Application for Works Approval

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

Works Approval Number	W6856/2023/1
Applicant	BHP Billiton Nickel West Pty Ltd
ACN	004 184 598
File number	DER2019/000419
Premises	Nickel West Leinster Nickel Operations – TSF3 Cell G and TSF3 Cell F Mining Tenement: ML255SA As specified in Schedule 1 of the Works Approval
Date of report	7/05/2024
Decision	Works approval granted

Christine Pustkuchen
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Manager, Resource Industries
REGULATORY SERVICES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the premises. As a result of this assessment, works approval W6856/2023/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

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

2.2 Application summary

On 28th September 2023, BHP Nickel West Pty Ltd (the applicant) submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

The application is seeking approval to undertake construction works and time limited operations (TLO) relating to a new Cell (G) in an existing tailings storage facility 3 (TSF3), a new return water pond (RWP) and an amendment to TSF3 Cell F design at the premises. The premises is the Leinster Nickel Operation (LNO) located approximately 370km northeast of Kalgoorlie and approximately 9km north of the town of Leinster in the goldfields region.

The premises relates to category 5 and assessed production capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6856/2023/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in works approval W6856/2023/1.

The new infrastructure will support the existing processing and beneficiation activities covered under the Existing licence L4612/1989/11 for the LNO. Following construction of the works and subject to the assessment of the critical containment infrastructure report the infrastructure will be allowed to operate under time limited operation conditions within the works approval. The existing Licence will require an amendment to allow continued long-term operation of the infrastructure approved under this works approval.

2.3 Overview of premises

The Applicant processes mined nickel sulphide ore to produce nickel concentrate which is then transported via road to Leonora, then via rail to the Kalgoorlie Nickel Smelter for smelting. The site is authorized to processes up to 3,600,000 tonnes of ore annually and during the 2018-2019 annual period approximately 2,185,484 tonnes of tailings were produced requiring on site disposal to existing TSF2 and TSF3 (cells AB, CD and E).

This Works Approval is for the construction of a new TSF3 Cell G, to the north of existing TSF3 Cell AB as shown in Figure 1 and for modifications to existing TSF3 Cell F. Tailings deposition will revert to the other operational TSFs (TSF2 and TSF3E) whilst the Stage 2 Cell F embankment and Cell G are constructed.

Stages 1A and 1B of the previously approved design for Cell F were completed in 2022. The works approval application seeks approval for modification to future stages of the TSF3 Cell F due to the recent construction of a rockfill buttress along the northern flank of TSF 3AB, which abuts TSF3 Cell F. The buttress was designed and constructed after approval of the initial

design for TSF3 in order to raise the slope stability factors of safety of TSF3 AB to satisfy the minimum criteria stipulated by the ANCOLD (Australian National Committee on Large Dams) and BHP. As such, Stage 1B of Cell F was constructed as a standalone facility, providing enough storage capacity and enable the Applicant time to assess options to tie in TSF3 Cell F in to TSF 3AB in the future.

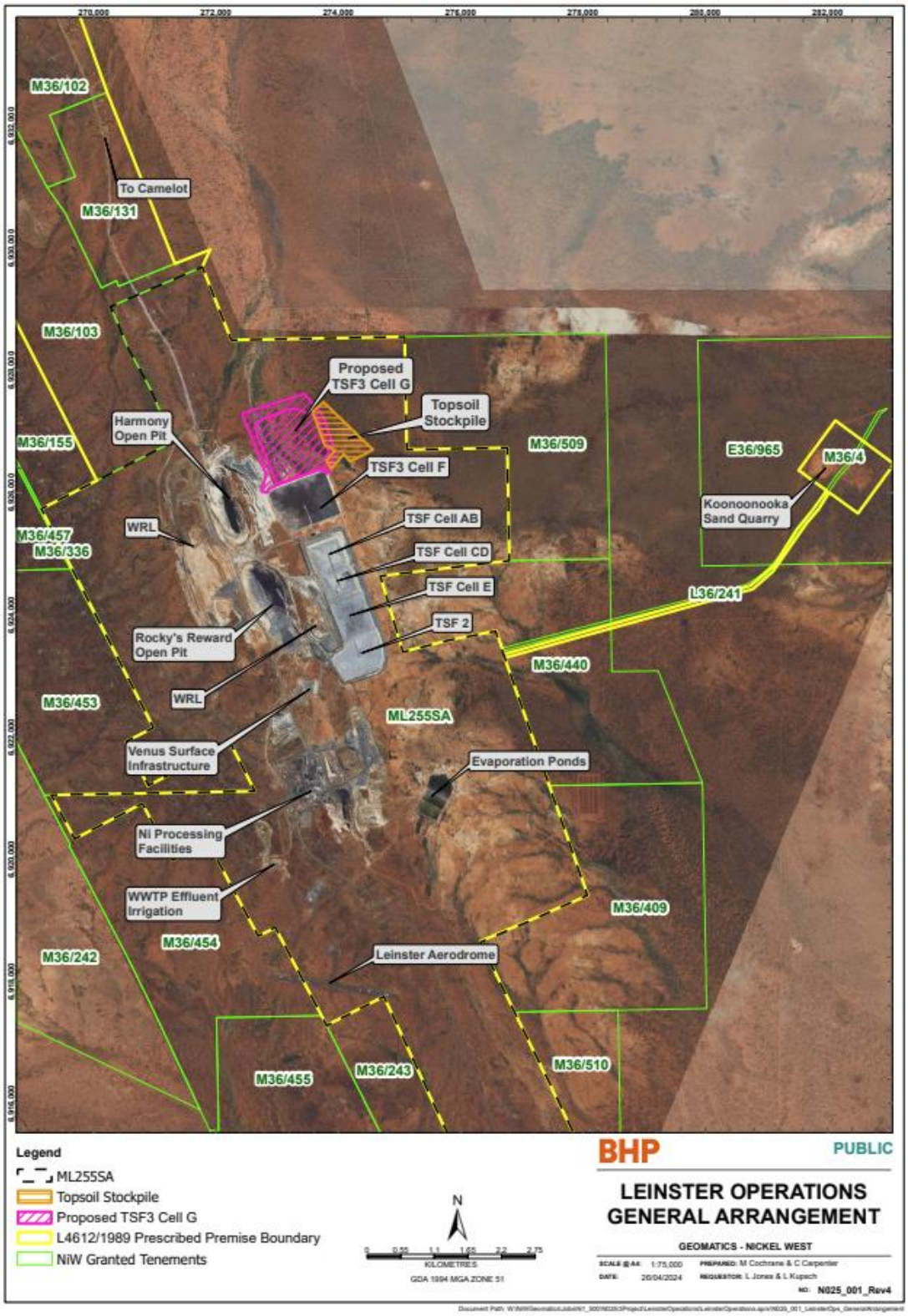

Figure 1. BHP LNO tenure, premises layout and prescribed premises boundary.

This works approval application is for the construction and time limited operations of:

Cell F: Modifications to existing TSF3 Cell F include the following activities:

- Extension of decant pipeline and under drainage outlet pipes and gravity outfall pipes to the Return Water Pond;
- Stage 2 Tie-in works to the TSF 3AB buttress using oxide mine waste as construction material and an upstream raise of the Stage 1B embankment to a crest elevation of RL 10522.5m (lift 1); and
- Two upstream embankment raises (lift 2 and 3) using tailings as construction material each 2.5m in height, lift 1 to a crest heigh of RL 10525 m and lift 2 to a crest height of RL 10527.5 m.
- Other ancillary measures to support the above works.

The applicant has included addition future embankment raises for Cell F within the application, listing a further 9 raises which is scheduled to occur up until the year 2049. As works approvals are generally only granted for a period of a maximum of 5 years the Delegated Officer has decided to reduce the scope of the application to only focus on the works that are achievable within a 5-year time period. Additional Cell F embankment raises will need to be applied for under separate works approval or licence amendment applications.

Cell G: The new cell, TSF3 Cell G is required to supplement the existing cells in TSF3 in order to accommodate up to 40 million tonnes (Mt) of tailings expected to be generated until the life of mine expectancy in 2048. TSF Cell G is planned to be constructed as an above-ground paddock style dam approximately 700m x 800m and will be progressively developed in stages:

- Stage 1A is the initial starter embankment and will include the west and northern flanks only. Embankments will be constructed to a crest height of RL 10511 m
- Stage 1B will be constructed in a downstream (outward) direction for the subsequent cell raise which will also tie into the existing north wall of Cell F. Embankments will be constructed to a crest height of RL 10515 m.
- Lift 1: One upstream embankment raise using tailings as construction material. Embankments will be constructed to a crest height of RL 10517.5 m.

The applicant has included addition future embankment raise for Cell G within the application, listing a further 9 raises which is scheduled to occur up until the year 2049. As works approvals are generally only granted for a period of a maximum of 5 years the Delegated Officer has decided to reduce the scope of the application to only focus on the works that are achievable within a 5-year time period. Additional Cell G embankment raised will need to be applied for under separate works approval or licence amendment applications.

Approximately 120.95 ha native vegetation is required to be cleared for the proposed works, this will be carried out under Native Vegetation Clearing Permit CPS 8877.

2.3.1 Category 5 Activities

TSF Design and embankment raises

Both Stages 1A and 1B of Cell G will be constructed from oxide stockpiles located to the western side of Cell F. The oxide will be compacted to form a low permeability confining embankment and an additional layer of oxide capping will be placed on the downstream slope of the embankments to reduce erosion and minimize oxidation of any exposed tailings.

Cell G will be unlined and comprises of soil typical of the area described as ‘loose, medium to coarse grained, red-brown silty sand to gravelly silty sand up to a depth of 0.5 m (the soil profile)

overlying coarse-grained felsic (quartz rich) gneiss' with a permeability ranging between 0.01 m/day to 5 m/day. Localised preferential seepage pathways lie underneath the embankment footprints of Cell G (Stage 1A) creating the need for the inclusion of a compacted cut-off key, a low permeability compacted oxide earth layer, down to caprock, below the entire perimeter embankment of Cell F to minimize seepage.

After the completion of the initial stages (1A and 1B) subsequent embankment raises for Cell G will be constructed from compacted tailings sourced from the adjacent beaches, with armoring through the placement of oxide waste. Tables 1 and 2 below show the stages of embankment raises for both Cells F and G.

It should be noted that TSF lifts can only occur to the extent they are completed within the timeframe of the Works Approval. Therefore, only Stage 2 (which is listed as lift 1 in the below table) and lifts 2 and 3 will be included for Cell F and only Stage 1A and 1B and Lift 1 will be included for Cell G within the Works Approval.

Table 1: Cell G lift stages and filling schedule

Stage	Crest RL	Commence Deposition	Storage Capacity (Mt)	Storage Life (days)	Annualised Rate of Rise (m/year)	Sequence of Filling between Raises on Cell F
Stage 1A	10 516.0 m	Mar 2021	2.03	256	2.51	TSF 3E → TSF 2
Stage 1B	10,520.0	Sep-22	4.20	528.62	1.51	TSF 3E → Cell G
Lift 1	10,522.5	Apr-25	3.11	391.53	0.83	TSF 3E → Cell G
Lift 2	10,525.0	Apr-28	2.99	377.27	0.95	TSF 3E → Cell G
Lift 3	10,527.5	Dec-30	2.95	371.29	0.98	TSF 3E → Cell G
Lift 4	10,530.0	Jul-33	2.89	363.74	1.00	TSF 3E → Cell G
Lift 5	10,532.5	Jan-36	2.83	356.78	1.19	Cell G
Lift 6	10,535.0	Feb-38	2.72	342.34	1.23	Cell G
Lift 7	10,537.5	Feb-40	2.63	331.67	1.25	Cell G
Lift 8	10,540.0	Feb-42	2.54	320.57	1.29	Cell G
Lift 9	10,542.5	Feb-44	2.45	309.21	1.33	Cell G
Lift 10	10,545.0	Dec-45	2.33	294.06	1.38	Cell G
Lift 11	10,547.5	Oct-47	2.26	285.23	1.41	Cell G
Lift 12	10,550.0	Jul-49	2.22	280.18	1.42	Cell G

Table 2: Cell F lift stages and filling schedule

Stage	Crest RL	Commence Deposition	Storage Capacity (Mt)	Storage Life (days)	Annualised Rate of Rise (m/year)	Sequence of Filling between Raises on Cell F
Stage 1A	10 516.0 m	Mar 2021	2.03	256	2.51	TSF 3E → TSF 2
Stage 1B	10,520.0	Sep-22	4.20	528.62	1.51	TSF 3E → Cell G
Lift 1	10,522.5	Apr-25	3.11	391.53	0.83	TSF 3E → Cell G
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Lift 7	10,537.5	Feb-40	2.63	331.67	1.25	Cell G
Lift 8	10,540.0	Feb-42	2.54	320.57	1.29	Cell G
Lift 9	10,542.5	Feb-44	2.45	309.21	1.33	Cell G
Lift 10	10,545.0	Dec-45	2.33	294.06	1.38	Cell G
Lift 11	10,547.5	Oct-47	2.26	285.23	1.41	Cell G
Lift 12	10,550.0	Jul-49	2.22	280.18	1.42	Cell G

Tailings delivery and pipeline

The proposed tailings delivery pipeline route and distribution system around Cells F and G are shown in Figure A, Appendix 2. The pipeline will be connected to the existing tailings delivery pipeline at the south-western corner of TSF Cell F (north-western corner of TSF 3AB). As part of the Stage 1A construction of Cell G, the pipeline will be extended along the western side of Cell F to the north-western corner of the TSF. The delivery pipeline will be located outside the footprint of Cell F, thereby avoiding interruptions to Cell F embankment lifts.

The Cell G tailings distribution network will connect to the new delivery pipeline and comprise two pipelines, one feeding the southern and eastern flanks, and one feeding the western and northern flanks.

Tailings will be delivered as a slurry at approximately 35-40% solids by mass and discharged by opening five or six adjacent spigots at any one time. This will assist in creating a uniform beach, maintaining a supernatant pond near the centre of the TSF to maximise the volume of water decanted off the TSF and reduce erosion.

Spigots will be installed along the pipelines placed around the perimeter embankments at approximately 40 m intervals. To minimise erosion of the internal faces of the starter embankments and toe drain, 110 mm diameter $uPVC_{18}$ 'conductor pipes' will be placed on the faces, into which the tailings slurry will discharge after flowing through an open spigot.

Toe Drains and decant towers and underdrainage

A series of toe drains will be constructed around the eastern, western, and northern flanks of Cell G and tie in with the Cell F toe drain on the western and eastern boundaries (see Figure C, Appendix 2). The drains will comprise of a filter zone, 3 m in width, placed at the upstream (internal) toe of the starter embankment (Cell G will adjoin the northern bank of Cell F; therefore a toe drain has not been included in this section of the TSF) (note Cell F has already been constructed).

The drains will collect water released through consolidation of the tailings thereby controlling the location of the phreatic surface on the internal surface of the starter embankment (See Figure B, Appendix 2). Outlet pipes will discharge into collection sumps from where the water will drain to the Return Water Pond (RWP) under gravity.

For Cell G, in addition to the toe drain collection pipe, a 'basin drainage system' of underdrainage has been included below the expected location of the supernatant pond in a 'herring bone' pattern (see Figure C, Appendix 2). The underdrainage will comprise perforated drainage pipes installed within filter zones. The pipes will be installed in trenches to reduce the load on the pipes when the TSF reaches final height. Operational monitoring of drain flows will provide an indication of the effectiveness of the drains. An elevated, internal (beach) drain may be required once the tailings beaches reach approximate elevations of RL 10,525 m in later stages which are not part of this proposal.

Supernatant water from Cells F and G will initially be decanted through turret pump systems which will be located on access causeways. The pumps will be progressively shifted away from deposited tailings, as the supernatant ponds approach the middle of the TSFs, the pumps will become redundant and water will be decanted via gravity collection and outfall systems.

Cell F will use the existing decant inlet structure constructed as part of Stage 1A. The decant inlet structure for Cell G will utilize the same design. The inlet systems comprise 1.8 m x 1.2 metre precast concrete towers. Decanted water to flow into the gravity outfall pipes, the size of which is designed to control the rate of flow in line with the new return water pond (RWP) pump capacity. The RWP will pump water back to the process plant for re-use.

Decant water from Cells F and G will temporarily be pumped to the existing RWP until the supernatant pond location moves upgradient to the centre of the TSF and the TSFs can be decanted via gravity (approximately 6 to 8 months). After this time, all decant water from each

of the operating TSFs on site will be directed to the new RWP north of Cell G which is included within the scope of this works approval application.

Return Water Pond

A new RWP will be constructed during Stage 1A of Cell G and will located to the north of the Cell G (See Figure D, Appendix 2). The RWP has been designed to accommodate decanted supernatant, underdrainage, recovery bore and rainwater from both TSF Cells F and G. The pond will be aproximately 7,500m^3 (80m x 40m x 3m deep) and will accommodate 12 hours of TSF water at full capacity from both Cell F and Cell G, over and above a normal operating capacity (~12,000 m^3) with a 500mm freeboard. An emergency spillway will be constructed consisting of a 5 m wide channel, lined with a protection layer comprising either rip-rap or a 2 mm smooth HDPE geomembrane liner.

The RWP will also be lined, a 2 mm HDPE geomembrane will be placed over the pond base, extend up the side slopes of the pond perimeter embankment and anchored in place using an anchor trench along the crest of the embankment. The embankments will be constructed with oxide similar to that used in construction of the Stage 1A and 1B TSF Cell G starter embankments. The final crest height of the RWP will be RL 10504.6 m.

The Return Water line transferring water to the Circuit Water Tank (Process water) is fitted with magnetic flow meters, which record water volumes and provide leak detection capabilities.

Groundwater and monitoring Bores

Groundwater in the project area is contained within deeply fractured bedrock with low porosity and permeability giving rise to poor to moderate yields. The weathered rocks show a rapid reduction in permeability with depth and groundwater flows within this unit will only occur within local permeable faults/fracture zones over short distance. Groundwater is thought to flow north towards Cell G as indicated by the seepage pathways from TSFs 2 and 3.

The depth to groundwater at the Premises varies greatly but generally ranges between 5 and 14 meters below ground level (mbgl), depending on the proximity of monitoring bores to the existing TSFs. There is an area of relatively shallow groundwater in the vicinity of Cell F, which is attributed to the natural sloping topography to the north as well as seepage from the TSFs migrating to the north. The depth to groundwater increases to approximately 30 m below natural ground to the north of Cell F (Cell G location) which is closer to the pre-mining groundwater levels.

The Applicant has provided groundwater quality data dating back to 1995, a summary of historic water quality data is provided in Table 3 below. The monitoring data shows strong correlations between TSF operation and changes to groundwater levels (rises) and groundwater quality. Groundwater levels have shown consistent rises at all monitoring bores to the north of TSF 3 during its operation from 1995 to 2007, but then declined after deposition at TSF 3 ceased and TSF 2 was re-commissioned.

Table 3: Selected average historical water quality indicators for TSF monitoring bores (from Golder, 2017)

Location	Parameter	Range	Average	DER Guideline
TSF2	pH	3.3 to 8.1	5.7	6.5 – 8.5*, 8 – 8.4^
	Ni (mg/L)	0 to 29	2.064	0.2#, 0.011*, 0.0007^
	TDS (mg/L)	240 to 48,990	24,761	Not specified
TSF3	pH	4.7 to 8.3	6.84	6.5 – 8.5*, 8 – 8.4^
	Ni (mg/L)	0 to 1.30	0.0914	0.2#, 0.011*, 0.0007^
	TDS (mg/L)	280 to 56,800	12,970	Not specified
Evaporation Pond	pH	3.42 to 7.54	5.25	6.5 – 8.5*, 8 – 8.4^
	Ni (mg/L)	0.01 to 1.02	0.592	0.2#, 0.011*, 0.0007^
	TDS (mg/L)	510 to 99,400	35,783	Not specified

Notes: The bores used for this summary are listed in Appendix A of Golder (2017)

#DER DoH non-potable use guideline value; *DER freshwater guideline value; ^DER marine water guideline value.

Seven new groundwater monitoring bores were installed as part of the construction of Cell F prior to its' commissioning in 2019. The bore installation included two groundwater monitoring bores along the eastern side of Cell F (MB71 and MB70), four groundwater monitoring bores along the northern side of Cell G (MB72, MB73, MB74 and MB75) and one further north (MB76).

Groundwater quality for recently installed bores was compared to *ANZECC (2000) Livestock drinking water guidelines, ANZECC (2000) Marine 90% protection value* and the *ANZECC (2000) Marine slightly-moderately disturbed ecosystem* guideline values. Metals including copper, cobalt, lead, nickel, zinc, and silver exceed the ANZEC (Marine) guidelines for slightly to moderately disturbed ecosystems in some wells. Elevated barium, boron, bromine, cobalt, copper, lithium, manganese, nickel, zinc, silver, and strontium are noted in MB70, possibly associated with seepage from the TSF. Water quality in bores to the north of TSF3 does not appear to have been impacted by seepage from the TSF.

The Applicant proposes to continue with the current groundwater monitoring program under the existing Licence for the premises. This includes monitoring from newly installed bores MB70 through MB76 for standing water level (SWL), nickel and total dissolved solids (TDS) and electrical conductivity (EC). The Applicant also implement groundwater recovery for the TSF area from recovery bores located near Cell F (MB74) and to the South of TSF2 (MB06). Existing target and limits from standing water levels within monitoring bores will apply to the new TSF Cell G.

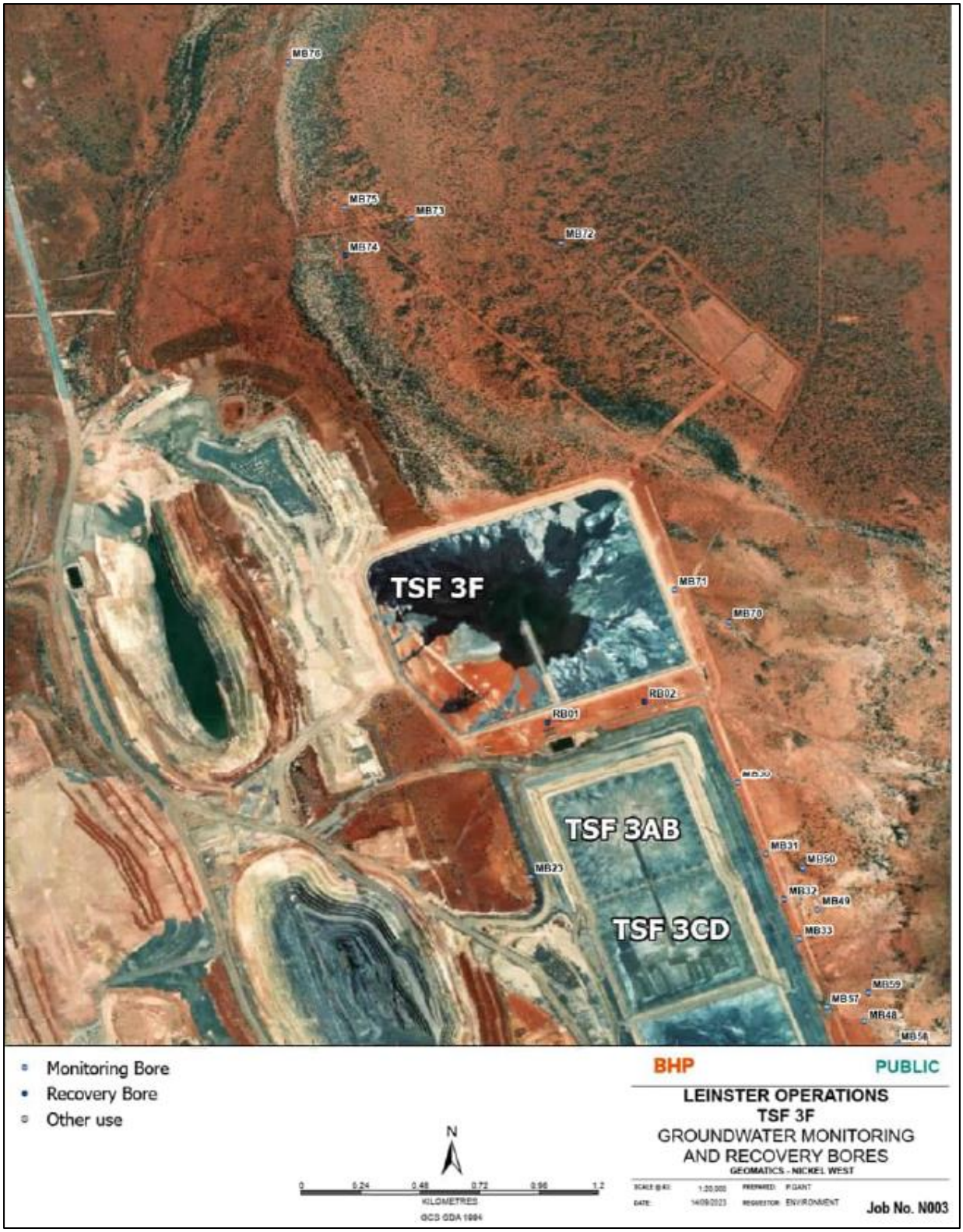

Figure 2: Groundwater monitoring bores around TSF3 Cell F and north of the proposed area for TSF3 Cell G.

2.4 Other Approvals

2.4.1 Part V of the EP Act

TSF3 Cell F original design was approved on the 28th November 2019 under works approval W6280/2019/1. Construction of stage 1A commenced in July 2020. Construction of stage 1A was complete in 2021, with Cell B completing construction in 2022.

The Applicant have an operational record spanning many years. Table 4 below summarises the works approval and licence history for the premises over the last 7 years.

Table 4: Works Approval and Licence history

Instrument	Issued	Nature and extent of works approval, licence or amendment	Approved Height (m)
W5314/2012/1	14/01/2013	TSF 2 Cell raise	RL10550.0 m
W5576/2013/1	2013	Cell E raise	RL 10545.5 m
W5331/2013/1	2013	Cell CD raise	RL 10554.0 m
W5331/2012/1	14/03/2013	Cell CD raise	RL 10554.0 m
W5479/2013/1	20/9/2013	Cell AB raise	RL 10554.0 m
L4612/1989/11	29/04/2016	The Licence duration extended from 18 October 2018 to 18 October 2030 by Amendment Notice.	-
L4612/1989/11	22/08/2017	Amendment Notice 2 to authorise embankment raise to TSF3 Cell CD to RL 10,556.5m	RL10556.5 m
L4612/1989/11	20/03/2018	Amendment Notice 3 to authorise embankment raise to TSF3 Cell AB to RL 10,556.5m	RL 10556.5 m
W6620/2019/1	7/03/2019	For TSF3 Cell E embankment raise from RL 10545.5 to a final height of RL 10547.5m	RL 10547.5 m
W6270/2019/1	20/9/19	For TSF3 Cells AB and CD embankment raise	RL 10559 m
W6280/2019/1	28/11/2019	TSF Cell F, includes stages 1 A and 1B. Also includes stages 2 - 8 (embankment lifts). Instrument expires November 2024.	Stage 1A – RL 1051 m Stage 1B – RL 10520 m

2.4.2 Nickel (Agnew) Agreement Act 1974, Nickel (Agnew) Agreement Amendment Act 2023 (WA)

The *Nickel (Agnew) Agreement Act 1974* was created to ratify an agreement between the State of Western Australia and Western Selcast (Pty) Limited and Mount Isa Mines Limited with respect to the mining and treatment of certain nickel ore reserves. This means that Applicant's mining activities on ML255SA are approved by the Minister for State Development, Jobs and Trade, and the State Agreement is administered by the Department of Jobs, Tourism, Science, and Innovation (JTSI).

The construction of TSF3 Cell G is to occur over ML255SA (State Agreement) which is held pursuant

to the Mining Act. A Bill for amendments to the Nickel (Agnew) Agreement Act, known as the Nickel (Agnew) Agreement Amendment Act 2023 (WA) was ratified by Parliament and commenced on 17 August 2023.. Tenements rolled into the State Agreement area were surrendered on 29 January 2024 and amalgamated into ML255SA

3. Risk assessment

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

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

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

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

Table 4: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction of Cells F, G and RWP			
Dust	Earthworks, construction, mobilisation and positioning of infrastructure Vehicle movements on unsealed roads	Air / windborne pathway	• Water sprays and wet condition of work surfaces; water cart on access roads
Noise			• No specific noise controls have been provided • Nearest sensitive land users (resident) approximately 8km west of the premises
Time limited Operation			
Tailings spills or leaks from TSF or RWP pipeline infrastructure	Discharge of tailings into TSF Cell F and G, decant water to RWP	Direct discharge to land. Overland flow caused from spills or leaks from pipelines. Contamination of land, impacts to surrounding land including vegetation such as smothering/death and, habitat destruction	Nickel West Tailings Master Management Plan Parts 1-9 including - • Automatic leak and flow rate detection system on pipelines. • Return water pipeline, decant, underdrainage and tailings pipeline bunded and fitted with shut off valves. • 12-hour shift based visual inspections to determine pipeline integrity –

Emission	Sources	Potential pathways	Proposed controls
Overtopping TSFs or RWP	Discharge of tailings into TSF Cell F and G, decant water to RWP	Direct discharge to land. Overland flow to adjacent land causing contamination, Impacts to vegetation such as smothering/death and, habitat destruction	• Vegetation monitoring as per Nickel West Tailings Management Master Plan Parts 1-9 (and Licence L4612/1981/11), Nickel West Tailings Master Management Plan Parts 1-9. • 12 hour shift based visual inspections of TSF cells • RWP has been designed to accommodate discharge of about 12 hours of water at full capacity from both Cell F and Cell G, over and above a normal operating and dead storage volume without overtopping (~12,000 m^3) with a minimum freeboard of 500 mm
Direct discharge of tailings slurry to land	Embankment failure	Seepage through floor and embankments of TSF4s leading to a stability failure. Smothering and contamination of soils and vegetation with process water and material high in heavy metals.	• An oxide capping will be applied to the downstream slope of the Cell G embankments, excluding the Stages 1A and 1B embankments, to protect the tailings embankments against erosion and to act as a capping layer to prevent oxidation of the exposed tailings surfaces • Diversion of natural stormwater drainage channels (east and west flowing) around Cells F and G • Annual operational reviews by independent experts • Trigger Action Response Plan – part of the Tailings Storage Facility Emergency Procedures Management Plan (Nickel West Tailings Management Master Plan) • The TSF Cell G Design Report – this report includes a Dam break assessment for Cell G. The Dam break assessment has been carried out in accordance with the relevant parts of ANCOLD (May 2012) *Guidelines on tailings Dams – Planning, design, Construction, Operation and Closure;* and DEMIRS (August 2015) *Guide to Departmental requirements for the management and closure of tailings storage facilities (TSFs).* **It should be noted that embankment failure due to overtopping, piping, foundation, liquefication or slope instability have been assessed by an independent third party expert and the design and operation of the TSF has**

Emission	Sources	Potential pathways	Proposed controls
			been planned to minimize risk of any of these events occurring (see DEMIRS response to request for advice in Section 4). See also proposed controls under Nickel West Tailings Management Master Plan Parts 1-9 referenced in "Leachate" below.
Leachate	Discharge of tailings into TSF Cell F and G, decant water to RWP	Seepage to groundwater via leachate through case of TSF or RWP causing groundwater mounding and potential minerals/salts/heavy metals reaching root zone of vegetation.	• RWP will be lined with high-density polyethylene (HDPE) geomembrane to prevent seepage. • Vegetation monitoring as per Nickel West Tailings Management Master Plan Parts 1-9 and L4612/1981/11 including annual vegetation survey. Nickel West Tailings Management Master Plan Parts 1-9 including the following operational/management practices and procedures- • Minimising water retained on TFS via decant pond management. Water will be removed from the surface of the TSF as quickly as possible to reduce the influence on the phreatic water level within the cell. • Consistency in tailings density to minimize excess water in tailings - the applicant propose to maintain a density around 35-42 % ensuring tailings density is optimal for maximizing water return and creating a uniform, consistent tailings layer across the TSF. • Constructing Cells F and G with internal toe drains, cut-off keys below the starter embankments and external seepage collection toe drains to intercept and manage seepage underneath the TSF embankments. • Inclusion of a 'basin' underdrainage system below the expected pond extent within Cell G to improve consolidation and reduce seepage into the underlying groundwater system • Larger diameter toe drain collection pipe in Cell G to control the phreatic surface. • Centralization of decant tower for Cell G maximizing tailings water recovery.

Emission	Sources	Potential pathways	Proposed controls
			• Supernatant water on TSF Cell G will be a minimum of 50% from the perimeter embankment to the centre. • Proof rolling in selected areas of base of TSF Cell G and traffic compaction during construction to reduce the permeability of the in situ basin materials and reduce seepage through the floor of the TSF • Two puddle flanges placed on decant pipelines where they protrude from the embankment for Cell G. This will mitigate the risks of localised seepage, which may conceivably propagate into piping (tunnel) erosion around the pipes. • Vibrating wire piezometers (VWPs) will be installed along all four flanks of both Cells F (up to Stage 1B). VWPs have been installed along each section for Stage 1A and 1B embankments, new VWPs will be installed in each section at the first step-in (after four embankment raises), and one VWP per section at the final crest elevation (Note: the installation of VWPs at first step in is outside of scope of current assessed proposal). • Cell G will have a single VWP per section will be installed in the Stage ~~1A and~~ 1B, one VWP per section at the first step-in (after four embankment raises), and one VWP per section at the final crest elevation (Note: the installation of VWPs at first step in is outside of scope of current assessed proposal). Piezometer bores carry out real time monitoring of water levels within standpipes. • During operation of the TSFs, the phreatic surface will be monitored using VWPs, and the seepage model will be periodically reviewed and updated, if required. • Groundwater monitoring – quarterly monitoring for Standing Water Level (SWL), Annual nickel and Total Dissolved Solids (TDS) and annual electrical conductivity profile. • SWLs to be greater than 4mbgl with groundwater recovery implemented at 6mbgl (as per Licence

Emission	Sources	Potential pathways	Proposed controls
			L4612/1981/11) • Active groundwater recovery via 2 seepage recovery bores (RB01 and RB02 – see Figure 2) depositing directly into the RWP. MB74 is a stand by recovery bore to the North of Cell G. • 12-hour shift based visual inspections to determine – ▪ Pipeline integrity. ▪ Tailings beach development. ▪ Decant pond on active cell position. ▪ Tailings disposal (Flowrate and density) ▪ Return water volume. ▪ Seepage collection systems. ▪ Embankment integrity (settlement, cracking, bulging or seepage). ▪ A full inspection of the TSF including pipelines, drains, access roads, sumps, decant infrastructure and all pumps.
Dust lift off (dry tailings)	Discharge of tailings into TSF Cell F and G	Air/windborne pathway causing impacts to health and amenity	• Vegetation monitoring as per Nickel West Tailings Management Master Plan Parts 1-9 and L4612/1981/11 including annual vegetation survey. Nickel West Tailings Management Master Plan Parts 1-9 including- • 12 hour shift based inspections • deposition cycles to maintain wet beach limiting the dust lift off from dry tailings beach.

3.1.2 Receptors

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

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

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

Human receptors	Distance from prescribed activity
Leinster Downs pastoral homestead	Located 8km west of the premises.

	Screened out due to distance
Environmental receptors	**Distance from prescribed activity**
Threatened and Priority Flora (Restricted)	*Thryptomene sp*. (priority 3) located 1km southeast from Cell F, 2km from Cell G. Two other recordings of this species are also located 2 and 3 km southeast of the proposal area, adjacent to the boundary of M255SA. Recent surveys in the application supporting document confirm this and indicate additional locations in the same vicinity.
Lake Miranda east calcrete groundwater assemblage types on Carey palaeodrainage on Yakabindie Station – Priority Ecological Community (PEC) – Priority 1	The northern boundary of the prescribed premises is within the boundary of the Lake Miranda East Calcrete PEC. This PEC is 7km north of TSF3 Cell G study area.
Aboriginal Heritage places	“Seven Sisters” located to the east and immediately over Cell F and Cell G. Seven other registered sites such as a men’s site, artefacts, rockshelter and quarry are all located in and immediately adjacent to “Seven sisters”. Another site, “Eagle Nest Quarry” lies 250m southwest of Cell F and 1km from Cell G.
Underlying groundwater (non-potable purposes)	Fractured rock aquifer with water levels approximately 5 – 14m below ground level. There is an area of relatively shallow groundwater to the north of TSF 3 where Cell F is located, which is attributed to the natural sloping topography to the north as well as seepage from the TSFs migrating to the north. Further north, approximately where Cell G will be located, the depth to groundwater increases to approximately 30 m below natural ground. Salinity between 17,900mg/L and 90,400mg/L total dissolved solids. The nearest groundwater user is located approximately 3 km north of northern flank of Cell G at ‘McArthurs Bore’
Native Vegetation	TSF Cell F and Cell G fall within an approved clearing permit area (CPS8877/1 amended to CPS8877/2). The proposal includes the clearing of 120 hectares of native vegetation, however there is vegetation surrounding the proposed new TSF Cell G and existing TSF Cell F.

3.2 Risk ratings

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

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

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

Works approval W6856/2023/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 6 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

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

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

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Earthworks, construction, mobilisation and positioning of infrastructure associated with TSF Cell F lift and TSF Cell G construction	Dust	Air/windborne pathway causing impacts to health and amenity Air/windborne pathway potentially causing ecosystem disturbance and impacts to threatened flora species, and native vegetation.	Adjacent native vegetation.	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	Dust during construction will be managed via water carts. Minimal impact on vegetation from dust emissions are expected. No additional regulatory controls are required.
Vehicle movements on unsealed roads	Noise	Air/windborne pathway causing impacts to health and amenity	Leinster Downs Homestead is 8km away **Screened out due to distance**	N/A	N/A	N/A	N/A	*Environmental Protection (Noise) Regulations 1997* apply.
Time Limited Operation								
Discharge of tailings into TSF Cell F and G, return water to RWP	Tailings or return water spills or leaks from TSF pipeline infrastructure	Direct discharge to land. Overland runoff caused from spills or leaks from pipelines. Contamination of land, impacts to surrounding land including vegetation such as smothering/death	Adjacent native vegetation, Aboriginal sites	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1 - construction requirements Condition 4 - construction requirements Condition 10 - operational requirements	The works approval holders' controls for managing leaks from pipelines have been conditioned within the works approval as per DWERs Guideline: Risk assessments

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
		and, habitat destruction						
	Overtopping TSF facility during Overtopping of RWP	Direct discharge to land. Overland flow to adjacent land causing contamination, Impacts to vegetation such as smothering/death and, habitat destruction	Adjacent native vegetation, Aboriginal heritage sites.	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 1 - construction requirements Condition 4 - construction requirements Condition 10 - operational requirements	The works approval holders' controls have been conditioned within the works approval as per DWERs Guideline: Risk assessments
	Direct discharge of tailings slurry to land	Embankment failure, seepage through floor and embankments of TSFs leading to a stability failure. Smothering and contamination of soils and vegetation with process water and material high in heavy metals.	Adjacent native vegetation, Aboriginal heritage sites	Refer to Section 3.1s	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 1 - construction requirements Condition 4 - construction requirements Condition 10 - operational requirements	The works approval holders' controls have been conditioned within the works approval as per DWERs Guideline: Risk assessments. Advice was sought from DEMIRS (see table 7) regarding the geotechnical and stability aspects of this proposal. DEMIRS confirmed that they have no concerns regarding the design of the TSF cell G and other works.
	Leachate	Seepage to groundwater via leachate through case of TSF or RWP causing groundwater mounding and potential minerals/salts/heavy metals reaching root zone of vegetation.	Contamination of land, impacts to adjacent native vegetation, threatened priority flora, local fauna, Aboriginal sites. Groundwater users (bore) to the north of Cell	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	N	Condition 1 - construction requirements Condition 4 - construction requirements Condition 10 - operational requirements **Condition 11 -**	Refer to detailed risk assessment in section 3.3

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
		Seepage expressing on surface causing contamination of soil	G				**groundwater monitoring – SWL limit**	
Discharge of tailings into TSF Cell F and G	Dust lift off (dry tailings)	Air/windborne pathway causing impacts to health and amenity	Adjacent remnant native vegetation.	**Refer to Section 3.1**	C = Minor L = Unlikely **Medium Risk**	Y	N/A	No additional regulatory controls required.

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

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

3.3 Detailed risk assessment for seepage of leachate from TSF Cells F and G

3.3.1 Overview of risk event

The seepage of tailings leachate into the underlying groundwater may occur over the operational period of the TSF Cell G and Cell F, with the capacity to impact groundwater quality to the north of Cells F and G, potentially migrating to water users to the north. Based on historical seepage rates and impacts at the premises (for example TSF3) it is expected that seepage will occur for the duration of tailings deposition , but at lower rates than those that occurred historically (TSF3) at the premises largely due to the inclusion of underdrainage in cells G. Drainage will aid in the consolidation of the tailings and intercept water at the base of the TSF, redirecting it to the Return Water Pond.

Groundwater/seepage modelling (see Figure 3) by Golder (2023) indicate that seepage from the TSF cells will result in localised mounding of groundwater under the facilities. An increase in groundwater mounding beneath the TSFs will alter local hydraulic gradients, with flow of seepage-affected groundwater occurring to both the north and the south. Seepage from the TSFs may also result in mounding of the surrounding groundwater table which could lead to negative impacts to vegetation in the vicinity should groundwater levels rise to levels within the root zone of native vegetation.

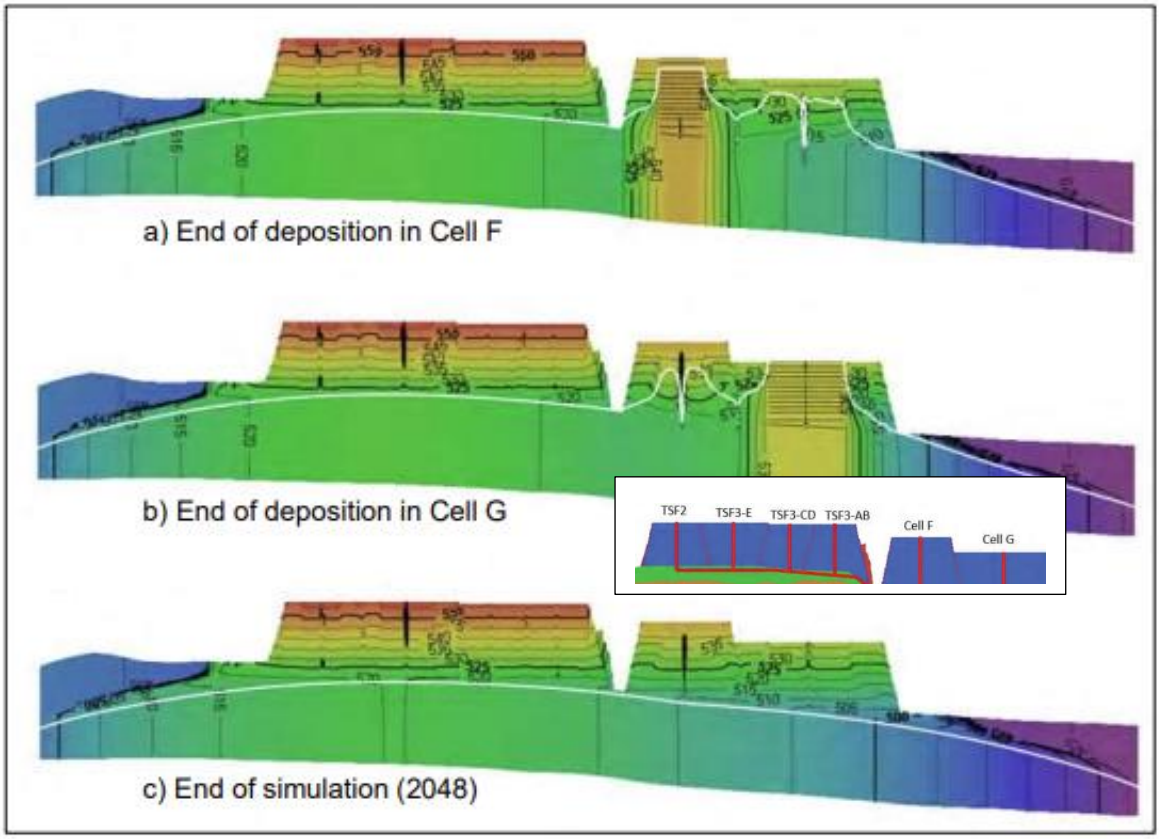

Figure 3 – TSF Groundwater/seepage model (note the model extends 2km south of TSF2 and 1km North of Cell G)

3.3.2 Identification and general characterisation of emission and receiving environment

Tailings slurry and return (decant) water contain soluble metals and metalloids and a typically elevated salinity. Historical tailings samples sourced from the existing TSFs showed the following characteristics–

- moderate to high salinity (2680 µS/cm to 10 300 µS/cm).
- ranging from slightly acidic to alkaline (pH 5.3 to 8.0).
- In most Potentially Acid Forming (PAF) samples, results were consistently acidic (Net Acid Generating pH 2.5 to 4.4), with limited readily available Acid Neutralising Capacity (ANC).
- Sulphide content was variable, ranging from 0 %S to 8.05 %S.
- Concentrations of nickel ranged between 1650 mg/kg and 3170 mg/kg.

In 2018 WSP Golder carried out testing on tailings samples from the premises for a 12-month period. The tailings were found to have elevated sulphide concentrations (~4% S) and a moderate ANC. An ANC of this level can potentially buffer the acid produced by the oxidation of sulphur. And delay the onset of acid conditions, especially if the ANC is associated with readily soluble carbonates, such as dolomite which is one of the key carbonate minerals in the LNO tailings. Even though the geochemical classification of the tailings would indicate they would become PAF, there has been no evidence either with groundwater monitoring or site observations since any of the TSFs have been in operation.

Groundwater in the area is naturally saline and the only beneficial use of the water in the area is as a process water supply for the processing of ore in mining operations. The nearest water receptor of potentially affected groundwater' is 'McArthurs bore' located approximately 1.6 km north of the proposed TSF Cell G. Groundwater in and around the project area has been previously discussed in Section 2.3.1 under *'Groundwater and monitoring bores.'*

Estimated seepage rates for the project have been calculated as part of the site water balance. An assumed seepage rate applied as 10% of slurry water for water lost from the system and additional seepage losses are assumed to be intercepted by the toe drain and captured in the return water.

3.3.3 Analysis of seepage impacts to groundwater

Historically, seepage of tailings porewater from TSFs 2 and 3 has resulted in variable rates of rise in underlying groundwater levels (primarily to the north), with higher rates of rise occurring within the fractured/faulted pathways (WSP Golder, 2023). While there is the potential for seepage pathways to exist to the west and east of Cells F and G, it is limited due to the hydraulic constraints imposed by the Perseverance Fault to the west and elevated topography to the east. Seepage was modelled using FEFLOW as a two-dimensional (2D) cross-sectional groundwater model with a saturated/unsaturated component (Figure 3). The model indicates the transmission of seepage below the TSFs is likely to occur over a distance of less than 1 km to the north and south. Given the presence of unexpected preferential flow pathways within the underlying saprock it is possible that seepage may migrate in high permeability zones.

The design report (WSP Golder, 2023) concluded that impacts to nearby groundwater users (e.g. McArthur's bore) is considered low due to the distance of the bore from Cell G and given the nature of fault/fracture (preferential) pathways at the premises tend to be limited in length (i.e. hundreds of metres rather than kilometres in length). It should be noted that the bore is considered historical and unlikely to be used anymore by pastoralists.

Groundwater levels immediately around TSF 3 have risen around 20 m since tailings deposition commenced in 1992, on average at a rate of around 0.8 m/year (WSP Golder, 2023). Recent

monitoring results (July 2022) from bores to the north of Cell F generally indicate groundwater levels are stable since commissioning of Cell F (with the exception of one of the monitoring bores (MB74) which indicates a reduction in groundwater level below ground surface, with the water level still in excess of 10 m below ground surface). Table 7 provide a summary of recent SWLs from groundwater monitoring bores around TSF 3 Cell F and the proposed Cell G.

Table 7: Quarterly TSF 3 Bore[1] Standing Water Level (SWL) mbtoc[2] 2022/2023.

Bore ID	2023 Q1 (Sep 2022	2023 Q2 (Dec 2022)	2023 Q4 (Jun 2023)
MB70	9.22	8.63	7.40
MB71	32.23	31.51	29.96
MB72	32.65	32.09	32.15
MB73	30.22	30.18	30.2
MB74	29.87	-	-
MB75	Dry	Dry	Dry
MB76	27.56	-	27.54

Note 1: See Figure 2 for bore locations.
Note 2: meters below top of casing.

Groundwater around TSF 3 Cell F has remained consistent across monitoring sites for the last two Annual Reporting periods since tailings deposition commenced in 2021. Water levels in MB70 are shallow, possibly due to localized mounding from elevated groundwater beneath TSF2 and local topography, however this is not fully understood.

As discussed in Section 2.3.1 groundwater around TSF 3 is mostly found within fractured zones with flows occurring within local permeable faults/fracture zones over short distance. Groundwater flow pathways from TSFs 2 and 3 have been estimated based on historical data and seepage migration pathways. Given historical tailings deposition at the premises has increased groundwater levels beneath existing TSFs, increases in groundwater levels in the vicinity of TSF 3 Cell F and G can be expected over time in parallel with an increase amount of tailings stored within the TSFs

It is possible that where groundwater, or seepage-affected groundwater rises up in the shallow root zones of surrounding vegetation, expression of seepage contaminated groundwater will occur and contaminants enter the natural environment and impacting flora and/or fauna. Modelling results indicate that this impact will be limited to the immediate area surrounding the TSF cells, however these impacts are yet to be observed near the tailings operations.

3.3.4 Proponent Operational Controls

The applicant's proposed control for managing seepage from Cell G and F are outlined within Table 4.

3.3.5 Decision

The Delegated Officer has determined that the consequence rating for this risk event is 'moderate' with low level offsite impacts to vegetation from mounding of the water table and groundwater users. The likelihood of this impact happening has been deemed to be 'unlikely' with the application of the Applicant's proposed controls and additional regulatory controls added to the Works Approval. The overall risk rating for this event therefore is 'medium'.

The applicant's proposed design measures (underdrainage system, toe drain etc.) to manage seepage from new TSF Cell G will be conditioned within the works approval.

Seepage migration pathways along fractures beneath saprolite under TSF Cells F and G are poorly understood and recently installed monitoring bores have not successfully intercepted

these features to the north. While the risk of seepage affected groundwater migrating beyond the predicted pathways to the north and south of the TSFs is unlikely, monitoring of groundwater levels and quality around TSF Cells F and G should continue to be carried out during time limited operations (and ongoing) to provide continuity of analysis through to operation.

Licence L4612/1989/11 for the premises already contain conditions requiring the monitoring of groundwater quality and standing water levels within existing monitoring bores around TSF cells G and F. These conditions have been duplicated on the works approval so this data can be provided within a time limited operations report at the end of TLO.

Seepage modelling has indicated (and observations made from operation of the other TSFs at the premises) it is likely some groundwater mounding of the water table will occur during operation of the Cell G and the lifted Cell F. It has been noted that SWL within MB70 is much shallower than other bores surrounding TSF3 Cell F and G possibly due to mounding as a result of nearby TSFs. The Delegated Officer has determined that a limit of 4 meters below ground level (mbgl) or SWL is required to be added to the works approval for MB70 for operation of TSF3 Cell F during TLO. It is recommended that when the licence is amended to add Cell G that a 4mbgl limit is applied to MB70 to ensure that mounding of the groundwater table does not occur to an extent where native vegetation at the surface could be impacted. Consideration of whether the limit should be applied to other bores surrounding the TSF complex should also occur at the time of this licence amendment.

4. Consultation

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

Table 8: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 27/11/2022.	None received	N/A
Local Government Authority advised of proposal on 22/12/23	None received	N/A
Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) advised of proposal 22/12/24	As the TSFs for the project are located on State Agreement Act tenure and, therefore, not regulated via a Mining Proposal under the Mining Act 1978 (Mining Act), DWER sought advice from DMIRS in relation to the stability and proposed design for the new TSF Cell G and proposed amendments to TSF Cell F, to ensure that the design complies with the Tailings Storage Facility Code of Practice and similar infrastructure regulated by DMIRS under the Mining Act and the Mines Safety and Inspection Act 1994. DEMIRS response was received on 27/02/24 and stated *"Based on the submitted information, the Certificate of Compliance that was submitted together with a 3rd Party technical review, DEMIRS is satisfied that the proponent has*	Noted.

	considered the geotechnical aspects of this project. DEMIRS does not require additional information or have any additional comments." A subsequent email received on 28/02/24 confirmed this position, stating that "DEMIRS has no objections, or formal comments to make on this License Amendment."	
Department of Planning Lands and Heritage advised of proposal on 22/12/24	DPLH advised the proposed topsoil stockpile may intersect with the boundary of Aboriginal Registered Sites ID 16044 (Leinster Downs GGT3), ID 16073 (Seven Sisters) and ID 2844 (Leinster Downs 8). If the proposed topsoil stockpile does intersect with the boundary of any of these Aboriginal sites, BHP Nickel West will be required to apply for approvals under the Aboriginal Heritage Act 1972 (AHA). DPLH also BHP Nickel West has entered into an ILUA with the Tjiwarl Aboriginal Corporation, and that the area required for TSF Cell G has been archaeologically and ethnographically surveyed to identify Aboriginal heritage sites and values. As a result, no known Aboriginal heritage sites or values have been identified.	Noted.
JTSI advised of proposal on 22/12/24	JTSI response received 20/12/24, stating *"As there is no EP Act Part IV approval for the Leinster Nickel Operation, JTSI and Nickel West have agreed that that Part V approval is the primary environmental approval for this project. The works approval will need to be granted before JTSI can finalise the processing of the State Agreement proposal."*	Noted.
Tijwarli Aboriginal Corporation advised of proposal on 22/12/24	None received.	Noted.
Applicant was provided with draft documents on 4/04/2024	Refer to Appendix 1	Refer to Appendix 1

5. Conclusion

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

References

1. BHP Nickel West Pty Ltd, 26 September 2023, *Nickel West Leinster Operations TSF3 Cells F and G Works Approval Application*

2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
4. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
5. WSP Golder 2023, *REPORT Leinster Nickel Operations – Tailings Storage Facilities Cells F and G design update in Support of Mining Proposal and Works Approval Application.* Report prepared for BHP Nickel West.

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

Draft Decision Report

Section	Summary of applicant's comment	Department's response
Cover Page	The Nickel (Agnew) Agreement Act 1974 (WA), commonly referred to as Nickel West's (NiW) 'State Agreement' was amended in 2023 (approved in October 2023). The amendment contained a number of variations including the ability to amalgamate certain surrounding mining tenements (identified as 'Specified Mining Tenements') into ML255SA. Tenements rolled into the State Agreement area were surrendered on 29 January 2024 and amalgamated into ML255SA. This includes four tenements the subject of this approval – M36/230, M36/389, G36/49 and G36/50. The proposed project area for the TSF Cell G is now contained wholly within ML255SA (as amended). NiW requests the premises description is amended to reflect the current tenure status on which construction will occur: "Tenement ML255SA" BHP NiW confirms that L36/93 was replaced as L36/241 in 2021. This tenement, along with M36/4 still apply to operation of the NiW Leinster Nickel Operation, i.e. included in the prescribed premise boundary, however the proposed Cell G is not on this tenure. Revised General Arrangement and Prescribed Premises Boundary figures are provided at Attachment 1. BHP NiW requests these figures replace those in the Draft Decision Report and Works Approval.	Cover page "Premises" location updated to reference only ML255SA. Figure 1 in the Decision Report and Figure 1, Schedule 1 in the Works Approval have been updated with the figures provided.
2.3.1 Toes Drains and decant towers and underdrainage DWER request for 'Applicant to confirm whether a new toe drain is intended to be constructed as	A toe drain will be installed as part of Cell G construction. The toe drain will tie into the Cell F toe drain on the western and eastern boundaries and maintain the same design requirements. As the southern wall of Cell G will adjoin the Cell F embankment, existing underdrainage will be extended under the TSF and directed to the outer perimeter toe drains.	Section 2.3.1 updated to reflect BHP comments.

Section	Summary of applicant's comment	Department's response
part of this proposal…'	BHP NiW confirms the detail included in Figure 5 of the proposed works approval is correct.	
2.4.2 Nickel (Agnew) Agreement Act 1974	Provides details of the NiW State Agreement. BHP NiW requests this section is updated to current status as described above.	Section 2.4.2 Updated to reflect current status of BHP's Nickel West State Agreement Act tenements.
Table 4: Proposed Applicant controls	It is noted throughout the decision report that the delegated officer has limited the scope of the project to what can be constructed within a 5-year period. This includes construction of Stages 1A and 1B and lift 1. However, the table of controls includes several controls to be installed beyond the refined scope, e.g. installation of Vibrating Wire Piezometers (VWPs) to be installed in sections after 4 embankment raises. BHP NiW requests DWER revise the table of controls to include only those applicable to the reduced scope. Controls to be implemented after the first lift are no longer considered applicable to this approval and should be removed or identified as out of scope.	References to VWPs at and beyond "step in" stage for embankment lifts has been amended to identify the installation is outside of scope of current assessed proposal.

Draft Works Approval

Condition	Summary of applicant's comment	Department's response
Premises details	Refers to correct tenement details (ML255SA) and Figure 1, Schedule 1 is correct. The premises details in the decision report are inconsistent with the proposed works approval. BHP NiW requests that the decision report is updated to reflect those in the proposed works approval. Revised General Arrangement and Prescribed Premises Boundary figures are provided at Attachment 1. BHP NiW requests these figures replace those in the Draft Decision Report and Works Approval.	Cover page "Premises" location updated to reference only ML255SA. Figure 1 in the Decision Report and Figure 1, Schedule 1 in the Works Approval have been updated with the figures provided.
Condition 1, Table 1	**Condition 1, Table 1**	**Condition 1, Table 1**

Condition	Summary of applicant's comment	Department's response
Reference to RL throughout the instrument. **TSF Foundation base** *(e) "The foundation base of the TSF must be formed of a compacted oxide layer and is to extend to the downstream slope of Stage 1A embankments for the perimeter of the TSF"* **Cell G VWPs** *Cell G (Stage 1 and 1B only)* *l) VWPs to be installed at 5-10m height intervals.*	The RL height referenced is Local Mine Datum (LMD) and BHP NiW requests this is defined accordingly. **TSF Foundation base** Its is not clear the extent to which the compacted oxide layer is to occur, and the wording appears slightly ambiguous. The design indicates the TSF foundation will consist of tailings and starter embankments will consist of compacted oxide, as described in Table 4 of the Decision Report. BHP NiW requests that the wording of this control is made clear: *"The starter embankment of Stage 1A and 1B will be formed of a compacted oxide"* **Cell G VWPs** The purpose of the VWPs is to measure the phreatic surface within the tailings in order to monitor any impacts on the stability of the TSF structure. They typically become more important once embankments heights exceed 15m, with pore pressures having a larger influence on Factors of Safety at higher embankment heights. For Cell G Stage 1A, Stage 1B and lift 1, the maximum embankment height will approach 15m and the influence of pore pressures on the Factor Safety are expected to be minimal at these facility heights. Four (4) VWP's will be installed during Stage 1B construction, at which time there will be a full perimeter embankment. Installation at this stage will also ensure VWPs will be retained in the foundation and not damaged during future cell raising activities. Additional VWPs will be installed on Cell G embankments after the fourth embankment raise, as detailed in the Decision Report. As such BHP NiW requests section (l) is revised to state*: "At least 4 Vibrating wire piezometers to be installed during construction of Stage 1B, with a minimum of one per wall".* It is noted that the piezometers shown in Figure 9 is the full scope. As per the comments contained within Table 2 on the Draft Decision Report, installation of the full suite of VWPs is not	Definition for Reduced Level (RL) added to "Table 5: Definitions" section of the Works Approval. **TSF Foundation base** Condition 1(e), Table 1 has been modified as per BHP comments, the condition now reads; *(e) The starter embankment of Stage 1A and 1B must be formed of a compacted oxide.* **Cell G VWPs** Condition 1(l), Table 1 has been amended as per BHP comments, Condition 1(l) now reads; *(l) At least 4 Vibrating wire piezometers to be installed with a minimum of one per wall* Table 4: Proposed Applicant Controls in the Decision Report has also been updated to reflect the number of VWPs in TSF Cell G.

Condition	Summary of applicant's comment	Department's response
	possible for Stages 1A, 1B and lift 1 (the revised scope of this approval as determined by the Delegated Officer).	Figure 9, Schedule 1 has been removed. Condition 1(m), Table 1 has also been removed.
Return Water Pond *Return water pond* *(p) Sized to accommodate discharge of about 12 hours of water at full capacity from both Cell F and Cell G over and above a normal operating and volume without overtopping (~12,000 m³)* *"*	**Return Water Pond** Whilst the Return Water Pond is designed to meet these requirements from an operational perspective, it is not a control to manage environmental risk. BHP NiW considers the requirement to maintain an operational freeboard of 500mm and contain a 1% AEP, along with routine 12 hourly inspections, is sufficient to manage the overtopping risk and herby requests removal of this detail regarding basis of design. Furthermore, BHP NiW requests inclusion of the ability to discharge water from the Return Water Pond to Harmony Pit as well as to the circuit water tank. Discharge of water to Harmony Pit is currently authorised by Condition 12 of L4612/1989/11 and this activity would be undertaken in compliance with these requirements.	**Return Water Pond** Part (p) of Condition 1, Table 1 has been removed. This request is outside the scope of the original application. The request to discharge return water to Harmony Pit would require a risk-based assessment and at this stage of the assessment process it is too late to incorporate this request.
Pipelines *Pipelines carrying tailings and decant return water* *(r) equipped with real-time 24/7 telemetry monitoring with automatic*	**Pipelines** As per the draft decision report and in accordance with the NiW Tailings Master Management Plan, pipelines will have the following controls to prevent pipeline failures and subsequent environmental impacts: - Have automatic leak and flow rate detection systems - Pipelines are to be bunded - Will be fitted with shut off valves - Will be subject the 12-hour visual inspections Automatic cut-outs are not proposed. Instead, telemetry will provide notification via the site data control system to the control room. On receipt of a high flow or pressure differential alarm, operators will investigate the cause of the alarm and activate shut off valves if required. Along with the other abovementioned controls, BHP NiW considers this control adequate to manage the pipeline failure risk and request section (r) is revised to state: *"(r)… requires real time*	**Pipelines** Condition 1(r), Table 1 modified as per BHP comments, the condition now reads; *(r) Tailings delivery and decant return pipelines to be equipped with real-time 24/7 telemetry monitoring with the purpose of monitoring for pipeline failure.*

Condition	Summary of applicant's comment	Department's response
cut-outs in the event of pipeline failure.	*telemetry monitoring with the purpose of monitoring for pipeline failures"*	
Condition 2 Requires submission of a Critical Containment Infrastructure (CCI) Report within 30 calendar days following construction.	BHP NiW requests 60 calendar days to complete the CCI. It is noted that time limited operations cannot commence until the CCI is approved or the allocated time period has lapsed	Condition 2 has been modified for submission of CCI report in 60 calendar days. DWER notes this may delay the commencement of Time Limited Operations.
Condition 5 Requires submission of an Environmental Compliance report within 30 calendar days following construction.	BHP NiW requests 90 calendar days to complete the Environmental Compliance Report. It is noted that time limited operations of this infrastructure cannot commence until the Environmental Compliance Report is submitted.	Condition 3 modified for submission of CCI report in 90 calendar days. DWER notes this may delay the commencement of Time Limited Operations.
Condition 10, Table 3 *1(b) Visual inspections daily and following significant rainfall events to check:* *i. Freeboard capacity* *ii. Location and size of decant pond (in hectares and expressed as a total percentage of the surface area of the TSF)* *iii. Change in seepage conditions or sudden change in water level; and signs of erosion* ***3**(b) Weekly inspections to check the integrity of flow meters, leak detection telemetry, pressure sensors system and automatic shut-off system when*	BHP NiW proposed 12-hourly visual inspections of pipelines and TSFs. Its is considered the weekly inspections detailed in 3(b) are not necessary due to the frequency of visual inspections. In addition, flow and leak detection infrastructure will alarm should failures in the instrumentation occur. Operators will be informed of potential infrastructure malfunctions via the data control system which will enable investigation and rectification. As such, BHP NiW considers the risk of pipeline failure is adequately addressed via the 12 hourly inspections and requests removal of 3(b).	Condition 3(b) removed.

Condition	Summary of applicant's comment	Department's response
pipelines in operation.		
Condition 11, Table 4 Groundwater monitoring bores	BHP NiW would like to clarify that MB74 is a recovery bore and MB72 is a monitoring bore. Monitoring bores are referenced correctly in the Draft Decision Report	Condition 11, Table 4 has been updated. MB74 is now referenced as a recovery bore and MB72 is a monitoring bore.
Schedule 1, Figure 9	The VWP locations are based on the full life of Cell G, including multiple lifts. As this scope has been revised to only include Stage 1A, 1B and lift 1, it is beyond the scope of this approval. The proposed monitoring bores are indicative and will be confirmed subject to further detailed investigative studies. Exact locations cannot be confirmed as there are a number of variables to be considered including hydrology, accessibility, cultural heritage and disturbance requirements. Whilst BHP NiW remains committed to installing VWPs and monitoring bores to monitor potential operational and environmental impacts, prescribing these locations is not appropriate at this stage of the project. BHP NiW requests removal of Figure 9	Figure 9 has been removed.

Appendix 2: Figures A-D

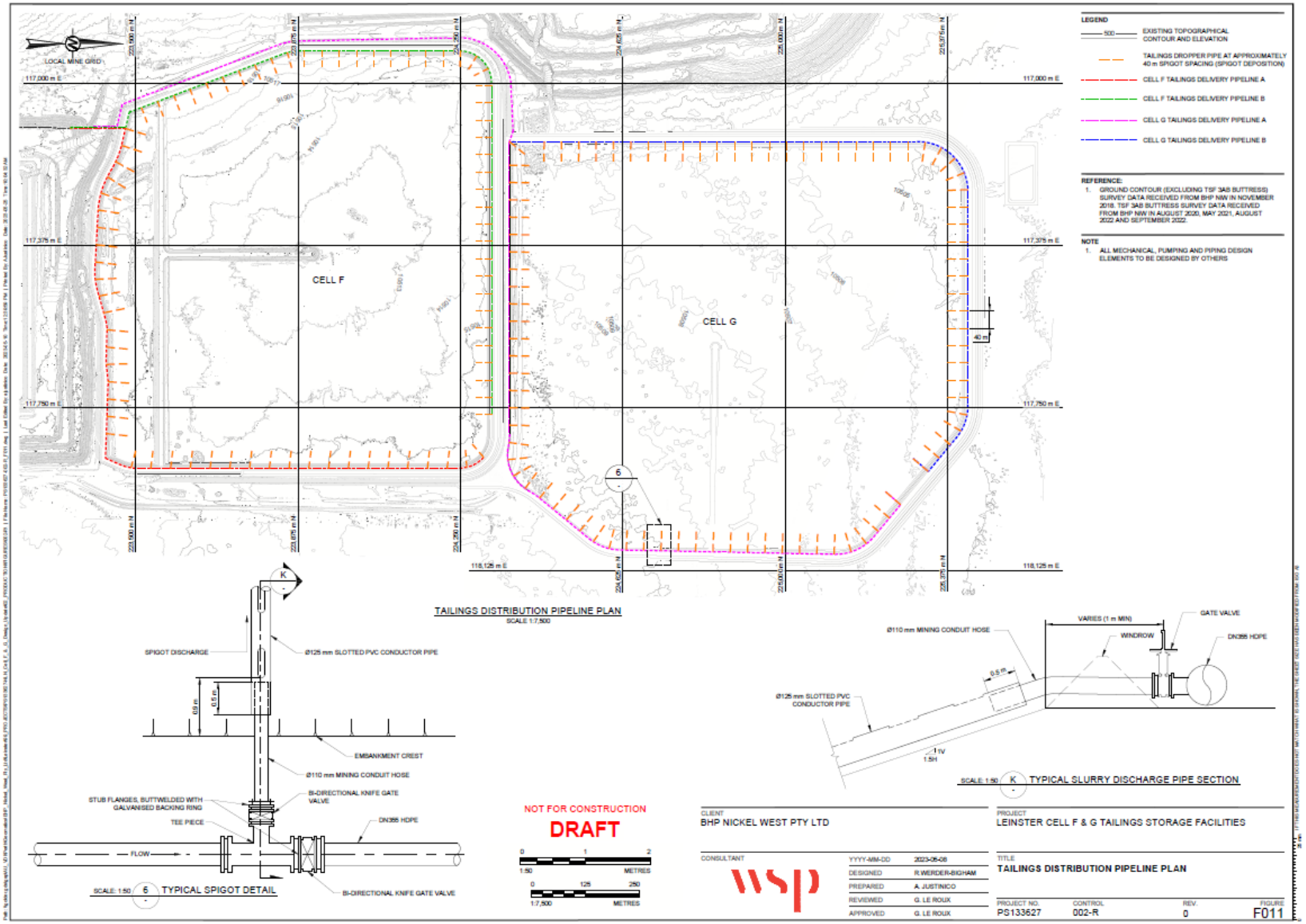

Figure A: Cell F and G tailings distribution and pipeline plan.

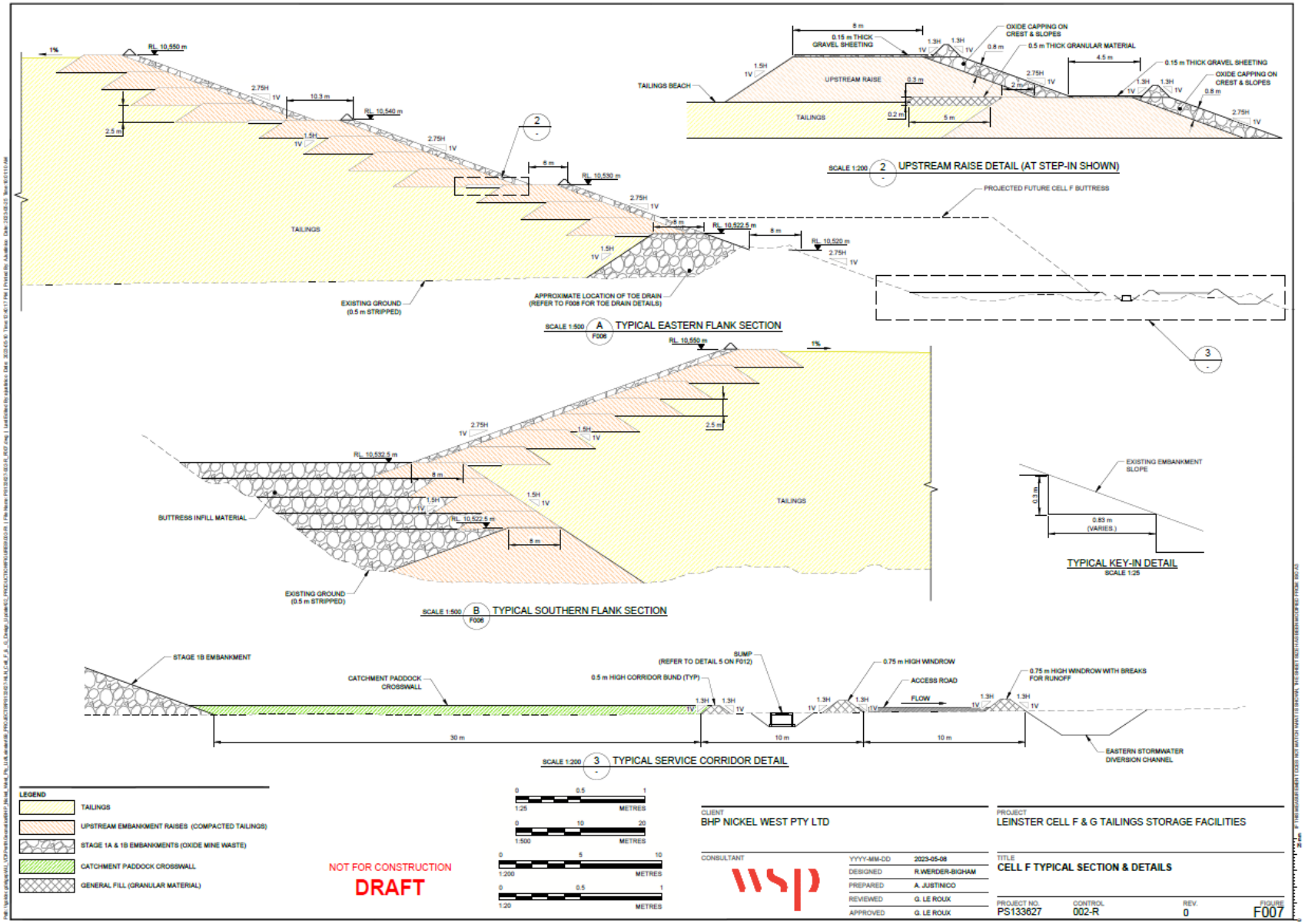

Figure B. Cell F cross section and design.

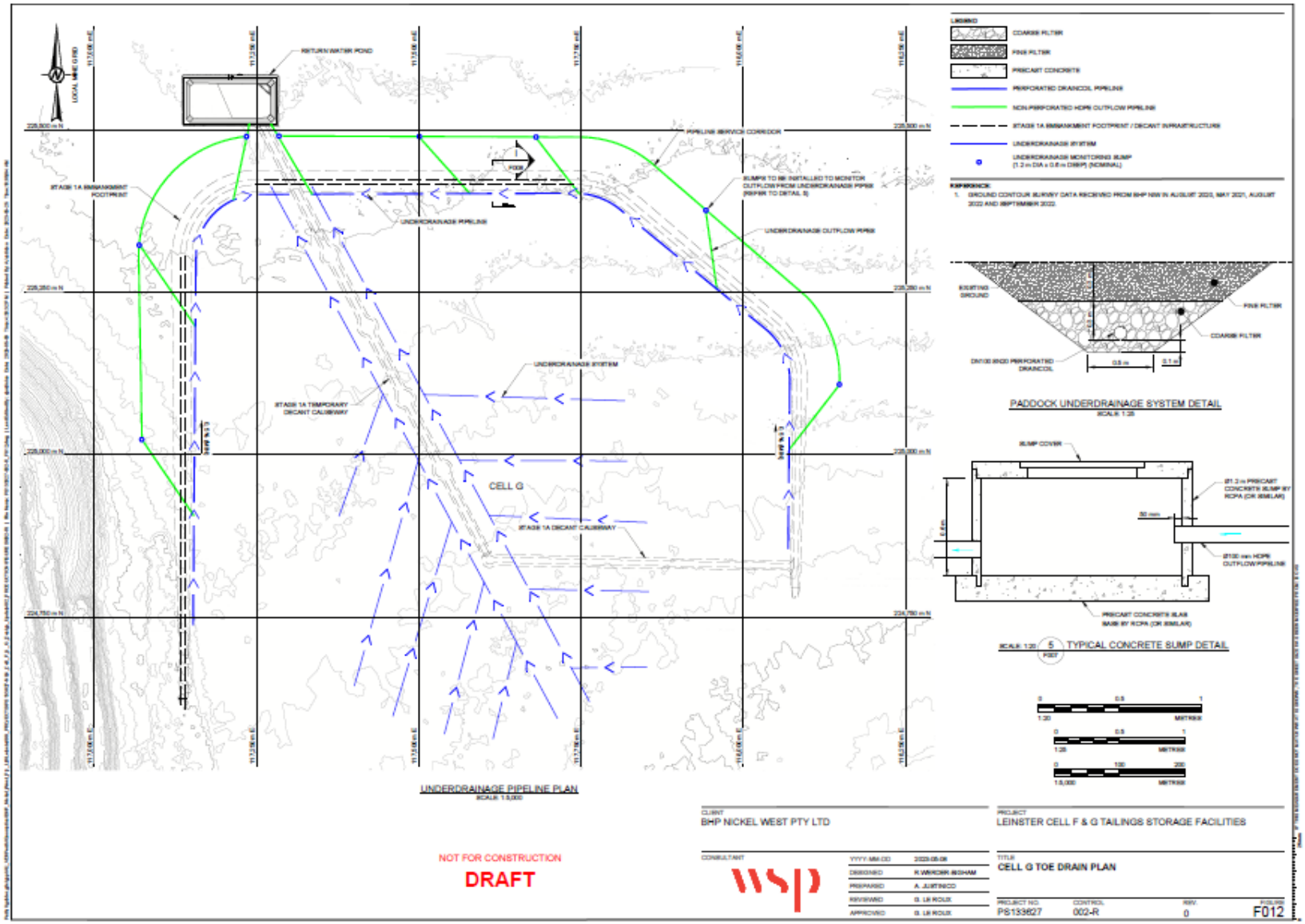

Figure C: Cell G toe drain and underdrainage.

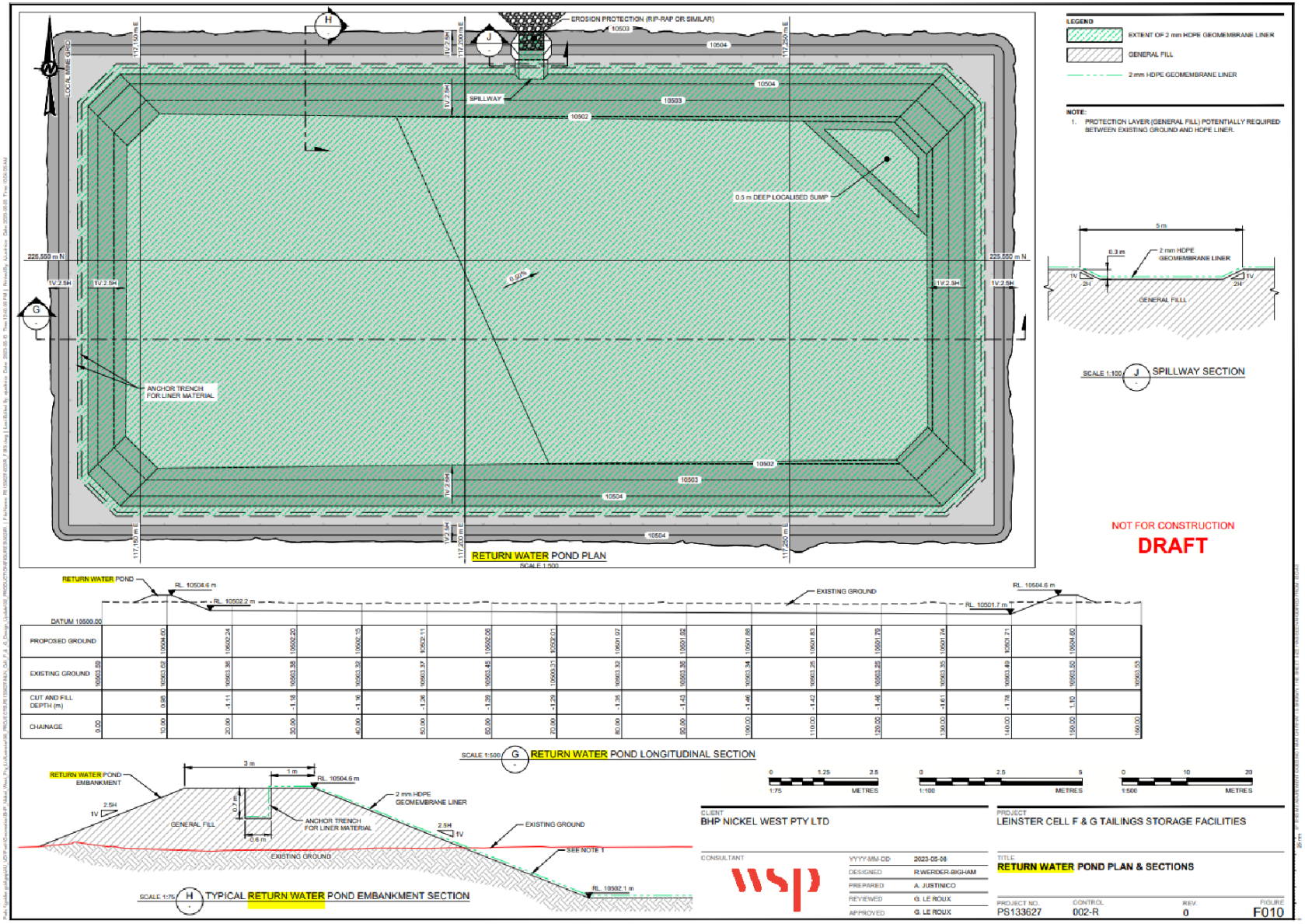

Figure D: Return water pond design