



Application for Works Approval Amendment

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

Works Approval Number	W4661/2010/1
Works Approval Holder	Alcoa of Australia Ltd
ACN	004 879 298
File Number	2010/004167-1~2
Premises	Pinjarra Alumina Refinery South Western Highway, OAKLEY, WA 6208 Legal description – Lot 19 on Diagram 44739, Part of Lot 109 on Diagram 60089, Part of Lot 151 on Plan 10914, Lot 221 and Lot 222 on Plan 302638, , Part of Lot 251 and Lot 252 on Plan 35963 As defined by the premises map in Schedule 1 of the amended Works Approval
Date of Report	7 April 2022
Proposed Decision	Revised works approval granted

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

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1. Decision summary

Works Approval W4661/2010/1 is held by Alcoa of Australia Ltd for the Pinjarra Refinery (the Premises), located at South Western Highway, Oakley.

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 construction and operation of the Premises. As a result of this assessment, Revised Works Approval W4661/2010/1 has been granted.

The Revised Works Approval issued as a result of this amendment supersedes the existing Works Approval previously granted in relation to the Premises. The Revised Works Approval has been granted with existing conditions being transferred, but not reassessed.

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 18 November 2021, the Works Approval Holder submitted an application to the department to amend Works Approval W4661/2010/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendment is being sought:

- Construction of an above ground decant pump within RSA1E area instead of a submersible pump in vertical concrete well as specified in W4661/2010/1 Condition 1 Table 1.

No other changes to the aspects of the existing Works Approval relating to Category 46 have been requested by the Works Approval Holder.

Table 1 below outlines the proposed changes to the existing Works Approval.

Table 1: Proposed changes

Category	Description of proposed amendment
46	<p>Condition 1 Table 1 - Pumping station</p> <p><i>submersible pump located in a vertical concrete well liner with minimum diameter of 1800 mm and a concrete base</i></p> <p>to be replaced by:</p> <p><i>above ground pump on a sand pad equipped with a noise enclosure</i></p>

3. Risk assessment

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

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

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this Amendment Report are detailed in Table 2 below. Table 2 also details the proposed control measures the Works Approval Holder has proposed to assist in controlling these emissions, where necessary.

Table 2: Works Approval Holder controls

Emission	Sources	Potential pathways	Proposed controls
Noise	Above ground pump	Air/windborne pathway	Construction of an enclosure specified to limit noise emissions to a maximum of 72 dB(A) at 7 metres. Factory acceptance testing (FAT) to be undertaken prior to commissioning of the Diesel Pump to validate the performance of the installed sound attenuating enclosure.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Works Approval 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 3 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 3: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Receptor 1 32°40'57.75"S 115°57'15.84"E	Located approximately 3.5 km to the south of the Refinery and at the foot of the scarp, represents the closest receiver in the Meelon area.
Receptor 2 32°37'18.15"S 115°58'8.47"E	Located approximately 2.2 km to the north-east of the Refinery, is the closest receiver to the Refinery and represents a single residence.
Receptor 3 32°36'28.58"S 115°53'42.36"E	Located approximately 2.2 km to the north-west of the residue area, represents the closest receiver in the North Pinjarra housing estate
Receptor 4 32°37'31.18"S	Located approximately 2.5 km to the west of the residue area, represents the closest receiver on the north-east edge of the town of Pinjarra.

115°52'50.59"E	
Receptor 5 32°38'15.95"S 115°52'49.53"E	Located approximately 2.7 km to the west of the residue area, represents the closest receiver on the south-east edge of the town of Pinjarra.



Figure 1: Proximity of sensitive receptors to the Premises

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 incomplete they have not been considered further in the risk assessment.

Where the Works Approval 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 Works Approval Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the Works Approval Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 4.

The Revised Works Approval W4661/2010/1 that accompanies this Amendment Report authorises construction. The conditions in the Revised Works Approval have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 4. Risk assessment of potential emissions and discharges from the Premises during operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
Operation								
RSA1E above ground diesel pump	Noise	Air/windborne pathway causing impacts to health and amenity	Residences located between 2.2 and 3.5 km from RSA1E	Refer to sections 3.1.1 and 3.3	C = Minor L = Unlikely Medium Risk	No	Condition 1	Refer to Section 3.3

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

Note 2: Proposed Works Approval Holder's controls are depicted by standard text.

3.3 Detailed risk assessment for noise at receptors R1 to R5

A noise assessment report (Wood 2022) was submitted with the works approval to support the application. At the time when the report was prepared, the Works Approval Holder intended to use a Tru-Flo TF200/100 pump and a sound attenuation system consisted of :

- external/weather shell: 4-6 mm steel
- absorptive fill: 100 mm of mineral wool or equivalent
- fill retainer: perforated metal sheet or equivalent.

The expected noise level for the TF200/100 pump has been modelled as 72 dB(A) at 7 m with a sound attenuation enclosure. When comparing the large number of noise sources distributed across the refinery, a diesel pump with the sound power noise level of 97 dB(A) is relatively insignificant.

Wood stated that the vendor is recommended to perform a validation test of the enclosure's noise reduction during the factory acceptance tests for the package, which indicates that the performance of the enclosure will be guaranteed.

However, during statutory consultation with the Works Approval Holder on draft conditions, DWER was advised that a different pump (Tru-Flo TF300/20) and sound enclosure system will be sourced. The revised sound enclosure system has:

- external/weather shell: 2 mm steel
- absorptive fill: 40 mm foam

No detail on the pump's emission levels was provided through the proposed changes although the Works Approval Holder has committed to achieving the same sound pressure level outputs (72dB(A)) as modelled in the Wood (2022) report.

In the absence of a supporting study to confirm that the sound attenuation system will achieve a similar level of noise control, the Delegated Officer has determined that noise validation during Factory Acceptance Testing will be required. The Works Approval Holder will be required to demonstrate compliance with the assessed noise outputs in the Wood (2022) report prior to operating the pump.

4. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
Works Approval Holder was provided with draft amendment on 10 February 2022	<i>Alcoa provided comments on 2 March 2022</i> <i>Refer to Appendix 1</i>	<i>Refer to Appendix 1</i>
Works Approval Holder was provided with a second draft amendment on 23 March 2022	<i>Alcoa provided comments on 5 April 2022</i> <i>Refer to Appendix 1</i>	<i>Refer to Appendix 1</i>

5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Works Approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

5.1 Summary of amendments

Table 6 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Works Approval as part of the amendment process.

Table 6: Summary of works approval amendments

Condition no.	Proposed amendments
1, <i>Table 1 – Pumping station</i>	Change to above ground pump with noise attenuation closure
Schedule 1: Maps	Figure 2 – inclusion of above ground pump location Figure 4: Decant pump installation details

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Wood 2022, *Alcoa Pinjarra Refinery RSA1E diesel pump noise assessment*, Rpt01-AU00540-02-Rev0. Report prepared for Alcoa by Wood.
5. DWER, *Internal Advice – Environmental Noise Branch*. Internal reference A2083079.

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

Instrument	Summary of Works Approval Holder's comment	Department's response
<p>Works Approval Condition 1 Table 1 Item 8</p>	<p>2 March 2022</p> <p>The works approval holder requested the following changes:</p> <ul style="list-style-type: none"> - retain the sub-liner and under drainage pumps specification as per the previous Works Approval W4661/2010/1. Only the decant pump will be above ground. - the diesel pump supplier has proposed different specifications for the sound enclosure which will still meet the sound level of 72dB(A) at 7m. <p>5 April 2022</p> <p>The works approval holder requested minor grammatical changes and the removal of reference to pump and sound attenuating enclosure model numbers.</p>	<p>DWER has reviewed the proposed changes and will amend the condition based on environmental outcomes.</p> <p>The Works Approval has been updated accordingly.</p>
<p>Decision Report Section 3.3 - Detailed risk assessment for noise at receptors R1 to R5</p>	<p>The noise assessment was based on the Tru-Flo TF200/100 Diesel Pump combined with a sound enclosure described below:</p> <ul style="list-style-type: none"> - external/weather shell: 4-6 mm steel - absorptive fill: 100 mm of mineral wool or equivalent - fill retainer: perforated metal sheet or equivalent. <p>However, the diesel pump supplier has proposed to supply a different model of pump which still meets the same sound power levels and with a sound attenuation enclosure. The supplier has committed to achieving a 72dB(A) sound pressure level for the sound enclosure and this is included as a performance criterion in their quotation.</p> <p>The works approval holder proposes to amend the assessment to read: "based on the vendor's specifications, will meet a sound power level of 103 dB(A) at 1 metre without any controls."</p>	<p>The assessment was based on the report prepared by Wood (2022) where the pump and sound enclosure have different specifications. The report conclusions cannot be amended using a different pump and enclosure.</p> <p>DWER has reviewed the proposed change that includes:</p> <p>Pump: Tro-Flo TF300/20</p> <p>Sound enclosure: HX Silent Pack Enclosure – series 8</p> <p>The delegated officer has determined that the conditions will be based on environmental outcomes. Conditions have been revised to include in the works approval amendment to limit the operation of the aboveground pump if the noise enclosure do not achieve 72 dB(A) at 7 m.</p>

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY			
Application type			
Amendment to works approval	<input checked="" type="checkbox"/>	Current works approval number:	W4661/2010/1
Date application received	18/11/2021		
Applicant and Premises details			
Applicant name/s (full legal name/s)	Alcoa Australia Limited		
Premises name	Pinjarra Alumina refinery		
Premises location	Lot 19 on Diagram 44739, Part of Lot 109 on Diagram 60089, Part of Lot 151 on Plan 10914, Lot 221 and Lot 222 on Plan 302638, Part of Lot 251 and Lot 252 on Plan 35963		
Local Government Authority	Shire of Murray		
Application documents			
HPCM file reference number:	DWERDT528879 – Container 2010/004167-1~2		
Key application documents (additional to application form):	Decant pump noise assessment (Wood, 2021)		
Scope of application/assessment			
Summary of proposed activities or changes to existing operations.	Change to the design of the approved decant system. The proposal is to install a decant pump above ground on sand pad instead of being a submersible pump.		
Category number/s (activities that cause the premises to become prescribed premises)			
Table 1: Prescribed premises categories			
Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)	
Category 46: Bauxite refining: premises (other than premises within paragraph (b) of category 5) on which alumina is produced from bauxite refining.	5 Mtpa (this is alumina production stated in MS646).	N/A	
Legislative context and other approvals			
Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>	
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Ministerial statement No: 646 EPA Report No: 1122	
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference No:	

Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Certificate of title <input type="checkbox"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input type="checkbox"/> Expiry: Other evidence <input type="checkbox"/> Expiry:
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	If N/A explain why? Sate Agreement
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Licence not required.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Name: Murrey River System Type: Proclaimed Surface Water Area Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Regional office: Kwinana Peel
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>	Name: South Dandalup Pipehead dam catchment area
Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004</i> , <i>Environmental Protection (Controlled Waste) Regulations 2004</i> , <i>State Agreement Act xxxx</i>)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<i>Alumina Refinery (Pinjarra) Agreement Act 1969</i>
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Peel Harvey
Is the Premises subject to any EPP requirements?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Site is subject to phosphorus loading flowing into Peel Harvey estuary.
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Classification: possibly contaminated – investigation required (PC-IR) Date of classification: 17/08/2012