



<b>Licence number</b>	L5245/1967/14
<b>Licence holder</b>	Alcoa of Australia Limited
<b>ACN</b>	004 879 298
<b>Registered business address</b>	181 – 205 Davy Street BOORAGOON WA 6154
<b>DWER file number</b>	2010/007402 & INS-0001190
<b>Duration</b>	03/09/2014 to 02/09/2030
<b>Date of last amendment</b>	19 January 2026
<b>Premises details</b>	Kwinana Alumina Refinery Hogg Road NAVAL BASE WA 6167

**Legal description –**

Public Transport Authority Lease No. 2641 (MTL Pipeline), Easement No. 3134B/996 on Crown Reserve 24901 (Jetty Easement), Lot 102 on Plan 18242, Lot 171 on Plan 180286, Lot 99 on Plan 17761, Lot 51 on Plan 20582, Lot 164 on Plan 174095, Landcorp Lease MTL Pipeline on Lot 114 on Plan 048295, Part Lot 304 on Diagram 72808, MTL Pipeline (Bayardo Pty Ltd lease) Lot 115 on Plan 48295, MTL Pipeline (DPI Lease) Lot 214 on Plan 184629, Lot 200 on Diagram 61086, North MTL Pipeline Lot 113 on Plan 20587, Part Lot 501 on Plan 72707, Part Lot 102 on Plan 21133, Part of Railway 3084426, Part of Railway 3084428. As depicted in Attachment 1

<b>Prescribed premises category description (Schedule 1, Environmental Protection Regulations 1987)</b>	<b>Assessed design capacity</b>
Category 5: Processing or beneficiation of metallic or non-metallic ore	5,000,000 tonnes per year (filter mud cake from filtration facility, dry)
Category 46: Bauxite refining	2,409,000 tonnes per year (smelter grade alumina equivalent)
Category 52: Electric power generation	76.5 MW in aggregate
Category 58: Bulk material loading or unloading	4,818,000 tonnes per year
Category 64: Class II or III putrescible landfill site	1,000 tonnes per year
Category 67: Fuel burning	65,000 m <sup>3</sup> per hour

This licence is granted to the licence holder, subject to the following conditions, on 19 January 2026, by:

**MANAGER, PROCESS INDUSTRIES**

**STATEWIDE DELIVERY**

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

## Licence history

Date	Instrument	Summary of changes
20/12/2007	W4353/2007/1	Works approval for construction of Residue Area N.
03/09/2014	L5245/1967/14	Licence issued for category 5, 46, 52, 58, 64 and 67 premises.
30/05/2015	W5757/2014/1	Works approval for a filtration project that alters the way residue tailings are handled and stored.
29/04/2016	L5245/1967/14	Amendment by notice: to extend the duration of the licence.
15/05/2017	L5245/1967/14	Amendment notice 1: Alter the date of submission from 1 April to 1 May for the Annual Groundwater Monitoring Report (AGMR), the addition of a physical address to the CEO address for correspondence, the creation of two new landfill cells within Area F of the existing RSA, and administrative amendment to correct an error in numbering of Attachment 5 of the licence.
01/10/2019	L5245/1967/14	Licence amendment to relocate Residue North East dust monitoring station. Amalgamated changes under AN1.
10/12/2019	L5245/1967/14	Licence amendment to construct a spillway on RSA cooling dam.
19/07/2022	L5245/1967/14	Licence amendment to relocate Residue West dust monitoring station, remove redundant conditions and extend licence duration by 2 years.
29/04/2024	L5245/1967/14	Licence amendment to install 15 evaporators on ROWS pond and 6 evaporators on RSA K and extend licence duration by 2 years.
25/06/2024	L5245/1967/14	Licence amendment to change the operational requirements of the evaporator units within the ROWS pond and RSA K areas.
22/08/2025	L5245/1967/14	Licence amendment to install an additional 16 land-based evaporators and associated infrastructure in RSA J, RSA F6 and RSA H South, and revise premises boundary coordinates.
22/12/2025	L5245/1967/14	Licence amendment to install an additional 6 land-based evaporators and associated infrastructure in RSA F7 and extend the licence duration by 4 years.
19/01/2026	L5245/1967/14	CEO-initiated amendment to correct an omission in Table 17 of condition W18.

## Interpretation

In this licence:

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

- (f) unless specified otherwise, all definitions are in accordance with the EP Act.

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

## CONDITIONS OF LICENCE

### Definitions

In these conditions of licence, unless inconsistent with the text or subject matter:

**‘AACR’** means an Annual Audit Compliance Report in a format approved by the CEO as presented by the licensee or as specified by the CEO from time to time and published on the Department’s website;

**‘Act’** means the *Environmental Protection Act 1986*;

**‘Alkaloam ®’** means red mud (fine fraction of bauxite residue) used as a soil amendment;

**‘ANCOLD’** means Australian National Committee on Large Dams;

**‘Approved’** means Approved in writing from time to time;

**‘AS’** means Australian Standard;

**‘AS/NZS’** means Australian and New Zealand Standard;

**‘BAM’** means Beta Attenuation Monitor;

**‘Baseline Vegetation Survey’** means the vegetation survey of the Spectacles North area conducted by Ecoscape (Australia) Pty Ltd dated 29 July 2014;

**‘Bauxite Residue’** means residue sand, mud and associated liquor mixture;

**‘Bayer process wastes’** means Bauxite Residue and all other process wastes associated with the production of alumina;

**‘Bio-removal Plant’** means process in which microorganisms degrade oxalate to carbonate and water;

**‘BMS trip’** means the operation of the Burner Management System (BMS) to trip and cut gas when it detects an explosion risk;

**‘Cease Feed’** means, in relation to Liquor Burning, stopping of the Dryer Slurry Feed Pump which provides the initial feed into the Liquor Burner;

**‘CEMS Code’** means the code of practice that details design, installation, performance, maintenance & verification for CEMS, as well as QA upon acquired data. The Code is titled *Department of Environment and Conservation Continuous Emission Monitoring System (CEMS) Code for Stationary Source Air Emissions, October 2006*;

**‘CEO’** means Chief Executive Officer;

**‘CEO’** for the purpose of notification means:

Director General  
Department Administering the *Environmental Protection Act 1986*  
Locked Bag 10  
JOONDALUP DC WA 6919  
Telephone: (08) 6364 7000  
Email: [info@dwer.wa.gov.au](mailto:info@dwer.wa.gov.au)

**‘Clean Fill’** has the meaning defined in Landfill Definitions;

**‘Clinical Waste’** has the meaning defined in Landfill Definitions;

'CO' means carbon monoxide;

'Cooling Ponds' means the ponds containing process water from the Kwinana Alumina Refinery and as depicted in Attachment 1;

'Composite Lined Areas' means areas of the RSAs that are underlain by both a low permeability clay liner and a synthetic liner;

'Comprehensive Groundwater Analysis' means analysis for the parameters stated in column 1 and reported in the units stated in column 2 in the following table;

Parameters	Units
p-Alkalinity, m-Alkalinity	g/L
Aluminium, Arsenic, Boron, Carbonate, Calcium, Cadmium, Chloride, Chromium, Copper, Dissolved Organic Carbon, Fluoride, Iron, Gallium, Bicarbonate, Hardness, Mercury, Potassium, Magnesium, Manganese, Molybdenum, Sodium, Nickel, Lead, Sulfate, Selenium, Silicon Oxide, Total Dissolved Solids, Thorium, Uranium, Vanadium, Zinc	mg/L
Ionic balance	%
Sodium:Chloride ratio	No units

'Department' means the department established under s.35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act;

'DWER' means Department of Water and Environmental Regulation;

'EC' means Electrical Conductivity;

'Engineer' means a person who:

- (a) holds a Civil Engineering tertiary qualification; and
- (b) has a minimum of ten years of experience working in the area of civil engineering; and
- (c) holds membership of the Institute of Engineers Australia,

or is otherwise approved by the CEO to act in this capacity.

'EPP' means the *Environmental Protection (Kwinana) (Atmospheric Waste) Policy 1999*;

'ESP' means Electrostatic Precipitator;

'g/m<sup>3</sup>' means grams per cubic metre;

'GL/year' means giga litres per year;

'Groundwater Monitoring and Management Plan' means the most recent version (received by DWER) of the Kwinana Groundwater Monitoring and Management Plan, Alcoa of Australia.

'ICOLD' means International Commission on Large Dams;

'Kwinana Wastewater Treatment Plant' means the wastewater treatment plant located at Lot 2128 (Crown Reserve 29335) and Lot 2129 on Plan 173137 McLaughlan Road, Postans WA 6167. Licensee and occupier is Water Corporation Pty Ltd,

'Landfill Definitions' means the document titled "Landfill Waste Classification and Waste Definitions 1996 (as amended 2018)" published by the Chief Executive Officer of the Department or amended from time to time;

'Licensee' means Licence Holder and refers to the occupier of the premises being the person to whom this Licence has been granted, as specified at the front of this Licence;

'Limit' means maximum emission level allowable under this licence;

'mg/m<sup>3</sup>' means milligrams per cubic metre;

'mg/L' means milligrams per litre.

'**µg/m<sup>3</sup>**' means micrograms per cubic metre;

'**µg/L**' means micrograms per litre;

'**µS/cm**' means micro Siemens per centimetre.

'**ML/day**' means mega litres per day;

'**MTL**' means mud to lake;

'**NATA**' means the National Association of Testing Authorities, Australia;

'**NATA accredited**' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

'**NEPM**' means the National Environment Protection Measure for ambient air quality published by the Environment Protection and Heritage Council;

'**normal operating conditions**' means any operation of a particular process (including abatement equipment) excluding start-up, shut-down and upset conditions, in relation to stack sampling or monitoring;

'**NOx**' means oxides of nitrogen, calculated as the sum of nitric oxide and nitrogen dioxide and expressed as nitrogen dioxide;

'**Number 12 and 13 Dust Collectors**' means the number 12 and 13 dust collector devices (DCD) as depicted in Attachment 4;

'**Operable Bores**' means groundwater monitor or recovery bores in a condition to be able to provide a representative sample of the groundwater, i.e. bores are not blocked, damaged, inaccessible, dry or containing insufficient water;

'**PM<sub>10</sub>**' means particulate matter with an equivalent aerodynamic diameter of 10 micrometres or less;

'**Quarterly**' means sampling to be undertaken once per each quarter of a calendar year, with the first sampling period beginning at 1 October, being the first quarter after licence issue;

'**Red Lime<sup>TM</sup>**' means filtered and washed residue lime;

'**Red Mud Gypsum**' means gypsum amended red mud which is used in septic treatment systems;

'**RSA**' and '**RSAs**' means residue storage area(s) as depicted in Attachment 1;

'**Red Sand<sup>TM</sup>**' means washed and carbonated residue sand;

'**Redetermination**' means the Department of Environment and Conservation, W.A., July 2009, Redetermination of maximum permissible quantities of sulphur dioxide under the Environmental Protection (Kwinana) (Atmospheric Wastes) Policy 1999;

'**Relevant Determination**' means a determination under clause 7(3) of the Environmental Protection (Kwinana) (Atmospheric Wastes) Policy 1999 determining the sulfur dioxide limits for the licensee;

'**ROWS pond**' means run-off water storage pond as depicted in Attachment 2.

'**RTO**' means Regenerative Thermal Oxidiser, which is part of the Liquor Burner emission control equipment;

'**Target**' means a goal to be achieved and is not considered to be a Limit;

'**SO<sub>2</sub>**' means sulphur dioxide;

'**Shiploading**' means conveying and loading of products past the Number 12 Dust Collector;

'**Shut-down**' means the period when plant or equipment is brought from Normal Operating Conditions to inactivity;

**‘Spillway’** means a structure to provide the controlled discharge from a dam or Residue Storage Area;

**‘The Spectacles North’** is UFI 6539, as described in DWER’s Geomorphic Wetlands Swan Coastal Plain dataset and is a Conservation Category sumpland.

**‘Start-up’** means the period when plant or equipment is brought from inactivity to Normal Operating Conditions;

**‘Step Change’** means the broken element detector (Electrodynamic Particulate Probe) has an output of 100;

**‘SWL’** means Standing Water Level;

**‘TDS’** means Total Dissolved Solids;

**‘TEOM’** means Tapered Element Oscillating Microbalance;

**‘the Regulations 1992’** means the Environmental Protection (Kwinana) (Atmospheric Waste) Regulations 1992;

**‘TSP’** means total suspended particulates;

**‘Upset’** means a short-term unplanned deviation from Normal Operating Conditions;

**‘USEPA’** means United States (of America) Environmental Protection Agency;

**‘USEPA Method 2’** means the promulgated Test Method 2 - Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube);

**‘USEPA Method 5’** means the promulgated Test Method 5 – Determination of Particulate Matter Emissions from Stationary Sources;

**‘USEPA Method 6C’** means the promulgated test Method 6C - Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure);

**‘USEPA Method 7E’** means the promulgated Test Method 7E - Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure);

**‘USEPA Method 10’** means the promulgated Test Method 10 – Determination of Carbon Monoxide Emissions from Stationary Sources (Instrumental Analyzer Procedure);

**‘USEPA Method 17’** means the promulgated Test Method 17 – Determination of Particulate Matter Emissions from Stationary Sources;

**‘usual working day’** means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia;

**‘Wet Winter’** means rainfall from 1 May to 30 September in each calendar year that is greater than or equal to 810mm as measured by the Bureau of Meteorology Anketell meteorological weather station; and

Other terms take their meaning preferentially from the *Environmental Protection Act 1986*.

## GENERAL CONDITIONS

### Calibration

- G1(a) The Licensee shall have all monitoring equipment referred to in any condition of this licence calibrated in accordance with the manufacturer's specifications, requirements of this licence or an appropriate Australian or International (ISO) Standard.
- G1(b) The Licensee shall, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, immediately bring these issues to the attention of the CEO for approval accompanied with a report comprising details of any modifications to the methods.

### Reporting requirements – Annual report

- G2(a) The Licensee shall provide the CEO with an Annual Environmental Report, and the report shall cover the period from **1 January to 31 December** and shall be provided by **1 May** the following year.
- G2(b) The Licensee shall ensure that the report required by condition G2(a) shall include, but not be limited to, the following:
- (i) a process summary;
  - (ii) quantity and description of Bayer process wastes produced at the Premises;
  - (iii) an assessment of the data against any Limits or targets set in this licence or other environmental guidelines or policies as referenced in this licence and data from previous years' monitoring;
  - (iv) results of Dust Concentration Monitor calibrations, including individual run data, correlation graphs and comparisons against previous calibration data;
  - (v) identification and summary of any data exceeding any Limits, Targets, guidelines or policies referenced in this licence and provide information on why the exceedance occurred (if known) and action taken by the licensee to prevent recurrence of such exceedances;
  - (vi) any monitoring methods used to collect and analyse data required by any condition of this licence to demonstrate compliance with the methods specified in this licence or those provided to the CEO pursuant to condition G1(b); and
  - (vii) reporting against any requirement included in this licence, as listed in Table 1.

<b>Condition</b>	<b>Description</b>
G7(b)(ii)/G7(b)(iii)	Waste Management
A2(b)/A2(c)	Stack Sampling Requirements
A5(a)	Monitoring Program – Calciners
A8	Monitoring Program – Powerhouse
A9(a)-(c)	Monitoring Program – RSA Dust and Refinery
A10	Monitoring Program Reporting – RSA Dust and Refinery
A14	Monitoring Program – Liquor Burner
P6(b)	Test Burns using Diesel
W10	Annual Groundwater Monitoring Report

- G3 The Licensee shall by **1 May** in each year, provide to the CEO an Annual Audit Compliance Report, indicating the extent to which the licensee has complied with the conditions of this licence, during the period beginning **1 January the previous year and ending on 31 December in that year.**

### Reporting requirements - Incidents and limit exceedances

- G4(a) The Licensee shall notify the CEO as soon as practicable of any unplanned occasion when any pollution control equipment at the Premises malfunctions or ceases to operate which has the potential to significantly impact on the environment.
- G4(b) The Licensee shall notify the CEO as soon as practicable, after receiving confirmation of any measurement which indicates that any emission Limit specified in condition A11 has been exceeded.
- G4(c) The Licensee shall ensure that the notification required by condition G4(b) is followed by written advice as soon as practicable that includes:
- (i) the date and time of the exceedance;
  - (ii) probable cause of the exceedance;
  - (iii) an estimate of the period over which the Limit was or is likely to be exceeded; and
  - (iv) an indication of known or potential environmental impacts.
- G4(d) The Licensee shall provide to the CEO a full report on its investigations into any Limit exceedance reported under condition G4(b) within seven (7) working days of receiving the confirmed measurement and it shall include, but not be limited to:
- (i) the date and time of the exceedance;
  - (ii) reason for the exceedance;
  - (iii) the period over which the exceedance occurred;
  - (iv) the extent of the discharge over that period and potential or known environmental consequences; and
  - (v) corrective action taken or planned to prevent a recurrence of the exceedance.

### Reporting requirements – Target exceedances

- G5(a) The Licensee shall notify the CEO before 5pm on the next usual working day after becoming aware of any confirmed measurement which indicates that any emission Target specified in conditions A12, A15 or A17(b) has been exceeded.
- G5(b) The Licensee shall submit a report to the CEO on any Target exceedance pursuant to condition G5(a) within seven (7) working days of receiving the confirmed measurement and the report shall include, but not be limited to:
- (i) the date and time of the exceedance;
  - (ii) the cause of the exceedance;
  - (iii) the extent of the exceedance; and
  - (iv) corrective actions taken or planned corrective actions to prevent a recurrence of the exceedance.
- G5(c) The Licensee is excluded from submitting a report pursuant to condition A13(b), in accordance with condition G5(b), if the requirements outlined in condition A13(b) are not satisfied.

### Waste disposal

- G6(a) The Licensee is permitted to dispose of the following types of waste(s) to the RSAs (as depicted in Attachment 2), that have been generated at the premises, Alcoa Peel Regional Office, Huntly and Willowdale Minesites, Pinjarra and Wagerup Refineries and Wellard Wetlands:
- (i) wastes meeting acceptance criteria for Class II landfills as specified in the document titled “Landfill Waste Classifications and Waste Definitions 1996” (as amended) to the landfill cell(s) within the RSA, titled “Class II Landfill” (as depicted in Attachment 2);and
  - (ii) wastes generated from alumina productions and associated activities, excluding:

- (a) elemental mercury collected as a waste stream;
  - (b) asbestos materials;
  - (c) packaged laboratory chemical wastes; and
  - (d) clinical wastes.
- G6(b) The Licensee may use waste oil generated at the Premises and the Huntly mine site for dust suppression in the RSAs.
- G6(c) The Licensee shall only dispose of contaminated soil from spills to Composite Lined Areas within the RSAs.
- G6(d) The Licensee may dispose of wastes generated at other premises to the RSAs as Approved by the CEO, and on such conditions as may be contained in such an Approval.
- G6(e) The Licensee is permitted to remove the following materials from the Premises:
- (i) Red Sand <sup>TM</sup> (<10 tonnes per hour for trial purposes)
  - (ii) Alkaloam <sup>®</sup>;
  - (iii) Red Lime <sup>TM</sup>;
  - (iv) Red Mud Gypsum; and
  - (v) minor quantities (<100 tonnes) of Bayer process waste used for trial and experiments or research and development or to benefit a process without adverse environmental impacts.

### Waste management

- G7(a) The Licensee shall bury waste referred to in condition G6(a)(i) by:
- (i) placing the waste in a defined trench or within an area enclosed by earthen bunds; and
  - (ii) covering the waste with clean fill, bauxite residue or sand (or other similar material) on a minimum of a weekly basis.
- G7(b) The Licensee shall:
- (i) maintain a register of waste disposed of to landfill cells within the RSAs, pursuant to condition G6(a);
  - (ii) include a summary of entries in the register during the report period in the annual report required by condition G2(a) and G2(b); and
  - (iii) include a plan showing the location of landfill cell(s) utilised in the report period in the annual report required by condition G2(a) and G2(b).

## AIR POLLUTION CONTROL CONDITIONS

### Dust controls

- A1 The Licensee shall implement and maintain dust control measures to minimise the generation of airborne dust from the refinery, bauxite stockpiles, bulk loading facilities and the RSAs.

### Stack sampling requirements

- A2(a) The Licensee shall ensure that sampling required under condition A5(a) and A14 of this licence is undertaken in accordance with AS4323.1-1995 *Stationary Source Emissions Method 1: Selection of sampling positions*.
- A2(b) The Licensee shall provide the CEO with the results of the monitoring program specified under conditions A5(a) and A14 comprising stack dimensions, concentrations and calculated mass emissions of the parameters specified in Tables 2 and 9 using measured flow rates.

- A2(c) The Licensee shall provide the CEO with the results of the monitoring program specified under condition A8, including stack dimensions, flow rates, stack emission concentrations and stack mass emissions, calculated using an Approved method.
- A3 The Licensee shall monitor particulates from the calciners and CO levels from the Liquor Burner with a monitoring system that is regularly maintained and calibrated in accordance with Section 2 Quality Assurance/Quality Control of the CEMS Code.
- A4 The Licensee shall ensure that the monitoring systems required by Condition A3 are operated to achieve at least 90% availability on a monthly basis, excluding for the calciners periods when the main calciner blower is not operational or, for the Liquor Burner, while the Liquor Burner is not in operation.

### Monitoring program– Calciners

- A5(a) The Licensee shall conduct a monitoring program which measures the parameters specified in Column 2 of Table 2 at the intervals specified in Column 3 of Table 2 and using analysis methods specified in Column 5 of Table 2 for calciner stacks 1, 2, and 3 during Normal Operating Conditions.

Table 2: Monitoring Program – Calciner				
Emissions Testing	Parameters to be measured	Frequency	Units	Analysis Method
Exit gases from: Calciner stacks 1, 2 and 3	Particulates	Quarterly	mg/m <sup>3</sup>	USEPA Method 5 or 17
	NO <sub>x</sub>			USEPA Method 7E <sup>(1)</sup>
	CO			USEPA Method 10 <sup>(1)</sup>
	SO <sub>2</sub>			USEPA Method 6C <sup>(1)</sup>
	Stack flow rate		m <sup>3</sup> /min	USEPA Method 2
	Stack velocity		m/sec	USEPA Method 2

Note 1: alternative NATA accredited method for sampling and analysis for required parameter may be used

- A5(b) The Licensee shall continuously operate dust concentration monitors and log the indicative hourly average particulate concentration of gases exiting each of the calciner stacks 1, 2 and 3 except when the dust concentration monitors are undergoing planned maintenance or are experiencing instrument upsets.
- A5(c) The Licensee shall utilise the indicative particulate concentration measured pursuant to condition A5(b) to commence calciner shut down in accordance with the “Dust concentration monitor above Limit” event in Table 3 of condition A6(d) unless the dust concentration monitor is undergoing maintenance, or is experiencing instrument upsets.
- A5(d) The Licensee shall keep records of the log referred to in condition A5(b).

### Calciners – Requirement to manage emissions

- A6(a) The Licensee shall target particulate concentrations of less than **150 mg/m<sup>3</sup>** for **95% of the time** of each calendar month that comprise Normal Operating Conditions from each of the calciner stacks 1, 2 and 3, based on the log referred to in condition A5(b).
- A6(b) The Licensee shall report to the CEO any exceedance of the frequency target stated in condition A6(a) by the end of the subsequent calendar month where this report shall include the following:
  - (i) the reason for the exceedance;
  - (ii) the extent of the exceedance; and
  - (iii) corrective action taken or planned to prevent a recurrence of the exceedance.
- A6(c) The Licensee shall control calciner operations such that the indicative particulate concentration of the gases exiting each calciner stack at the Premises, as measured by

the dust concentration monitor, will not exceed the calciner particulate concentration Limit as specified in Table 6 of condition A11.

A6(d) The Licensee is exempt from the calciner particulate concentration Limit of **250mg/m<sup>3</sup>** as specified in Table 6 of condition A11 if the licensee's response to an event listed in column 1 of Table 3 is in accordance with the corresponding actions to be taken as described in column 2 of Table 3.

<b>Table 3: Actions to be taken for exemption to Calciner Particulate Concentration Limit</b>	
<b>Event Title</b>	<b>Action to be Taken</b>
Calciner Start-up and Shut-down	All practicable measures to minimise the discharge of particulate matter into the environment.
BMS trip purge	All practicable measures to minimise the discharge of particulate matter into the environment.
Calciner partial failure of ESP	If as a result of an event of this type there are readings for more than 60 consecutive minutes above the particulate limit, the licensee shall immediately commence Calciner Shut-down procedures and not resume Calciner operation until the ESP is able to operate effectively to ensure control of particulate emissions.
Calciner complete failure of ESP	If as a result of an event of this type there are readings for more than 10 consecutive minutes above the particulate Limit, the licensee shall immediately commence calciner Shut-down procedures and not resume calciner operation until the ESP is able to operate effectively to ensure control of particulate emissions.
Troubleshooting	If any Upset (including calciner upsets) or ESP failure event as shown in column 1 of this table results in 60 consecutive minutes above the particulate emission Limit and the subsequent initiation of Shut-down procedures has occurred prior to the cause of the problem being identified, the calciner may with the permission of the CEO be re-started to accomplish troubleshooting.
Dust concentration monitor above Limit	If the calciner dust concentration monitor records a dust concentration that exceeds the equivalent of the calciner particulate emission Limit specified in Table 6 of condition A11 for more than 60 minutes, the licensee shall immediately commence calciner Shut-down procedures. Calciner operation shall not resume until the problem has been rectified.

A6(e) The Licensee shall continually operate and maintain the ESPs on the calciners to ensure effective control of particulates from the calciner stacks, subject to condition A6(d).

### Calciner limits– Exemption during isokinetic sampling

A7(a) The Licensee is exempt from the calciner particulate concentration Limit as specified in Table 6 of condition A11 when performing isokinetic stack testing, under the following circumstances:

- (i) while undertaking dust concentration monitor correlations; and
- (ii) actions in response to the events detailed in Table 3 of condition A6(d) have been undertaken.

A7(b) The Licensee shall keep written records of dust concentration monitor correlations.

### Monitoring program – Powerhouse

A8 The Licensee shall conduct a monitoring program during normal operating conditions which measures the parameters specified in Column 2 of Table 4, from the sources specified in Column 1 of Table 4, at the frequency specified in Column 3 of Table 4 and using the analysis methods specified in Column 5 of Table 4.

Table 4: Monitoring Program – Powerhouse				
Emissions Testing	Parameters to be measured	Frequency*	Units	Method
Powerhouse Boilers 1-8	NO <sub>x</sub>	Quarterly	mg/m <sup>3</sup>	USEPA Method 7E <sup>(1)</sup>
	CO			USEPA Method 10 <sup>(1)</sup>
	SO <sub>2</sub>			USEPA Method 6C <sup>(1)</sup>

Note 1: Alternative NATA accredited method for sampling and analysis for required parameter may be used

Note 2: The Licensee should take reasonable measures to ensure monitoring reflects the balance of fuel firing throughout the year.

### Monitoring program – RSA dust and refinery

A9(a) The Licensee shall operate and maintain a dust monitoring program that measures the following parameters:

- (i) TSP dust levels generated from the RSAs and refinery; and
- (ii) PM<sub>10</sub> dust levels at ambient locations in the proximity of the RSAs.

A9(b) The Licensee shall ensure that the dust monitoring program, as noted in condition A9(a), incorporates the following features:

- (i) use of TEOMs or BAMs and high volume samplers;
- (ii) high volume samplers used for the purposes of measurement of TSP to be located in positions identified in Attachment 3;
- (iii) high volume samplers used for the purposes of measurement of TSP are to be run continuously (with a Target of 95% functioning availability for each monitor);
- (iv) subject to A9(b)(iii), filter papers are to be renewed at least daily on operating monitors on high volume samplers when measuring TSP; and
- (v) for dust monitor(s) used for the purposes of identifying and investigating PM<sub>10</sub>, the licensee shall notify the CEO in the event that the relevant monitors are not functioning for a period greater than one week.

A9(c) The Licensee shall analyse filter papers in accordance with Table 5 when the 24-hour average dust concentration is greater than the ambient air quality targets detailed in Table 8 and meteorological conditions indicate Alcoa’s operations may have contributed to the exceedance.

Table 5: Analysis of high volume sampler filter papers at the RSAs				
Monitoring point reference	Parameter <sup>1, 2</sup>	Units <sup>3</sup>	Reference Period	Frequency
Sayer Rd or Residue NE or Spectacles NE or Cooling Pond or Residue West (as depicted in Attachment 3)	pH	pH units	24 hours	Four times each calendar year
	Alkalinity, Aluminium, arsenic, boron, barium, cadmium, cobalt, chromium, copper, mercury, molybdenum, nickel, lead, vanadium, zinc, gallium, thallium, selenium, lithium, beryllium	µg/m <sup>3</sup>		

Note 1: Analysis to be conducted by NATA accredited laboratory

Note 2: Analysis to include one blank filter from the same batch

A9(d) The licensee shall operate and maintain the dust monitoring program referred to in condition A9(a) in accordance with:

- (i) AS/NZS 3580.9.3:2015 “Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - Total suspended particulate matter (TSP) - High volume sampler gravimetric method”<sup>(1)</sup>; and

- (ii) AS/NZS 3580.9.11:2016 “Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM10 beta attenuation monitors”<sup>(1)</sup>.

Note 1: conversion to the new standard in condition (i) and (ii) to be effected no later than 1 January 2020.

### Monitoring program reporting – RSA dust and refinery

- A10 In accordance with condition G2(a), the Licensee shall provide a report on the monitoring data and analysis resulting from the monitoring program required by condition A9(a) with the assessment of PM<sub>10</sub> compared against the NEPM standard.

### Air emissions – Limits

- A11 Subject to conditions A6(d) and A7(a), the Licensee shall not exceed any Limit for an emission source as specified in Table 6.

Table 6: Licence air emission Limits		
Emission Source(s)	Parameter	Licence Limit
Calcliner stack 1, stack 2, and stack 3 as individual emission points	Particulates	250 mg/m <sup>3</sup> <sup>(1)</sup>
	NOx	1,000 mg/m <sup>3</sup> <sup>(1)</sup>
Powerhouse stacks 1, 2, 3 and 4 as calculated from Powerhouse Boilers 1-8	CO	1,000 mg/m <sup>3</sup> <sup>(1)</sup>
	NOx	1,000 mg/m <sup>3</sup> <sup>(1)(2)</sup>

Note 1: expressed dry at 0 degrees Celsius and 1.0 atmosphere (101.325 kilopascals)

Note 2: NOx emissions to be corrected to 7% O<sub>2</sub> for boilers

Note 3: the addition of diluting gases shall not be used to achieve compliance with emissions Limits

### Air emissions – Targets

- A12 The Licensee shall report to the CEO any exceedance of the Targets specified in Table 7, as determined pursuant to condition A8 in accordance with conditions G5(a) and G5(b).

Table 7: Licence air emission Targets		
Emission Source(s)	Parameter	Licence Target
Powerhouse stacks 1, 2, 3 and 4 as calculated from Powerhouse Boilers 1-8.	CO	250 mg/m <sup>3</sup> <sup>(1)(2)</sup>
	NOx	750 mg/m <sup>3</sup> <sup>(1)(2)(3)</sup>

Note 1: expressed dry at 0 degrees Celsius and 1.0 atmosphere (101.325 kilopascals)

Note 2: the addition of diluting gases shall not be used to achieve compliance with emissions Limits

Note 3: NOx emissions to be corrected to 7% O<sub>2</sub> for boilers

### Ambient air quality targets - Particulates

- A13(a) The Licensee shall keep a record of any exceedance specified in Table 8, as monitored at the locations identified in Attachment 3. The records must include the following:

- (i) the date and time period of the exceedance;
- (ii) the predominant wind speed and direction; and
- (iii) the physical characteristics of the sample.

The record shall be available for viewing or copying at the request of any inspector appointed under section 88 of the *Environmental Protection Act 1986*.

- A13(b) Where the physical characteristics of the sample and meteorological conditions indicate that Alcoa’s operations contributed to the dust exceedance, the Licensee shall provide an exceedance report in accordance with the requirements of condition G5(b).

Table 8: Licence ambient air quality targets for particulates				
Emission Source(s)	Location of Monitor(s)	Parameter	Target <sup>(1)</sup>	Averaging Period
Refinery	Area A (as defined in the EPP)	TSP	150 µg/m <sup>3</sup>	24 hours
RSAs	Area B (as defined in the EPP)		90 µg/m <sup>3</sup>	
RSAs	Area C (as defined in the EPP)			

Note 1: targets to apply before background correction

### Monitoring program – Liquor burner

A14 The Licensee shall conduct a monitoring program of the exit gases from the Liquor Burner Stack to measure the parameters specified in Column 1 of Table 9 at the intervals specified in Column 2 of Table 9 and using analysis methods specified in Column 4 of Table 9 during normal operating conditions.

Table 9: Monitoring Program for exit gases from the Liquor Burner			
Parameters to be measured	Frequency	Units	Analysis method
Particulates	Quarterly	mg/m <sup>3</sup>	USEPA Method 5 or 17
NOx			USEPA Method 7E <sup>(1)</sup>
SO <sub>2</sub>			USEPA Method 6C <sup>(1)</sup>
Stack flow rate		m <sup>3</sup> /min	USEPA Method 2
Stack velocity		m/sec	

Note 1: alternative NATA accredited method for sampling and analysis for required parameter may be used

### Air quality targets – Liquor burner

A15 The Licensee shall, upon becoming aware that an emission listed in Column 2 of Table 10, from an emission point in Column 1 of Table 10 has exceeded the emission target for that emission in Column 3 of Table 10, undertake the target exceedance response required by conditions A18 and A19.

Table 10: Licence air emission Targets		
Emission Source(s)	Parameter	Licence Target
Liquor Burner stack	Particulates	20 mg/m <sup>3</sup> <sup>(1)</sup>
	NOx	150 mg/m <sup>3</sup> <sup>(1)</sup>
Liquor Burner RTO Outlet Ducting	CO	125mg/m <sup>3</sup> <sup>(1)</sup>
Liquor Burner RTO Combustion Zone	Temperature	≥750°C

Note 1: expressed dry at 0 degrees Celsius and 1.0 atmosphere (101.325 kilopascals)

Note 2: the addition of diluting gases shall not be used to achieve compliance with emissions Limits

A16 The Licensee is exempt from compliance with the Liquor Burner Emission Targets specified in Table 10 during start up and shut down if the licensee implements all practicable measures to minimise the discharge of particulate matter and CO into the environment.

A17(a) The Licensee shall utilise and maintain one or more continuous temperature probes in the combustion zone of the Liquor Burner RTO.

A17(b) If the temperature in the combustion zone of the RTO located in the Liquor Burner falls below 750°C for more than 60 consecutive minutes during operation of the Liquor Burner, the Licensee shall immediately cease liquor feed to the Liquor Burner for each individual occurrence.

- A18 If the CO on the RTO Outlet Ducting of the Liquor Burner exceeds 125mg/m<sup>3</sup> for more than 60 consecutive minutes during operation of the Liquor Burner, the Licensee shall, for each individual occurrence, immediately cease feed to the Liquor Burner.
- A19 The Licensee shall cease feed to the Liquor Burner immediately following a Step Change in percentage dust output being detected for 2 or more online Dust Collector Cells, as measured by the dust electrodynamic particulate probe located on the dust collector cell output, for more than 60 consecutive minutes.

### Liquor burner – Management of RTO bypass

- A20(a) The Licensee shall immediately cease feed to the Liquor Burner if the RTO has been bypassed for more than 10 consecutive minutes.
- A20(b) Where liquor feed has ceased to the Liquor Burner in accordance with condition A20(a), the Licensee shall not re-commence feed to the Liquor Burner until:
- (i) the cause of the bypass has been rectified; or
  - (ii) a plan is submitted to the CEO outlining the troubleshooting actions to be undertaken.

### Shiploading

- A21 The Licensee shall ensure that the Number 12 and 13 Dust Collectors, depicted in Attachment 4:
- (i) operate effectively during Shiploading; and
  - (ii) undergo dust collector rebagging annually but not less than once every 15 calendar months.
- A22 The Licensee shall ensure that all Shiploading activities cease as soon as practicable when it has been detected that either the Number 12 Dust Collector or Number 13 Dust Collector are not operating effectively.
- A23 The Licensee shall maintain all conveyor belt transfer points to minimise the generation of dust.
- A24 The Licensee shall ensure that all reasonable and practicable measures are taken to prevent discharges of caustic, alumina and hydrate products into the marine environment.

## ENVIRONMENTAL PROTECTION (KWINANA ATMOSPHERIC WASTE) POLICY 1999 IMPLEMENTATION CONDITIONS

- E1 The Licensee shall control the discharge of sulphur dioxide from each source listed in the Relevant Determination within the Premises, so as to comply with the limits in the Relevant Determination and the monitoring and reporting requirements detailed in Attachment 6.

## WATER AND LAND POLLUTION CONTROL CONDITIONS

### Monitoring program – Groundwater and Spectacles North

- W1 The Licensee shall monitor and manage groundwater in accordance with the Groundwater Monitoring and Management Plan.
- W2 The Licensee shall conduct annual monitoring of indicator species (as determined in the Baseline Vegetation Survey) on the western side Spectacles North between the 1 September and 30 November.
- W3 The Licensee shall conduct a groundwater monitoring program for the Spectacles North in accordance with Table 11.

Monitoring point reference	Parameters	Units	Reference Period	Frequency
SP1-1D, G-003 as shown in Attachment 5	SWL	m ADH	Instantaneous	Quarterly <sup>1</sup>
	pH	pH units	Instantaneous and spot	
	Electrical conductivity	µs/cm		
	Total dissolved solids	mg/L	Spot	
	Ammoniacal nitrogen, nitrate nitrogen, total nitrogen, total phosphorus			
Sulphate				

Note 1: Quarterly sampling shall be undertaken at least 45 days apart including sampling in April and September of each year.

- W4 The Licensee is exempt from the monitoring requirements of conditions W2 and W3:
- (i) until more than 6ML of treated waste water has been discharged to the Cooling Ponds, subject to condition W5; and
  - (ii) if treated wastewater has not been accepted from the Kwinana Wastewater Treatment Plant for 3 consecutive years.

### Water reuse

- W5 The Licensee may accept treated waste water from the Kwinana Wastewater Treatment Plant which shall be discharged to, and stored in, the Cooling Ponds.
- W6 Pursuant to condition W5, the Licensee shall ensure that the volume of treated waste water accepted from the Kwinana Wastewater Treatment Plant does not exceed the limits in Table 12.

Parameter*	Licence Limit	Units	Averaging Period
Intake of treated wastewater from Kwinana Wastewater Treatment Plant	3.5	ML/day	each calendar month
	1	GL/year	each calendar year

Note: \*Flow rate to be measured by the Kwinana No. 6 Residue Pumping Station flow meter located 6435394.031N, 388609.731E.

- W7 If the SWL in bore SP1-1D falls below the Primary Licence Target in Table 13, the Licensee shall conduct vegetation surveys, designed in consultation with DER, on the western and eastern side of the Spectacles North.
- W8 If the SWL in bore SP1-1D falls below the Secondary Licence Target in Table 13, the Licensee shall cease acceptance of treated wastewater from the Kwinana Wastewater Treatment Plant within 30 days of becoming aware of exceeding the minimum Secondary Licence Target.

Monitoring Location	Parameter	Primary Licence Target	Secondary Licence Target
SP1-1D	SWL	≤ 9.5 metres AHD	≤ 9.0 metres AHD

- W9 The Licensee is exempt from conditions W7 and W8 if treated wastewater has not been accepted from the Kwinana Treatment Plant for 3 consecutive years.

## Reporting – Groundwater

- W10 The Licensee shall submit to the CEO an Annual Groundwater Monitoring Report by **1 May** for the preceding period **1 January to 31 December**, which shall include but not be limited to the following:
- (i) the results of the monitoring program implemented pursuant to condition W1 and W3;
  - (ii) an analysis of the results of the monitoring program implemented pursuant to condition W1 and W3;
  - (iii) details of any groundwater monitoring bores listed in the Groundwater Monitoring and Management Plan that are de-commissioned or rendered unusable in the reporting period; and
  - (iv) action taken or planned actions to compensate for the bores identified pursuant to condition W10(iii) in order to maintain effective monitoring coverage

## General groundwater monitoring requirements

- W11(a) The Licensee shall collect all water samples in accordance with the relevant part of Australian Standard 5667.
- W11(b) The Licensee shall submit all water samples to a laboratory with current NATA accreditation for the parameters specified for analysis in accordance with the current “Standard Methods for Examination of Water and Wastewater-APHA-AWWA-WEF”.

## Liquid chemical storage

- W12 In circumstances where AS3780-2008 cannot be practicably met when undertaking any significant additions or alterations to existing corrosive liquid chemical storage compound(s) or liquid chemical containment facilities, the Licensee shall undertake and provide to the CEO a risk assessment that details how it will reduce the risk in areas where the conditions within AS3780-2008, section 5.4 “Bunds and Compounds”, cannot be achieved.

## Spillway

- W13 The Licensee must ensure that all emissions specified in Table 14 are discharged only from the corresponding discharge point and only at the corresponding discharge point location.

Table 14: Authorised discharge points		
Emission	Discharge point	Discharge point location
Process water	Cooling Pond Spillway	As shown in Attachment 7

- W14 The Licensee must ensure that the Spillway listed in Table 14 and located at the corresponding Spillway location is maintained and operated in accordance with the corresponding operational requirement set out in Table 15.

Table 15: Infrastructure and equipment requirements		
Site infrastructure and equipment	Operational requirement	Infrastructure location
Cooling Pond Spillway	<ul style="list-style-type: none"> <li>• The Licensee must manage the Cooling Pond such that it does not activate the Spillway other than as a result of a Wet Winter.</li> <li>• The Spillway shall not be activated after 21 December in each calendar year.</li> </ul>	As shown in Attachment 7

## Evaporators

W15 The Licensee must install the infrastructure and equipment listed in Table 16, in accordance with:

- (i) the corresponding installation requirements; and
- (ii) at the corresponding infrastructure location;

as set out in Table 16.

<b>Table 16: Infrastructure and equipment requirements</b>		
<b>Site infrastructure and equipment</b>	<b>Installation-requirement</b>	<b>Infrastructure location</b>
22 x land-based evaporators	<ul style="list-style-type: none"> <li>(a) Evaporator units must be installed within RSA J, RSA F6 or RSA H South and must be equipped with automated control units which are capable of managing spray according to onsite weather conditions.</li> <li>(b) Evaporator units must be installed with appropriate noise attenuation to ensure they do not exceed a sound power level of 96 dB(A).</li> <li>(c) A minimum 34,000 m<sup>2</sup> of synthetic liner must be installed over the lower portion of the RSA F7 surface.</li> </ul>	RSA J, RSA F6, RSA F7 and RSA H South as shown in Attachment 8
Diesel storage tanks up to 10,500 L	<ul style="list-style-type: none"> <li>(a) Total storage volume of diesel tanks must not be more than 120,000 litres.</li> <li>(b) Diesel storage tanks and generators must have integral secondary containment that complies with the requirements of section 5.9 of AS 1940.</li> <li>(c) Diesel storage tanks and generators must be located within a clay or composite lined area of the RSA.</li> </ul>	RSA K, RSA J, RSA F6, RSA F7 and RSA H South as shown in Attachment 8
F6 Decant Pipeline	<ul style="list-style-type: none"> <li>(a) Must be constructed using materials that meet applicable Australian/New Zealand Standards including:                             <ul style="list-style-type: none"> <li>i. AS/NZS 2033:2024 Design and installation of polyolefin pipe systems;</li> <li>ii. AS/NZS 4129:2008 Fittings for polyethylene pipes for pressure applications; and</li> <li>iii. AS/NZS 4130:2009 Polyethylene pipes for pressure applications.</li> </ul> </li> <li>(b) Must be pressure tested prior to use.</li> </ul>	Within the pipeline route shown in Attachment 9
Cooling Pond Supply pipelines	<ul style="list-style-type: none"> <li>(a) Must be located within an existing pipeline corridor.</li> <li>(b) Must be constructed using materials that meet applicable Australian/New Zealand Standards including:                             <ul style="list-style-type: none"> <li>i. AS/NZS 4129:2008 Fittings for polyethylene pipes for pressure</li> </ul> </li> </ul>	Within the pipeline route shown in Attachment 9
Other new pipelines	<ul style="list-style-type: none"> <li>(b) Must be constructed using materials that meet applicable Australian/New Zealand Standards including:                             <ul style="list-style-type: none"> <li>i. AS/NZS 4129:2008 Fittings for polyethylene pipes for pressure</li> </ul> </li> </ul>	Within the RSA management area as shown in Attachment 8

Table 16: Infrastructure and equipment requirements		
Site infrastructure and equipment	Installation-requirement	Infrastructure location
	applications; ii. AS/NZS 4130:2009 Polyethylene pipes for pressure applications; and iii. AS/NZS 4131:2010 Polyethylene compounds for pressure pipes and fittings. (c) Must be pressure tested prior to use.	
Staging tanks and pumps	(a) Staging tanks and pumps must be located within a clay or composite lined area of the RSA. (b) Staging tanks must be fitted with overfill protection valves.	RSA K, RSA J, RSA F6 and RSA H South as shown in Attachment 8

W16 The Licensee must within 30 days of an item of infrastructure required by condition W15 being installed:

- (i) undertake an audit of their compliance with the requirements of condition W15; and
- (ii) prepare and submit to the CEO an Environmental Compliance Report on that compliance that is signed by a person authorised to represent the Licensee and contains the printed name and position of that person.

W17 The Licensee must not operate the site infrastructure and equipment listed in Table 17 until the Environmental Compliance Report required by condition W16(ii) has been submitted.

W18 The Licensee must ensure that the site infrastructure and equipment listed in Table 17 and located at the corresponding location is maintained and operated in accordance with the corresponding operational requirements set out in Table 17.

Table 17: Infrastructure controls table		
Site infrastructure and equipment	Operational Requirement	Infrastructure locations
15 x evaporators	a) Evaporators must be operated with an automated controller linked to their common meteorological (wind speed and direction) monitoring unit unless undergoing maintenance, set-up and/or testing. b) Evaporators must be operated in a manner that does not result in spray drift outside the RSA Management Area illustrated in Attachment 8.	ROWS pond, as shown in Attachment 8
28 x land based evaporators	a) Evaporators must be operated with an automated controller linked to their common meteorological (wind speed and direction) monitoring unit unless undergoing maintenance, set-up and/or testing. b) Evaporators must be operated in a manner that does not result in spray drift outside the RSA Management Area illustrated in Attachment 8. c) Until report(s) required by conditions W20, W21,	RSA K, RSA J, RSA F6, RSA F7 and RSA H South as shown in Attachment 8

Table 17: Infrastructure controls table		
Site infrastructure and equipment	Operational Requirement	Infrastructure locations
	<p>W22 and W23 are submitted to the CEO, the evaporators located within RSA K and RSA F7 must only be operated:</p> <ul style="list-style-type: none"> <li>a. between the hours of 0900 to 1900 on Sunday and public holidays, and</li> <li>b. 0700 to 1900 on Monday to Saturday, excluding public holidays.</li> </ul> <p>unless being operated for the purposes of undertaking night-time noise assessments.</p>	

- W19 The Licensee must within 90 days of the items of infrastructure specified in Table 17 commencing operation provide to the CEO a report containing the following:
- (i) the commencement date of operation of the infrastructure;
  - (ii) a summary of meteorological control criteria developed for the evaporators during commissioning;
  - (iii) a review of performance and compliance against conditions W15 and W18; and
  - (iv) where the design specifications and performance against conditions W15 or W18 have not been met, what measures the Licensee will take to meet them, and what timeframes will be required to implement those measures.
- W20 Within 30 days of the commencement of operation of the items of infrastructure specified in Table 17 within RSA J, RSA F6 and RSA H South, the Licensee must retain the services of a person qualified and experienced in the area of environmental noise assessment and who by their qualifications and experience is eligible to hold membership of the Australian Acoustical Society or the Australian Association of Acoustical Consultants to:
- (i) investigate the nature and extent of noise emissions from the premises, including if the noise is perceptible as tonal at the nearest receptors;
  - (ii) assess in accordance with the methodology required in the *Environmental Protection (Noise) Regulations 1997*, the compliance of the noise emissions from the premises, against the relevant assigned levels specified in those Regulations; and
  - (iii) compile and submit to the Licensee within 90 days of the commencement of operation of the items of infrastructure specified in Table 17 within RSA J, RSA F6 and RSA H South a report in accordance with condition W21.
- W21 A report prepared pursuant to condition W20(iii) is to include:
- (i) a description of the methods used for monitoring and/or modelling of noise emissions from the premises;
  - (ii) details and the results of the investigation undertaken pursuant to condition W20(i);
  - (iii) details and results of the assessment of the noise emissions from the premises, against the relevant assigned levels in the *Environmental Protection (Noise) Regulations 1997* undertaken pursuant to condition W20(ii); and
  - (iv) an assessment of noise levels against the most recent previous noise assessment.
- W22 The Licensee must submit to the CEO the report prepared pursuant to condition W20(iii) within 14 calendar days of receiving it.
- W23 Where an assessment pursuant to condition W20(ii) indicates that noise emissions do not comply with the relevant assigned levels in the *Environmental Protection (Noise)*

*Regulations 1997*, the Licensee must:

- (i) within 30 days of receiving an assessment report pursuant to condition W20(iii) prepare a plan to ensure the undertaking of the premises activities will no longer lead to any contravention of the *Environmental Protection (Noise) Regulations 1997*; and
- (ii) provide to the CEO a copy of the plan prepared pursuant to condition W23(i) within 14 days of its preparation.

W24 The Licensee must ensure visual inspections of the infrastructure specified in Table 18 are undertaken in accordance with the inspection requirements, and at a minimum at the frequency set out in Table 18.

W25 The Licensee must maintain a written log of all inspections undertaken as required by condition W24, with the name of the person who conducted the inspection recorded on the inspection log.

<b>Table 18: Inspection of infrastructure requirements</b>		
<b>Site infrastructure and equipment</b>	<b>Inspection requirements</b>	<b>Frequency of inspection</b>
ROWS pond and 15 x evaporators	ROWS pond perimeter inspection with checks for spray drift from evaporators	Every 6 hours during daylight hours in the first 60 days of commencing operation; Daily when operating after the first 60 days of operation.
RSA K, RSA J, RSA F6, RSA F7 and RSA H South and 28 x land-based evaporators	RSA perimeter inspection with checks for spray drift from evaporators	Every 6 hours during daylight hours in the first 60 days of commencing operation; Daily when operating after the first 60 days of operation.

W26 The Licensee must notify the CEO within seven days of becoming aware of any non-compliance with condition W18 and include in that notification the following information:

- (i) the date and time any spray drift or impact from spray drift was observed;
- (ii) details of any impact caused by the spray drift; and
- (iii) details of management actions undertaken and/or planned to be undertaken to mitigate any impact caused and to ensure compliance with condition W18.

## **SOLID WASTE CONDITIONS**

### **Storage of oxalate**

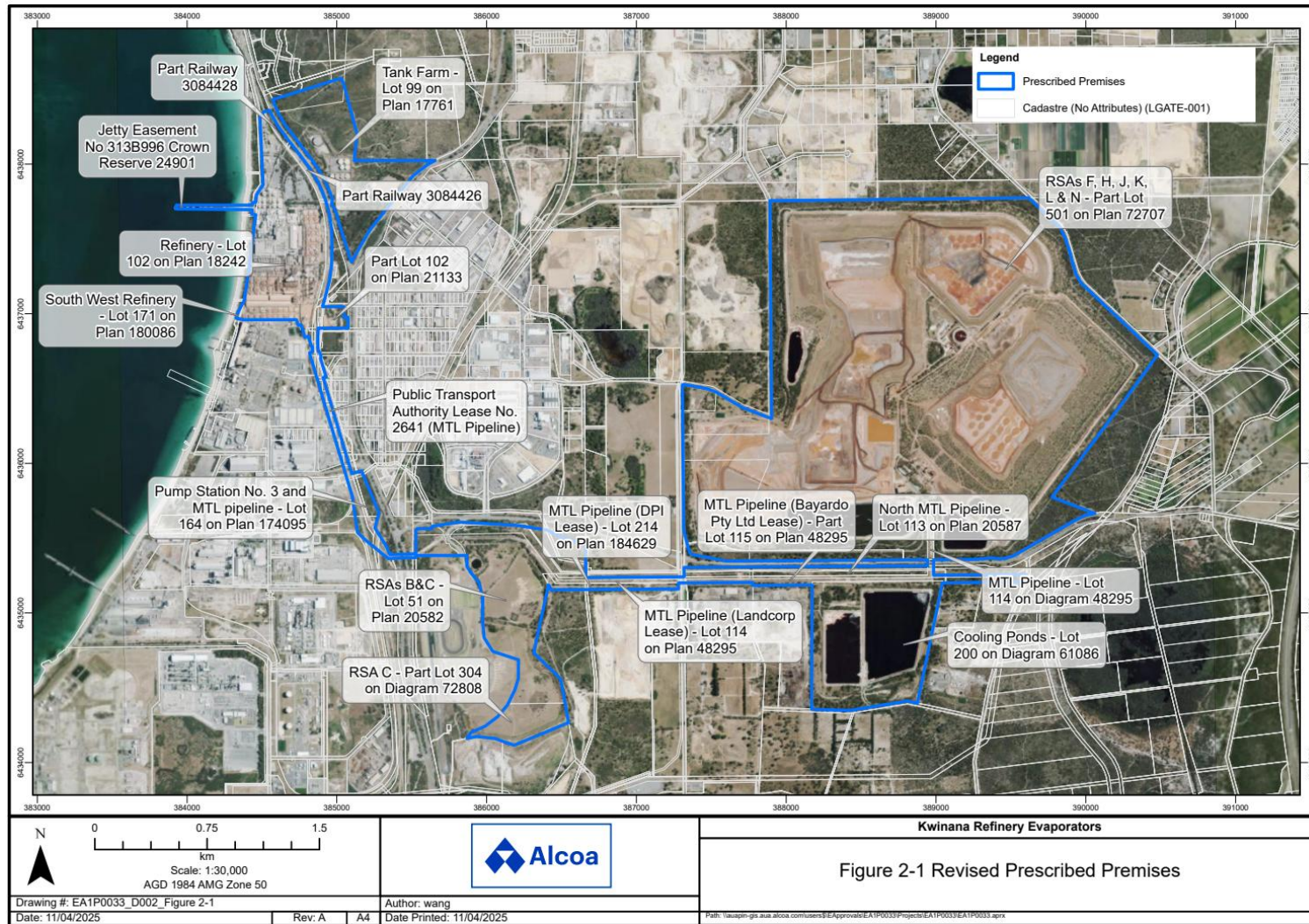
S1(a) The Licensee shall ensure that oxalate is in a moist state when discharged into the approved oxalate storage ponds located in the RSAs.

S1(b) The Licensee shall within 12 hours of oxalate being discharged into the approved oxalate storage ponds, ensure the oxalate is kept moist or maintained under water or beneath a full surface cover that ensures dust is not generated from oxalate storage and does not impinge on the ability to fully recover the oxalate.

S1(c) The Licensee is exempt from storing oxalate in approved oxalate storage ponds and condition S1(b) when oxalate is processed via the Bio-removal Plant.

# ATTACHMENT 1

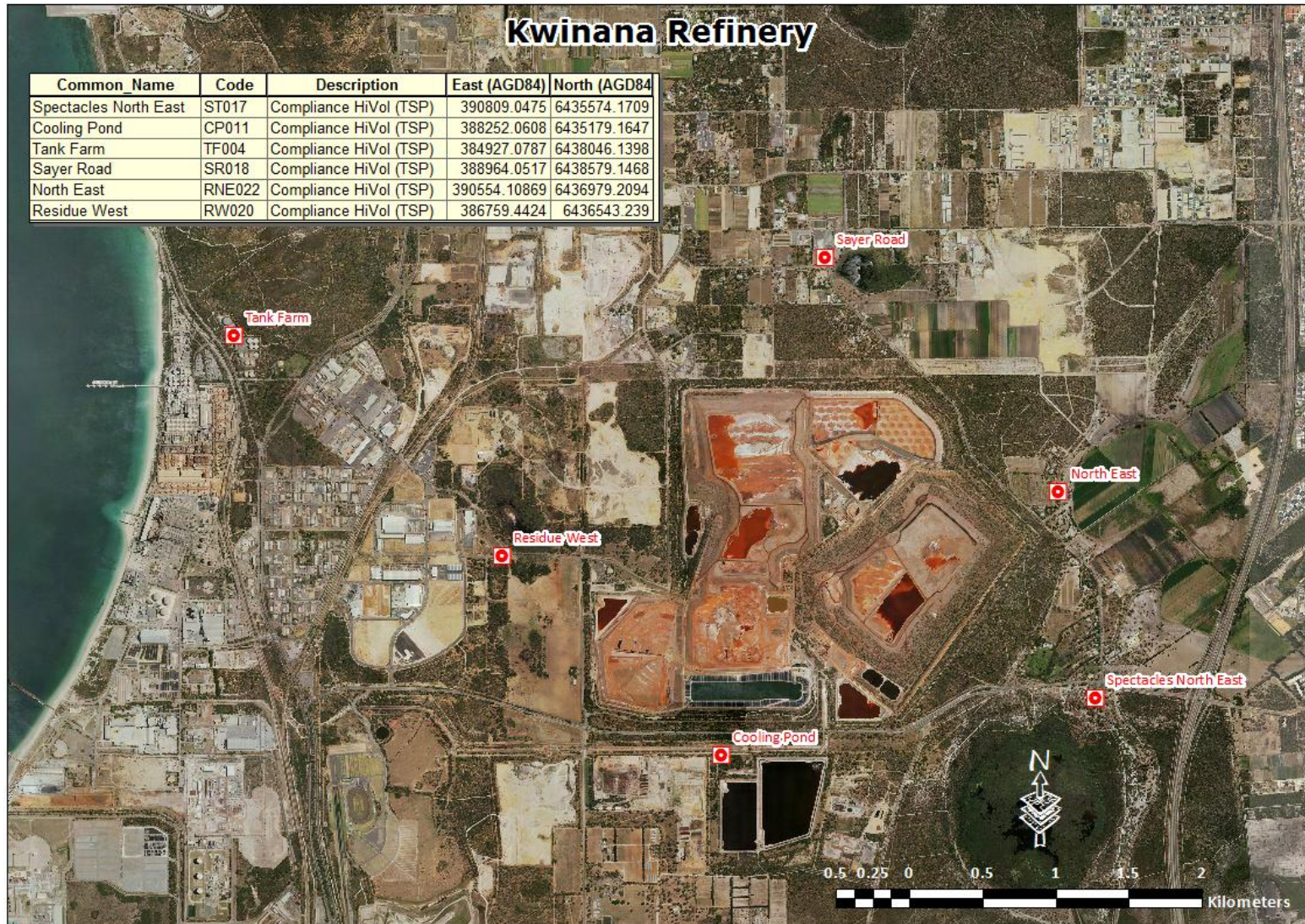
## Alcoa of Australia Pty Ltd – Kwinana Alumina Refinery Premises





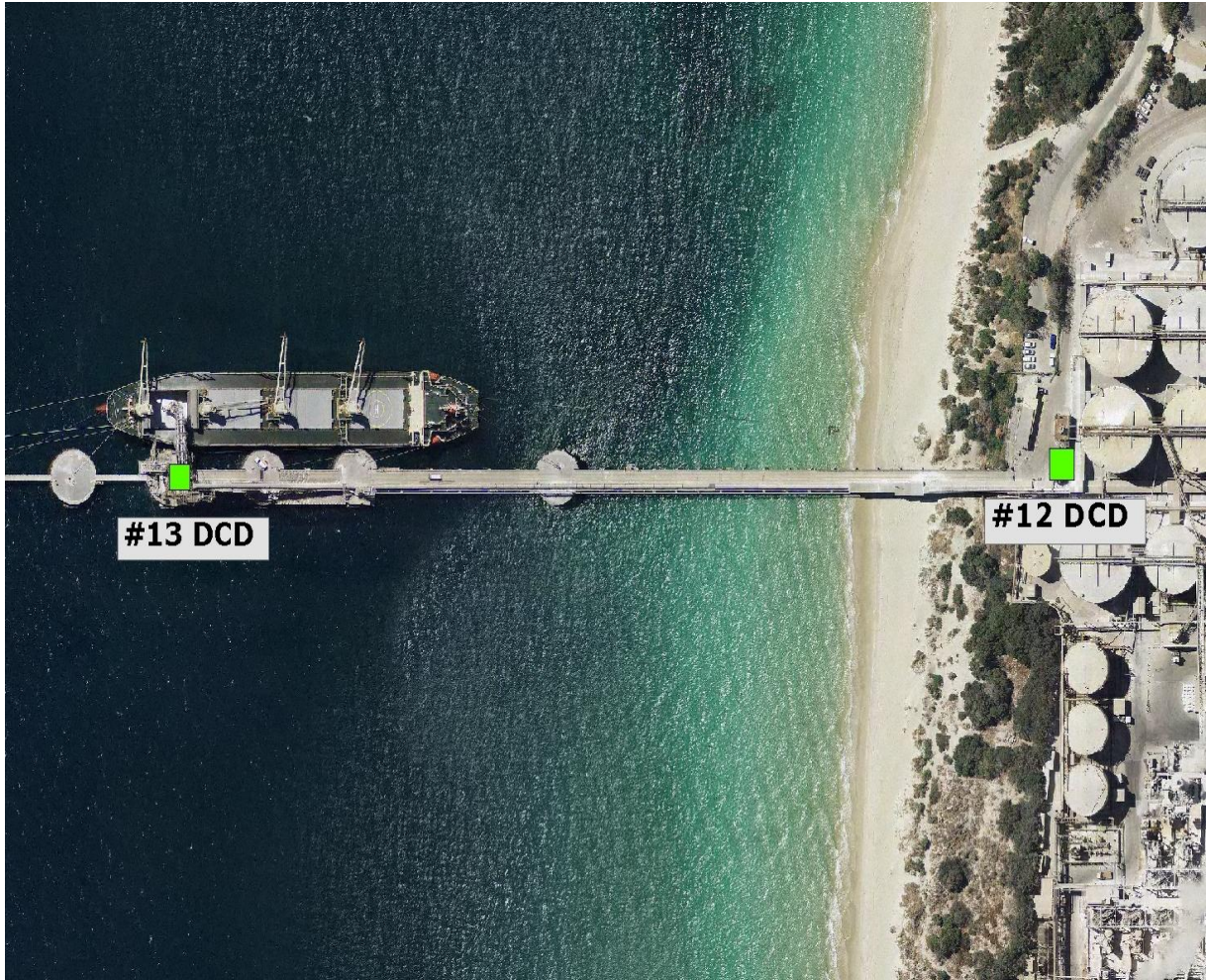
## ATTACHMENT 3

### Dust monitoring locations at the Alcoa Kwinana Alumina Refinery



# ATTACHMENT 4

## Locations of Shiploading Dust Collectors



# ATTACHMENT 5

## Spectacles North Monitoring Locations



## ATTACHMENT 6

# ENVIRONMENTAL PROTECTION (KWINANA ATMOSPHERIC WASTE) POLICY 1999 IMPLEMENTATION CONDITIONS

### Sulphur dioxide discharge limits

- P1(a) The licensee shall control the discharge of sulphur dioxide from the industrial sources located within the boundary of the licensed Premises so as to ensure that the quantities of sulphur dioxide discharged comply with the relevant determination.
- P1(b) Notwithstanding part (a) of this condition, the licensee shall conduct its operations so as to ensure that it is not the dominant cause of any exceedance of the ambient air quality Limits for sulphur dioxide specified within the EPP and the Regulations.

### Monitoring reporting requirements of EPP

- P2(a) The licensee shall establish an emissions monitoring system to monitor the discharge of waste gases from each of the sources listed in the relevant determination and located within the boundary of the licensed Premises.
- P2(b) The emissions monitoring system shall consist of approved monitoring equipment or otherwise employ approved estimation procedures.
- P2(c) The emissions monitoring system shall measure or otherwise estimate using Approved procedures the following quantities for each specified source:
- (i) mass discharge rate of sulphur dioxide in grams per second; and
  - (ii) total volume discharge rate of waste gases in cubic metres per second;
- P2(d) The licensee shall provide data from the emissions monitoring system to the CEO.
- (i) The emissions data for each quantity specified in condition P2(c) of this condition shall be provided as a time-series listing of the recorded emissions data for a period of one calendar year on an approved computer-readable medium and in an approved format; and
  - (ii) The emissions data shall be provided to the CEO by 1 May, for the preceding period 1 January to 31 December.
- P2(e) As and when requested by the CEO:
- (i) the licensee shall provide, orally as soon as practicable and in written form within five working days of that request, data from the emissions monitoring system.
  - (ii) The emissions data shall be provided as a time-series listing of the data in an Approved format and shall cover the period requested by the CEO.
- P2(f) If the quantity of sulphur dioxide discharged from any source listed in the relevant determination and located within the boundary of the licensed Premises, as determined by the emissions monitoring system, is at any time in excess of the maximum permissible quantity specified by the relevant determination, the licensee shall advise the CEO that this has occurred in writing within five working days of that exceedance becoming known:
- (i) The licensee shall provide as part of that written advice an exceedance report which shall contain reasons for the quantity of the discharge being in excess of the maximum permissible quantity and outline, where applicable, corrective action taken by the licensee to ensure that the discharge of sulphur dioxide complies with the relevant determination;
  - (ii) The exceedance report shall contain a time series listing of the emissions

monitoring data from the relevant source in an approved format, for the period which includes and extends one hour either side of the period of the exceedance; and

- (iii) The emissions monitoring data provided within the exceedance report shall be certified on each page as a true and correct representation of the emissions monitoring data by the signature of an authorised delegate of the licensee together with the printed name and position of that person within the company.

### Ambient sulphur dioxide monitoring

- P3(a) The licensee shall undertake a program to monitor the ambient concentration of sulphur dioxide at the following sites, as outlined in Section 7.2 of EPA Bulletin 644 "Development of an Environmental Protection Policy for Air Quality at Kwinana", or otherwise as determined by the CEO.

Ambient Monitoring Sites	
Site	Location
4	Western Power gas pumping station, Abercrombie Road, Kwinana
5	Hydrocarbon pumping station, Miguel Road, Cockburn
8	Within the locality of Munster

**\*\* Please see note after condition P5 \*\***

- P3(b) The licensee shall ensure that the approved monitoring equipment referred to in condition P3(a) is operated and calibrated as approved and is maintained so as to provide reliable data for greater than 90% of the time in every calendar month and for greater than 95% of the time in any period of twelve calendar months, unless special exemption has been Approved by the CEO.

### Meteorological monitoring

- P4(a) The licensee shall obtain meteorological data from a meteorological monitoring system comprised of approved instruments and data acquisition equipment, at each location at which sulphur dioxide concentrations are being monitored in accordance with condition P3(a) above. The following meteorological parameters shall be monitored at each location:

- (i) wind speed;
- (ii) wind direction; and
- (iii) air temperature.

- P4(b) The following additional meteorological parameters shall be monitored at an approved site:

- (i) wind direction standard deviation;
- (ii) differential air temperature;
- (iii) relative humidity or a related parameter;
- (iv) barometric pressure;
- (v) net radiation; and
- (iv) rainfall.

- P4(c) The meteorological monitoring system shall be maintained so as to provide reliable data on each meteorological parameter for greater than 90% of the time in every calendar month period and greater than 95% of the time in any 12 consecutive calendar months, unless special exemption has been approved by the CEO.

## Reporting of meteorological and ambient sulphur dioxide monitoring data

- P5(a) The licensee shall provide to the CEO data from each of the meteorological and sulphur dioxide monitoring stations at which monitoring is occurring in accordance with conditions P3 and P4.
- (i) The meteorological data shall be provided as a time series listing on an approved computer-readable medium or via email and in a format approved by the CEO.
  - (ii) The sulphur dioxide data shall be summarised in the form of one calendar month tables, one for each monitoring station, and shall contain for each day in the one month period the following:
    - daily average;
    - maximum one-hour average, which may span midnight; and
    - percentage data recovery for the day.
  - (iii) The sulphur dioxide data from each monitoring station shall be provided as time-series records of the recorded sulphur dioxide data on an approved computer-readable medium or via email and in a format approved by the CEO.
  - (iv) The meteorological and sulphur dioxide monitoring data shall be provided to the CEO no later than 14 days after the last day of the one calendar month period to which the data relates or within such longer period of time as is approved by the CEO.
- P5(b) If the ambient sulphur dioxide concentration measured at any of the monitoring sites at which monitoring is occurring in accordance with condition P3 exceeds the standard or Limit for that site, for any of the averaging periods, as established by the EPP, then the licensee shall advise the CEO that this has occurred, by facsimile within two working days of knowledge of the exceedance. Further, the licensee shall provide in writing within five working days of knowledge of the exceedance, in the format approved under condition P2, a listing of sulphur dioxide discharges from each source listed in the relevant determination and located within the boundary of the licensed Premises, for the period which includes and extends one hour either side of the period in which the exceedance occurred.
- P5(c) As and when requested by the CEO the licensee shall provide, orally as soon as practicable and in written form within five working days of that request, data from the meteorological and sulphur dioxide monitoring systems. The requested data shall be provided as a time-series listing of the data in an approved format and shall cover the period requested by the CEO.

### **Note on conditions P3 - P5.**

*Without Limiting the licensee's responsibility and obligation to fulfil all of the requirements for monitoring and reporting specified in conditions P3 - P5, the CEO will, if so requested by the licensee, approve the monitoring and reporting functions being performed on behalf of the Licensee by a nominated agent, as part of a cooperative arrangement between industries. Notwithstanding this, advice on exceedences of the standard or limit together with sulphur dioxide emissions during those exceedences as required by condition P5 must be provided directly by the licensee.*

*Condition P3(a) requires that a total of three ambient sulphur dioxide monitoring stations are maintained in the relevant portion of the environment, pursuant to Clause 11(1)(b) of the EPP. Two of the monitoring stations are permanently located at sites 4 and 5 as shown in Condition P3(a). The third monitoring station shall be relocated in accordance with condition P3(a). A period of one month is allowed for relocation of the monitoring station.*

## Test burns using diesel

P6(a) The licensee may conduct test burns using diesel, of a single powerhouse boiler at a time, during which time condition P1 does not apply in respect to the stack serving that boiler.

*Note: each stage comprises of two boilers serving a single stack.*

P6(b) The licensee shall provide to the CEO a report containing details of any test burns using diesel in the report required pursuant to condition G2(a). The report shall contain data collected over the previous calendar year and include details of:

- (i) which unit was being tested;
- (ii) time, date and duration of the test burn;
- (iii) type and quantity of fuel used; and
- (iv) the fuel's sulphur content expressed as an average percent sulphur.

# ATTACHMENT 7

## Location of Spillway



# ATTACHMENT 8

## Location of RSA Management Area



# ATTACHMENT 9

## Location of RSA Pipeline Routes

