Government of Western Australia
Department of Water and Environmental Regulation

Amendment Report

Application for Licence Amendment

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

Licence Number	L6453/1990/12
Licence Holder	BHP Nickel West Pty Ltd
ACN	004 184 598
File Number	APP-0026329
Premises	Mt Keith Operations WILUNA WA 6646 Mining tenements: M36/183, M36/184, M36/185, M36/246, M36/286, M36/288, M36/294, M36/399, M36/422, M36/467, M36/658, M36/677, M53/56, M53/57, M53/165, M53/166, M53/167, M53/208, M53/215, M53/216, M53/217, M53/218, M53/327, M53/328 and M53/489. General purpose leases: G53/11, G53/12, G53/13; and G53/14. Miscellaneous licence L36/206.
Date of Report	16 May 2025
Decision	Revised licence granted

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

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1. Decision summary

Licence L6453/1990/12 is held by BHP Nickel West Pty Ltd (licence holder) for the Mt Keith Operations (the premises), located in Wiluna, Western Australia.

This amendment report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the premises. As a result of this assessment, revised licence L6453/1990/12 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this amendment report, the department has considered and given due regard to its regulatory framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Application summary and overview of premises

The licence holder owns and operates the Mt Keith nickel mine, located approximately 460 kilometres (km) north of Kalgoorlie, Western Australia. Licence L6453/1990/12 for the Mt Keith Nickel Operations (MKO) is granted under Part V of the *Environmental Protection Act 1986* (WA) (EP Act).

On 7 November 2024 the licence holder submitted an application to the department to amend the licence L6453/1990/12 under section 59 and 59B of the EP Act. The licence holder has requested the following amendments to L6453/1990/12:

1. Approval to allow for the discharge of supernatant water from the Central Discharge Tailings Storage Facility (CDTSF) via an additional discharge point at NMK Main Pit;
2. Changes to the conditioned monitoring regime to reflect the temporary suspension of operations; and
3. Addition of SAG mill circuit from works approval W6597/2021/1.
4. Change to the throughput for existing category 64, class II putrescible landfill from 3,200 to 7,000 tonnes per year.

The proposed changes are discussed in section in the sections below. Table 2 at the conclusion of this section outlines the proposed changes to the existing licence categories and throughputs.

2.2.1 Request for discharge of excess water to the NMK Main Pit

The licence holder is requesting an amendment to L6453/1990/12 to allow for transportation and discharge of excess stormwater generated in extreme weather conditions from the Water Storage Area (WSA) of CDTSF to the NMK Main Pit.

As background, two large rainfall events occurred at MKO, in relatively quick succession, with 118mm received over a two-day period from 25/01/2024 to 26/01/2024 and an additional 84.8mm received over a 6-hour period on 09/03/2024. The WSA is designed to accommodate a single 1% AEP rain event of ~202mm and likely contingency storage allowances, with the rainfall received since the first event in January equal to 125.5% of the 1% AEP rainfall volume.

At the time of rainfall event, the remaining capacity within the WSA was assessed and a combination of small duration plausible rainfall events (63.2% AEP) with a total rainfall depth of >60mm was determined to likely be sufficient to fill the WSA up to the spillway.

On 28 November 2024, a licence amendment was granted allowing the discharge of excess stormwater collected in the CDTSF WSA into J Stage Pit. This licence amendment application is seeking approval to discharge into NMK Main Pit, and is intended to provide additional

optionality for water management. This licence amendment application does not impact the existing approval for J Stage pit. The decision to discharge to either J Stage Pit or the NMK Main Pit will be made by the licence holder considering operational and environmental circumstances at the time.

The licence holder will begin to evaluate the requirement to discharge to J Stage Pit or NMK Main Pit through regular TSF inspections and consideration of water balance modelling (BHP, 2024).

Discharge from the CDTSF WSA will only be initiated if water levels in the WSA are equal to or less than 1.2 meters from the bottom of the spillway (RL526.5m) with water to be discharged and stored in the NMK Main Pit up to a height of 170mRL level (375 meters below ground level). Water levels in the NMK Main Pit will be monitored via 6 monthly surveys.

Figure 1 below shows the proposed discharge location, existing pipelines and proposed alignment of new pipeline to be constructed.

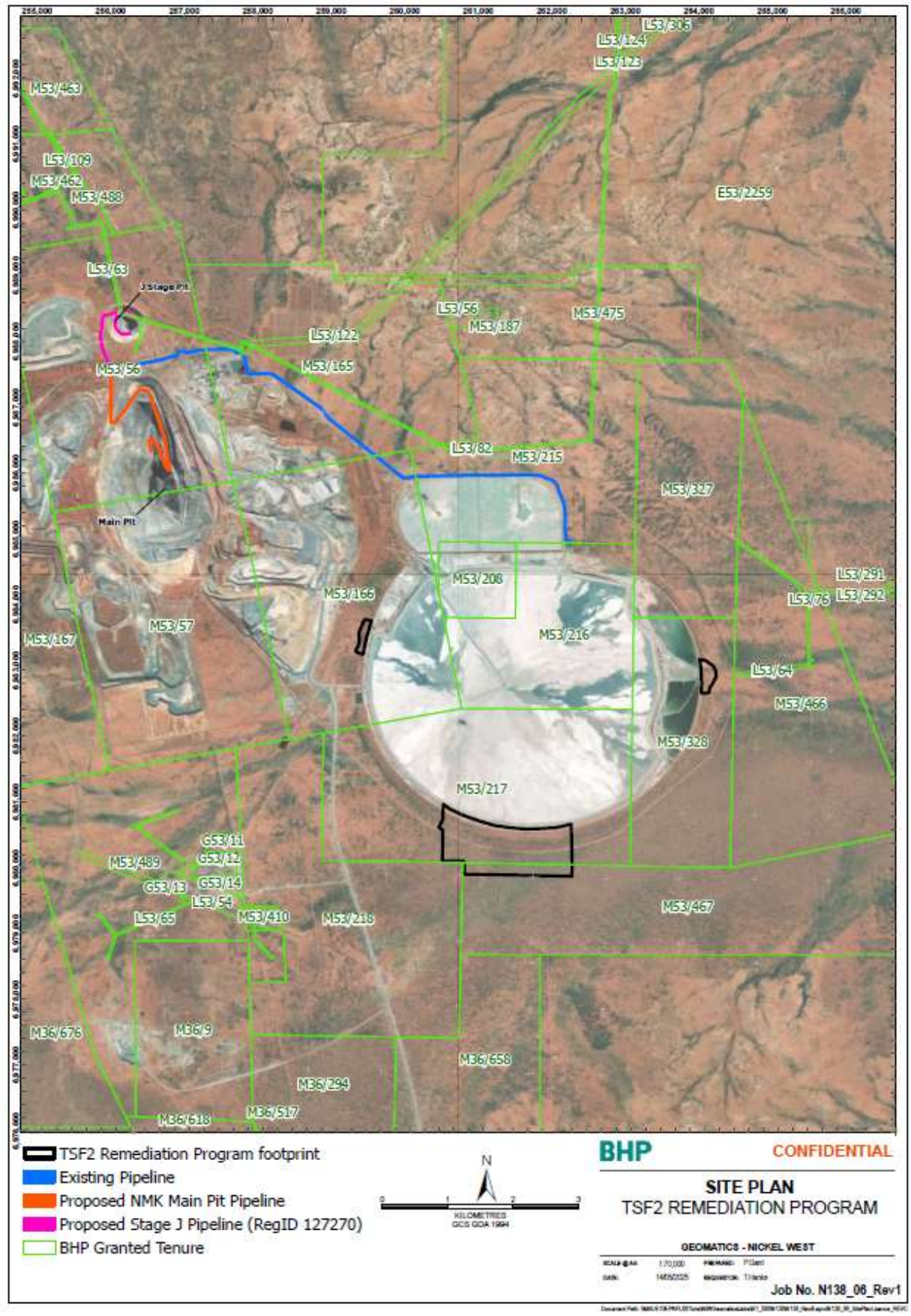

Figure 1: NMK Discharge Location and additional pipeline route

2.2.2 Changes to reflect temporary suspension of operations

BHP announced in July 2024 that BHP Nickel West Pty Ltd (BHP NiW) operations will be temporarily suspended from October 2024 (BHP, 2024). During the temporary suspension BHP NiW's mining and processing operations will be suspended; and a care and maintenance program of work will be implemented to ensure the ongoing safety and integrity of BHP NiW's mines and related infrastructure.

During temporary suspension, deposition of tailings will no longer occur. In order to manage weather events and potential loss of containment risks, water will continue to be moved throughout the processing plant, tailings storage facilities and water storage area. In consideration of the reduced risk profile, and considering the reduced resourcing available during temporary suspension, the licence holder proposes a reduced frequency of visual inspections.

Table 1 details the proposed changes to site processes. It also outlines the department's decision regarding each proposed change in frequency

Table 1: Proposed reduced monitoring frequency

Scope of Inspection	Type of Inspection	Frequency of Inspection when operational	Proposed frequency of Inspection when non-operational	Delegated officer's decision
Tailings pipelines	Visual	12 hourly	Annual	As pipelines will not contain water or tailings when not operational and therefore the Delegated officer accepts the proposed change to inspection frequency as the risk of pipeline leaks is reduced. The licence has been updated accordingly.
Return water lines	Visual	12 hourly	Annual	
Dewater pipelines	Visual	24 hourly	Annual	
External walls of the TSF	Visual	24 hourly	Fortnightly	See risk assessment Table 5.
Borefield pipelines, pump stations	Visual	24 hourly	Annual	As pipelines will not contain water or tailings when not operational and therefore the Delegated officer accepts the proposed change to inspection frequency as the risk of pipeline leaks is reduced. The licence has been updated accordingly.
Contingency tailings delivery pipeline 291 and associated bunding	Visual check of physical integrity	Prior to discharge of tailings into pipeline 291 and 6 hourly while in operation	Annual	
Bunding and stormwater management controls for the mobile crushing and screening plant	Visual check of physical integrity	Following a significant rainfall event (a 20% AEP event over 24 hours)	N/A	N/A

2.2.3 Addition of infrastructure from works approval W6597/2021/1

The Mt Keith satellite operation (MKS) is located approximately 15 km south of Mt Keith Nickel Mine (NMK). MKS consists of two open pits, a waste rock dump (incorporating landfill) and ancillary infrastructure. MKS ore is transported to NMK for processing via haul road. The open pit mine supporting NMK is nearing the end of its economic life and volumes extracted from this pit are reducing. Most future ore required to support NMK production will be drawn from the MKS deposits. MKS ores are significantly harder than those mined at Mount Keith and additional grinding capacity is required to maintain ore throughput and processing currently approved under L6453/1990/12. To meet this requirement the BHP NiW Mount Keith Debottlenecking Project (MKDP) was developed to build an additional SAG mill circuit at the NMK's existing processing plant.

Works approval W6597/2021/1 was granted on 17 May 2022 to approve the construction of an additional SAG mill within the existing processing plant (Category 5), including an additional coarse ore stockpile No.2, new conveyors and other associated infrastructure.

An Environmental Compliance Report (ECR) relating to W6597/2021/1 was submitted to the department on 5 September 2024 in accordance with conditions 2 and 3 of the works approval. On 24 January 2025 construction activities for conditions 2 and 3 were determined by the department to be compliant with requirements of W6597/2021/1.

Time limited operations were approved under W6597/2021/1, however given the temporary suspension of the operations at Mt Keith, the operation of MKDP infrastructure as listed in Condition 1, Table 1 of W6597/2021/1 did not operate immediately following the submission of the ECR.

2.2.4 Category 64, class II putrescible landfill throughput increase.

The licence holder has requested to increase the Category 64: Class II putrescible landfill approved throughput from 3,200 tonnes to 7,000 tonnes per annual period. The increase in waste volumes is expected due to site preservation works to allow the safe transition into temporary suspension. No additional landfill locations have been requested for approval. The increased waste disposal will occur within existing authorised landfill areas within TSF1 and the Western Rock landform.

2.2.5 Summary of category and throughput changes to licence

This amendment is limited only to changes to category 5, and 64 from the existing licence. No change to category 12, 54, 57 and 73 have been requested by the licence holder. Table 2 below outlines the changes proposed to the existing licence.

Table 2: Proposed throughput capacity changes

Prescribed premises category and description	Current throughput	Proposed changes to the existing production or design capacity	Proposed activities, processes, or operations, including any changes to existing operations (if amendment)
Category 5: Processing or beneficiation of metallic or non-metallic ore	13,500,000 tonnes per year	No change	Works approval W6597/2021/1 was granted on 17 May 2022 to support the BHP NiW Mount Keith Debottlenecking Project (MKDP). Works approval includes an additional SAG mill within the processing plant (Category 5 infrastructure). The

			additional grinding capacity of the new SAG mill will allow the processing plant to operate at its full capacity of 13,500,000 tonnes per year already approved under the licence. No increase in throughput for Category 5 is required. Request to allow for controlled discharge of supernatant water from WSA CDTSF via an additional discharge point at NMK Main Pit
Category 12: Screening of material	1,000,000 tonnes per year	No change	No change.
Category 54: Sewage facility	Existing: 10,000 tonnes per annual period	No change	No change
Category 57: Used tyre storage	120 tyres	No change	No change
Category 64: Class II putrescible landfill	3,200 tonnes per year	7,000 tonnes per annual period	Class II putrescible landfill from 3,200 to 7,000 tonnes per annual period.
Category 73: Bulk storage of chemicals	13,500m^3 in aggregate	No change	No change

2.3 Part IV of the EP Act

Ministerial Statement (MS) 415 was issued on 7 May 1996 and approves the design and operation of the MKO CDTSF. On 14 October 2019, a proposal under section 45c of the EP Act was approved to increase tailing storage capacity, delineate the development area, and amend the proposed description and elements.

The ministerial statement includes conditions which relate to management of tailings on site. The changes proposed in this licence amendment are consistent with the requirements of MS 415.

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 operation which have been considered in this amendment report are detailed in Table 3 below. Table 3 also details the proposed control measures the licence holder has proposed to assist in controlling these emissions, where necessary.

Table 3: Licence holder controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Installation of new pipeline	Air/windborne pathway	No controls proposed.
Operation - discharge of supernatant water from CDTSF to pit			
Saline Water	Discharge of saline water from CDTSF via Water Storage Area NMK Main Pit	Pipeline failure – Direct discharge to land	• The pipeline and pumps will be located in secondary containment and / or have telemetry with automatic shut offs • Pipelines inspected every 12 hours whilst operating. • Management of spills will first isolate the system and stop the release of water. If required to prevent environmental impact, contaminated soil will be removed. • An investigation and necessary works will be undertaken to prevent further incidents.
		Overtopping of NMK pit causing a discharge to land	• A freeboard within the pit will be maintained below 170mRL • Water levels in the NMK Main Pit will be monitored via annual surveys when in care and maintenance.
		Seepage of supernatant water from CDTSF through pit wall	• A freeboard within the pit will be maintained below 170mRL • Maintain water level within the fresh rock domain, which has negligible inherent permeability to transmit water • Maintain water level below the local groundwater level to maintain local groundwater flow towards the pit.

Emission	Sources	Potential pathways	Proposed controls
Operation - Increase in disposal of waste to existing landfills			
Leachate	Disposal of waste	Seepage into soil / groundwater	Existing conditions regarding landfill management on L6453/1990/12 these include: • Condition 8 (Table 3) management of waste to ensure waste is only discharged to approved landfill areas within waste rock landform landfill and the TSF1 landfill area. • Condition 8 also requires a separation distance between the base of TSF1 landfill and groundwater is greater than 2 m • Waste required to be covered regularly in accordance with condition 9 (Table 4) which reduces the generation of leachate.
Contaminated stormwater runoff	Stormwater coming into contact with wastes	Overland runoff	Existing conditions 1 and 8 (Table 3) requires all waste to be placed within a defined trench or within an area enclosed by earthen bunds to prevent stormwater runoff from coming into contact with wastes.
Wind-blown waste	Disposal of waste	Air/windborne pathway	Existing conditions regarding landfill management on L6453/1990/12 these include: • Windblown waste required to be collected on a fortnightly basis and returned to tipping areas in accordance with condition 8 (Table 3). • Waste required to be covered regularly in accordance with condition 9 (Table 4) which reduces the windblown waste
Operation - SAG Mill			
Dust	Operation of New SAG mill circuit (Category 5) Unloading, loading, stockpiling and storage of material	Air/windborne pathway	New SAG mill circuit: • Water dousing at the primary crusher; a dust spray has been installed at the stockpile stacking conveyor and the main conveyors are provided with washdown nozzles • Water carts will be used as

Emission	Sources	Potential pathways	Proposed controls
	Vehicle Movements on unsealed surfaces		required to minimize dust emissions at haul roads, conveyors, transfer points and at the coarse ore stockpile No.2 (COS2). • MKDP Air Quality Assessment (Environmental Technologies & Analytics 2021) determined the MKDP air quality impact to be minor compared to nominated ambient air quality assessment criteria
Sediment laden/ contaminated stormwater		Overland runoff	New SAG mill circuit: • Additional drain diversion installed around coarse ore stockpile No.2 • MKDP flood modelling indicate no adverse flooding effects for the 1% Annual Exceedance Probability (AEP) 1% • Existing drainage structures
Noise	Operation of mobile crushing and screening plant and operation of new SAG mill circuit	Air/windborne pathway	Environmental noise assessment modelling (Talis 2020) determined that the new SAG mill circuit will comply with the Environmental Protection (Noise Regulations) 1997.
Hydrocarbon spills/leaks	Hydrocarbons at SAG mill	Direct discharge to land	• Immediate removal of spilled material • Contaminated material disposed of at bioremediation area or an approved location in accordance existing NMK site procedures and conditions of Licence L6453

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the delegated officer has excluded employees, visitors and contractors of the licence holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation. Table 4 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)). Receptors relating to addition of works approval infrastructure have previously been assessed and are therefore not included in Table 4.

Table 4: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	**Distance from activity / prescribed premises**
Wanjarri Nature Reserve	The boundary of the Wanjarri Reserve is located approximately: • 2 km south of the CDTSF and WSA. • 9.5 km south of the SAG mill. The Wanjarri Nature Reserve Camping Ares is located more than 20 km from SAG mill) (no pathway for emissions). • 8 km south of the NMK main pit (no pathway for emissions) • greater than 5 km from proposed additional landfilling activities (no pathway for emissions)
Environmental receptors	**Distance from activity / prescribed premises**
Groundwater	The Premises is located within the East Murchison Groundwater Area proclaimed under *Rights in Water and Irrigation Act 1914*. Historical natural groundwater level near the NMK pit was about 20 metres below ground level (BHP, 2024b) but due to the significant depth of the NMK Main pit and the level of dewatering, groundwater is approximately 400m below original groundwater table (BHP Nickel West, 2024). Local groundwater direction is towards NMK Main pit. There are no groundwater users nearby (besides the licence holder who operates the Caprock borefield to the north of NMK Main pit with the closest operating bore PT21 located approximately 2 km to the north).
Remnant native vegetation The Prescribed Premises is located within the Priority 1 PEC. No threatened flora species as listed under the *Biodiversity Conservation Act 2016* have been recorded within the Prescribed Premises.	Native vegetation occurs within the Prescribed Premises boundary. Native vegetation is approximately: • 600 metres south of NMK main pit • 500 metres north of SAG Mill • 500 metres southeast of crushing and screening plant • Adjacent to the CDTSF and WSA
Surface Water Lines	Two seasonal surface water lines intersect the Prescribed Premises boundary, with the closest being 650 m northeast of the processing area (SAG mill).
Conservation significant fauna species	Brush-tailed Mulgara has the potential to utilise the habitat of the Prescribed Premises. No species of conservation significance have been recorded within the Prescribed Premises. Subterranean fauna surveys have revealed some species that are not well known or well collected within the region, but these were considered within the EPA assessment of the project as approved under MS 1087.

Cultural receptors	Distance from activity / prescribed premises
Aboriginal sites of significance	Registered heritage sites have been identified in the vicinity of and within the Prescribed Premises. The Licence Holder has an agreed 'Cultural Heritage Management Plan' in place with the Tjiwarl people. The results of all heritage surveys and location of Aboriginal heritage sites are recorded in the Licence Holder's database, which is used in the internal Environmental and Heritage Impact Assessment process, prior to land disturbance to ensure heritage sites are not accidentally impacted

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change 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 licence holder 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 licence holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the licence holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 5.

The revised licence L6453/1990/12 that accompanies this amendment report authorises emissions associated with the operation of the premises. The conditions in the revised licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 5. Risk assessment of potential emissions and discharges from the premises during construction and operation

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence holder's controls**				
Construction								
Installation of new pipeline	Dust	Dust transported via air/windborne pathway Impact to native vegetation (smothering)	Native vegetation	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A
Operation								
Discharge of excess water (mixture of CDTSF return water/process water and captured stormwater) from	Saline water	Rupture/leak of pipeline releasing saline water to land Contamination of soil	Native vegetation/soil	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 2	Licence holder's proposed controls for managing pipeline leaks from any new pipelines are acceptable and have been conditioned within the licence.

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence holder's controls**				
WSA /CDTSF to the NMK Main pit.		/ impact to vegetation						
		Overtopping of NMK Main pit causing a discharge to land Impact to soil and direct contact with native vegetation resulting in vegetation stress / death	Native vegetation/soil	Refer to Section 3.1	C = Major L = Rare **Medium Risk**	Y	Condition 1 Condition 12 **Condition 17**	An expected volume of water to be discharged to NMK Main pit was not provided. However, it is noted that there is significant holding capacity within NMK main pit and that another pit (J stage pit) has already been authorised to receive this water (volume will be shared across the two pits where required). The licence holder is proposing to maintain a freeboard below 170mRL with annual water level surveys to occur. Considering the proposed controls, it is expected that overtopping is unlikely to occur. The applicant will be required to monitor the volume of water discharge to NMK Main Pit and required to undertake frequent inspections when discharging. The proposed freeboard will also be conditioned within the licence.
		Seepage of saline mine dewater through pit wall Groundwater mounding and changes in groundwater quality	Native vegetation Groundwater	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	N	Condition 1, **Condition 17**	Refer to section 3.3
Operation of a new	Dust	Air/windborne	Wanjarri Nature	Refer to Section	C= Slight	Y	Condition 1	

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence holder's controls**				
SAG mill circuit and associated infrastructure		pathway causing impacts to health and amenity of closest human receptors	Reserve Camping Area located greater than 20km from SAG mill.	3.1	L = Unlikely **Low Risk**			No residences or sensitive land uses within 15km of the processing plant area. MKDP Air Quality Assessment (Environmental Technologies & Analytics 2021) determined the air quality impact from the SAG mill project to be minor compared to nominated ambient air quality assessment criteria For further details see works approval W6597/2021/1 Decision Report.
		Air/windborne pathway causing impacts to native vegetation from smothering or dust deposition	Native vegetation	Refer to Section 3.1	C= Minor L = Unlikely **Medium Risk**	Y	Condition 1	The applicant controls proposed are deemed to be suitable by the Delegated Officer and they have been captured as regulatory requirements within licence L6453/1990/12.
	Noise	Air/windborne pathway causing impacts to health and amenity of closest human receptors	Wanjarri Nature Reserve Camping Area located greater than 20km from SAG mill.	Refer to Section 3.1	C= Slight L = Unlikely **Low Risk**	Y	N/A	No residences or sensitive land uses within 15km of the processing plant area. Environmental noise assessment modelling (Talis 2020) determined that the new SAG mill circuit will comply with the Environmental Protection (Noise Regulations) 1997 at sensitive receptors. No further noise mitigation is expected to be required. For further details see works approval W6597/2021/1 Decision Report.

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence holder's controls**				
	Sediment laden stormwater	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Native vegetation is located adjacent to the Prescribed Premises boundary. Two seasonal surface water lines intersect the Prescribed Premises boundary, with the closest being 650 m northeast of the processing area	Refer to Section 3.1	C= Minor L= Unlikely **Medium Risk**	Y	Condition 1	The applicant controls proposed are deemed to be suitable by the Delegated Officer and they have been captured as regulatory requirements within licence L6453/1990/12.
	Hydrocarbon spills/leaks	Direct discharge to land potentially causing contamination of soils and the deterioration of groundwater quality	Native vegetation located adjacent to the Prescribed Premises.	Refer to Section 3.1	C = Minor/slight L= Unlikely **Low/Medium Risk**	Y	N/A	No additional regulatory controls are required. The Delegated Officer notes that discharges to the environment are also regulated under the *Environmental Protection (Unauthorised Discharges) Regulations 2004.*
Increase in disposal of waste to existing landfills	Leachate	Seepage causing groundwater contamination	Groundwater	Refer to Section 3.1	C = Minor L= Unlikely **Medium Risk**	Y	Condition 1 Condition 8 Condition 9	Existing conditions adequately manage this risk event. No additional regulatory controls required.
	Contaminated stormwater runoff	Overland runoff during rainfall events	Native vegetation	Refer to Section 3.1	C= Slight L= Unlikely **Low Risk**	Y	Condition 1 Condition 8	

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence holder's controls**				
		causing ecosystem disturbance and impacting surface water quality.	Surface water					
	Wind-blown waste	Air/wind pathway causing ecosystem disturbance with impacts to fauna	Native vegetation And fauna	Refer to Section 3.1	C= Slight L= Unlikely **Low Risk**	Y	Condition 8 Condition 9	
Reduced frequency of inspections of external walls of the TSF	Tailings / decant water	Embankment failure / overtopping resulting in smothering of vegetation.	Native vegetation	Refer to Section 3.1	C = Major L = Unlikely **Medium Risk**	N	Condition 4 **Condition 12**	The licence holder is required to manage TSF1 and the CDTSF such that a minimum embankment freeboard of 300mm or a 1 in 100 year/72-hour storm event (whichever is greater) is always maintained in accordance with condition 4. It is noted that modifying the inspection frequency of the TSFs will not change the licence holder's requirement to comply with this condition. The Delegated Officer has accepted the licence holder's proposed fortnightly frequency for inspection of TSF embankment walls during temporary suspension of operations, however, have determined that an additional requirement is needed to require inspections of the TSFs after significant rainfall events (20% AEP in 24 hours). To ensure there is no risk of overtopping and the integrity of embankments. This is in line with the recommendations from WSP's

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence holder's controls**				
								review of changes in inspection frequency (WSP, 2024).

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

Note 2: Proposed Works Licence Holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

3.3 Risk assessment - Seepage from NMK Main Pit

The premises is currently in a period of temporary suspension (care and maintenance phase). To support this phase surplus water is proposed to be sent from the CDTSF WSA to the NMK Main pit for storage. Another pit, J stage pit, has already been approved for this discharge. The WSA captures decant water from the CDTSF as well as rainfall runoff from the facility. During large rainfall events this volume of water can be significant and in order to manage storage capacity in the WSA water is required to be discharged into pit voids to maintain required freeboards . Water will be pumped through existing and proposed pipework and stored within the NMK Main Pit (or J Stage Pit). Once operations recommence it is anticipated that stored water will then be used within the processing circuit within the premises.

Discharge of surplus water from the CDTSF WSA into NMK Main pit could result in an alteration in pit lake water quality leading to seepage into groundwater. Seepage may also cause mounding of the groundwater table which could lead to impacts to native vegetation at the surface if groundwater levels were to reach the root zone of vegetation.

3.3.1 Characteristics of emission

The water quality from the WSA is variable with salinity influenced by rainfall at the CDTSF. Between 2019 and 2024, salinity ranged from 26,800 to 128,000 mg/L total dissolved solids. While the mine is in suspended operations water quality is expected to improve over time as the majority of water in the dam will be coming from rainfall. The licence holder has stated that water within the NMK main pit is expected to be similar to the WSA discharge water quality, however no water quality data has been provided for the NMK main pit lake.

Table 6 below outlines recent water quality data for the WSA from sampling post Q1 2024 rain event (samples taken 13 March 2024). It is noted that contaminants of concern (metals) are in low concentrations.

Table 6: Analysis of water from WSA

Analyte	Unit	Result
Field pH	pH unit	7.42
Field Electrical Conductivity	µS/cm	6440
pH Value	pH Unit	7.26
Electrical Conductivity @ 25 0C	µS/cm	6610
Total Dissolved Solids @1800 C	mg/L	4010
Hydroxide Alkalinity as $CaC0_3$	mg/L	<1
Carbonate Alkalinity as $CaC0_3$	mg/L	<1
Bicarbonate Alkalinity as CaC03	mg/L	39
Total Alkalinity as $CaC0_3$	mg/L	39
Silicon as $Si0_2$	mg/L	1.8
Sulfate as $S0_4$ - Turbidimetric	mg/L	871
Chloride	mg/L	1560
Calcium	mg/L	42
Magnesium	mg/L	243
Sodium	mg/L	884
Potassium	mg/L	54
Arsenic	mg/L	0.002
Cadmium	mg/L	<0.0001
Chromium	mg/L	<0.001

Copper	mg/L	<0.001
Lead	mg/L	<0.001
Nickel	mg/L	4.28
Selenium	mg/L	<0.01

3.3.2 Potential impact of emission

Seepage from the pit walls may result in changes in water quality surrounding the NMK pit lake or may result in mounding of the groundwater table if seepage is significant. Mounding may cause impacts to native vegetation at the surface if saline water was to come into contact with root zone of vegetation causing vegetation stress/death.

Water quality data from the WSA indicates that concentrations of metals are low and it is likely that with the addition of more rainfall water quality will be further diluted. There are no groundwater users nearby, besides the licence holder who operates the Caprock borefield to the north of NMK Main pit with the closest operating bore PT21 located approximately 2 km to the north.

Historical natural groundwater levels were approximately 20 metres below ground level (mbgl) with groundwater flow in a norther easterly to easterly direction. The licence holder has provided information that indicates there is a steep cone of depression around the NMK main pit as a result of past dewatering of the pit with local groundwater flow direction towards NMK main pit.

The licence holder is proposing to maintain the water level in NMK main pit to within the fresh rock domain which has negligible permeability to transmit water. The licence holder is also proposing to maintain the water level below the local groundwater level so the NMK main pit will act as a groundwater sink with groundwater flow continuing to move towards the pit. The water level proposed to be maintained within the MNK main pit is below 170 mRL.

3.3.3 Risk assessment outcome and conditions

If significant seepage from NMK main pit occurs, then the Delegated Officer has determined that mid-level onsite impacts (groundwater mounding causing vegetation stress/death, changes in groundwater quality) may occur. Therefore, the Delegated Officer considers the consequence of this risk event to be **'moderate'** in accordance with the risk matrix outlined in the department's Guideline: Risk assessments.

The Delegated Officer has determined that the likelihood of this risk event occurring is unlikely due to the applicant's proposed controls, and the significant elevation difference between the pit lake level and the groundwater level surrounding the NMK Main pit. Therefore, the Delegated Officer considers the likelihood of this risk event to be **'unlikely'** in accordance with the risk matrix outlined in the department's Guideline: Risk assessments.

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix outlined in the department's Guideline; Risk assessments and determined that the overall rating for this risk event is '**Medium**'. This risk rating is acceptable subject to regulatory controls.

The Delegated Officer has determined to condition the licence holder's proposed freeboard for the MNK main pit to ensure water levels within the pit stay below the surrounding groundwater level which will reduce seepage from the pit. The licence holder will also be required to monitor the quality of the water discharged from the WSA on commencement of the discharge and weekly while discharging. This is consistent with the monitoring requirements for the already approved J stage pit discharge point.

4. Consultation

Table 7 provides a summary of the consultation undertaken by the department.

Table 7: Consultation

Consultation method	Comments received	Department response
Licence Holder was provided with draft amendment on 2 May 2025 Response to draft received 16 May 2025	Condition 11: Request to change daily measuring of the bulk diesel storage tank volume to weekly. BHP NiW would like to propose the daily bulk diesel storage tank measurements be amended to weekly. Due to the transition to temporary suspension the tank will no longer be utilised at its operational capacity. There will be no further bulk diesel deliveries to the tank for the foreseeable future. The tank will be emptied to 20% capacity and periodically filled to maintain enough stock for the equipment remaining onsite during temporary suspension. The tank is currently at 34% capacity. BHP NiW believes that weekly volume measurements are suitable given the volume that will be stored in the tank	Request accepted.
	Condition 18: Request to remove requirement to undertake pit lake monitoring. BHP NiW would like to propose the removal of the pit lake monitoring for both J Stage Pit and NMK Main Pit. The J Stage pit monitoring was accepted by BHP NiW when the previous licence amendment was received, however the inability to comply with this condition due to safety concerns was not identified at the time. The precedent for this proposed change is the geotechnical instability of the J Stage Pit and NMK Main Pit preventing safe entry of personnel to complete the required 6 monthly spot sample. However, it is also BHP NiW's opinion that the pit lake sampling does not provide an indication of deterioration of water quality associated with the pit discharge and consequently does not assist in the monitoring of potential seepage from the pits. The supporting documentation submitted with both amendments states that due to the influx of stormwater in the Water Storage Area (WSA) the water discharged to the pits will be diluted, as demonstrated by the water quality results provided of the WSA post rainfall event. DWER have requested spot sampling of the pit lakes due to the potential for contaminates to be present within the water from the WSA. Water from the WSA will be sampled prior to discharge, therefore providing a record of the water quality prior to discharge into the pits without the in pit sampling requirement. Further to this, the Hydrological Assessments supporting the discharge to both pits state that should water levels be maintained below the required levels as stipulated in Condition 1, the chance of seepage from the pits is significantly minimised.	Noting safety concerns around the ability to undertake pit lake monitoring and the requirement to undertake water quality testing of the water from the WSA prior to discharge to the pits, the Delegated Officer has determined to accept this request and has removed table 8 from the licence.

5. Conclusion

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

5.1 Summary of amendments

Table 8 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the revised licence

as part of the amendment process.

Table 8: Summary of licence amendments

Condition no.	Proposed amendments
Prescribed premises category description	Assessed design capacity for landfill increased from existing 3,200 to 7,000 tonnes per annual period.
Condition 1 Table 1	- Landfill approval capacity increased to 7,000 tonnes a day in total shared between TSF 1 landfill area and Western Rock Landfill Area. - NMK Main Pit added to site infrastructure table and discharge controls added to operation. - Infrastructure from W6597/2021/1 added to licence.
Condition 2 Table 2	Pipeline construction and location requirements conditioned.
Condition 8 table 3	Landfill maximum disposal volume conditioned.
Condition 11	Change the requirement to measure the bilk diesel storage tank volume from daily to weekly
Condition 12 Table 5	Additional column updated to provide updated Infrastructure inspection frequencies during suspension of operations. NMK main pit added to table. Operational and non-operational periods defined.
Condition 17 Table 6	Requirement to monitor water discharged to NMK Main Pit added. Modification to tailings monitoring and mine dewatering re-use, to only require that these parameters are monitored “when operational” Operational period defined.
Condition 18 table 8	Table 8 removed from the licence.
Condition 25	Requirement for licence holder to notify the CEO as soon as practical when decision made for premise to enter temporary suspension of operations and or care and maintenance.
Multiple conditions	Licence terminology updated from “the licence holder shall” to “the licence holder must” for consistency with current licensing preferred terminology.
Definitions	Minimum construction requirements for water bores in Australia removed as no longer relevant.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. BHP Nickel West, 2024, *Licence Amendment Application Supporting Information*, Western Australia.
3. BHP Nickel West, 2024a, Tailings Management Master Plan: Part 8 Emergency Response Plan, Western Australia.
4. BHP, 2024b, *Hydrological Assessment for H Stage Pit* Contingency Water Storage, Western Australia
5. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
6. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
7. DWER, 2022, *W6597/2021//1 Mt Keith Operations Decision Report*, Perth, Western Australia.
8. Talis Delivering Solutions (Talis 2020), TN20010-1 *Environmental Noise Assessment, Mt Keith De-bottlenecking Project, BHP Nickel Wes*t, Leederville WA
9. WSP, 2024, Review of changes in inspection frequency on TSF failure modes – Mt Keith TSF, Western Australia