Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6403/2020/1
Works approval holder	Hamersley HMS Pty Ltd
ACN	115 004 129
Registered business address	152-158 St Georges Terrace PERTH WA 6000
DWER file number	DER2020/000121 INS-0002373
Duration	26/10/2020 to 25/10/2027
Date of issue	23/10/2020
Date of amendment	11/04/2025
Premises details	Hope Downs 4 Iron Ore Mine – Area 3 Mining Lease (ML) 282SA and ML5SA NEWMAN WA 6753

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed production / design capacity**
Category 5: Processing or beneficiation of metallic or non-metallic ore	2,008,000 tonnes per annual period

This works approval is granted to the works approval holder, subject to the attached conditions,

On 11 April 2025, by:

Timothy Moran

Digitally signed by Timothy Moran
Date: 2025.04.11 09:28:23 +08'00'

MANAGER, RESOURCE INDUSTRIES

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
26/10/2020	W6403/2020/1	Works approval granted.
11/04/2025	W6403/2020/1	Works approval amended to extend duration to 25/10/2027.

Interpretation

In this works approval:

(a) the words ‘including’, ‘includes’ and ‘include’ in conditions mean “including but not limited to”, and similar, as appropriate;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a condition, each row in a table constitutes a separate condition;

(d) any reference to an Australian or other standard, guideline, or code of practice in this works approval:

  (i) if dated, refers to that particular version; and

  (ii) if not dated, refers to the latest version and therefore may be subject to change over time;

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and

(f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

The works approval holder must ensure that the following conditions are complied with:

Infrastructure and equipment

1. The works approval holder must:

(a) construct and/or install the infrastructure;

(b) in accordance with the corresponding design and construction / installation requirements; and

(c) at the corresponding infrastructure location;

as set out in Table 1.

Table 1: Design and construction / installation requirements

Infrastructure	Design and construction / installation requirements	Infrastructure location
Tailings Storage Facility - Area 3		

Tailings Storage Facility - Area 3	• Constructed within ML282SA and ML5SA.
	• Storage Capacity:
	  • Kal 2 (650 mRL) – 4.8 Mm³ for 4.8 Mt at estimated dry density of 1.0 t/m³.
	  • Kal 3 (640 mRL) – 6.1 Mm³ for 6.1 Mt at estimated dry density of 1.0 t/m³.
	  • Kal 4 (640 mRL) – 4.2 Mm³ for 4.2 Mt at estimated dry density of 1.0 t/m³.
	• Two parallel 255OD PN20 HDPE pipe spigots to be located from the pit edge from each facility.
	• Decant return system including:
	  • A skid/trailer mounted diesel pump located down the pit ramp with floating intake in the supernatant pond
	  • Decant return water pipeline constructed of HDPE with associated flow meter and turbidity meter.
	• Constructed to meet operational design Freeboard
	  • (i) 0.3 m above maximum waste fines elevation, or
	  • (ii) 0.5 m above required stormwater capacity elevation.
		Schedule 1 Figures 2, 3 and 4

Stormwater Capacity (containment)	Short duration requirement • 1% AEP (1 in 100 year ARI), 72 hour rainfall event superimposed over average rainfall sequence (no evaporation). Long duration requirement • 1% AEP (1 in 100 year ARI), 3 to 12 months critical duration wet rainfall sequence.	
Spillway Capacity (Operation and closure)	• External: None – full containment for external discharge. • Internal: Cascade flow from Kal 2 to Kal 3 and Kal 3 to Kal 4. Capacity for 1 in 5,000 year critical duration.	
Delivery infrastructure		

Infrastructure	Design and construction / installation requirements	Infrastructure location

Delivery pipelines	• Waste fines delivery pipelines (including flow meters / telemetry installed along the pipeline to detect any issues).
	• Within a bunded corridor reporting to containment ponds (for the purposes of containing any spills caused by pipeline leaks).
	• Valve position indicators located on the waste fines delivery pipeline to record which facility is being operated to ensure monitoring of waste fines volumes. These include:
	  • Two at the junction where the Area 3 pipeline departs from the main line.
	  • Three valve position indicators at the Area 3 valve station where the values are used to control deposition to Kal 2, Kal 3 and Kal 4 pits.
	• Valve station to direct waste fines to one of the three pits by gravity drainage.
	• Two containment ponds constructed at low points and flush valves with nominal 1,500m^3 capacity.
	• End point of pipeline (near pit voids) includes flow meter and telemetry station to detect flow differences with flow meter at outlet of slurry pumps at the plant.
		Schedule 1 Figures 3, 6, 7 and 8

2. The works approval holder must design, construct, and install groundwater monitoring wells in accordance with the requirements specified in Table 2.

Table 2: Infrastructure requirements – groundwater monitoring wells

Infrastructure	Design, construction, and installation requirements	Monitoring well location(s)	Timeframe
Groundwater monitoring bores	• Reinstall MB14HD4028 • One new groundwater monitoring bore to be installed for monitoring groundwater level and groundwater water quality. The bore must be installed within a 20 m radius of the specified coordinates: 759200 mE 7439800mN • Design and construction in accordance with *ASTM D5092/D5092M-16: Standard practice for design and installation of groundwater monitoring bores*. • Well screens must target the part, or parts, of the aquifer most likely to be affected by contamination[1]. Where temporary/seasonal perched features are present, wells must be nested, and the perched features individually screened.	As depicted in Schedule 1, Figure 5	Must be constructed, developed (purged), sampled, and determined to be operational by no later than 30 calendar days prior to the commencement of time limited operations under condition 6**.**
	Logging of borehole: soil samples must be collected and logged during the installation of		

Infrastructure	Design, construction, and installation requirements	Monitoring well location(s)	Timeframe
	the monitoring wells. A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS1726.		
	Well network map: a well location map (using aerial image overlay) must be prepared and include the location of all monitoring wells in the monitoring network and their respective identification numbers.		

Note 1: Refer to Section 8 of Schedule B2 of the *Assessment of Site Contamination NEPM* for guidance on well screen depth and length.

3. The works approval holder must, within 60 calendar days of the monitoring bores being constructed, submit to the CEO a bore construction report evidencing compliance with the requirements of Condition 2.

4. The works approval holder must within 60 days of the monitoring bores being constructed, conduct baseline sampling in accordance with Section 8.2.3.5 of National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM, 1999) for parameters outlined in Schedule 2: Monitoring.

Compliance reporting

5. The works approval holder must within 30 calendar days of an item of infrastructure required by condition 1 being constructed and/or installed:

(a) undertake an audit of their compliance with the requirements of condition 1; and

(b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.

6. The Environmental Compliance Report required by condition 5, must include as a minimum the following:

(a) certification by a suitably qualified and experienced Engineer (eligible for membership of the Institute of Engineers, Australia) that the items of infrastructure or component(s) thereof, as specified in condition 1, have been constructed in accordance with the relevant requirements specified in condition 1;

(b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 1; and

(c) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

7. Where an item of infrastructure has been certified as not being located or constructed, or does not comply with the corresponding requirements, the works approval holder must correct the non-compliant or defective works, prior to re-certifying, or provide to the CEO a description of, and explanation for, any departures from the requirements specified in condition 1 that do not require relocation or rectification and do not constitute a material defect along with the Environmental Compliance Report.

Environmental commissioning phase

Environmental commissioning requirements and emission limits

8. The works approval holder may only commence environmental commissioning of an item of infrastructure listed in condition 1 once the Environmental Compliance Report has been submitted for that item of infrastructure in accordance with condition 5 of this works approval.

9. Any environmental commissioning activities undertaken for an item of infrastructure specified in Table 3 may only be carried out:

(a) in accordance with the corresponding commissioning requirements; and

(b) for the corresponding authorised commissioning duration.

Table 3: Environmental commissioning requirements

Infrastructure	Commissioning requirements	Authorised commissioning duration
Kal 2, Kal 3 and Kal 4 Comprises the following infrastructure/ equipment: a) Slurry delivery pipes, flow meters and telemetry b) Valve position indicators c) Valve station	Environmental commissioning to validate and check design parameters of facilities with water and slurry.	For a period not exceeding 2 calendar months in aggregate.

10. During environmental commissioning, the works approval holder must ensure that the emissions specified in Table 4, are discharged only from the corresponding discharge point and only to the corresponding discharge point location.

Table 4: Authorised discharge points during commissioning

	Emissions	Discharge point	Discharge point location
1.	Waste Fines	Kal 2, Kal 3 and Kal 4 pits via dual spigot	As per Schedule 1 Figure 3

Environmental commissioning reporting

11. The works approval holder must submit to the CEO an Environmental Commissioning Report within 30 calendar days of the completion date of environmental commissioning for each item of infrastructure specified in Table 3.

12. The works approval holder must ensure the Environmental Commissioning Report required by condition 11 of this works approval includes the following:

(a) a summary of the environmental commissioning activities undertaken, including timeframes and amount of ore processed;

(b) a summary of the environmental performance of each item of infrastructure as constructed or installed;

(c) a review of the works approval holder's performance and compliance against the conditions of this works approval; and

(d) where compliance has not been met, measures proposed to meet the manufacturer's design specifications and the conditions of this works approval, together with timeframes for implementing the proposed measures.

Time limited operations phase

Commencement and duration

13. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 1:

(a) where the item of infrastructure is not authorised to undertake environmental commissioning, the Environmental Compliance Report as required by condition 5 has been submitted by the works approval holder for that item of infrastructure; and

(b) where the item of infrastructure is authorised to undertake environmental commissioning under condition 9, the Environmental Commissioning Report for that item of infrastructure as required by condition 11 has been submitted by the works approval holder.

14. Upon granting of a licence or registration under Part V of the *Environmental Protection Act 1986*, authorising the operation of the infrastructure identified in condition 1, the works approval holder may no longer conduct time limited operations in respect of the infrastructure under the terms of this works approval.

Time limited operations requirements

15. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 5 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 5.

Table 5: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirement	Infrastructure location
1.	Kal 2, Kal 3 and Kal 4	• Can accept up to 2.088Mta (dry) of tailings per year • Record daily volumes of wet tailings produced during time limited operation • Freeboard of 1:100 AEP, 72 hour rainfall event and normal operating (decant) pond depth of 0.5m • Regular inspections as per Table 9.	Schedule 1, Figure 3

16. During time limited operations, the works approval holder must ensure that the emissions specified in Table 6, are discharged only from the corresponding discharge points and only at the corresponding discharge point locations.

Table 6: Authorised operation discharge points

Emission	Discharge point	Discharge point location
Waste Fines	Deposition points within Kal 2, Kal 3 and Kal 4	Two spigots – Schedule 1 Figure 3

17. During the first 30 days of time limited operations, the works approval holder must collect at least 10 individual representative tailings samples, including pore water, to determine the likely behaviour of elements under a range of leaching conditions, and may include, but not be limited to:

(a) testing using the LEAF Test Method 1313 pH-dependent leaching test (US EPA, 2017);

(b) geotechnical characterisation of tailings including particle size distribution, volume of solids, settling test (drained and undrained), air drying test and hydraulic conductivity of the same tailings tested in 17 (a); and

(c) testing for the contaminants listed in Table 7.

All test results shall be collated in excel format and provided in a report to the CEO no more than 90 days after sample collection.

Table 7: Tailings characterisation parameters

Stream	**Contaminants**		
Tailings leachate (mg/L)	Ag - Silver	Fe – Iron	Sb – Antimony
	Al – Aluminium	Hg – Mercury	Se – Selenium
	As – Arsenic	K – Potassium	Si - Silicon
	Ba – Barium	Mg – Magnesium	Sn - Tin
	B - Boron	Mn - Manganese	Sr - Strontium
	C total – Carbon total	Mo – Molybdenum	Tl - Thallium
	C carbonate – Carbon carbonate	Na – Sodium	Ti - Titanium
	Ca – Calcium	Ni – Nickel	V – Vanadium
	Cd – Cadmium	P – Phosphorus	U – Uranium
	Co - Cobalt	Pb – Lead	Zn – Zinc
	Cr – Chromium	Sulfur total	TDS (total dissolved solids)
	Cu – Copper	SO_4^{-2} – Sulphate	Total Nitrogen
Tailings leachate (pH units)	pH		

Monitoring during time limited operations

18. The works approval holder must monitor groundwater during time limited operations for concentrations of the identified parameters in accordance with Table 8.

19. The works approval holder must record the results of all monitoring activity required by condition 18 and report against ANZECC criteria for a slightly to moderately disturbed ecosystem.

Table 8: Monitoring during time limited operations

Monitoring location	Parameter	Unit	Frequency	Averaging Period	Method	
					Sampling	Analysis
MB05HD4008 (shallow and deep) MB11HD4011 MB14HD4027 MB14HD4028 (reinstalled) MB15HD4002 MB15HD4004 MB16HD4002 MB16HD4003 MB16HD4004 MB17HD40006 MB17HD40007 MB18HD40008 WB14HD4017# WB15HD4001# WB15HD4003# New borehole **X**	Surface water level	mbgl	Monthly	Spot sample	AS/NZS 5667.1 AS/NZS 5667.11	N/A
	pH	pH units				In field
	Electrical Conductivity	µS/cm				
	Dissolved Oxygen	mg/L				
	TDS	mg/L	Quarterly	Spot sample	AS/NZS 5667.1 AS/NZS 5667.11	By a NATA accredited laboratory
	Alkalinity $CaCO_3$					
	Total Nitrogen					
	Major Ions: Ca, Cl, F, K, Mg, Na and SO4,					
	Metals / metalloids: Al, As, Ba, B, Cd, Co, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Sb, Se, Si and Sn					
	acrylamide					
Vibrating Wire Piezometer (VWP) location HM18HD40002	phreatic surface	mbgl	Monthly	Spot sample	AS/NZS 5667.1 AS/NZS 5667.11	N/A

Note #: All parameters excluding surface water level

Inspections

20. The works approval holder must conduct visual inspections of the infrastructure listed in Table 9 during commissioning and time limited operations at the corresponding frequency specified Table 9.

Table 9: Inspections of infrastructure

Facility	Infrastructure	Frequency
Waste fines storage facility	Pipeline integrity inspection	Daily
	Facility integrity inspection (pit walls, discharge location)	Daily
	Waste fines level (freeboard)	Daily
	Supernatant pond location	Daily
	Supernatant pond level	Daily
	Freeboard capacity available	Daily

Specified Actions

21. The works approval holder shall conduct leach testing of two saturated columns of representative waste fine/waste rock from the receiving Pit samples for a minimum period of 13 weeks. The leaching test methodology shall be representative of the anoxic conditions likely to be present at the WFSF and follow the protocol outlined in Watson *et all* 2016. The works approval holder shall analyse the concentrations of contaminants in the leachate and detail the methodology used, source of the samples and the results in a report.

(a) Within 30 days of the completion of the test, the works approval holder shall submit the results in a report to the CEO.

Compliance reporting

22. After one month of tailings deposition, the works approval holder shall provide to the CEO a monthly water balance report for operating Kal pits.

23. The works approval holder must submit to the CEO a report on the time limited operations 60 calendar days prior to the completion date of time limited operations.

24. The works approval holder must ensure the report required by condition 23 includes the following:

(a) volume of waste fines deposited;
(b) fines sold percentage
(c) volume of seepage recovered;
(d) calculated seepage
(e) groundwater contours before and after discharge;
(f) a summary of monitoring results and inspections obtained during time limited operations under conditions 19 and 20;
(g) a review of performance against the in-pit TSF design; and
(h) where they have not been met, measures proposed to meet the manufacturer's design specification and/or conditions of this works approval, together with timescales for implementing the proposed measures.

Records and reporting (general)

25. The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:

(a) the works conducted in accordance with condition 1;
(b) any maintenance of infrastructure that is performed in the course of complying with condition 1; and
(c) monitoring and inspection programmes undertaken in accordance with conditions 19 and 20.

26. The books specified under condition 25 must:

(a) be legible;
(b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;
(c) be retained by the works approval holder for the duration of the works approval; and
(d) be available to be produced to an inspector or the CEO as required.

Definitions

In this works approval, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
annual period	a 12 months period commencing from [day month] until [day month] of the immediately following year.
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V Division 3 of the EP Act.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
environmental commissioning	means the sequence of activities to be undertaken to test equipment integrity and operation, or to determine the environmental performance, of equipment and infrastructure to establish or test a steady state operation and confirm design specifications.
Environmental Commissioning Report	means a report on any commissioning activities that have taken place and a demonstration that they have concluded, with focus on emissions and discharges, waste containment, and other environmental factors.
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and/or equipment has been constructed and/or installed in accordance with the works approval.
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).
monthly period	means a one-month period commencing from day 2 of a month until day 1 of the immediately following month.
premises	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in

Term	Definition
	Schedule 1 to this works approval.
prescribed premises	has the same meaning given to that term under the EP Act.
Engineering / geotechnical specialist	means a person who: (a) holds a tertiary academic qualification in geotechnical science or engineering; and (b) has a minimum of 5 years of experience working in the field of geoscience.
TSF	tailings storage facility
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions.
waste	has the same meaning given to that term under the EP Act.
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 54 of the EP Act, subject to the conditions.
works approval holder	refers to the occupier of the premises being the person to whom this works approval has been granted, as specified at the front of this works approval.

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below (Figure 1).

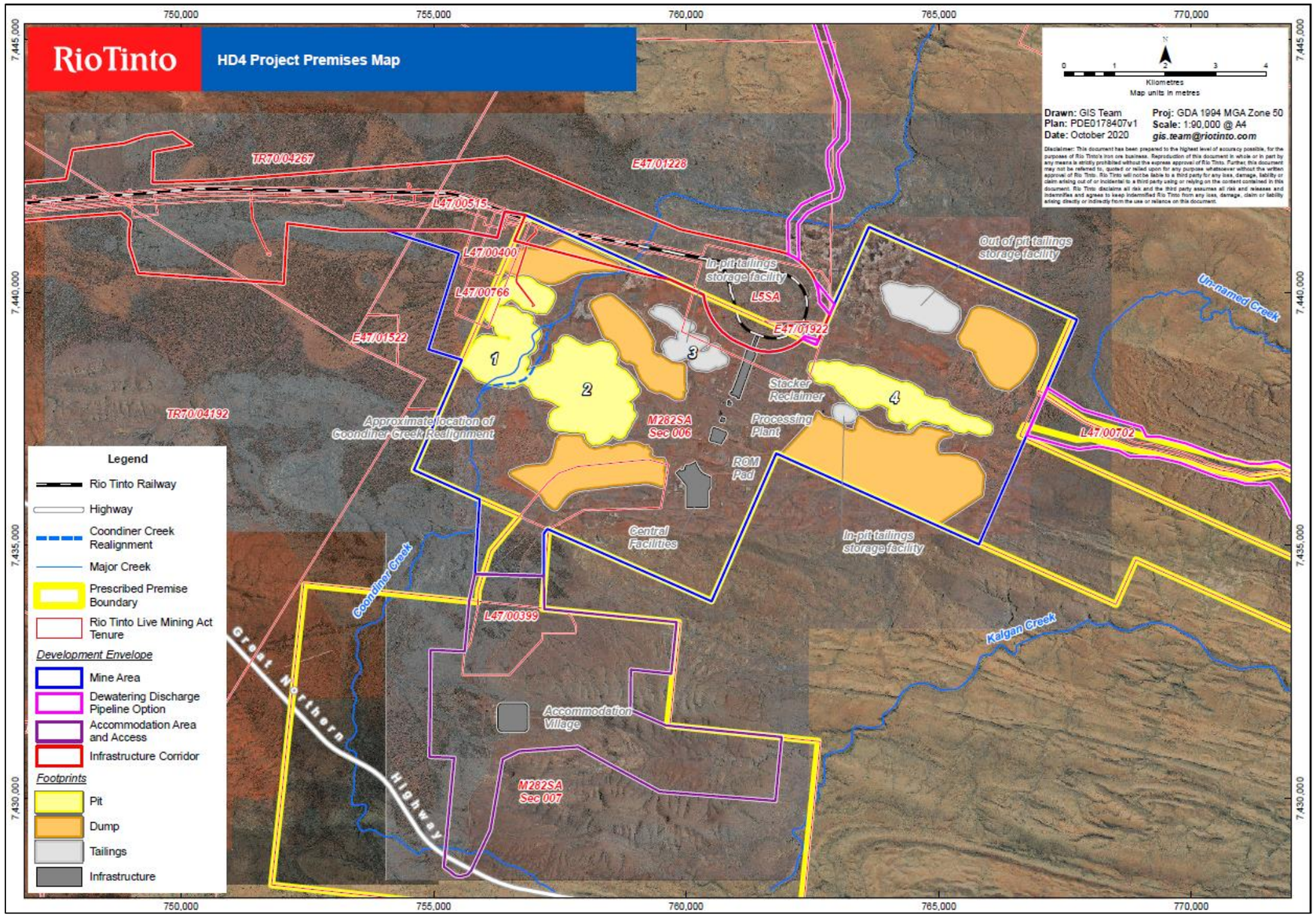

Figure 1: Premises location.

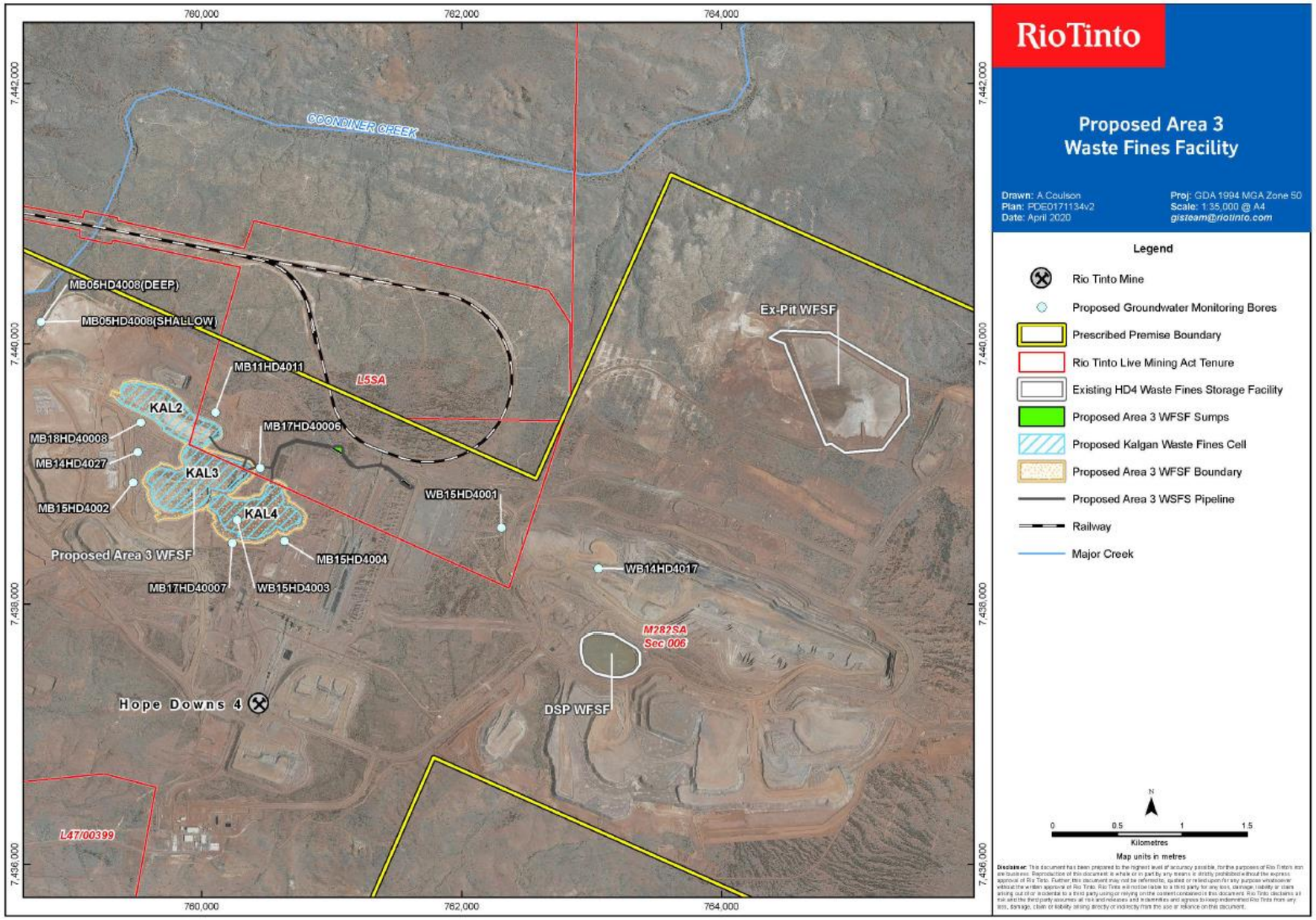

Figure 2: Map of the boundary of the prescribed premises.

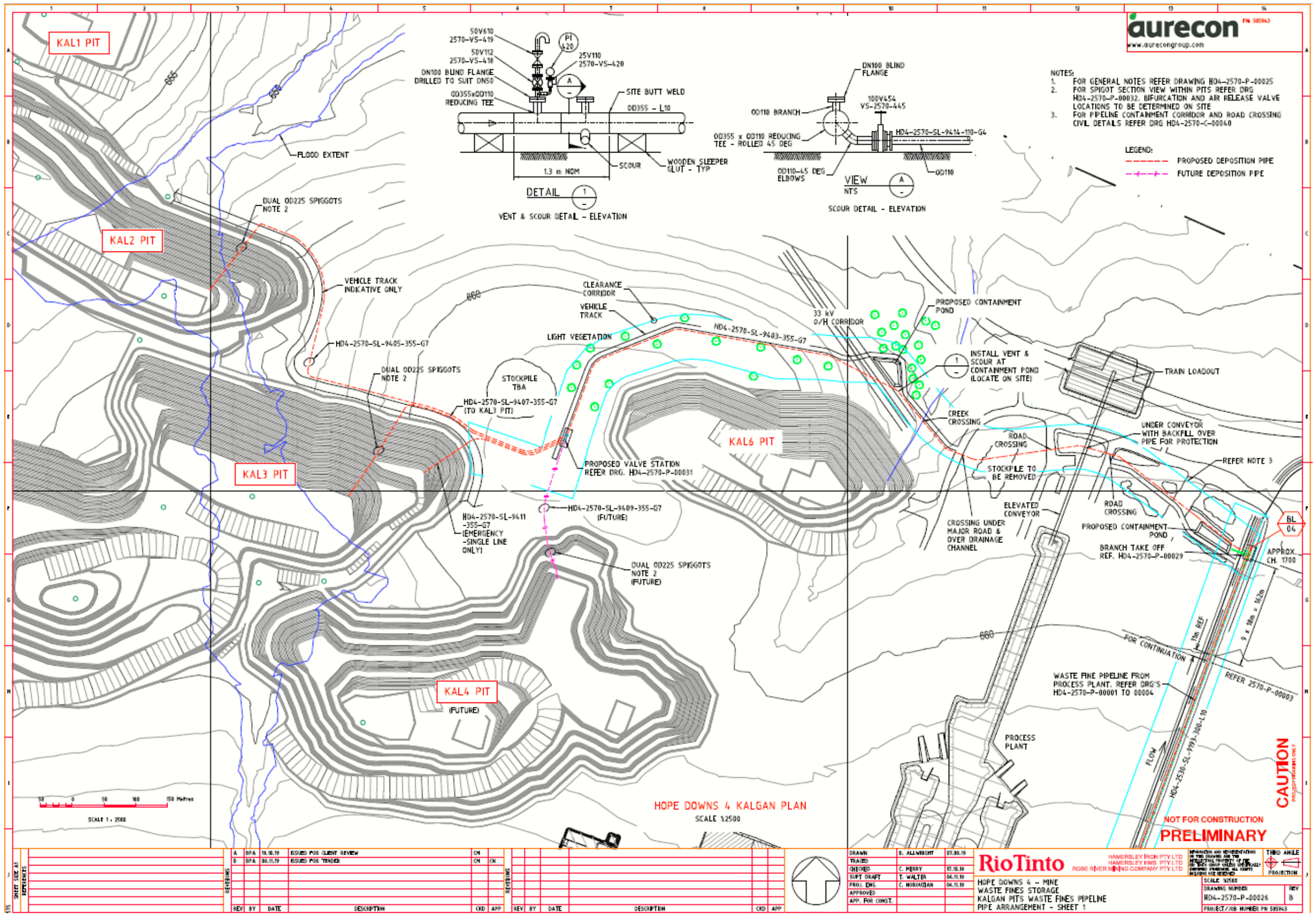

Figure 3: Proposed in-pit WFSF and pipeline arrangement – Hope Downs 4 – Area 3.

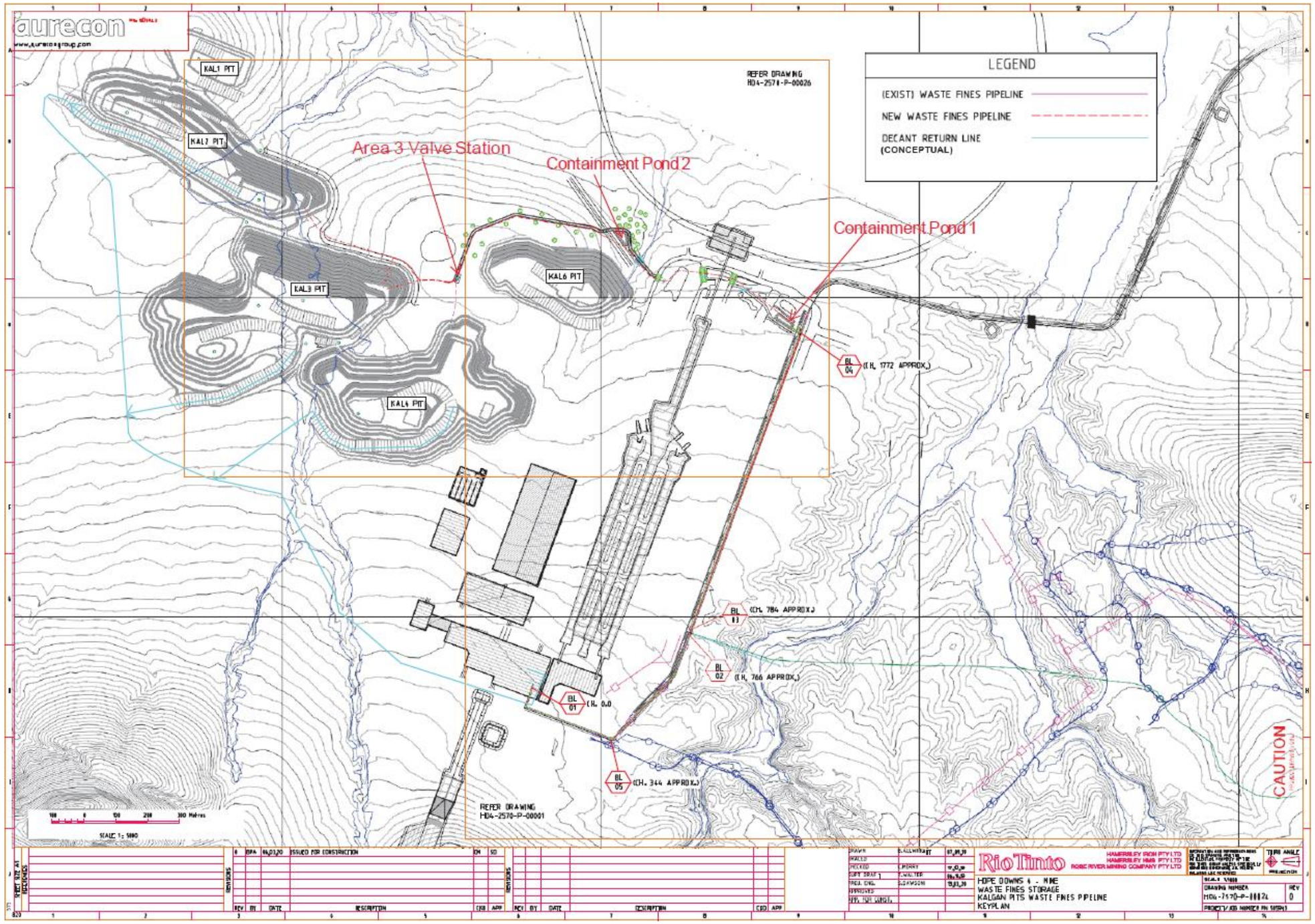

Figure 4: Delivery pipeline and decant return system – Hope Downs 4 – Area 3.

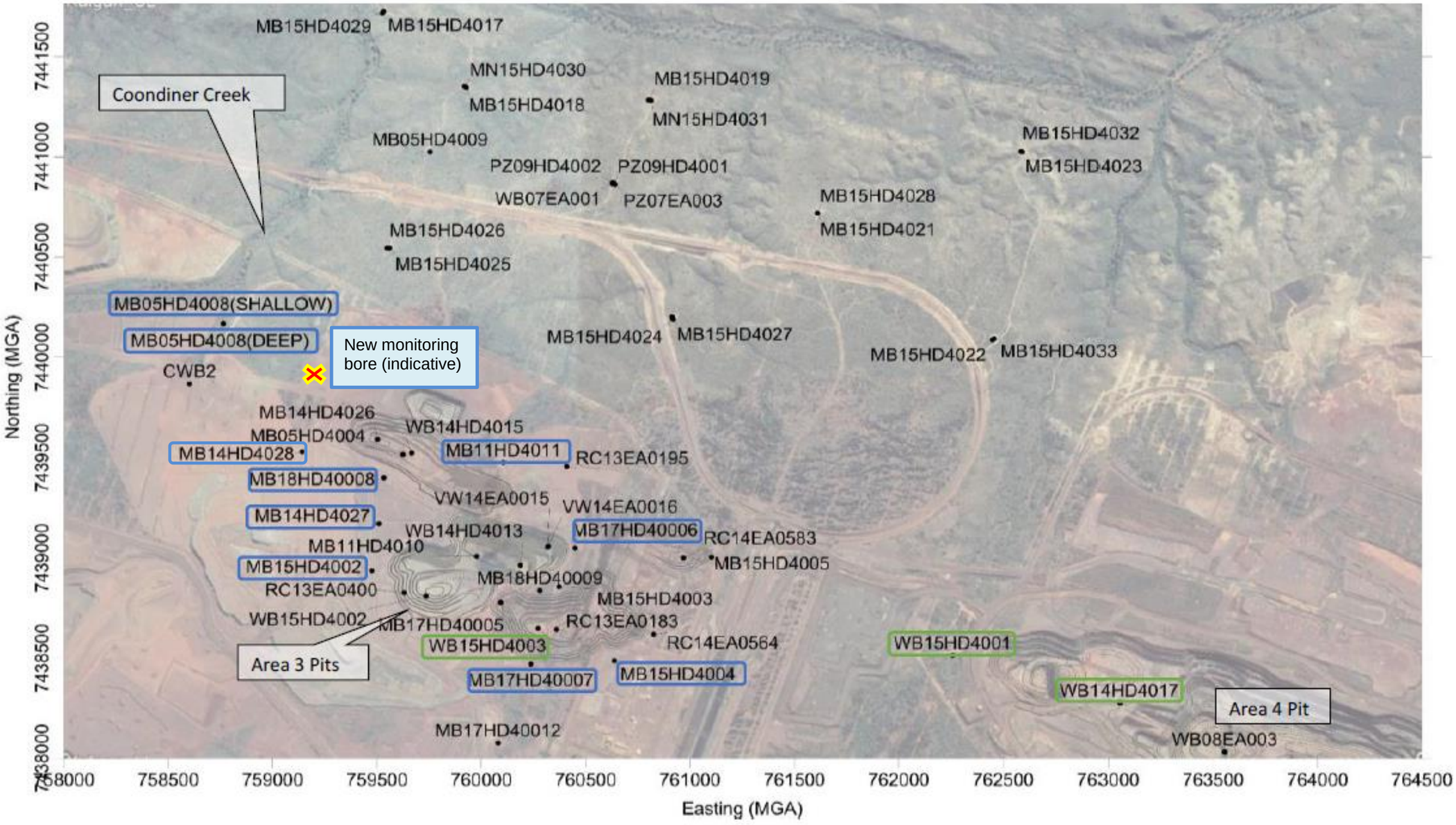

Figure 5: Area 3 in-pit Waste Fine Storage Facility - Monitoring locations.

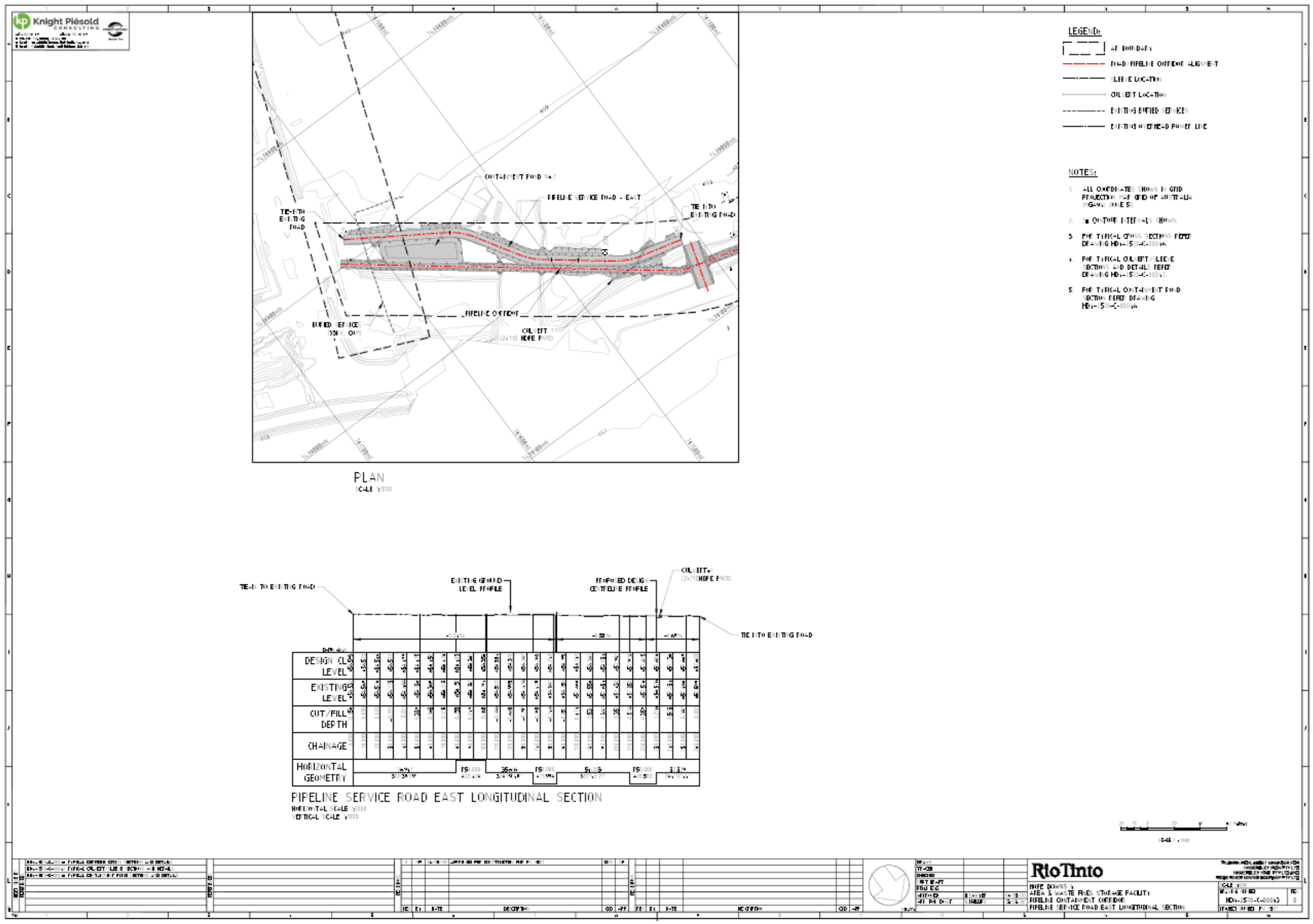

Figure 6: Containment pond No. 1 detailed design.

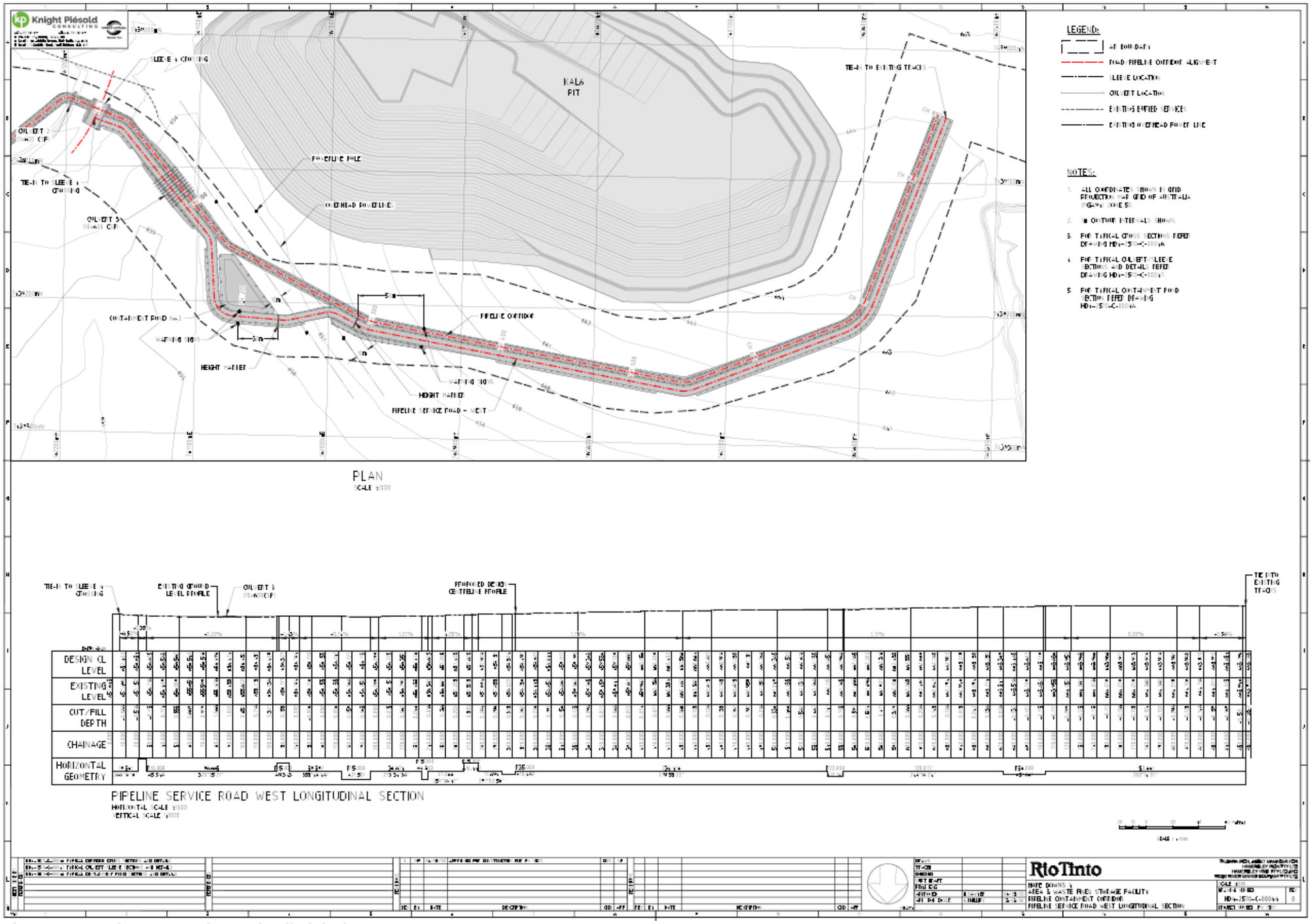

Figure 7: Containment pond No.2 detailed design.

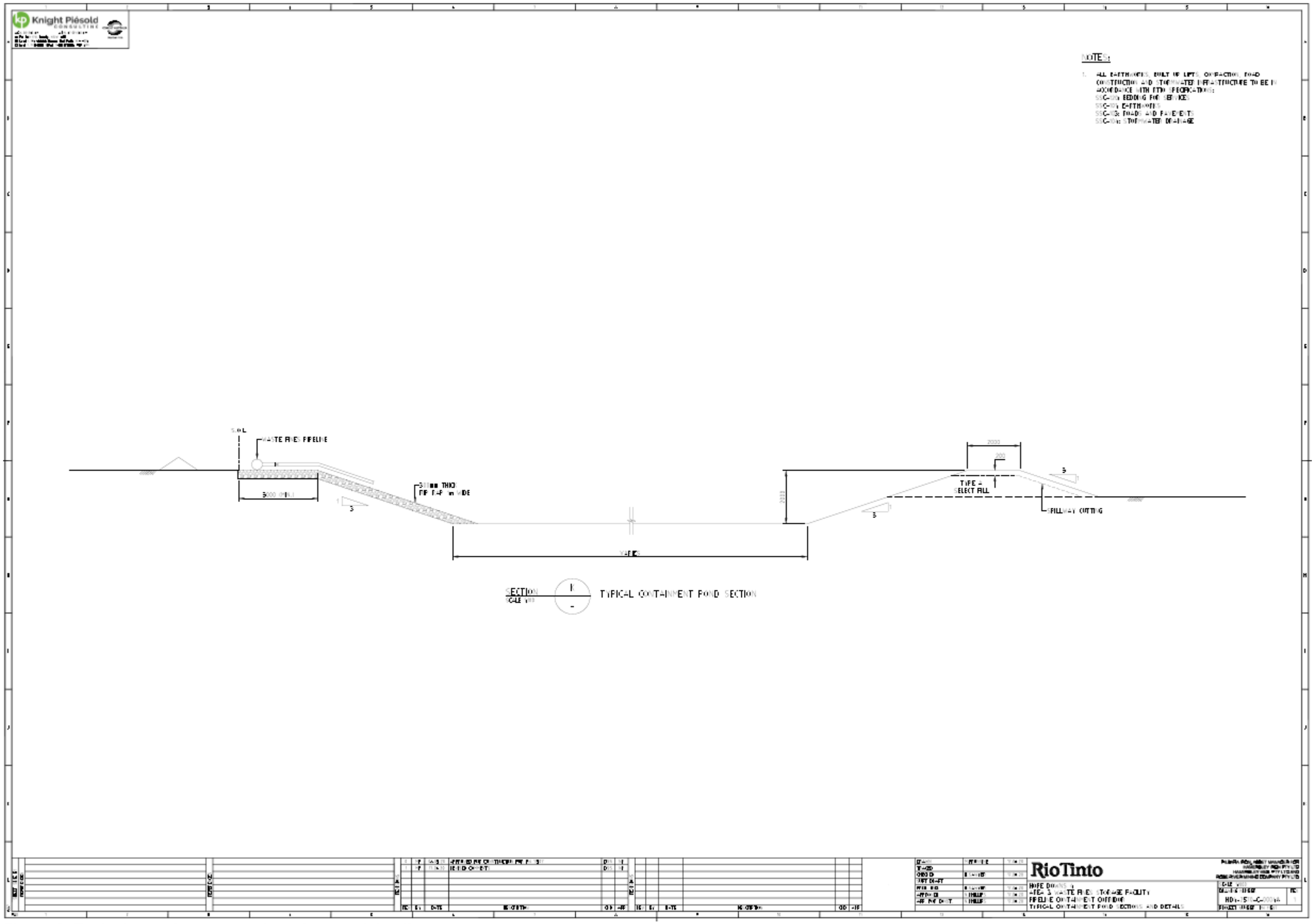

Figure 8: Typical containment pond sections and details.