



Application for Licence Amendment

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

| | |
|--------------------------|--|
| Licence Number | L6217/1983/15 |
| Licence Holder | Alcoa of Australia Limited |
| ACN | 004 879 298 |
| File Number | 2012/007237-7~2 |
| Premises | Wagerup Alumina Refinery Willowdale Road, WAROONA, WA 6215 Legal description – Lot 700 on Plan 59305 Certificate of Title Volume 2708 Folio 955 Lot 205 on Plan 34250 Certificate of Title Volume 2540 Folio 866 |
| Date of Report | 30/10/2020 |
| Proposed Decision | Revised licence granted |

Table of Contents

| | |
|---|-----------|
| 1. Decision summary | 3 |
| 2. Scope of assessment | 3 |
| 2.1 Regulatory framework | 3 |
| 2.2 Application summary | 3 |
| 2.2.1 Proposed causticisation emission offset | 4 |
| 2.2.2 Proposed 45K cooling tower emission offset | 4 |
| 2.2.3 Proposed modification of aggregate calciner priority VOC conditions | 5 |
| 2.3 Part IV of the EP Act | 5 |
| 2.4 Update and consolidation of licence | 6 |
| 3. Air quality impact assessment | 6 |
| 3.1 Health Risk Assessment | 8 |
| 4. Risk assessment | 9 |
| 4.1 Source-pathways and receptors | 9 |
| 4.1.1 Emissions and controls | 9 |
| 4.1.2 Receptors | 11 |
| 4.2 Risk ratings | 12 |
| 5. Consultation | 15 |
| 6. Decision | 18 |
| 7. Conclusion | 19 |
| 7.1 Summary of amendments | 19 |
| 8. Definitions | 20 |
| References | 21 |
| Appendix 1: Process change diagrams | 22 |
| Appendix 2: Summary of Licence Holder's comments on risk assessment and draft conditions | 23 |
| Appendix 3: Application validation summary | 24 |

1. Decision summary

Alcoa of Australia Limited (the licence holder) holds licence L6217/1987/15 (the licence) for the Wagerup Alumina Refinery (the Premises) and applied for a licence amendment on 13 August 2020. This Amendment Report is to assess the licence holder's request to increase its licensed annual alumina production limit (2.85 million tonnes) by 50,000 tonnes per annum (tpa). Alcoa also proposed to undertake two operational changes predicted to offset volatile organic compound (VOC) and odour emissions, and amend aggregate calciner priority VOC emissions limits specified in condition A(2(a)).

This Amendment Report documents the assessment of potential risks to the environment and public health from the licence holder's requested amendments during the operation of the Premises. As a result of this assessment, revised licence L6217/1987/15 has been granted.

The revised licence issued because of this amendment also consolidates and supersedes the existing licence and any Amendment Notices previously granted in relation to the Premises.

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> under 'Industry Regulation'.

2.2 Application summary

On 13 August 2020, the licence holder submitted an application to the department to amend the licence under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The licence holder requested the following amendments:

- Amend condition A1(a)(i) to increase the existing 2.85 Mtpa production limit by 50,000 tpa (1.75% increase). The proposed production increase will be achieved through yield improvements and increased throughput in calcination, noting that the daily alumina production capacity will remain at 8,400 tonnes per day (tpd).
- The proposed production increase in alumina production is only to the annual production capacity. Therefore, the predicted change to the air emission risk profile relates to increases in mass emission rates of VOCs, combustion gases, particulates and metals which is further discussed in section 3 (Table 4). Changes to the air emissions profile are primarily related to calcination and cooling tower sources. The licence holder indicated there are no suitable or practical VOC abatement options available within the calcination area and considered options for sources outside of calcination. The licence holder proposed the following two operational changes that it predicted would offset the predicted mass emission increase of VOCs and odour resulting from a 50,000 tpa production increase.
 - Reconfiguration of causticisation where two tanks (J14 and J25) within 35J are temporarily taken out of circuit (as depicted in Appendix 1). The licence holder predicts the operational change will reduce VOC emission rates from causticisation by 0.7%, and odour emission rates by 0.2%.
 - Temporary change to cooling tower make-up water supply source. The 45K precipitation cooling towers run on a common make-up water header which is normally fed by water from the Lower Dam (rainfall runoff and digestion condensate). The cooling towers are proposed to be run on Upper Dam water ("fresh surface water" from rainfall runoff and Yalup Brook) which is

predominantly used for potable water supply at the refinery. Upper Dam make-up water is proposed to be used for 1.6% of the time (equivalent to 141 hours per calendar year) and predicted to reduce odour emission rates from the cooling towers by 0.4%.

The proposed changes will provide an immediate temporary reduction in emissions to offset the VOC and odour emission increase associated with increased production until longer term emission reduction solutions are developed.

- Amend Table 1 of condition A2(a) to increase the aggregate calciner priority VOC annual limit from 29,501 to 30,017 kg per year, 1.75% increase corresponding to a 1.75% annual production increase.
- Amend Table 1 of condition A2(a) to remove the aggregate calciner priority VOC quarterly limits and modify the related reporting requirement in condition A2(b).

The proposed amendment is limited only to changes to Category 46 activities. No changes to the aspects of the existing licence relating to Category 52, 64 or 67 have been requested by the licence holder.

Table 1 below outlines the proposed changes relating to Category 46.

Table 1: Proposed production capacity changes

| Category | Current production capacity | Proposed production capacity | Description of proposed amendment |
|----------|-----------------------------|------------------------------|--|
| 46 | 2.85 Mtpa | 2.9 Mtpa | 50,000 tpa alumina production increase (1.75%) |

Additional supporting detail in the application is summarised in the sections below.

2.2.1 Proposed causticisation emission offset

Causticisation involves dosing the alumina rich green liquor with lime to regenerate caustic soda from sodium carbonate which forms in the green liquor. The regenerated caustic soda is then used in the refining process. Causticisation is undertaken within a series of tanks at about 100°C and results in the production of vapour containing VOC and odour which is discharged via a stack on each tank. Alcoa proposes to temporarily reconfigure the operation of causticisation and predicts this will offset increases in VOC and partially offset increases in odour emissions associated with the proposed annual production increase.

Alcoa has proposed a model where two tanks will be taken out of the causticisation circuit, reducing the number of tanks in the circuit from seven to five (refer to Appendix 1). These tanks will be bypassed and remain empty, reducing emissions from the two bypassed tanks to zero. Alcoa has nominated tanks J14 and J25 to be moved offline and changed over with other tanks for maintenance requirements. Alcoa has advised that tanks J13, J14, J15, J24 and J25 are similar and have similar emission profiles, therefore J14 and J25 can be used for tank J13, J15 and J24 change over periods without causing an increase to emissions during change over. The emissions from the remaining tanks in the circuit are not anticipated to change because of bypassing two tanks as they are dependent on process conditions rather than flow rate.

2.2.2 Proposed 45K cooling tower emission offset

Several cooling towers are in operation at the refinery to cool water which is used for indirect process cooling at the refinery. The cooling towers are evaporative coolers which cool water to near ambient temperature. Some of the water fed to the cooling tower evaporates into the air (cooling the water in the process). The remaining water circulates through the tower and is

used again for indirect cooling. Each evaporative cooling tower requires make-up water to replace water lost via evaporation and blowdown. Contaminants within the make-up water can be stripped into the cooling tower air and discharged to atmosphere therefore the quality of make-up water is a key contributing factor to emissions from cooling towers. Make-up water for the cooling towers is supplied from the Lower Dam which contains rainfall runoff and digestion condensate (which contains some VOCs).

The cooling towers can run on fresher surface water from the Upper Dam which contains water sourced from rainfall runoff and Yalup Brook. Water from the Upper Dam is predominantly used at the refinery for potable water supply therefore the availability of Upper Dam water for cooling is limited by the site water balance. Alcoa has modelled that if make-up water for the precipitation cooling towers is supplied from the Upper Dam for 141 hours per calendar year, this will partly offset the odour emission increase predicted to occur as a result of the 50,000 tpa production increase. In conjunction with the causticisation offset project, this cooling tower offset project is predicted to achieve a 0% net change in the refinery odour emission rate.

The licence holder provided the department with supplemental information (Alcoa email dated 20/10/2020) relating to options for timing of the 141 hours of Upper Dam water use that may optimise the emissions benefit of the operational change. The licence holder expressed the view that timing the Upper Dam water use through the winter months (May to September inclusive) was optimum. It referred to previous studies through the 2004 CSIRO Air Quality Review that pointed to observed correlations between odour complaints and certain meteorological conditions. These conditions were identified as typically occurring in winter with lower dispersion conditions and increased frequency of northerly winds.

2.2.3 Proposed modification of aggregate calciner priority VOC conditions

Condition A2(a) of the licence specifies limits for calculated Aggregate Calciner priority VOC emissions of 29,501 kg/year, and progressive limits for each quarter throughout the year. Increasing production by 1.75% is expected to result in a pro-rata rate increase to the aggregate calciner VOC emissions therefore the annual limit is required to be increased to 30,017 kg per licence year. While emissions will increase from calcination the increase will be offset by the modified operation of causticisation described in section 2.2.1.

Alcoa has also requested removal of the quarterly VOC emission limits in condition A2(a) to allow Alcoa the flexibility to manage and minimise hydrate storage levels that accumulate due to calciner maintenance, overhauls, and unplanned outages. Alcoa advises that removal of the quarterly limits will allow for energy and production efficiencies to be maximised when the calcination is running efficiently. Removal of the quarterly emission limits will allow Alcoa greater flexibility in operation of the calcination circuit however it is important to note that Alcoa is still subject to a daily calcination production limit of 8,400 tpd (condition A1(a)(ii)) which prevents excessive short-term calcination throughput and associated short-term emission spikes.

2.3 Part IV of the EP Act

Ministerial Statement (MS) 728 and 1069 have been granted under Part IV of the EP Act and allows Alcoa to initiate an expansion project at the Premises to increase production up to 4.7 Mtpa. The expansion to 4.7 Mtpa is subject to implementation conditions in MS 728 and 1069, including best practice emissions management requirements to offset and reduce emissions.

The department supports the approach in MS 728 and 1069, that an increase in production to 4.7 Mtpa is met with offsets and reductions in VOC and odour emissions to air. While the department assesses applications under Part V of the EP Act according to its risk-based Regulatory Framework, it seeks to ensure its decision making for the Premises is not

inconsistent with the broader objectives and principles of MS 728 and 1069.

The Environmental Protection Authority (EPA) is currently assessing proposed changes to the MS under section 46 of the EP Act. The EPA's inquiry relates to a change to conditions relating to air quality, noise, and water to facilitate production increasing in increments, with an initial increase in production to 3.3 Mtpa, without triggering the upper limit extent of 4.7 Mtpa.

The Delegated Officer formed the view that Alcoa's licence amendment application, including its requested 50,000 tpa alumina production increase, is not directly associated with the expansion to 4.7 Mtpa under MS 728 and 1069, or the section 46 inquiry process.

2.4 Update and consolidation of licence

As part of this amendment the department has updated the format of the licence and consolidated changes made under Amendment Notices into the revised licence. A summary of Amendment Notices which have been incorporated is included in Table 2.

Table 2: Amendment notices consolidated into the revised licence

| Instrument | Issued | Summary of approval |
|---------------|---------------|--|
| L6217/1983/15 | 29 April 2016 | Licence expiry date extended to 12 October 2035 |
| L6217/1983/15 | 26 July 2019 | Amendment notice 1 to enable construction of a spillway on the ROWS pond |

The format change and consolidation of Amendment Notice's has not changed the licence holder's licence obligations. The department has not undertaken any additional risk assessment related to previous Amendment Notices.

In consolidating the licence, the CEO has:

- updated the front-page appearance of the licence;
- deleted the redundant AACR form set out in Appendix C of the existing licence and included a definition for AACR;
- added conditions and requirements specified in the Amendment Notices detailed in Table 2, and
- added definitions where required.

The amendments to the licence are detailed in Section 7.1. Previously issued Amendment Notices will remain on the department's website for future reference and will act as a record of the department's decision making.

3. Air quality impact assessment

The proposed 50,000 tpa increase in annual production is predicted by the licence holder to result in the changes to mass air emissions shown in Table 4. Alcoa completed a review and update of the 2018 Refinery Emissions Inventory to identify and quantify changes to emission sources which are expected to occur because of the proposed amendments. Emissions from the 2018 inventory were scaled to predict impacts at a 2.9 Mtpa production rate. The expected source emission changes within the refinery are summarised in Table 3.

Table 3: Predicted source emission changes resulting from proposed amendments

| Source | Emission change |
|--|--|
| 50 Calciners | Emissions to increase in direct proportion to production |
| 25A Slurry Storage | Emissions will not increase ¹ |
| 45K Precipitation Cooling Towers | Emissions will decrease due to freshwater operation offset proposal |
| 25 Milling | Emissions will not increase |
| 44 Seed Filtration | Emissions will not increase ¹ |
| 26 Sand Separation | Emissions will not increase |
| 45 Precipitation | Emissions will not increase |
| 30 Digestion | Emissions will not increase ² |
| 110 Powerhouse | Emissions will not increase |
| 42 Evaporation | Emissions will not increase ² |
| 44 Heat Interchange | |
| 47 Oxalate Removal | Emissions will not increase ¹ |
| 48 Liquor Burning | |
| 35 Clarification, Causticisation, filtration | Emissions will decrease due to two sources being taken offline offset proposal |
| 15 Stockyard | No change |
| 984Y Sand and Mud to Lake 259 Residue Disposal Area | No change |

Note 1: Non-combustion source

Note 2: Non-condensable vapour source

Emissions from non-combustion sources such as vented tanks are not expected to increase as they are dependent on process conditions in the tank and are not influenced by flow rate through a tank. Vapour (non-condensable gas) flow rates through pressure vessels such as flash tanks are expected to increase. However, non-condensable gases from flash tanks in digestion, evaporation and heat exchange are captured via the existing non-condensable treatment system and directed to the powerhouse for thermal destruction. Therefore, there is not expected to be an increase in emissions from these sources. The predicted emission reductions from precipitation cooling towers and causticisation are dependent on the licence holder's implementation of proposed operational changes to these sources.

The licence holder used the scaled 2018 Emission Inventory to quantify the predicted changes to the mass emission, for emissions to air at a production of 2.9 Mtpa with and without the two proposed operational changes as shown in Table 4. Its calculations predict that the cooling tower and causticisation projects will provide a net offset of the VOC and odour mass emission rate increase from calcination also shown in Table 4. The production increase is predicted to increase the point source mass emission rate of combustion gases (0.46 g/s or 0.8%), particulates (0.15 g/s or 4%) and metals 0.004 g/s or 0.4%). A summary of the licence holder's predicted changes to air emissions from the refinery is included in Table 4.

Table 4: Summary of Alcoa's predicted air emission changes

| Type of emission | 2018 Emissions Inventory at current 2.85 Mtpa | Scaled 2018 Emissions Inventory at 2.9 Mtpa (no offset projects) | | Scaled 2018 Emissions Inventory at 2.9 Mtpa (including offset projects) | |
|----------------------|---|--|----------|---|----------|
| | | Emission rate | % change | Emission rate | % change |
| Odour (OU/s) | 1,400,451 | 1,409,240 | +0.6% | 1,400,373 | 0% |
| VOCs (g/s) | 2.87 | 2.89 | +0.7% | 2.87 | 0% |
| Combustion gases g/s | 54.78 | 55.24 | +0.8% | 55.24 | +0.8% |
| Particulates (g/s) | 3.75 | 3.9 | +4% | 3.9 | +4% |

| Type of emission | 2018 Emissions Inventory at current 2.85 Mtpa | Scaled 2018 Emissions Inventory at 2.9 Mtpa (no offset projects) | | Scaled 2018 Emissions Inventory at 2.9 Mtpa (including offset projects) | |
|------------------|---|--|----------|---|--------------|
| | | Emission rate | % change | Emission rate | % change |
| Metals (g/s) | 0.0281 | 0.0285 | +1.4% | 0.0282 | +0.4% |

The Delegated Officer reviewed the licence holder’s predicted source and mass emission rate changes. The Delegated Officer formed the view that the methodology and validity of the source change scenario (Table 3) and predicted scaled mass emission changes (Table 4) appeared reasonable. The Delegated Officer recognises that the reduction estimates are likely to be well within the “noise” of the 2018 Emissions Inventory data. That is, uncertainty associated with the estimation of VOC and odour emissions from a refinery-wide perspective is potentially larger than changes of a few percent resulting from a 50,000 tpa production increase.

The operational changes to cooling towers and causticisation also appeared reasonable. It was noted the causticisation change (temporary removal of two tanks from the circuit) would have an immediate and ongoing reduction to VOCs and odour while the tanks were out of service. The operation of the cooling towers on Upper Dam water for 141 hours however, had an ad-hoc emissions implication. The cooling tower change contributes to the overall annual odour mass emission reduction, however that is only for the period the cooling towers operate on Upper Dam water.

As odour impact is generally associated with short time periods (e.g. emission peaks during adverse meteorological conditions), the Delegated Officer was of the view that the timing optimisation of when the cooling towers are run on Upper Dam water was an important consideration. The Delegated Officer agreed with supplementary information from Alcoa (refer to section 2.2.2) that the winter’s months of May to September (inclusive) represented the preferred time period for the 141 hours using Upper Dam water.

The Delegated Officer had regard to the fact that increases in mass emissions of VOCs from calcination could be offset numerically by the cooling tower and causticisation projections, however did not necessarily represent a like for like offset when considering the dispersion pathway factors and potential ground level impacts. The potential emission related health impacts from increasing production to 2.9 Mtpa are further discussed in section 3.1.

3.1 Health Risk Assessment

The licence holder provided a copy of its updated 2020 health risk assessment (HRA) of air emissions in support of its licence amendment application. The 2020 HRA was prepared as part of the EPA’s section 46 of the EP Act inquiry relating to a change to conditions relating to air quality, noise and water for production increasing in increments. This includes an initial increase to 3.3 Mtpa without triggering the upper limit extent of 4.7 Mtpa. The EPA procured an independent peer review of the HRA that was subsequently further updated considering the peer review findings. The Delegated Officer had regard to the findings of the final version of 2020 HRA dated 15 October 2020. The HRA addressed two operating scenarios:

- base case – representative emission rates from the existing Wagerup Refinery operating at 2.85 Mtpa; and
- expansion case – representative emission rates from the expanded Wagerup Refinery operating at 3.3 Mtpa. This case accounts for improved emission abatement incorporated into the proposed design for the refinery expansion.

The Delegated Officer did not have material regard to the health risk assessment conclusions of the 3.3 Mtpa operating scenario as this does not relate to a theoretical 2.9 Mtpa production capacity.

The HRA results for the 2.85 Mtpa scenario indicate that the acute risk, chronic risk and carcinogenic risk were reported to be low and considers combustion gases, particulates and metals in addition to VOCs. The adopted risk metrics in the HRA are stated to be strongly influenced by particle emissions and associated metal emissions. The licence holder's predicted increases to particulate emissions and associated metals are 4% and 0.4% respectively and while the 2.9 Mtpa scenario has not been explicitly modelled, the Delegated Officer expected that the incremental change in risk from these emission increases is unlikely to change the HRA outcomes. It stands to reason that the incremental change in risk for combustion gases and VOCs are also unlikely to change the HRA outcomes.

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 *Guidance Statement: Risk Assessments* (DER 2017).

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.

The increase in production is not expected to alter noise or dust emissions; discharges to land or to waters (ground and surface) which have been previously been risk assessed and are subject to existing conditions of licence L6217/1983/15. These emissions/discharges have therefore not been further considered through the risk assessment of the application.

4.1 Source-pathways and receptors

4.1.1 Emissions and controls

The key emissions and associated actual or likely pathway associated with the licence holder's proposal to increase production at the refinery which have been considered in this Amendment Report are detailed in Table 5 below. Table 5 also details control measures the licence holder has proposed to assist in controlling these emissions, where necessary, and control measures already applied through the conditions of the existing licence relevant to the emission.

Table 5: Emission pathways, sources and relevant controls

| Emission | Sources | Potential pathways | Proposed and existing controls |
|------------------|------------------------------------|-----------------------|--|
| Odour | Increase in calcination throughput | Air/windborne pathway | <p>Alcoa proposes to offset the estimated 0.6% increase in odour emissions from increased calcination via the following.</p> <ul style="list-style-type: none"> • Modified operation of causticisation through removal of two tanks from the circuit to achieve a 0.2% reduction in odour emissions. • Modified operation of the cooling towers through temporary supply of fresh makeup water from the Upper Dam for 141 hours during the winter period (May to September inclusive) to achieve a 0.4% reduction in emissions. <p>The licence includes controls for odour emissions which are detailed in the following line for VOC emission controls.</p> |
| VOC | | | <p>Alcoa proposes to offset the estimated 0.7% increase in VOC emissions from increased calcination via the following.</p> <ul style="list-style-type: none"> • Modified operation of causticisation through removal of two tanks from the circuit to achieve a 0.7% reduction in VOC emissions. <p>The licence includes controls for reduction and monitoring of VOC (and odour) emissions from the refinery as well as emission limits, these include the following.</p> <ul style="list-style-type: none"> • Limits and reporting for aggregate calciner priority VOC emissions. • The liquor burner and oxalate kiln have regenerative thermal oxidiser (RTO) for VOC destruction. • Automated shutdown or liquor burner and oxalate kiln in the event of RTO bypass. • Monitor and maintain minimum exit temperatures of RTO. • The calciner combustion zones destroy a portion of VOC from calcination. • The 25A vents and 35J tank vents, digestion, heat interchange and evaporation condensables are extracted by condensers and directed to the lower dam, lake water circuit or reused as process water. Non-condensables are directed to the air feed of the powerhouse boilers for destruction. • Emission monitoring program and reporting for the calciners, liquor burning facility and oxalate kiln. |
| Combustion gases | | | <p>The licence includes limits, monitoring and reporting for key sources of combustion emissions from the refinery, these include the following.</p> <ul style="list-style-type: none"> • Quarterly monitoring of key emission sources including the calciner, liquor burner, oxalate kiln RTO and boiler stacks. • NOx limits for the calciner, liquor burner and boilers stacks. • CO limit for the liquor burner stacks. • A response level of <100ppm to the liquor burner and |

| Emission | Sources | Potential pathways | Proposed and existing controls |
|--------------|---------|--------------------|---|
| | | | oxalate kiln stack linked to management actions. |
| Metals | | | Metal emissions occur via particulate emissions. The licence includes controls for particulate emissions which address the risk associated with metals. |
| Particulates | | | <p>The licence includes controls for reduction, monitoring and reporting for key sources of particulate emissions from the refinery, these include the following.</p> <ul style="list-style-type: none"> • Calciners have electrostatic precipitators and multiclones to reduce particulate emissions. • Calciners and liquor burners have continuous dust concentration meters to monitor emissions. • Particulate limits for the calciner and liquor burner stacks with a requirement to shut-down feed to the calciners if the limit is exceeded for more than 60 minutes. • Calciner, liquor burners and oxalate kiln have alarm systems and interlocks are linked to continuous monitoring. • The liquor burner has an electrostatic precipitator to remove particulate matter including a quench duct and dehumidifier that aids in final particulate polishing. • The oxalate kiln has a wet scrubber to reduce particulate emissions and continuous dust concentration meters to monitor emissions. • The liquor burner stack has a particulate response level set at $\leq 30 \text{ mg/m}^3$ and if it exceeds the value for 60 consecutive minutes there is an immediate cease feed to the liquor burner. • The oxalate kiln RTO stack has a particulate response level set at $\leq 30 \text{ mg/m}^3$ and if it exceeds the value for 60 consecutive minutes there is an immediate cease feed to the oxalate kiln. • Emission monitoring program and reporting for the calciners, liquor burning facility and oxalate kiln. |

4.1.2 Receptors

In accordance with the *Guidance Statement: Risk Assessment* (DER 2017), 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 6 below provides a summary of potential human and environmental receptors that may be impacted by activities upon or emissions and discharges from the prescribed premises (*Guidance Statement: Environmental Siting* (DER 2016)). Only those receptors which may be impacted as a result of emission sources and pathways identified in Table 5 have been included.

Table 6: Sensitive human and environmental receptors and distance from prescribed

activity

| Human receptors | Distance from prescribed activity |
|--------------------------|---|
| Seven private residences | 1.7 to 4.1km from the refinery on the Premises. |
| Hamel town site | 4.2km north of the refinery on the Premises. |
| Yalooop town site | 3.4km south of the refinery on the Premises |
| Waroona town site | 6.3km north of the refinery on the Premises. |

4.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guidance Statement: Risk Assessments* (DER 2017) 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 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 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 7.

The revised licence L6217/1983/15 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. alumina production from a bauxite refinery.

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

Table 7. Risk assessment of potential emissions and discharges from the Premises during operation

| Risk Event | | | | | Consequence Rating ¹ | Likelihood rating ¹ | Risk ¹ | Licence Holder's controls sufficient? | Reasoning | Regulatory controls |
|---|--------------------|---|--|---------------------------|---|--|---|---------------------------------------|--|--|
| Source/Activities | Potential emission | Potential pathways and impact | Receptors | Licence Holder's controls | | | | | | |
| Operation | | | | | | | | | | |
| 50 000tpa increase in alumina production including: <ul style="list-style-type: none"> Potential air emissions Potential changes to precipitation cooling towers Potential changes to causticisation operations. | Odour | Air/windborne pathway causing impacts to health and amenity | Seven private Residences 1.7 to 4.1km away, Townsites of Yarloop located 3.4km. Hamel 4.2km and Waroona 6.3km away from the refinery | Refer to Table 4 | Low level impact to amenity Specific consequence criteria for public health are likely to be met Minor | Risk event could occur at some time Possible | Medium Acceptable, subject to regulatory controls | Y | The refinery includes existing odour control equipment on sources including calciners, the oxalate kiln, liquor burner, tank vents and condensers to reduce odour emissions from the refinery. The existing licence conditions require the licence holder to monitor, manage and report odour from VOC and non-VOC odorous emission sources within the refinery. A production increase of 50,000 tpa is predicted to increase odour emissions by 9,000 OU/s (or 0.6%) primarily in the calcination area. The Delegated Officer considers Alcoa's proposed operational changes to reduce odour emissions from causticisation and the precipitation cooling towers are likely to offset the predicted increased odour mass emission from calcination because of the production increase. The increase in production capacity is based on annual production while the daily maximum production remains at 8,400 tpa as required by the existing licence. Odour impact is generally associated with short time periods (e.g. emission peaks that occur during adverse meteorological conditions) therefore the Delegated Officer formed the view that the level of mass emission rate increase in odour was not expected to impact on short-term odour emission risk, taking into account the two proposed operational changes. The Delegated Officer determined that the odour emission risk profile is unlikely to change and existing licence conditions for odour remain appropriate with requirements to implement the proposed operational changes to causticisation and cooling towers. | Monitoring Conditions A19, A22, Monitoring Conditions 22, A23, 25, A25 Reporting Conditions G5, G6 <u>Operational Conditions A2(c), A2(d), A2(e), A2(f)</u> |
| | VOCs | | | | Low level impact to amenity Specific consequence criteria for public health are likely to be met Minor | Risk event will probably not occur Unlikely | Medium Acceptable, subject to regulatory controls | Y | The refinery includes existing VOC pollution control equipment in calcination, the oxalate kiln, liquor burner, tank vents and condensers to reduce VOC emissions from the refinery and existing licence conditions require the licence holder to monitor, manage and report VOC emission sources within the refinery. A production increase of 50,000 tpa is predicted to increase VOC emissions by 0.02 g/s or 1.75% primarily in the calcination area. The Delegated Officer considers Alcoa's proposed operational changes are likely to offset the predicted increases of VOC from calcination because of the production increase. The Delegated Officer was of the view that the 2.85 Mtpa operating scenario was likely to be indicative of the 2.9 Mtpa scenario. Taking into account the level of mass emission VOC increase, the VOC offsets and differences in source emissions, the Delegated Officer was of the view that the production increase of 50,000 tpa was unlikely to change the 2.85 Mtpa scenario HRA outcomes that the acute, chronic and carcinogenic health risk is low. The Delegated Officer determined that the VOC risk profile is unlikely to change and existing licence conditions for VOC's remain appropriate with requirements to implement the proposed operational change to causticisation. | Limits and response levels Condition A2 (a), A27, A6, A11, Management actions Condition A28, A29, A7, A8, A9, A10, A15, A16, 17, A18, A5 Monitoring Conditions 22, A23, 25, A25 Reporting Conditions G5, G6 <u>Operational Condition A2(c), A2(d),</u> |
| | Particulates | | | | Low level impact to amenity Specific consequence criteria for public health are likely to be met Minor | Risk event will probably not occur Unlikely | Medium Acceptable, subject to regulatory controls | Y | The refinery includes existing particulate pollution control equipment such as electrostatic precipitators on the calciners to reduce particulate emissions from the refinery and existing licence conditions require the licence holder to monitor, manage and report particulate emissions from the calciner stacks, and also establish a limit on particulate emissions from the stacks. The HRA for the 2.85 Mtpa operating scenario found the acute, chronic, and carcinogenic health risks associated with atmospheric emissions from the refinery to be low. The Delegated Officer is of the view that the incremental change in risk due to a 4% increase in mass emission of particulates is unlikely to change the 2.85 Mtpa scenario HRA outcomes. The Delegated Officer determined that the existing licence conditions relating to point source emissions of particulates remain appropriate. | Limits and response levels Conditions A27, A7, A12 Management actions Conditions A28, A29, A8, A9(c), A11, A16(c), A18, A19 Monitoring Conditions A24, A25, A24(d), A25(c), A25(d) and A25(e) Reporting Conditions G5, G6 |
| | Metals | | | | Low level impact to amenity Specific consequence criteria for public health are likely to be met | Risk event will probably not occur Unlikely | Medium Acceptable, subject to regulatory controls | Y | Metals are bound to particulates and released via particulate emission. Therefore, the controls applied to particulate emissions relate to the control of metal emissions. The existing regulatory licence conditions to monitor, manage and report the particulates (metals) from the calciner stacks along with licence limits will not change for normal operating conditions and abnormal operations that are documented within the existing licence. The HRA for the 2.85 Mtpa operating scenario found the acute, chronic, and carcinogenic health risks associated with atmospheric emissions from the refinery to be low. The | Limits and response levels Conditions A27, A7, A12 Management actions Conditions A28, A29, A8, A9(c), A11, A16(c), A18, A19 Monitoring Conditions A24, A25, A24(d), A25(c), A25(d) |

| Risk Event | | | | | Consequence Rating ¹ | Likelihood rating ¹ | Risk ¹ | Licence Holder's controls sufficient? | Reasoning | Regulatory controls |
|-------------------|--------------------|-------------------------------|-----------|---------------------------|---|---|---|---------------------------------------|--|--|
| Source/Activities | Potential emission | Potential pathways and impact | Receptors | Licence Holder's controls | | | | | | |
| | | | | | met Minor | | | | Delegated Officer is of the view that the incremental change in risk due to a 0.4% increase in mass emission of metals is unlikely to change the 2.85 Mtpa scenario HRA outcomes. The Delegated Officer determined that the existing licence conditions relating to point source emissions of metals remain appropriate | and A25(e) A26 Reporting Conditions G5, G6 |
| | Combustion gases | | | | Low level impact to amenity Specific consequence criteria for public health are likely to be met Minor | Risk event will probably not occur Unlikely | Medium Acceptable, subject to regulatory controls | Y | The refinery includes existing pollution control equipment such as calciner, liquor burner, and boiler stack to reduce combustion emissions from the refinery and existing licence conditions require the licence holder to monitor, manage and report combustion gas emissions from the liquor burner, oxalate kiln, boiler and calciner stacks and establish limits for NOx and CO. The HRA for the 2.85 Mtpa operating scenario found the acute, chronic, and carcinogenic health risks associated with atmospheric emissions from the refinery to be low. The Delegated Officer is of the view that the incremental change in risk due to a 0.8% increase in mass emission of combustion gases is unlikely to change the 2.85 Mtpa scenario HRA outcomes The Delegated Officer determined that the existing licence conditions relating to point source emissions of metals remain appropriate. | Limits and response levels Conditions A27, A7, A12 Management actions Conditions A28, A29, A8, A9(c), A11, A16(c), A18, A19 Monitoring Conditions A24, A25, A24(d), A25(c), A25(d) and A25(e) Reporting Conditions G5, G6 |

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guidance Statement: Risk Assessments* (DER 2017).

Note 2: Existing Licence controls are depicted by standard text. **Bold and underline text** depicts the proposed licence holders' controls.

5. Consultation

Table 8 provides a summary of the consultation undertaken by the department.

Table 8: Consultation

| Row | Consultation method | Comments received | Delegated Officer's response |
|-----|---|--|---|
| 1 | Application advertised on the department's website (10/09/2020) | <p>One comment was received from Hon. Diane Evers MLC (Member for the South West Region) on the 25/09/2020. Summary comments included in the submission were:</p> <ul style="list-style-type: none"> i. The proposal lacked details on the effects on the community and environment. ii. Licence conditions should be imposed to monitor and police Alcoa. iii. Lack of government resources and processes to monitor and police Alcoa. iv. If Alcoa has had the ability to implement best practice pollution measures to reduce emissions why have they not implemented this beforehand, rather than when they need an increase in production. v. Threat to Public Drinking Water Area's (PDWA) from failures and spills. vi. Water allocation to Alcoa should be reconsidered considering farming water quota cuts. vii. Section 46 and Licence Conditions 2017 appeals should be completed before a further amendment decision. viii. Supporting information from Alcoa should be independently reviewed. | <ul style="list-style-type: none"> i. The Delegated Officer has had regard to Alcoa's 2020 HRA prepared as part of the EPA's section 46 of the EP Act inquiry into changes to MS 728 and 1069. ii. The Delegated Officer has assessed the risks associated with emissions from increasing production by 50,000 tpa and granted amendments to the licence. The licence contains a range of monitoring requirements. It is noted that once the EPA section 46 of the EP Act inquiry is complete, the department intends to complete its full review of the existing licence (refer to https://www.wa.gov.au/organisation/department-of-water-and-environmental-regulation/community-updates) iii. The comment was noted, however is beyond the scope of assessment under Part V of the EP Act. iv. The Delegated Officer notes that Alcoa's expansion to 4.7 Mtpa is subject to implementation conditions in MS 728 and 1060 under Part IV of the EP Act, including best practice emissions management requirements to offset and reduce emissions. Assessment of applications under Part V of the EP Act occur with reference to its risk-based Regulatory Framework. v. The Delegated Officer determined that the proposed increase in production capacity by 50,000 tpa had potential emissions risk profile implications on emissions to air only. The Delegated Officer therefore did not consider potential impacts on groundwater and surface water receptors as shown in Table 6. It is also noted the premises is not within a PDWA, and the nearest PDWAs are the Sampson Brook Catchment Area approx. 6.2 km up gradient of the premises and the Preston Beach Water Reserve approximately 14 km down gradient. vi. Water allocation is not regulated under Part V of the EP Act. Water allocation is regulated and managed by DWER under the <i>Rights to Water and Irrigation Act 1914</i>. vii. The Delegated Officer has addressed the context of Part IV of the EP Act in section 2.3, including the current section 46 of the EP Act inquiry. The Delegated Officer formed the view that MS 729 and 1069 and the section 46 of the EP Act inquiry do not impact on assessment and determination of Alcoa's licence amendment application. viii. The Delegated Officer determined that the licence amendment application and supporting information did not require independent review. The Delegated Officer had regard to technical advice from the department's Air Quality Services branch. |

| Row | Consultation method | Comments received | Delegated Officer's response |
|-----|--|--|---|
| | | | The Delegated Officer also had regard to the 2020 HRA that was independently peer reviewed through the EPA's section 46 of the EP Act inquiry. |
| 2 | Shire of Waroona advised of proposal 10/9/2020 | The Shire of Waroona did not reply. | NA |
| 3 | Department of Jobs, Tourism, Science and Innovation (DJTSI) advised of proposal (10/09/2020) | DJTSI replied on 01/10/2020 and advised that they had no comments. (DWERDT346308) | Noted. |
| 4 | Other Stakeholders Community Alliance for Positive Solutions Inc (CAPS) advised of proposal (10/09/2020) | <p>CAPS replied on the 26/09/2020 (DWERDT344398). A summary of comments made were:</p> <ul style="list-style-type: none"> i. Why has Alcoa not introduced VOC emission reductions beforehand if they had the technologies and processes to implement best practices approaches. ii. Any increases in production will increase toxic emissions, toxic waste, water consumption, groundwater contamination, noise, heavy metals, radiation from the refinery and mud lakes. iii. The proposed condition changes do not require Alcoa to carry out the refinery configuration and operations of the causticisers and cooling towers to reduce VOC and odour emissions. iv. Alcoa's 2020 Health Risk Assessment (HRA) should be made available to the public before further licence amendments are considered and should be independently reviewed and satisfy DWER that the amendment will not cause or contribute to health impacts. v. Rainfall is decreasing in south west WA and Alcoa should demonstrate that it does not require additional water supply. vi. Has Alcoa demonstrated that it is compliant with current conditions? vii. Why/ why not has DWER appointed an independent consultant to peer review Alcoa's reports and claims. | <ul style="list-style-type: none"> i. The Delegated Officer has addressed this point in section 2.3. Alcoa's expansion to 4.7 Mtpa is subject to implementation conditions in MS 728 and 1060 under Part IV of the EP Act, including best practice emissions management requirements to offset and reduce emissions. Assessment of applications under Part V of the EP Act occur with reference to its risk-based Regulatory Framework. However, the department supports the approach in MS 728 and 1069, that an increase in production to 4.7 Mtpa is met with offsets and reductions in VOC and odour emissions to air and seeks to ensure its decision making for the Premises is not inconsistent with the broader objectives and principles of MS 728 and 1069. ii. The Delegated Officer determined that the proposed increase in production capacity by 50,000 tpa had potential emissions risk profile implications on emissions to air only and has undertaken risk assessment for this aspect only. iii. The Delegated Officer has granted amendments to the licence that includes conditions for Alcoa to implement the proposed operational changes to causticisation and cooling towers. iv. The 2020 HRA was prepared by Alcoa as part of the EPA's section 46 of the EP Act inquiry which included an independent peer review of the HRA. The Delegated Officer has considered the updated version of 2020 HRA that addresses the independent peer review comments. It is understood the EPA will publish the final HRA as part of its section 46 of the EP Act inquiry process. v. Refer to point vi in row 1 above. vi. Alcoa reported to the department in its most recent Annual Audit Compliance Report for the period 1 January 2019 to 31 December 2019 that it complied with the conditions of the licence. vii. Refer to point vii in row 1 above. viii. Refer to point vi in row 1 above. ix. Refer to point v in row 1 above. |

| Row | Consultation method | Comments received | Delegated Officer's response |
|-----|---|---|--|
| | | <ul style="list-style-type: none"> viii. Alcoa will have an increase in water allocation while farmers have their water quota's reduced. ix. Concerns on the safety on PDWAs and the impacts on current future drinking water sources and quality. x. DWER is not resourced or structured to effectively manage Alcoa's expansion. xi. Request for Alcoa to provide an audit on verification on all Refinery emissions. xii. Section 46 and Licence condition appeal (7 June 2017) should be resolved first before the amendment approved by DWER. | <ul style="list-style-type: none"> x. Beyond the scope of assessment and regulation under Part V of the EP Act. The Delegated Officer was not certain on the specific "expansion" reference, however the expansion to 4.7 Mtpa is subject to MS 728 and 1069 under Part IV of the EP Act. xi. It is understood that the EPA's section 46 of the EP Act inquiry has considered updated emissions information including the 2018 Emissions Inventory at a 2.85 Mtpa production capacity. The Delegated Officer considers that amendments to the licence are commensurate to the risks associated with a 50,000 tpa production increase. The department intends to complete its full licence review once the EPA's s.46 of the EP Act inquiry process is complete. xii. Refer to point vii in row 1 above. |
| 5 | <p><i>Licence Holder was provided with the draft amended licence and draft amendment report on 30/10/2020</i></p> | <p><i>The licence holder provided comments to DWER on the 6 November 2020, see Appendix 2 for details.</i></p> | <p><i>See Appendix 2</i></p> |

6. Decision

The Delegated Officer has determined the proposed increase in annual production capacity by 50,000 tpa is unlikely to increase the risk profile of emissions to air from the Premises. This determination is based on the following:

- The proposed production increase is limited to 50,000 tpa (1.75% increase) while the maximum daily production capacity (8,4000 tpd) remains the same;
- The licence holder has proposed operation changes to offset the net increase in VOC and odour mass emissions which is consistent with the broader objectives and principles of MS 728 and 1069.
- The licence holder's calculated predictions of mass emissions to air changes appear reasonable.
- The 2020 HRA includes a 2.85 Mtpa scenario which indicated the acute, chronic, and carcinogenic risks of emissions to air to be low. The adopted risk metrics are stated in the HRA to be strongly influenced by particulate and associated metal emissions. Taking into account the offset of VOC emissions, and the incremental changes in combustion gases, particulates and metals, the Delegated Officer expects the incremental change in risk from these emissions is unlikely to change the HRA outcomes for the 2.85 Mtpa scenario.
- Odour impact is generally associated with short time periods (e.g. emission peaks that occur during adverse meteorological conditions) therefore the level of mass emission odour increase is unlikely to increase the risk profile of odour impacts, noting the proposed causticisation and cooling tower operational changes.
- The cooling tower operational change to use Upper Dam water will occur during the winter months when adverse meteorological conditions are more likely to occur.

The Delegated Officer also determined to delete the quarterly aggregate calciner priority VOC limits in condition A2(2). The Delegated Officer formed the view the annual limit was sufficient and complemented by the daily alumina production rate limit therefore the quarterly VOC limits along with reporting requirements did not need to be retained. The Delegated Officer was of the view that removing the quarterly VOC limits did not alter the emissions to air risk profile.

With reference to Table 9 below, the Delegated Officer has granted the following amendments to the licence:

- a 50,000 tpa alumina production increase;
- implementation of the proposed causticisation and cooling tower operation changes;
- a 1.75% increase (equivalent to 30,017 kg/yr) in the annual aggregate calciner priority VOC limit which is equivalent to a 1.75% annual production increase;
- removal of the quarterly aggregate calciner priority VOC limits; and
- administrative amendment of the aggregate calciner priority VOC reporting requirements.

Conditions have been included on the licence to require the operational changes to causticisation and the precipitation cooling towers to be implemented to ensure the proposed emission offsets are achieved such that there is expected to be net zero increase in VOC and odour mass emissions on an annual basis.

In granting a 50,000 tpa increase to the annual production limit, the Delegated Officer noted that the department intends to complete its review of the licence once the EPA has completed its section 46 of the EP Act inquiry and the Minister for Environment has determined any changes to the implementation conditions of MS 728 and 1069. Further information on the licence review is available on the department's website at <https://www.wa.gov.au/organisation/department-of-water-and-environmental-regulation/community-updates>.

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 9 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 9: Summary of licence amendments

| Condition no. | Proposed amendments |
|-------------------|--|
| Cover page | Expiry date of 12 October 2035 included from as per Amendment Notice issued on 29 April 2016. New licence cover page aligning with current template. |
| G1(vii) | Clause has been added to licence to record time periods when cooling tower make up water is supplied from the Upper Dam water supply. |
| G2 | Remove AACR form from Appendix C and revised condition to reflect change. Current definition for AACR added referring licence holder to website for template. |
| A1(a) (i) | Increase alumina production limit from 2.85 to 2.9 million tonnes per licence year. |
| A2(a) Table 1 | Increase the aggregate calciner priority VOC emissions in to 30,017 kg per licence year and removed quarterly limits. |
| A2(b) | Change of periods to single period. |
| A2(c) and A2(d) | New conditions requiring modification to causticisation operations to achieve VOC and odour emission offset. |
| A2 (e) and A2 (f) | New conditions requiring use of water from the Upper Dam for cooling tower make up water for a minimum period of 141 hours during the period May to September to achieve odour emission offset. |
| W5 and W6 | Water pollution control conditions included in the licence from Amendment Notice. Associated tables 19 and 20 included within Appendix A Figure 1 Schedule 1 in Tables 19 and 20 located in Appendix C |

8. Definitions

In this Decision Report, the terms in Table 10 have the meanings defined.

Table 10: Definitions

| Term | Definition |
|----------------------------|---|
| ACN | Australian Company Number |
| Alcoa | Wagerup Alumina Refinery |
| Amendment Report | refers to this document. |
| CAPs | Community Alliance for Positive Solutions Inc |
| Category/ Categories/ Cat. | Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations |
| CEMS | continuous emissions monitoring system |
| CO | Carbon Monoxide |
| Delegated Officer | an officer under section 20 of the EP Act. |
| 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. |
| DJTSLs | Department of Jobs, Tourism, Science and Innovation |
| DWER | Department of Water and Environmental Regulation |
| EPA | Environmental Protection Authority |
| EP Act | <i>Environmental Protection Act 1986 (WA)</i> |
| EP Regulations | <i>Environmental Protection Regulations 1987 (WA)</i> |
| Existing Licence | means L6217/1983/15 issued 29/04/02016 |
| g/s | grams per second |
| HRA | health risk assessment |
| Minister | the Minister responsible for the EP Act and associated regulations |
| µg/m ³ | micrograms per meters cubed |
| MS 728 | Ministerial statement 728 |
| MS 1069 | Ministerial statement 1009 |
| Mtpa | million tonnes per annum |
| NEPM | National Environmental Protection Measure |
| Noise Regulations | <i>Environmental Protection (Noise) Regulations 1997 (WA)</i> |
| NOX | Nitrogen oxide |
| Occupier | has the same meaning given to that term under the EP Act. |
| OU/s | odour units per second |
| PM | Particulate Matter |
| Premises | refers to the premises to which this Amendment Report applies, as specified at the front of this Amendment Report |
| Primary Activities | as defined in Schedule 2 of the Revised Licence |
| Risk Event | As described in <i>Guidance Statement: Risk Assessment</i> |
| RTO | regenerative thermal oxidiser |
| VOCs | Volatile organic compounds |

References

1. Department of Environment Regulation (DER) 2016, *Guidance Statement: Environmental Siting*, Perth, Western Australia.
2. DER 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
3. DER 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. Katestone 2020, *Wagerup Alumina Refinery Expansion - Health Risk Assessment 15 October 2020*, Brisbane, Queensland.

Appendix 1: Process change diagrams

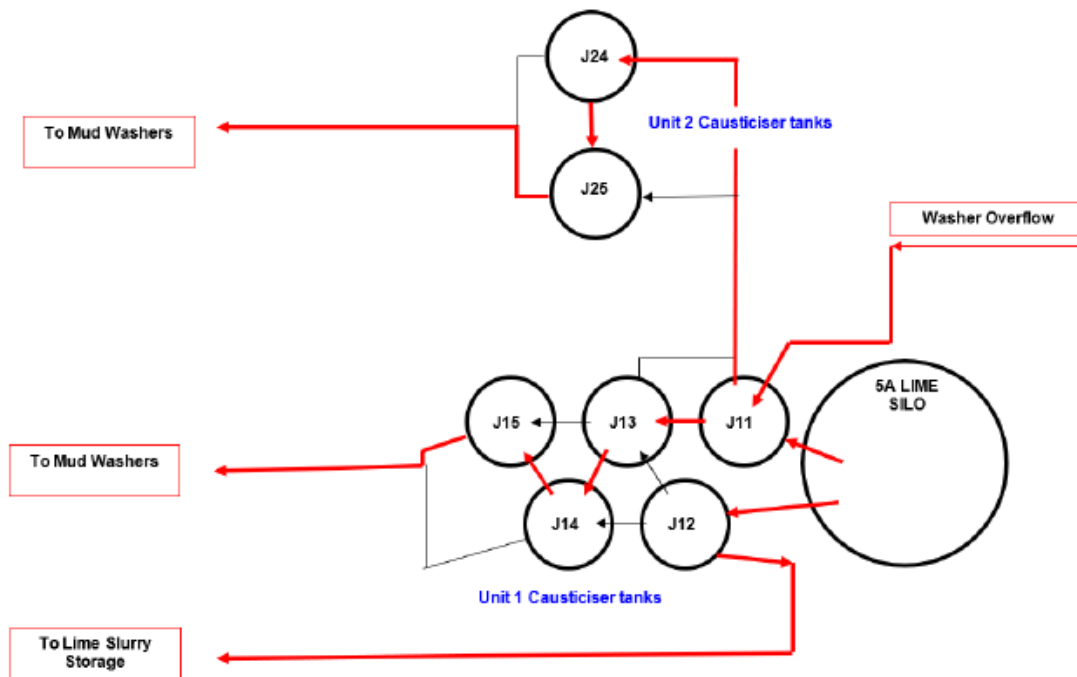


Figure 1: Simplified representation of existing normal operation of causticisation

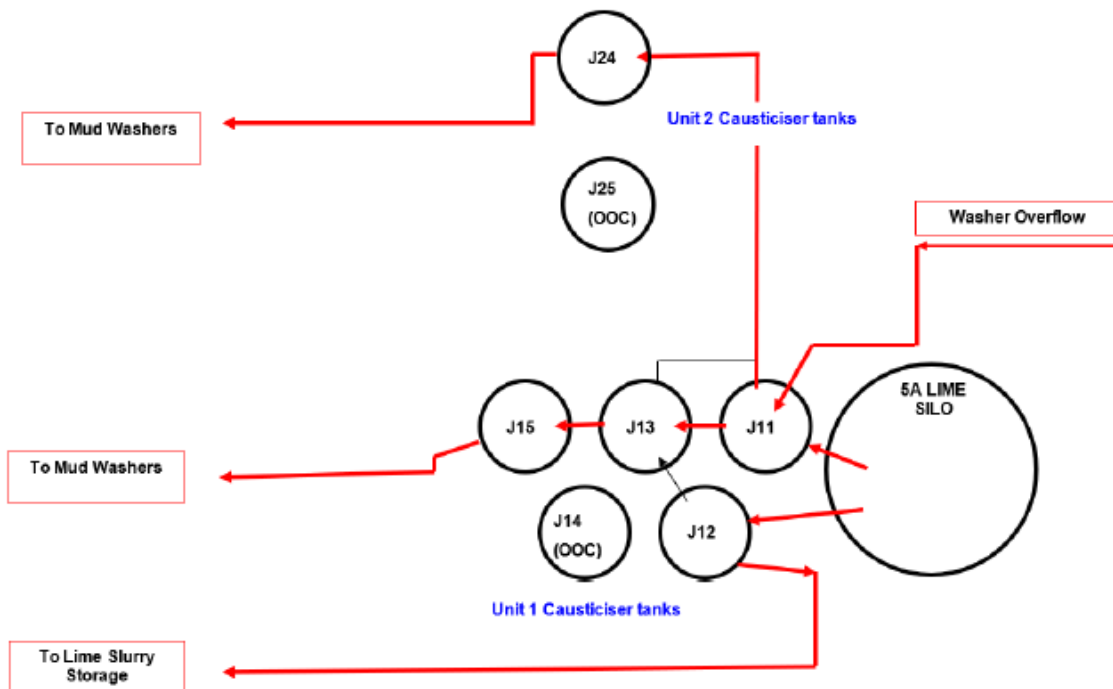


Figure 2: Simplified representation of proposed modified operation of causticisation

Appendix 2: Summary of Licence Holder's comments on risk assessment and draft conditions

| Condition | Summary of Licence Holder's comment | Department's response |
|----------------------|--|-----------------------|
| Amended Licence | | |
| Duration | Typo on month | Noted and changed |
| G1(vii) - | Typo on word "Upper Dam" | Noted and changed |
| Definitions | Typo on "Mtpa" | Noted and changed |
| Definitions | Definitions for ANCOLD and ICOLD were for the works on the construction of the spillway. The works have been completed and the definitions can be removed. | Noted and changed |
| G2(a) | Word "ending" is inserted before 31 December. | Noted and changed |
| A2(e) | The dates to be included for 1 May to 30 September. | Noted and changed |
| Appendix A | Formatting error in the Appendix, request removal of the roman numerals. | Noted and changed |
| Amendment Report | | |
| Table 7 | Request to removal of the word "of" before cooling towers. | Noted and changed |
| Section 7.1, Table 9 | Alcoa suggest G1(vii) be added to table as the clause has been amended (added). | Noted and changed |

Appendix 3: Application validation summary

| SECTION 1: APPLICATION SUMMARY | | | | | | |
|---|-------------------------------------|--|---------------|------|--------------------------|--------------------------|
| Application type | | | | | | |
| Works approval | <input type="checkbox"/> | | | | | |
| Licence | <input type="checkbox"/> | Relevant works approval number: | | None | <input type="checkbox"/> | |
| | | Has the works approval been complied with? | | | Yes | <input type="checkbox"/> |
| | | Has time limited operations under the works approval demonstrated acceptable operations? | | | Yes | <input type="checkbox"/> |
| | | Environmental Compliance Report submitted? | | | Yes | <input type="checkbox"/> |
| Date Report received: | | | | | | |
| Renewal | <input type="checkbox"/> | Current licence number: | | | | |
| Amendment to works approval | <input type="checkbox"/> | Current works approval number: | | | | |
| Amendment to licence | <input checked="" type="checkbox"/> | Current licence number: | L6217/1983/15 | | | |
| | | Relevant works approval number: | | N/A | <input type="checkbox"/> | |
| Registration | <input type="checkbox"/> | Current works approval number: | | None | <input type="checkbox"/> | |
| Date application received | | 13/08/2020 and an amended version received 1/09/2020. | | | | |
| Applicant and Premises details | | | | | | |
| Applicant name/s (full legal name/s) | | Alcoa of Australia Limited | | | | |
| Premises name | | Wagerup Alumina Refinery | | | | |
| Premises location | | Lot 700 on Plan 59305 Certificate of title Vol 2708 Folio 955 Lot 205 on Plan 34250 Certificate of Title Vol 2540 Folio 866 | | | | |
| Local Government Authority | | Shire of Waroona | | | | |
| Application documents | | | | | | |
| HPCM file reference number: | | This application 2012/007237-7~2 History file 2012/007237-7 | | | | |
| Key application documents (additional to application form): | | <i>Attachment 3B Proposed activities</i> <i>Attachment 5 Consultation</i> <i>Attachment 6A Emissions and Discharges</i> | | | | |

Scope of application/assessment

Summary of proposed activities or changes to existing operations.

Operation of a bauxite refinery with a production throughput of 2.85 million tonnes/ year of alumina.

The purpose of the licence amendment is to seek an incremental 1.75% increase in production to produce 2.90 million tonnes/year of alumina. Alcoa indicates that emissions will increase offsets for the increase VOC and odour emissions have been outlined through altering two areas of operation, causticisation (35J) and Precipitation Cooling Towers (45K).

- Two causticiser tanks will be emptied in the process to offset the VOC emissions.
- The Precipitation Cooling Towers will run on Upper Dam fresher water 1.6% of the time (equivalent to 141 hours per year) this will offset VOCs and odour as less VOC make-up water is used in the cooling process, therefore less evaporation emissions with VOCs.

The Table below summaries the emission changes and offsets.

| Type of emission | Current emission | Emission increase with 50,000tpa increase | Emission increase with offset |
|----------------------|------------------|---|-------------------------------|
| Production Mtpa | 2.85 | 2.9 | 2.9 1.75% |
| Odour (OU/s) | 1,400,451 | 1,409,240 +0.6% | 1,400,373 0% |
| VOCs (g/s) | 2.87 | 2.89 +0.7% | 2.87 0% |
| Combustion gases g/s | 54.78 | 55.24 +0.8% | 55.24 +0.8% |
| Particulates (g/s) | 3.75 | 3.9 +4% | 3.9 +4% |
| Metals (g/s) | 0.0281 | 0.0285 +1.4% | 0.0282 +0.4% |

Alcoa have requested that the 90 day limits under Condition A2 (a) are removed with only the yearly limit to remain and the VOC emissions in kg from 29501 to 30017kg. This increase is a pro-rata increase based on production increase.

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 refinery | <i>Assessed to process 2.85 million tonnes / year of alumina.</i> | <i>Proposed to process 2.9 million tonnes / year of alumina.</i> |
| Category 52: Electric power generation | Not specified | No changes |
| Category 64: Class II or III putrescible landfill site | Not specified | No changes |
| Category 67: Fuel burning | Not specified | No Changes |
| | | |

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 checked="" type="checkbox"/> No <input type="checkbox"/> | Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input checked="" 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: MS728 as amended by 1069 EPA Report No: |
| 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"/> But it can be assumed that current licence has validated this. | 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"/> | Approval: Expiry date: If N/A explain why? Alumina Refinery (Wagerup) Agreement and Acts Amendment Act 1978 |

| | | | |
|--|--|--|--|
| 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"/> | Application reference No: Licence No: GWL160881, GWL10266 SWL99246, SWL151027 Licence changes 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 type="checkbox"/> No <input checked="" type="checkbox"/> | Name: N/A Type: Has Regulatory Services (Water) been 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 type="checkbox"/> No <input checked="" type="checkbox"/> | Name: N/A Priority: P1 / P2 / P3 / N/A Are the proposed activities/ landuse o the PDWSA (refer to <u>WQPN 25</u>)? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> | |
| Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx</i>) | Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> | Class 8 Process waste material | |
| 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"/> | Nitrogen and phosphorus loading limits for waterways. | |
| 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: contaminated – remediation required (C-RR) Date of classification: 12/06/2008 | |