Government of Western Australia
Department of Water and Environmental Regulation

# Amendment Notice 4

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|---|---|
| Licence Number | L6744/1996/12 |
| Licence Holder | Southern Ports Authority |
| Registered business address | Ground Floor<br>16 Parliament Place<br>West Perth WA 6005 |
| Date of amendment | 18 December 2017 |
| Prescribed Premises | Category 58: Bulk material loading or unloading |
| Premises | Southern Ports Authority<br>Lot 963 on Plan 220558 and Lot 962 on Plan 219848,<br>Inner Harbour – Berth 5 and 8<br>BUNBURY WA 6230 |

Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above licence in accordance with section 59 of the *Environmental Protection Act 1986* as set out in this Amendment Notice.

Date signed: 18 December 2017

Danielle Eyre

Senior Manager, Resource Industries

Regulatory Services (Environment)

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

# Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act* 1986 (EP Act) to amend the licence issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

The following DWER Guidance Statements have informed the decision made on this amendment:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Risk Assessment (February 2017)*

Under the existing Licence (L6744/1996/12) the Licence Holder loads and unloads the following bulk materials:

- Bauxite ore
- Coal
- Copper concentrate
- Ilmenite
- Iron concentrate
- Leucoxene
- Medium Zircon Feedstock (MZF)
- Petroleum coke
- Silica sands
- Spodumene
- Synthetic rutile
- Urea
- Zircon
- Mineral sands rutile/synthetic rutile/concentrate (out of Berth 8)

## Amendment Description

On 19 May 2017, Southern Ports Authority (the Licence Holder) submitted an application under the EP Act to authorise the bulk loading of up to 100,000 tonnes of alumina hydrate in a one-off shipment from Berth 8 at the Port of Bunbury (the Premises). No storage of product will occur at the Premises.

Alumina hydrate will be transported by truck to the Berth 8 road hopper to load material directly onto the vessel. An existing closed conveyor system will then carry the alumina hydrate to the ship loader, which has a telescopic chute. Product will be loaded into one vessel at a maximum loading rate 2,000 tonnes per hour. This additional tonnage will not cause the total throughput of the port to exceed the 75,000 tonnes per day nominal throughput stated within the existing Licence.

Existing infrastructure will be utilised to load alumina hydrate into vessels. No construction of new infrastructure is required under the proposal.

## Location, environmental siting and potential receptors

Table 1 below lists the relevant sensitive land uses and environmental receptors in the vicinity of the prescribed premises.

**Table 1: Receptors and distance from prescribed premises**

| Receptor | Distance from Prescribed Premises |
|---|---|
| Residential receptor | 840m from the Berth 8 ship loader<br>1,020m from the Berth 8 road hopper<br>430m from Berth 5 |
| Preston River<br>(Conservation category river that feeds into Vittoria Bay) | Less than 55 m from the premises southern boundary |
| Vittoria Bay<br>(High conservation value estuary) | Immediately to the east of the premises boundary |

## Risk assessment

Table 2 below applies a risk assessment to the potential emissions which may arise from the amendment application, according to the *Guidance Statement: Risk Assessments*. The tables identify whether the emissions present a risk to human health or the environment, requiring regulatory controls.

**Table 2: Risk assessment for proposed amendments during operation**

| | | | Potential Emissions | Potential Receptors | Potential Pathway | Potential Impacts | Continue risk assessment? | Reasoning |
|---|---|---|---|---|---|---|---|---|
| **Source** | **Cat 58** Bulk material loading or unloading | Loading of alumina hydrate into vessels | **Dust** associated with the handling of bulk material using ground hoppers, conveyance systems and ship loaders. | Residential receptors (see Table 1) | Air/wind dispersion | Impacts to public health and amenity | Yes | N/A |
| | | | **Noise** associated with additional vehicle movements, mobilisation of loading infrastructure and operation of dust control equipment. | Residential receptors (see Table 1) | Air/wind dispersion | Impacts to amenity | Yes | N/A |
| | | | **Stormwater** contaminated with bulk product. | Aquatic organisms of Preston River and Vittoria Bay (see Table 1) | Direct discharge | Reduced water quality resulting in declining ecosystem health | Yes | N/A |

### Risk of Dust Emissions

The key emission arising from loading of alumina hydrate is fugitive dust.

Alumina dust is considered to be of low toxicity although dust from handling alumina hydrate can represent a health hazard by increasing the concentration of airborne particulate matter (PM). The respirable fraction (expressed as $PM_{10}$) has been linked to adverse health impacts on respiratory and cardiovascular systems with the most severe effects resulting from long term, sustained exposure. Alumina hydrate loaded or unloaded using the mobile infrastructure has the potential to cause an increase in PM through fugitive dust emissions.

An approximate maximum of 3% of the ore product is finer than 45 micron and therefore ambient concentrations of respirable dust at nearby receptors are not expected to reach occupational exposure limits of 3 $mg/m^3$ for respirable silica (Safe Work Australia, 2012) during any event.

The dust extinction moisture (DEM) of a material represents the moisture content required for the material to emit no dust as determined using Australian Standard *AS4156.6-2000: Coal preparation - Determination of dust/moisture relationship for coal*[1]. Alumina hydrate has been analysed under this method and found to have a DEM of 1.27% (Jenike & Johanson, 2017). Moisture content of alumina hydrate received at Berth 8 is expected to be between 7 and 10%, significantly reducing the potential for dust emissions.

Other Licence Holder proposed controls include:

- A one-off shipment of alumina hydrate.
- Shielding of the Berth 8 road hopper with a roof and two side walls.
- When trucks are tipping product into the road hopper a baghouse dust collector will be operated.
- Shielding of the berth-facing conveyor (CV04) from wind with side, top and bottom walls.
- The Berth 8 ship loader is connected to a dust collector and the boom is fitted with a shade cloth to reduce dust from loading partially enclosed conveyors CV03, CV02 and CV01.

The Licence Holder also operates a series of ambient air quality monitors near to sensitive receptors and capable of measuring particulate matter as $PM_{10}$ (that smaller than 10 microns in diameter) and Total Suspended Particulate Matter.

Due to the low toxicity of alumina hydrate, and the low concentrations of respirable particulates, chronic health effects are not anticipated. Based upon the information provided in the application and nature of the materials being loaded, the consequence of dust impacts is considered to be **minor** as the shipment may result in low level impacts to amenity.

The distance between the nearest residential receptors and the Berth 8 ship loader is approximately 840 m suggesting a possible pathway for dust to reach receptors although impacts from the one-off shipment are only expected to occur under exceptional circumstances due to proposed Licence Holder controls. Therefore the Likelihood of impacts to amenity from alumina hydrate dust during loading is assessed as **rare**.

The overall rating for the risk of dust impacts on sensitive receptors during operation is **Low** based on Licence Holder controls.

[1] Note: No current test exists for the determination of DEM specific to alumina hydrate. DWER considers the use of AS4156.6-2000 to be an acceptable measure for risk assessment and regulatory purposes.

### Risk of Noise Emissions

Noise from alumina hydrate loading activities will be generated from the additional truck movements, and the operation of conveyors and baghouses used for dust control. Noise has the potential to impact the amenity and comfort of nearby residential receptors. The closest receptor is located approximately 1,020m to the southwest of the Berth 8 road hopper.

Based on results of a cumulative noise modelling report for the Premises (SVT, 2017), it is evident that activities at Berth 8 have the potential to significantly contribute to assigned noise level exceedances at residential receptors under the worst case scenarios. This means that the predicted noise levels from Berth 8 are within the 5 dB margin of the assigned noise levels defined in the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations).

The Licence Holder has proposed the following controls for noise as a part of the alumina hydrate application:

- Low speed limits and the prohibition on exhaust braking.
- Shielded conveyor galleries.

Based on the information provided in the application and 2017 noise modelling, the consequence of noise impacts from loading at both berths to considered to be **minor** as there is a potential for low-level (one-off) impacts to amenity should assigned levels be exceeded.

Based on modelling input data the Berth 8 ship loader may be a significant contributor to noise under specific weather conditions. The likelihood of assigned noise levels being exceeded increases where both Berths 5 and 8 are being operated simultaneously at night time during periods of light northerly, north-easterly, easterly and south-easterly wind conditions, and temperature inversion also exists.

The likelihood of alumina hydrate loading activities significantly contributing to noise exceedances is considered to be **rare** based on the fact that there will be only one shipment of alumina hydrate.

The overall rating for the risk of noise impacts on sensitive receptors during operation is **Low**.

### Risk of Discharges to Water

There are no known toxic effects of the alumina hydrate proposed for handling at the Premises to the marine environment. Therefore the risks to the environment from discharges relate largely to sedimentation.

Stormwater on Berth 8 and in the vicinity of the road hopper is directed into the waste water capture system (WWC). The WWC consists of a series of sumps and sediment traps that lead to a reeded artificial wetland that is likely to further remove sediment. Stormwater from the artificial wetland has the potential to overflow into the Preston River during heavy rainfall events and the wetland water level is already high. The Licence Holder regularly operates road sweepers and vacuum trucks to remove spilt material from hardstand surfaces, sumps and sediment traps.

Based upon the nature of alumina hydrate and the anticipated low volumes likely to enter the marine environment following one shipment, the consequence of material entering the marine environment is **slight**.

Based upon the proposed Licence Holder controls and the requirement for heavy rainfall events the likelihood of impacts to the marine ecosystem is considered to be **rare**.

The consequence and likelihood ratings determined that the overall rating for impacts to water from alumina hydrate handling is **Low**.

## Decision

This Amendment Notice authorises the loading of alumina hydrate using an existing road hopper to telescopic chute system at Berth 8. Licence Holder controls for the loading of alumina hydrate are conditioned on the Licence to ensure that the risks associated with dust and noise emissions are reduced.

Amendment Notice 3, which authorised the handling of bauxite at Berth 8 using the road hopper, introduced the requirement for the baghouse dust collector to be operated at all times during the loading of bauxite ore. Further conditions were implemented to ensure the maintenance of conveyor coverings and operation of reverse pulse bag dust collection systems at all conveyor transfer points. Many of these existing conditions are relevant to addressing the risks associated with the proposal and have been retained and/or amended based on a risk-based approach, provided above.

DWER is also currently undertaking a full risk-based review of the Premises in accordance with its regulatory framework. This risk-based review and assessment is scheduled to be completed in 2018 and will include all prescribed premises activities including activities authorised through this amendment. Changes to the conditions imposed under this Amendment Notice may occur as part of the review.

### Regulatory controls

*Dust*

Existing monitoring conditions will verify that dust controls are effective and will be retained. Conditions 4 and 5 on the Licence have been retained to ensure that the material loading chute remains below the ship's hold at all times during loading alumina hydrate to reduce material drop heights and exposure to wind.

Condition 19 is amended to require the operation of the baghouse dust collector at all times when trucks are unloading alumina hydrate into the Berth 8 road hopper.

The assessment of risk was in part based on the moisture content of alumina hydrate exceeding the DEM level. It was further based on the limited volume of product being shipped in the context of current annual throughput rates at the Premise. Therefore this Amendment Notice only authorises a single shipment of alumina hydrate.

Through the application of these controls, the risk of dust from the handling of alumina hydrate at Berth 8 is reduced to acceptable levels. The Licence Holder will be required to report to DWER the moisture content of the alumina hydrate shipped to confirm compliance with licence controls.

*Noise*

Existing conditions requiring the covering of conveyors along Berth 8 have been retained. However, as these are existing controls that have been considered through noise modelling provided, the risk is not expected to reduce.

The risk of noise impacts is low based on the Licence Holder's commitment to only ship one load of alumina hydrate. Therefore this Amendment Notice only authorises a single shipment of alumina hydrate to ensure that the risk of noise is maintained at acceptable levels.

*Discharges to Water*

No further conditions have been applied to the Licence in relation to the protection of the marine environment as the risks are considered acceptable.

## Amendment History

Table 3 provides the amendment history for L6744/1996/12.

**Table 3: Licence amendments**

| Instrument | Issued | Amendment |
|---|---|---|
| L6744/1996/12 | 25/09/2015 | Licence reissue |
| L6744/1996/12 | 29/04/2016 | Amendment Notice to extend expiry date<br>Expiry date extended to 29 September 2031 |
| L6744/1996/12 | 28/09/2016 | Amendment Notice 1<br>Approval of mobile ship loading infrastructure at Berth 5 |
| L6744/1996/12 | 15/12/2016 | Amendment Notice 2<br>Extension of approval of mobile ship loading infrastructure at Berth 5 |
| L6744/1996/12 | 07/07/2017 | Amendment Notice 3<br>Authorisation to handle bauxite at Berth 8. |
| L6744/1996/12 | 18/12/2017 | Amendment Notice 4<br>Authorisation to handle alumina hydrate at Berth 8 (one shipment only) |

## Licence Holder's Comments

The Licence Holder was provided with the draft Amendment Notice on 15 December 2017. On 15 December 2017, the Licence Holder replied to DWER with no comments on the Amendment Notice and requesting that the 21 day consultation period be waived.

## Amendment

1. Condition 19 of the Licence is amended by the insertion of the red text shown in underline below:

   19. The Licence Holder must operate the baghouse dust collector at all times when trucks are tipping bauxite ore and alumina hydrate into the Berth 8 road hopper.

2. The Licence is amended by the insertion of Conditions 21, 22 and 23 below:

   21. The Licence Holder must not load more than one vessel with alumina hydrate.

   22. The Licence Holder must only accept alumina hydrate that contains a Moisture Content above the DEM derived from application of AS4156.6-2000.

   23. At the completion of the alumina hydrate shipment the Licence Holder must submit to the CEO within 30 days a report providing the following information:

      (a) Times and dates of shiploading;

      (b) Moisture Content of the alumina hydrate, as taken from a representative sample; and

      (c) Analysis of monitoring data collected during, and the 24-hour periods either side of the alumina hydrate shipment as required by Table 1 of Condition 17.

3. The Licence is amended by insertion of the following definitions:

   ***DEM*** means the dust extinction moisture which is the Moisture Content expressed as a

percentage of the product at which the dust number is 10 derived from the Australian Standard AS4156.6-2000.

***Moisture Content*** means the ratio of the mass of water in a sample to the mass of solids in the sample, expressed as a percentage. In equation form:

$$\boldsymbol{w = \frac{m_1 - m_2}{m_1} \times 100}$$

Where:
w = moisture content of sample;
$m_1$ = initial mass, in grams, of the test portion; and
$m_2$ = mass, in grams, of the test portion after drying.

## Appendix 1: Key Documents

| | Document Title | Availability |
|---|---|---|
| 1 | ChemAlert (2015) Safety Data Sheet – Hydrated Alumina (Worsley Alumina) | DWER records (A1434963) |
| 2 | Jenike & Johanson (2017) Report 70817-1 DEM Test Results for Hydrated Alumina Material. | DWER records (A1471944) |
| 3 | Safe Work Australia (2012) Workplace Exposure Standards for Airborne Contaminants. | Available at: www.safeworkaustralia.gov.au |
| 4 | SVT Consultants (2017) 2017 Update to the Cumulative Noise Model of Bunbury Port. Prepared for Southern Ports Authority. | DWER records (A1444826) |
| 5 | SVT Consultants (2016) Environmental Noise Impact Assessment of Qube – Bunbury Port Operations | DWER records (A1188760) |