



Amended Works Approval

Works approval number	W6275/2019/1
Works approval holder	BHP Billiton Nickel West Pty Ltd
ACN	004 184 598
Registered business address	125 St Georges Terrace, PERTH WA 6000
DWER file number	DER2019/000398
Duration	25/09/2020 to 24/09/2025
Date of amendment	17/12/2020
Premises details	Kwinana Nickel Refinery 270 Patterson Road, Kwinana Beach WA 6167 Legal description - Lot 89 on Deposited Plan 411084 (Certificate of Title Volume 2958/Folio 292) and Lot 820 on Deposited Plan 77252 (Certificate of Title Volume 2841/Folio 582) as depicted in Schedule 1: Premises map

Prescribed premises category description (Schedule 1, Environmental Protection Regulations 1987)	Assessed production capacity
Category 31: Chemical manufacturing	2,701 tonnes of hydrogen sulfide gas per annum
Category 34: Oil or gas refining	5,840 tonnes of hydrogen gas per annum
Category 44: Metal smelting or refining	90,000 tonnes of nickel metal per annum
Category 67: Fuel burning	7,500 kilograms per hour

This amended works approval is granted to the works approval holder, subject to the attached conditions, on 17 December 2020, by:

Manager, Process Industries

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

Interpretation

In this works approval:

- (a) the words 'including', 'includes' and 'include' in conditions mean "including but not limited to", and similar, as appropriate;
- (b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (c) where tables are used in a condition, each row in a table constitutes a separate condition;
- (d) any reference to an Australian or other standard, guideline, or code of practice in this works approval:
 - (i) if dated, refers to that particular version; and
 - (ii) if not dated, refers to the latest version and therefore may be subject to change over time;
- (e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and
- (f) unless specified otherwise, all definitions are in accordance with the EP Act.

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

Works approval conditions

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

Construction phase

Infrastructure and equipment

1. The works approval holder must construct and/or install the infrastructure and/or equipment in accordance with the corresponding design and construction / installation requirements as set out in Table 1.

Table 1: Design and construction / installation requirements

Infrastructure	Design and construction / installation requirements
High rate thickener	Thickener with a maximum diameter of 12 m Waste gases from the thickener directed the Vent Gas Scrubber prior to release into atmosphere
Wet metals upgrade	Replacement of driers, pan filters and screw classifiers with larger and more efficient units Waste gases to be directed to the existing venturi scrubber or a new scrubber with no less than the same scrubbing efficiency as the existing venturi scrubber
Ammonium sulfate drier replacement	Replacement of existing driers with larger capacity. Ammonia sulphate cooler Waste gases from the drier to be treated by a wet gas cyclone prior to discharge to atmosphere
Adjustment thickener	Waste gases from the adjustment thickener to be directed to the Vent Gas Scrubber prior to discharge to atmosphere Maximum diameter of 12 m

Infrastructure	Design and construction / installation requirements
4D-1 Tank	Tank vent gases to be passively vented via the Amsul cooling tower
7 th Leach autoclave	Waste gases to be directed to the existing Tail Gas Scrubber for treatment prior to discharge to atmosphere
No.3 Boiler de-bottleneck	Replace fans and upgrade burner management system with no change to the existing design capacity (136 t/hr steam) or operating performances (80-85% combustion efficiency)
Brine crystalliser	Designed to process up to 700 litres per minute of Metal Free Liquor Condensed water effluent stream to be directed to and discharged via a cooling tower

Compliance reporting - infrastructure

2. The works approval holder must within 90 calendar days of an item of infrastructure required by condition 1 being constructed and/or installed:
 - (a) undertake an audit of their compliance with the requirements of condition 1; and
 - (b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.
3. The Environmental Compliance Report required by condition 2, must include as a minimum the following:
 - (a) certification by a Chemical Engineer or Mechanical and Manufacturing Engineer that the infrastructure stage, as specified in condition 1, has been constructed in accordance with the relevant requirements specified in condition 1;
 - (b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 1; and
 - (c) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

Monitoring - ambient ammonia monitoring

4. The works approval holder must within 180 days following the issue date of this works approval, install and operate for at least 12 consecutive months a continuous ammonia monitor within the crème shaded area as shown in Figure 2 of Schedule 2.
5. The works approval holder must ensure the continuous ammonia monitor as required by condition 4 complies with the following requirements:
 - (a) fitted with or co-located with continuous wind speed and wind direction monitoring equipment;
 - (b) continuously monitors and records ammonia concentrations as 10 minutes and 60 minutes averages;
 - (c) a monitor availability of greater than or equal to 95% of the time per calendar month; and
 - (d) compliant with AS3580.5.1-2011.

Specified action – emission verification and management plan

6. The works approval holder must submit to the CEO within 12 months following the date of issue of this works approval, an emission verification and management plan for emission point sources, that provides the following minimum detail:
 - (a) a list of all point sources of nickel and ammonia emissions to air within the Premises;

- (b) a list and details of all controls of nickel and ammonia emissions to air within the Premises;
- (c) analysis for each air emission source of how to conduct emissions testing and proposed testing method;
- (d) analysis and outcomes of investigations into options for reducing nickel and ammonia air emissions from the Premises;
- (e) details of investigations into the development of an emissions monitoring strategy which considers actual and predictive monitoring methodologies for ammonia and nickel emissions from the Premises;
- (f) details (design specifications) equipment and process monitoring used to monitor nickel and/or ammonia;
- (g) details of variability of the emission rates of nickel and ammonia for each source; and
- (h) details of management actions that a control room operator can undertake to directly influence emission rates of nickel and ammonia.

Compliance reporting – time limited operations

7. Following the installation of the continuous ammonia monitor as specified by condition 4 the work approval holder must prior to the 15th day of months January, April, July and October submit to the CEO the results of the ambient ammonia monitoring as required under condition 4 from the previous three monthly period, in a computer readable format as 10 minute and 60 minute averages.

Records and reporting (general)

8. The works approval holder must record the following information in relation to complaints received by the works approval holder (whether received directly from a complainant or forwarded to them by the department or another party) about any alleged emissions from the Premises:
 - (a) the name and contact details of the complainant, (if provided);
 - (b) the time and date of the complaint;
 - (c) the complete details of the complaint and any other concerns or other issues raised; and
 - (d) the complete details and dates of any action taken by the works approval holder to investigate or respond to any complaint.
9. The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:
 - (a) the works conducted in accordance with condition 1; and
 - (b) complaints received under condition 8.
10. The books specified under condition 9 must:
 - (a) be legible;
 - (b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;
 - (c) be retained by the works approval holder for the duration of the works approval; and
 - (d) be available to be produced to an inspector or the CEO as required.

Definitions

In this works approval, the terms in Table 2 have the meanings defined.

Table 2: Definitions

Term	Definition
AS/NZS 3580.5 - 2011	means Australian/New Zealand Standard 3580.5.1- 2011, <i>Methods for Sampling and Analysis of Ambient Air - Determination of Oxides of Nitrogen - Direct Reading Instrumental Method</i> .
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the <i>Environmental Protection Act 1986</i> Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
Chemical Engineer or Mechanical and Manufacturing Engineer	means a person who: (a) holds a relevant tertiary qualification; and (b) has a minimum of five years of experience working in the area / field of design engineering and certification of chemical or mechanical and industrial manufacturing systems.
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V Division 3 of the EP Act.
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and/or equipment has been constructed and/or installed in accordance with the works approval.
EP Act	<i>Environmental Protection Act 1986</i> (WA).
monthly period	means a one-month period from the first day of a month until the last day of that same month.
Premises	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in Schedule 1 to this works approval.
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions.
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 54 of the EP Act, subject to the conditions.
works approval holder	refers to the occupier of the premises being the person to whom this works approval has been granted, as specified at the front of this works approval.

END OF CONDITIONS

Schedule 1: Maps

Premises map

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



Figure 1: Map of the boundary of the prescribed premises

Schedule 2: Ambient Ammonia Monitoring area



Figure 2: Area for the ambient ammonia monitoring

Figure Note: The crème coloured area is the area where the ambient ammonia monitoring should occur as per condition 5