



Application for Licence Amendment

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

Licence Number	L8437/2010/3
Licence Holder	BHP Nickel West Pty Ltd
ACN	004 184 598
File Number	INS-0001673 and APP-0027912
Premises	Kwinana Nickel Refinery 270 Patterson Road, East Rockingham WA 6168 Baldivis Facility Legal description – Lot 100 on Deposited Plan 423540 (Formerly Lot 89 on Deposited Plan 411084) (Kwinana) and Lot 820 on Deposited Plan 77252 (Baldivis) As defined by the premises maps in Schedule 1 attached to the Revised Licence
Date of Report	27 October 2025
Decision	Revised licence granted

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1. Decision summary

Licence L8437/2010/3 is held by BHP Nickel West Pty Ltd (BHP NiW; Licence Holder) for the Kwinana Nickel Refinery (the Premises), located at 270 Patterson Road, Kwinana Beach.

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 L8437/2010/3 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

On 13 June 2025, the Licence Holder submitted an application to the department to amend Licence L8437/2010/3 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The proposed amendment relates to the inclusion of the operation of a 70ML and a 40ML Chloride Brine Storage Tank (CBST) at the Kwinana Nickel Refinery premises.

The construction of the CBST was authorised through a works approval W6788/2023/1 and the tanks are currently being operated under time limited operations under the works approval until 19 June 2026.

2.2.1 Operation of the CBST

The initial use of the CBST is to enable the relining of the Baldvis evaporation ponds constructed under works approval W6882/2023/1, where the wastewater from the evaporation ponds will be pumped to the CBSTs for temporary storage (to be pumped back to the evaporation ponds upon completion of the relining project), and thereafter, for the ongoing management of wastewater across the site, both during normal and temporary suspension operations.

The 70ML and the 40ML tanks have an internal diameter of 109m and 82m respectively, with a wall height of 8m and are associated with two leak detection pits. The tanks are constructed on compacted limestone pads. Each tank has a recovery pump and flow totaliser that will keep the respective tanks empty. A 4m wide access platform has been constructed between the two tanks to allow inspection access to the tanks and the leak detection inspection pits.

The tanks are an engineered modular construction comprising concrete panels supported by steel galvanised posts and restrained by circumferential post-tensioned cables and continuous concrete ring beam. The tank walls and support posts were prefabricated off site and transported to site by truck.

The tanks are fitted with multi-layer liner system and leak detection system, consisting of a level switch and remote alarm system, along with a sump pump capable of automatic operation when liquid is detected;

- The floor lining system of the tanks consists of:
 - A primary liner of 1mm fortified polyolefin alloy;
 - Electrically conductive geotextile (to enable testing of fusion welded joints during

- installation);
- Geonet flow/drainage layer (for leak detection system);
- Secondary liner of 1mm fortified poly olefin alloy;
- Geosynthetic Clay Liner (GCL) underlying the whole tank;
- The wall lining system of the tanks consists of:
 - A primary liner of 1mm fortified polyolefin alloy;
 - Electrically conductive geotextile (to enable testing of fusion welded joints during installation);
 - Secondary liner of 1mm fortified polyolefin alloy;
 - Electrically conductive geotextile (to enable testing of fusion welded joints during installation and to protect secondary liner from abrasion against concrete walls);

The tanks were designed with 655mm freeboard and are able to be monitored via installation of level alarms. The freeboard was calculated to contain a rainfall resulting from a 1 in 20 (5%) annual exceedance probability rainfall event and the 90th percentile wet season, after allowance for any evaporative water loss and the effects of any water reuse recovery system.

The existing pipelines from the water treatment plant was modified to allow the transfer of chloride brine to the new tanks from the Baldvis evaporation ponds as well as concentrate from the water treatment plant. The same pipelines will also be used to return liquors from the new tanks to the Baldvis evaporation ponds.

BHP NiW advised that the CBSTs were constructed in accordance with the requirements of the *Water Quality Protection Note (WQPN) 26 - Liners for containing pollutants using synthetic membranes*.

3. Compliance issues

BHP submitted a section 72 notification to Regulatory Assurance on 19 November 2024 following observation of visible leakage of approximately 200L from the two CBSTs during commissioning. The discharge was identified in tell-tales in the surrounding embankments.

Industry Regulation referred the licence holder to Regulatory Assurance in relation to number of potential non-compliances to the works approval conditions observed during assessment of Environmental Compliance report (ECR) in accordance with section 55 of the EP Act on 10 October 2024. Regulatory Assurance also observed a number of potential breaches to sections 50(2) and 58 of the *Environmental Protection Act 1986* (EP Act) during premises inspections undertaken on 16 November 2023 and 21 February 2024. Subsequently, Assurance issued BHP with a letter of non-compliance on 25 March 2025 that required the Licence Holder to take several actions to comply with the licence and works approval conditions.

Industry Regulation followed up with its own request for information (RFI) requiring BHP NiW to demonstrate compliance with the works approval conditions. An analysis of BHP NiW's response submitted on 23 May 2025 demonstrates that the requirements of works approval W6788/2023/1 have been complied with.

Operation of the Kwinana Nickel Refinery premises is currently suspended with all processing operations ceased from October 2024, while a care and maintenance program of work is being implemented to ensure the ongoing safety and integrity of premises infrastructure.

3.1 CBST Leak Repair works

BHP NiW advised that tank repair works were implemented and successfully completed via

implementation of the following works:

- Installation of flow net drains vertically in every alternating wall panel to prevent hydraulic lock between the primary and secondary liners; and
- Liner was reversed so that the white side of the liner faced outwards, to prevent any potential solar radiation burning on the liner.

To further demonstrate that the repair works to the tanks were implemented in accordance with the Construction Quality Assurance (CQA) Plan, BHP NiW submitted a 'repair CQA report on 7 August 2025, conducted by an independent consultant, WSP Australia Pty Ltd (WSP).

On reviewing BHP NiW's response to RFI and 'repair' CQA, the delegated officer has determined that the licence holder has successfully demonstrated compliance with the works approval conditions and noted that the leaks to the two CBST have been repaired successfully in accordance with CQA Plan, and the infrastructure are fit for purpose.

4. 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.

4.1 Source-pathways and receptors

4.1.1 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 1 below. Table 1 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 1: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Odour	Ammonia present in the stored material	Air/windborne pathway causing impacts to health and amenity	• Minimal amounts of ammonia present in the liquors/effluent, which are bound in the liquors as Ammonia Sulphate. • No ammonia odour related complaints at the Baldivis Facility. • If odour or odour complaints arise: ○ Undertake consultation with impacted stakeholder; ○ Investigate and implemented mitigation measures such as: ▪ Use of a positional ambient air monitor for continuous monitoring of effluent transfer; ▪ Implement procedural controls to allow for

Emission	Sources	Potential pathways	Proposed controls
			stoppage and diversion of ammonia bearing liquors. • CBST to store reverse osmosis (RO) water from the water treatment plant, which has no odour, during normal operations post relining project.
Effluents discharged to soil and groundwater	Overtopping or loss of containment causing discharge to lands via overflow or failure of CBS tank and associated pipelines connecting the evaporation ponds (Baldivis) to the CBST (Kwinana).	Overland runoff. Seepage of contaminated water to soil and groundwater	• Operation of an automated and monitored leak detection system on each CBST. • A minimum freeboard of 655mm will be maintained. • Liners inspected monthly • All pipelines will be inspected weekly and maintained • Tanks are constructed with concrete-tilt-up panels with multi-layer lining system on the walls and floor to prevent effluent leaks.

4.1.2 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 2 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 2: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Wells Park	~ 500 m west of the premises
Residential premises in North Rockingham	~ 1.6km southwest of the premises
Residential premises	~ 2.7km south of the premises
Residential premises in Kwinana	~ 3.2km east of the premises
Industrial premises	Adjacent to the premises and several within 1km of the premises.
Environmental receptors	Distance from prescribed activity
Cockburn Sound – Premises is located within the State Environmental (Cockburn	~ 600m west of the premises

Sound) Policy 2015 area	
Cockburn Groundwater Area, Safety Bay Sand: Aeolian and beach lime sand	~3mbgl (1.00mAHD)
Threatened Ecological Communities (TEC) - "Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain"	Within Prescribed Premises boundary.
Threatened fauna- Black Cockatoo and Carnabys Cockatoo	Within Prescribed Premises boundary.

4.2 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 4.1. Where linkages are incomplete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 4.1), 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 3.

The Revised Licence L8437/2010/3 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. operation of 70ML CBST and storage of Nickel salts at the premises.

The conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 3. Risk assessment of potential emissions and discharges from the Premises during operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Reasoning
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Operation								
Operation of the 70ML and 40ML CBST. Operation of 900m pipeline connecting the evaporation ponds to existing break tank at Baldvis premises. Operation of 2 x 300m pipelines connecting the CBST to the existing pipework at Kwinana premises.	Ammonia Odour	Air/windborne pathway causing impacts to health and amenity	Wells Park 500 m west of the premises Residential premises (nearest 1.6 km south-west of the premises)	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	Condition 21	The CBST will be used to store effluents pumped from the Baldvis Evaporation Ponds in the short term during the Baldvis Relining Project. BHP advised that minimal amounts of ammonia have been found to be present in liquors/effluents stored at the Baldvis Facility and therefore, does not anticipate ammonia odour emission to occur during transfer and storage at the CBST. Moreover, ammonia present in the effluent is bound in the liquid as Ammonium Sulphate, and not available for free dispersion on its own. Post relining project, the tank will be used for normal plant operation to hold reverse osmosis (RO) water from water treatment plant, which has no odour. Noting the presence of minimal ammonia in the liquor/effluent to be temporarily stored in the CBST, and that ammonia is bound in the liquid as Ammonia Sulphate, the delegated officer considered the operation of the CBST to pose a low risk of ammonia odour impacting the nearby receptors.
	Contaminated water from overtopping or loss of containment via loss of CBST liner integrity or failure of associated pipelines.	Overland runoff and seepage, potentially impacting groundwater quality, including ultimate migration into Cockburn sound.	- Cockburn Sound 600m to the west. - Vegetation (TEC) within the premises - Groundwater 3mbgl.	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Y	Condition 21	BHP NiW advised that the CBST has been constructed on a compacted limestone pad, with the tank lining system (wall and floor), leak detection system and the associated pipework being constructed in accordance with requirements of WQPN 26, included as conditions in works approval W6788/2023/1. Leaks to the tanks were successfully repaired and the 'repair' CQA report submitted demonstrates that the tanks are fit for purpose. The CBST was designed to be operated with a freeboard of 655mm below the invert level of the

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Reasoning
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
								emergency overflow weir to the MOL (maximum operating level), calculated based on the WQPN 26 requirements and Victoria Best Practice Environmental Management (BPEM) Guidelines, and are fitted with level alarms, along with routine inspections implemented during operations to ensure levels remain below the capacity at all times. Noting that the CBST was constructed in accordance with the WQPN-26 liner and freeboard requirements, along with the successful demonstration of the repairs to the leaks, the delegated officer considered the CBST to be fit for purpose and the proposed controls are adequate to manage risks and impacts related to loss of containment or overtopping during operation.

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

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

5. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Local Government Authorities (City of Kwinana & City of Rockingham) advised of proposal 30 July 2025	No comments received	Delegated officer determined to proceed with the licence amendment
Licence Holder was provided with draft amendment on 16 September 2025	BHP NiW responded on 3 October 2025 with their comments on the drafts. Refer Appendix 1 for details	Refer to Appendix 1

6. Decision

The delegated officer has determined that the operation of the 40 ML and 40ML CBST at the Kwinana Nickel Refinery premises does not pose an unacceptable risk of impacts to public health or the environment. The determination is based on the following:

- Ammonia is present in low volumes in the liquor/effluents, bound to ammonium sulphate and not available for free dispersion, thereby, posing low risk of ammonia odour emission;
- The CBSTs were constructed on a compacted limestone pad and comply with the requirements of the *Water Quality Protection Note (WQPN) 26 - Liners for containing pollutants using synthetic membranes*;
- Each CBST is operated with an automated and monitored leak detection system;
- Each CBST will be operated with a minimum 655mm top of embankment freeboard.

The delegated officer determined the applicant's proposed design and operational controls are sufficient to manage the risks related to odour and contaminated wastewater emissions from the proposed activity.

7. 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.

7.1 Summary of amendments

Table 5 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 5: Summary of licence amendments

Condition no.	Proposed amendments
21	Inclusion of emission and discharge controls related to the operation of the 70ML and 40ML CBST at the Kwinana premises.

References

1. BHP Nickel West Pty Ltd 2025a, *Application form: Licence Amendment*, Perth, Western Australia.
2. BHP Nickel West Pty Ltd 2025b, *Licence Amendment Application Supplementary Information*, Perth, Western Australia.
3. BHP Nickel West Pty Ltd 2025c, *Response to RFI* (dated 23 May 2025).
4. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, 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. WSP 2025, *Construction Quality Assurance Summary Report: Kwinana 40 and 70 ML Tanks Partial Primary Liner Replacement*, Perth, Western Australia.

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

Condition	Summary of Licence Holder's comment	Department's response
Condition 21(c): <i>Tank liners must be monitored monthly</i>	BHP NiW stated that the tank liners below the water level cannot be inspected/monitored monthly and instead proposed to be worded as follows: <i>Weekly visual inspection of seepage tell tails, seepage collection pit and liner above the water level.</i>	The department noted BHP NiW's submission and considered that weekly visual inspection of seepage tell tails, seepage collection pit and the liner above the water level for was appropriate for monitoring the risk of tank liner failure. Condition 21(c) was updated as proposed.
Condition 21(e): <i>If seepage occurs into the leak detection pits, tanks contents must be returned by pumping back to the main CBS tank from which it originated</i>	BHP NiW stated that the condition was restrictive as if the leaking tank needed to be repaired or decommissioned for repairs, contents will not be pumped back to the originating tank, instead into a relevant containment location. BHP proposed the condition wording be changed to: <i>If seepage occurs into the leak detection pits, the tanks contents shall be returned to a relevant containment location whilst maintaining freeboard at this location.</i>	The delegated officer considered it reasonable to allow contents to be pumped to a relevant containment system/location (such as IBCs or other self-containing system to prevent contact with the environment) to allow repair works to occur. Condition 21(e) was modified to: <i>If seepage occurs into the leak detection pits, the tanks contents shall be pumped to other relevant self-containing containment system/location to allow repairs to take place.</i>
Condition 21(g): <i>If ammonia odour occurs, implement following odour control measures:</i> <i>a. dilute effluent with raw/process</i> <i>b. treat effluent with sulphuric acid to neutralise odours</i> <i>c. cover the surface of storage tank(s) with HPDE "shade balls" to prevent the escape of</i>	BHP NiW stated that tank liquors contain low levels of ammonia and therefore, unlikely to generate ammonia odours. BHP NiW proposed to remove the condition and replace it with: <i>If an ammonia odour is reported, it will be investigated and appropriate actions implemented to reduce any potential impacts.</i>	Noting that the CBSTs will be used to hold liquors from evaporation ponds at Baldivis Facility for only a short duration during the Baldivis Relining Project, and the low levels of ammonia determined to be present in the liquor, thereby posing low odour risk, the delegated officer accepted the request and updated the condition 21(g), as proposed. The condition change still requires actions to be taken, however is less prescriptive which is commensurate with the risk profile.

Condition	Summary of Licence Holder's comment	Department's response
<i>odours.</i>		
Condition 21 – Table 4	BHP proposed to add the below note to Table 4: Note: • * Refers to the pipeline from the evaporation ponds to the existing break tank at the Refinery • ** Refers to the pipelines that connect the CBS tanks to the existing pipework from the evaporation cells	The delegated officer accepted the request and included the proposed notes to Table 1 for the existing pipelines at the premises.