Amendment Report

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
Application Number	APP-0027912
Premises	1. Kwinana Nickel Refinery Lot 100 on Deposited Plan 423540 Patterson Road, KWINANA BEACH, WA 6167 Certificate of Title Volume 4029 Folio 430 2. Baldivis Facility Lot 820 on Plan 77252 Miller Road, BALDIVIS WA 6171 Certificate of Title Volume 2841 Folio 582 As defined by the premises maps in Schedule 1 attached to the Revised Licence
Date of Report	8 August 2025
Status of Report	Final

1. Decision summary

Licence L8437/2010/3 is held by BHP Nickel West Pty Ltd (licence holder, BHP NiW) for the Kwinana Nickel Refinery (the premises), located at 270 Patterson Road, East Rockingham.

This report documents the assessment of potential risks to the environment and public health from emissions and discharges from the storage of nickel salts at 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 its assessment, the department has considered and given due regard to its regulatory framework and relevant policy documents which are available at https://www.wa.gov.au/service/building-utilities-and-essential-services/integrated-essential-services/dwer-regulatory-documents.

2.2 Application summary

On 11 March 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 amendment was initially sought to authorise operation of 70 ML Chloride Brine Storage Tanks (CBST) constructed under works approval W6788/2023/1 and storage of waste nickel salt (change to category 62: Solid waste depot) at the refinery.

On 6 June 2025, BHP NiW requested to withdraw the sections related to operation of the CBST. The scope of the application was refined to a change to category 62 activity only, for the storage of waste nickel salt. BHP NiW advised that no changes to the current assessed capacity for category 62 (27,000 tonnes per annum) are required for the amendment.

2.2.1 Background

BHP NiW is undertaking the Baldivis Relining Project under works approval W6882/2024/1 at the Baldivis Facility, which entails relining of three process effluent pond evaporation cells. To undertake the project, a staged balancing and removal of process liquor and solids from each evaporation cell is being undertaken. The solids extracted from the ponds are screened to separate nickel salts which are dried and temporarily stored at the Baldivis Facility before being transported to the Kwinana Beach refinery for storage. Approximately 5,000 tonnes of nickel salts are anticipated to be removed from the ponds during the project.

Nickel salts will be offloaded into the existing ammonium sulphate (Amsul) salt storage shed where the salts will be bagged and stored on pallets for potential resale. The shed is enclosed, has a concrete hardstand floor with concrete partitions for separate storage of nickel and Amsul salts. The Amsul storage shed has a storage capacity of 15,000 tonnes. BHP NiW advised that the storage shed has sufficient capacity to store nickel salts during the project.

The Packaging Shed has been added as an additional storage shed for the nickel salts to allow operational flexibility and to maintain compliance with storage requirements when routine or unplanned maintenances are required for either shed. The Packaging Shed is also enclosed and has concrete hardstand floor that extends outside the shed. BHP NiW advised that bagging of salts will occur within the shed, and only the bagged salts will be moved on to the hardstand area outside the Packaging Shed for disposal offsite.

The nickel salts are highly crystalline and well-formed, with a large portion of the salts having an estimated diameter of >20mm. Nickel salts are a hydrated complex of nickel sulphate ($NiSO_4$) and ammonium sulphate ($(NH_4)_2SO_4$) (Amsul) salts, with various organic and inorganic impurities. Due to the nickel sulphate content, the nickel salts are less soluble than

pure Amsul salts. As nickel salts contain a concentration of nickel with commercial value (10-15%), BHP NiW plans to either feed it back into the refinery process or sell it to a third party.

The existing licence authorises the storage of Amsul salts only at the premises under category 62 and the amendment is sought to also authorise the storage of nickel salts under category 62, to ensure that all relevant wastes stored at the premises are included in the licence. The total volume of 27,000 (dry) tonnes of waste stored per annum will remain unchanged, including 5,000 tonnes of nickel salts stored at any one time.

2.2.2 Controlled Waste Regulations

Nickel compounds are classified as a controlled waste and are listed under Category Group D (Inorganic Chemicals) in Schedule 1 of the Environmental Protection (Controlled Waste) Regulations 2004. Material Safety Data Sheet (MSDS) provided by BHP NiW indicate the nickel salts excavated from the Baldivis Relining Project to be nickel double salts composed of nickel sulphate (30 - 40%), ammonium sulphate (35 - 40%), cobalt sulphate (3 – 5%) and impurities (15 – 20%). As controlled waste is involved, BHP NiW is required to comply with the requirements under the Controlled Waste Regulations during handling, transport and storage of the nickel salts.

BHP advised that the Kwinana Nickel Refinery is listed as a waste facility in DWER's Controlled Waste Tracking System (CWTS) to receive controlled waste at the premises (ID 24664959) and all loads of salts received will be recorded on the CWTS. However, the current controlled waste listing does not include cobalt compounds, which are present in the nickel salts, although in minimal volumes, and therefore, BHP NiW may consider amending the listing to include these cobalt compounds.

2.2.3 Australian Dangerous Goods (ADG) Code

Nickel salts extracted from the Baldivis Relining Project are classified as environmentally hazardous substances and fall under Transport Hazard Class 9 Dangerous Goods category under the *Australian Code for the Transport of Dangerous Goods by Road & Rail* (Australian Dangerous Goods (ADG) Code).

BHP NiW advised that all requirements of the ADG code, such as packaging, placarding and documentation requirements for transport of nickel salts will be complied with.

Kwinana Nickel Refinery premises also holds a Dangerous Goods licence (DGS000169) for storage of dangerous goods onsite.

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 1 below.

Table 1 also details the 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
Dust	Transfer and storage of nickel salts onsite	Air/windborne pathway	• Nickel salts transported in sealed trucks compatible with the requirements for class 9 Dangerous Goods under the ADG code. • Nickel salts stored in an enclosed shed. Material is highly crystalline and well-formed and will not generate dust. • Limited access to the shed, and PPE controlled when required.
Contaminated water	Transfer and storage of nickel salts onsite	Seepage of, nickel contaminated water to soil and groundwater	• Nickel salts stored in an enclosed shed, with a concrete floor. • Shed has a roof preventing contact with the rainwater.

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 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

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 Kwinana premises and several within 1km of the premises.
Residential premises (Baldivis)	670m south of ponds are residential dwellings on Kerosene Lane, Baldivis 1.7m east on Lumbar Way, Baldivis 1.5km north on Ebrington Road, Wellard
Environmental receptors	**Distance from prescribed activity**
Cockburn Sound – Premises is located within the State Environmental (Cockburn Sound) Policy 2015 area	~ 600m west of the premises
Cockburn Groundwater Area, Safety Bay Sand: Aeolian and beach lime sand	~3 mbgl (1.00 mAHD)

Lake Coolongup	1.2km east from ponds and 650m east from staging pong at Baldivis Facility
Leda Nature Reserve	150m north of ponds at Baldivis Facility
Environmentally Sensitive Areas	• Most of the Baldivis Facility premises, including the ponds, is within the ESA buffer area applied to adjacent Threatened Ecological Communities (TECs). • All of premises within Schedule 1 clearing area
Threatened Ecological Communities (TECs): • Woodlands over sedgelands in Holocene dune swales in Swan Coastal Plain; • Tuart *Eucalyptus gompaocephela* woodlands of the swan coastal plain; • Southern *eucalyptus gomphocephela* and *Agonis flexuosa* woodlands; • Banksia woodlands of the Swan Coastal Plain	Within 200m-2km there are TECs to the north, south and east of the Baldivis Facility boundary
Threatened fauna There are various birds species that are found within proximity to the ponds including members of the *Scolopacidae* family (shorebirds) and *Cacatuidae* family (black cockatoos).	Various distances within 2km of Baldivis Facility boundary

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 3.

The revised licence L8437/2010/3 that accompanies this Amendment Report authorises handling and storage of nickel salts at the Kwinana 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**				
Transport of dried waste nickel salts (solids)	Nickel dust	**Pathway:** Air/windborne pathway **Impact:** Impacts to health and amenity Contamination and impacts to the environment.	Members of the community and the environment including soil, fauna and wetlands	None	C = Minor L = Unlikely **Medium Risk**	Y	**Condition 20**	Nickel ammonium sulphate salt is considered mildly toxic and a breathing irritant. It is also potentially damaging to the environment. The licence holder advised that nickel salts are highly crystalline and well-formed, with a large portion having an estimated diameter of >20mm, thereby minimising the risk of solids becoming airborne. However, the delegated officer considers that risk of dust emission, still remains from the remaining finer or broken dried salt particles. The licence holder advised that the dried nickel salts will be transported in bulk to Kwinana premises in lined, sealed trucks in compliance with the requirements of the ADG code that will ensure dust risks are minimsed during transport. The bulk salts will only be loaded, unloaded and bagged within the authorised storage sheds. A requirement to implement dust suppression measures, if visible dusts are observed from the shed, is included as an additional condition to minimise nickel dust risks. The delegated officer considered it necessary to implement the licence holders proposed controls and the additional condition to maintain a medium risk rating.
Handling (loading/unloading) and storage of waste nickel salts (solids) at Kwinana Refinery	Nickel Dust	**Pathway:** Air/windborne pathway **Impact:** Impacts to health and amenity	Wells Park 600 m west of the premises Residential premises (nearest 1.6 km south-west of the premises)	Refer to Section 3.1 Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	N	**Condition 20**	The licence holder advised that the solids will be stored within existing enclosed Amsul salt storage shed and the Packaging Shed. The delegated officer considered it necessary to include additional controls related to the volume of solids authorised to be stored within the shed, and for loading, unloading and bagging of solids to be undertaken only within the enclosed

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**				
								storage shed to prevent dust emissions. The above controls are considered necessary for maintaining an acceptable level of risk to offsite receptors from fugitive dust impacts and have been included in the licence.
	Nickel salts or contaminated water from the storage sheds	**Pathway:** Direct discharge to soil and infiltration **Impact:** Soil contamination Seepage of nickel contaminated water through soil profile causing deterioration of groundwater quality	Soil and groundwater (3 mbgl)		C = Minor L = Unlikely **Medium Risk**	N		The licence holder advised that the waste nickel salts will be stored in existing enclosed storage sheds with concrete floor and separated from Amsul salts with concrete partitions. The delegated officer has had consideration for the solids being less soluble than the Amsul salts that are already being stored at the shed with no accessible contact with water. The works approval W6882/2023/1 decision report indicates that the solids will be dried prior to being transported to the refinery for storage, and therefore, the solids are not anticipated to contain any entrained liquid. Additional regulatory controls were included requiring the handling (loading/unloading/bagging) of bulk solids to strictly occur within the sheds to prevent leaching of nickel salts or contaminated water into the environment causing soil contamination and deterioration of groundwater quality via seepage of nickel contaminated water through the soil profile. With the additional controls included in Condition 20, the delegated officer considers the risks and impacts related to release of nickel salts or nickel contaminated water into the environment will be sufficiently managed.

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.

4. Consultation

The licence holder was provided with the draft of this report on 29 July 2025. Comments received from the licence holder on 31 July 2025 have been considered by the delegated officer, as detailed in Appendix 1.

5. Decision

The delegated officer has determined the proposal to transport and store nickel salts 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:

- Dried nickel salts from the Baldivis Relining Project will be transported in lined, sealed trucks compatible with the requirements of Class 9 Dangerous Goods;
- Waste nickel salt solids will be stored within enclosed Amsul storage shed and Packaging Shed with concrete floors and no exposure to rain and wind, thereby preventing dust and leachate risks;
- Additional controls included in the amended licence require BHP NiW to load, unload and bag bulk solids only within the enclosed sheds to prevent dust emission risks; and
- The sheds will be maintained in proper condition to remain fit for purpose.

Subsequently, authorisation is provided in the revised licence for nickel salt storage within the Amsul storage shed and Packaging Shed at the Kwinana Nickel Refinery premises.

6. Conclusion

Based on the assessment in this 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.

6.1 Summary of amendments

Table 4 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 4: Summary of licence amendments

Condition no.	Proposed amendments
20	Inclusion of Table 3 related to operational requirements during transport, handling (loading/unloading and bagging) and storage of waste nickel salts solids at the 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, *RFI Response* (email dated 23 July 2025).
4. BHP Nickel West Pty Ltd 2025d, Safety Data Sheet (Revision 1, 17 April 2025).
5. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.

6. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
7. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.

Appendix 1: Summary of licence holder's comments

Condition	Summary of Licence Holder's comment	Department's response
Delivery and handling requirements: 20(a) Dried nickel salts must be transported in sealed (lined) trucks compatible with the requirements of Class 9 Dangerous Goods under the Australian Code for the Transport of Dangerous Goods by Road & Rail (Australian Dangerous Goods (ADG) Code).	Licence holder proposed changing the licence condition to: *When transporting drained nickel salts between Baldivis and Kwinana salts must be transported in sealed (lined) trucks compatible with the requirements of Class 9 Dangerous Goods under the Australian Code for the Transport of Dangerous Goods by Road & Rail (Australian Dangerous Goods (ADG) Code)* The change was proposed as, once the salts were bagged onsite, the bagged salts will be moved using other relevant mode of transport. Licence holder states that bagged salts will not pose dust risks or risks of exposure to soil or ground as the bags are sealed.	Accepted the proposed change. Licence condition updated.
20(b) Nickel salts must only be loaded or unloaded within the nickel salt storage shed.	Licence holder proposed changing the licence condition to: *Nickel Salts must only be loaded or unloaded within the two identified nickel salt storage sheds – refer to updated figure 8, schedule 2* Licence holder proposed the addition of the Packaging Shed as an option to store Nickel Salts on site to allow operational flexibility and ensure compliance with storage requirements should routine or unplanned maintenance be required on either shed. BHP NiW will determine which shed to use based on the available capacity at the time of delivery of salts to the refinery.	Accepted the proposed change. Licence conditions updated to include the 'Packaging Shed' as an additional nickel salt storage shed at the Kwinana premises. Merged conditions b, c and d in the updated licence into 20(b)
20(c) Nickel salts must only be loaded and unloaded with the nickel salt storage shed doors closed.	Licence holder proposed removing the condition. BHP NiW states that the nickel salts are in a stable crystalline form, with low friability, which prevents the salts from breaking down into smaller, finer particles that may cause dust emissions. Salt stockpiles will be an interim measure as salts will be bagged, thus eliminating any fugitive dust emission risk. Stockpiles will not be placed near the access ways.	Modified the condition to remove the requirement to have the shed doors closed, but still require loading, unloading and bagging of bulk salts to be undertaken within the storage sheds. Included an additional condition 20(g) to include the requirement to implement dust suppression measures, if visible dust is observed from the storage sheds. Merged conditions b, c and d in the updated licence into 20(b)

Condition	Summary of Licence Holder's comment	Department's response
20(d) Loading and unloading of the salts must occur on a hardstand that drains to a sump.	Licence holder proposed changing the licence condition to: *Loading and unloading of salts must occur on a hardstand area.* BHP NiW proposed the removal of the requirement for a sump as the crystal is chemically stable and non-reactive in situ and will not generate a leachate. There is also no risk of contamination to soil or groundwater when stored within the identified sheds on the hardstand area.	Accepted the proposed change. Modified the condition to include bagging, alongside loading and unloading of salts, to be undertaken within a hardstand area within the sheds. Merged conditions b, c and d in the updated licence into 20(b)
Storage requirements: 20(b) Nickel salts must only be stored within the nickel salt storage shed on the concrete floor	Licence holder accepted the condition, provided an updated premises layout map for Schedule 2 – Figure 8 to reflect the additional storage shed (Packaging Shed).	Updated Schedule 2 – Figure 8 in the licence. Updated the condition to include the additional storage shed proposed (Packaging Shed). Condition number updated to 20(e) in the revised licence to maintain a continuous numbering sequence under condition 20. An additional condition 20(f) is included to allow only bagged salts to be moved to the hardstand outside the Packaging Shed for removal offsite.
20(c) Nickel salt storage shed doors must remain closed except to allow personnel or vehicle access.	Licence holder proposed removing the condition as nickel salts are in a stable crystalline form, with low friability, which prevents the salts from breaking down into smaller, finer particles that may cause dust emissions. Salt stockpiles will be an interim measure as salts will be bagged, thus eliminating any fugitive dust emission risk. Stockpiles will not be placed near the access ways.	Accepted the proposed change and removed the condition from the licence.