ensure that a minimum top of embankment freeboard of 0.5m is maintained. Vegetation monitoring.	Moderate	Rare	Low		
	Wall Failure of CPTSF	Localised ground subsidence in the vicinity of CPTSF.	Ground subsidence.	Local land disturbance impacts.	Weathering in the vicinity of the CPTSF is minimal. Periodic geotechnical inspections. Quarterly supernatant SWL monitoring.	Minor	Unlikely	Low	Subsidence zones can be managed through exclusion. Potential impacts are localised.	

Table 20 TSF 2 Raise To 525mRL Risk Assessment

Risk Event						Risk Rating			
Sources/Activities	Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts	Controls	Consequence Rating	Likelihood Rating	Risk	Reasoning
Category 5: Processing or beneficiation of metallic or non-metallic ore									
Construction of TSF 2 infrastructure	Dust	Native vegetation in the vicinity of TSF 2 Infrastructure.	Particulate matter (fugitive dust).	Dust deposition on native vegetation species can potentially lead to poor vegetation health.	If local wind speeds are conducive to elevated dusting, construction works will be paused until conditions improve.	Insignificant	Rare	Low	Sufficient controls are in place to minimise dust emissions.
Tailings delivery to TSF 2	to Tailings, decant water	Soil and native vegetation in the vicinity of TSF 2 and pipeline infrastructure.	Direct discharge to soil.	Reduced quality or contamination of soil, sediment, or surface water runoff. Reduced vegetation health or death.	Scheduled inspections. Secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.	Moderate	Unlikely	Low	
Decant water return		Groundwater and groundwater dependent ecosystems.	Infiltration to soils and local aquifers.	Reduced quality or contamination of soil, sediment, and surface water.		Minor	Rare	Low	The proposed controls in this licence amendment as considered industry standard and similar to those applied at currently operational TSF 2 and the previously operated Tom's and El Dorado In- Pit TSFs, which have proven to manage the potential risk appropriately.
Storage of tailings material in TSF 2	Leachate seepage	Local aquifers. Groundwater dependent ecosystems.	Infiltration to local aquifers.	Reduced quality or contamination of groundwater. Raised groundwater levels (groundwater mound).	No Threatened Ecological Communities (TECs) nearby. Priority Ecological Community too far away to be affected (PECs). Priority flora will not be directly affected.	Minor	Unlikely	Low	
		Native vegetation in the vicinity of TSF 2.	Increasing groundwater levels.	Impacts to the health and survival of vegetation (waterlogging / increased salt concentrations). Local vegetation is dominated by <i>Acacia</i> shrublands and woodlands. Robinson Range vegetation (banded iron formation) Priority 1 PEC communities are located greater than 1.5km away. <i>Indigofera gilesii</i> and <i>Goodenia</i> <i>berringbinensis</i> are locally significant species but will not be directly affected.	Minimal seepage expected due to limited flow pathways. Ongoing quarterly sampling at existing TSF 2 monitoring bores for the parameters defined in Table 13. Maintenance of decant return pump. Quarterly survey of freeboard and tailings deposition.	Moderate	Unlikely	Moderate	
	Tailings	Drainage lines in the vicinity of TSF 2.	Overtopping of the TSF 2 after excessive rainfall.	Contaminated surface water flows.	Operation of facility within the NPTSF Operations, Maintenance and Surveillance Manual. Ongoing survey controls and monitoring to ensure that a minimum top of embankment freeboard of 1.0m is maintained. Extent limited by current surface water diversion bunds at the toe of TSF 2.	Moderate	Rare	Low	
		Soil and native vegetation in the vicinity of TSF 2.	Overtopping and unplanned discharge of tailings.	Localised contamination of soil and reduced vegetation health.	Operation of facility within the TSF 2 Operations, Maintenance and Surveillance Manual. Ongoing survey controls and monitoring to ensure that a minimum top of embankment freeboard of 0.5m is maintained. Vegetation monitoring.	Moderate	Rare	Low	
	Wall Failure of TSF 2	Localised ground subsidence in the vicinity of TSF 2.	Ground subsidence.	Local land disturbance impacts.	Weathering in the vicinity of the TSF 2 is minimal. Periodic geotechnical inspections.	Minor	Unlikely	Low	Subsidence zones can be managed through exclusion. Potential impacts are localised.

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