Government of Western Australia
Department of Water and Environmental Regulation

Amended Licence

Licence Number	L4533/1967/15
Licensee	Cockburn Cement Limited (ACN) 008 673 470
Registered business address	Level 1, 157 Grenfell Street Adelaide SA 5000
Duration	31/03/2012 to 30/03/2022
Prescribed Premises	**Category 43 – Cement or lime manufacturing** Category 12 – Screening etc. of material Category 61A – Solid waste facility Category 63 – Class I inert landfill
Premises	Cockburn Cement Limited Munster Being Lot 450 on Plan 249735 Rockingham Rd, Lot 50 on Diagram 6065, Lot 88 on Plan 22127, Lot 246 on Plan 226117, Lot 5 and Lot 4 on Diagram 18525 and Lot 311 on Plan 300770 Russell Road, MUNSTER 6166

This Amended Licence is granted to the Licensee, subject to the following conditions, on 17 May 2021
by:

Paul Newell

Digitally signed by Paul Newell
Date: 2021.05.17 11:39:02 +08'00'

Senior Manager, Process Industries
an officer delegated under section 20 of the Environmental Protection Act 1986 (WA)

17 May 2021

Conditions

Environmental compliance

1. The ***Licensee*** must comply with the ***EP Act*** and all regulations prescribed under the EP Act applicable to the ***Premises***, including:

(a) the duties of an occupier under s 61;

(b) the duty to notify the ***CEO*** of ***discharges*** of ***waste*** under s 72; and

(c) not causing, or doing anything that is likely to cause, an offence under the EP Act,

except where the Licensee does something in accordance with a ***condition*** which expressly states that a defence under s 74A of the EP Act may be available.

Emissions

2. The Licensee must not cause any ***emissions*** from the Premises except for Specified Emissions and General Emissions described in column 1, subject to the exclusions, limitations, or requirements specified in column 2 of Table 1 below.

If the Licensee proves that it has acted in accordance with this condition, it may be a defence under s 74A of the EP Act to proceedings for offences under the EP Act (including offences under s 56).

Table 1: Emissions Table

Column 1	**Column 2**
Emission Type	**Exclusions/Limitations/Requirements**
Specified Emissions	
Discharges to air – Point Source, Ambient Odour and Ambient Dust	Only from Discharge Points specified in Table 2 and subject to compliance with conditions 7, 8, 9, 10, 11, 12,13, 14, 15, 18, 18A, 18C 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30
Land and Groundwater – contaminated or potentially contaminated stormwater and wastewater generated on the Premises	Subject to compliance with: • condition 34; and • Table 16, Schedule 6 (Artificial Wetland)
Land and Groundwater – disposal of lime kiln dust, cement kiln dust, high alkaline dust, or any other material collected from hoppers	Subject to compliance with: • condition 35; and • Table 16, Schedule 6 (LKD Disposal Area)
Land and Groundwater – disposal of ***Inert Waste Type 1*** generated on the Premises or at the Kwinana facility	Subject to compliance with: • conditions 35 and 36; and • Table 16, Schedule 6 (Landfill)

Column 1	Column 2
Emission Type	**Exclusions/Limitations/Requirements**
General Emissions (excluding Specified Emissions)	
Emissions which: • originate from the activities on the Premises arising from matters set out in, or incidental to the matters set out in, the ***General Description*** in Schedule 2.	Emissions excluded from General Emissions are: • ***unreasonable emissions***; or • emissions that result in, or are likely to result in, ***pollution, material environmental harm*** or ***serious environmental harm;*** or • discharges of waste in circumstances likely to cause pollution; or • emissions that result, or are likely to result in, the discharge or abandonment of waste in water to which the public has access; or • emissions or discharges which do not comply with an ***approved policy***; or • emissions or discharges which do not comply with prescribed standard; or • emissions or discharges which do not comply with the conditions in an ***implementation agreement or decision***; or • emissions or discharges the subject of offences under regulations prescribed under the EP Act, including materials discharged under the *Environmental Protection (Unauthorised Discharges) Regulations 2004*.

Discharges to Air

Infrastructure

3. The Licensee must ensure that pollution control equipment in Table 2 is operational for the purpose of lime manufacturing and product storage, should waste be emitted from the discharge points.

Table 2: Discharges to Air Infrastructure Requirements

Discharge Points	Pollution Control Equipment	Emission Point	Current Status	Location and Reference
Kiln 3 Stack	Electrostatic Precipitator	Kiln 3 Stack	Care and maintenance[1]	Schedule 1: Premises Plan D
Kiln 4 Stack	Electrostatic Precipitator	Kiln 4 Stack	Care and maintenance[1]	
Kiln 5 Stack	Baghouse	Kiln 5 Stack	Active	
Kiln 6 Stack	Baghouse	Kiln 6 Stack	Active	
Low level sources (silos)	Dust collector	As per Premises Plan D	Active	Schedule 8

Note 1: The current status of a discharge point in 'care and maintenance' reverts to 'active' as of the date specified in the notification as required by part (b) of condition 4.

4. The Licensee must notify the CEO in writing within 24 hours of activating a Discharge Point specified in Table 2 with a current status of 'care and maintenance' and provide the following details:
(a) discharge point(s);
(b) date and time of activation; and
(c) estimated timeframe for operating the discharge point.

5. Pursuant to condition 3, the Licensee must undertake the following while a Discharge Point specified in Table 2 is active:
(a) Continuously monitor emissions in accordance with condition 7;
(b) Periodically monitor emissions in accordance with condition 13;
(c) Ensure emissions do not exceed the limits specified by condition 14;
(d) Report any limit exceedances in accordance with condition 44; and
(e) Publish real-time ***CEMS*** data for ***PM*** in accordance with conditions 16 and 17.

6. Pursuant to condition 4, the Licensee must submit a report to the CEO within two weeks of returning a Discharge Point specified in Table 2 to 'care and maintenance' and include the following:
(a) The date of deactivation;
(b) CEMS data obtained in accordance with condition 7; and
(c) Periodical monitoring emissions data obtained in accordance with condition 13.

Point Source

7. The Licensee must continuously monitor volumetric flow rate, PM, Nitrogen Oxides (NOx) and Sulfur Dioxide (SO_2) emissions from the active Discharge Points specified in Table 2 (excluding low level sources (silos)), as per the requirements of Table 9, Schedule 3.

8. The Licensee must install and commission CEMS that satisfy the requirements in Table 3 by **12 July 2020.**

Table 3: CEMS Installation Requirements

Discharge Point	Parameters	Installation Requirements	Operational Parameters
Kiln 5 Stack and Kiln 6 Stack	Total Reduced Sulfur compounds (as SO_2)	Installed and calibrated in accordance with the CEMS Code	Provide 1-minute and 1-hour averages
	Carbon monoxide (CO)		
	Oxygen (O_2)		
	Nitrogen Oxides (NOx)		
	Sulfur Dioxide (SO_2)		
	PM		
	Volumetric flow		

9. Following the installation of the CEMS required by condition 8, the Licensee must:
(a) operate and maintain all CEMS to the manufacturer's specifications and the CEMS Code; and
(b) ensure that the CEMS will be maintained by persons that are suitably qualified and trained.

10. Following the installation of CEMS required by condition 8, the Licensee must conduct monitoring of Total Reduced Sulfur compounds, Oxygen, and Carbon Monoxide as per Table 9, Schedule 3 in addition to condition 7.

11. Pursuant to condition 12, the Licensee must undertake a correlation curve, in accordance with the requirements of ***USEPA*** Performance Specification 11, on all continuous PM monitors annually to demonstrate their accuracy.

12. The Licensee is only required to undertake a correlation curve on any PM CEMS, if the concentration of PM monitoring conducted in accordance with condition 7 is above 50 percent of a PM limit specified in Table 10 at any point during the previous ***Calendar Year***.

13. The Licensee must conduct periodic monitoring of the active Discharge Points as specified in Table 2 (excluding low level sources (silos)), to satisfy the requirements of Table 7 and Table 8, Schedule 3.

14. The Licensee must ensure emissions from the active Discharge Points, specified in Table 2, do not exceed the limits specified in Table 10, Schedule 3.

15. The Licensee must control the discharge of Sulfur Dioxide from a 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 Schedule 5.

16. The Licensee must publish on a Cockburn Cement Limited website on the internet real time CEMS data for PM from all active Discharge Points as specified in Table 2 (excluding low level sources (silos)), monitored in accordance with condition 7 and displayed in a graph form as mg/m^3 and g/s.

17. The Licensee must ensure that the real time CEMS data published in accordance with condition 16:

(a) has a maximum delay of 60 minutes;

(b) is viewable in a time period of at least 60 minutes; and

(c) is available for at least 90% of the time per ***Calendar Year***.

Ambient Odour

18. The Licensee must prepare and submit to the CEO an odour survey plan at least three months prior to the completion of the installation and commissioning of CEMS as specified in condition 8. The odour survey plan must as a minimum address the requirements set out in Table 4.

Table 4: Odour Survey Plan Requirements

Survey	Parameters	Frequency	Method	Reporting parameters
Field Odour Survey	Plume Measurement	Monthly during March - November	***VDI 3940-2:2006*** and ***VDI 3940-3:2010***	Wind Speed Wind Direction
		Fortnightly during December - February		Production details including: • Kiln status; • Production rates; and • Fuel type and ratio.
				CEMS data

Note 1: Reporting requirements to include data for the duration of field odour survey, 1 hour prior to commencement and 1 hour following completion of field odour survey.

18A. The Licensee must implement the odour survey plan prepared as per the requirements of condition 18 following the installation and commissioning of CEMS as specified in condition 8.

18B The Licensee must, at their expense:

(a) undertake comprehensive investigations into the source and cause of odour from the active kilns over summer and autumn 2019, with a view to identifying what emissions or process controls can be applied to address odour emissions; and

(b) prepare and submit to the CEO by no later than **1 August 2019**, a report on the outcomes of the investigations and proposed solutions.

18C The Licensee must ensure that odour emitted from the premises does not unreasonably interfere with the health, welfare, convenience, comfort or amenity of any person who is not on the premises.

19. The Licensee must monitor the coal stockpile using a thermal imagery camera twice a day, at least four hours apart.

20. Pursuant to condition 19, if coal hotspots or fires are identified, the Licensee must undertake actions to extinguish or cool the coal within two hours.

21. The Licensee must only use coal and/or natural gas as a fuel for kilns 3, 4, 5 and 6.

22. When using coal as a fuel, the Licensee must ensure that it does not exceed an average sulfur content of 0.7%, as measured on delivery.

Ambient Dust

23. The Licensee must install and commission an ambient monitoring system that satisfies the requirements in Table 5 by **12 November 2019.**

Table 5: Ambient monitor installation requirements

Monitoring Point	Location and Reference on Premises Plan A	Parameters	Installation Requirements
AM1	WEST	***PM_{10}***	***AS/NZS 3580.1.1***
AM2	SOUTH		
AM3	NORTH-A		
AM4	EAST		
AM5	NORTH-B		

24. Following the installation of the ambient monitors required by condition 23, the Licensee must:
(a) maintain the ambient monitors to the manufacturer's specifications; and
(b) ensure that the ambient monitors will be maintained by persons that are suitably qualified and trained.

25. The Licensee must conduct ambient monitoring in accordance with Table 11 and Table 12, Schedule 4.

26. The Licensee must ensure ambient dust emissions from the Premises do not exceed the limits specified in Table 13, Schedule 4.

27. If ambient monitors exceed the response level in Table 13, Schedule 4, the Licensee must visually inspect activities within two hours of the exceedance, to identify the source of dust emissions in the following Premises locations:
(a) LKD disposal area and landfill;
(b) Landfill area;
(c) Coal stockpile;
(d) Shell sand stockpile
(e) Processing Area – low level sources;
(f) Quarry; and
(g) Site wide housekeeping.

28. Pursuant to condition 27, upon identification of the source of dust emissions, the Licensee must undertake the corresponding management actions specified in Table 14, Schedule 4.

29. The Licensee must conduct daily inspections of the LKD Disposal area, landfill, coal stockpile, shell sand stockpile and processing area for the purposes of identifying potential dust sources and assessing the adequacy of dust control measures.

30. The Licensee must ensure that all dust including lime kiln dust, cement kiln dust, high alkaline dust or any other material collected from hoppers is disposed of to the LKD Disposal Area, identified in Premises Plan B, in a wet state.

31. The Licensee must publish on a Cockburn Cement Limited website on the internet real time monitoring data for PM_{10} from ambient monitoring stations AM1, AM2, AM3, AM4 and AM5 as specified in Table 11, monitored in accordance with condition 25, and displayed in a graph form as 1-hour averages.

32. The Licensee must ensure that the real time PM_{10} data published in accordance with condition 31:

(a) has a maximum delay of 60 minutes;
(b) is viewable in a time period of at least 60 minutes; and
(c) is available for at least 90% of the time per Calendar Year.

Land and Groundwater

Infrastructure

33. The Licensee must ensure that infrastructure is maintained and operated to satisfy the requirements of Table 16, Schedule 6.

Materials Handling and Disposal

34. The Licensee must ensure that all contaminated stormwater or wastewater (excluding stormwater from the employee and contractor carpark and associated roads and driveways) is treated in the Artificial Wetland specified in Table 16 or removed from the Premises to a facility authorised to accept and treat or dispose of the contaminated water.

35. The Licensee must ensure that materials are stored, treated and disposed of in accordance with the requirements in Table 16, Schedule 6.

36. The Licensee must ensure the following when disposing of waste to the landfill:

(a) Disposal of all waste on the premises is at least 35 meters inside the premises boundary;
(b) All waste is placed within a defined trench or within an area enclosed by earthen or other inert bunds;
(c) Restrict the tipping area to a maximum linear length of 30 meters;
(d) Ensure that any exposed face of the landfill does not exceed 2 meters in height; and
(e) Cover waste with a minimum inert final soil cover of at least 1 meter.

37. The Licensee must maintain detailed records of the wastes deposited at the premises which must include but not be limited to:

(a) nature of waste;
(b) volumes of waste; and
(c) sources of waste.

Groundwater

38. The Licensee must install and commission groundwater monitoring bores that satisfy the requirements in Table 6 by **12 July 2019**.

Table 6: Groundwater monitoring bores installation requirements

Monitoring Bores	Location and Reference on Premises Plan C	Description	Installation Requirements
Two monitoring bores: W1 and W2	Area 1	Downgradient of Artificial Wetland	(a) Installed to meet the requirements of *Minimum Construction Requirements for Water Bores in Australia* (AIH 2012). (b) Sited in accordance with the Department of Water *Water Quality Protection Note 30 Groundwater Monitoring Bores* (DoW 2009). (c) Surveyed to allow the ground level (to Australian Height Datum) at each location to be accurately determined. (d) Separated by at least 50m where two bores are specified in one location.
One monitoring bore: LKD1	Area 2A	Downgradient (southwest) of LKD Disposal Area	
Two monitoring bores: LKD2 and LKD3	Area 2B	Downgradient (west) of LKD Disposal Area	
Two monitoring bores: CS1 and CS2	Area 3	Downgradient of Coal stockpile	
One monitoring bore: SS1	Area 4	Downgradient of Shell Sand Stockpile	

39. The Licensee must undertake groundwater monitoring in accordance with ***AS/NZS 5667.11*** to satisfy the requirements of Table 17, Schedule 6.

Management

40. The Licensee must ensure all non-continuous sampling and analysis for monitoring required by conditions of this licence is conducted by companies and laboratories with current ***NATA accreditation*** for the methods and analysis specified.

41. The Licensee must keep a written record of all complaints received concerning the impact of emissions from the premises for a minimum of three years, which must include but not be limited to:

(a) date and time both of the complaint and of any environmental impact reported by the complainant;
(b) a unique registration number;
(c) location of the complaint;
(d) general description of the nature of any environmental impact reported by the complainant to which the complaint relates;
(e) whether the complainant reported any adverse health effects;
(f) wind direction, wind speed and air temperature at the time of the complaint;
(g) the likely source(s) of the cause of the complaint;
(h) action taken in response to the complaint including results of any investigation(s) and action(s) taken to prevent a recurrence of the events giving rise to the complaint; and
(i) time taken to respond to the complaint.

42. Following receipt of a complaint concerning the impact of emissions from the premises:

(a) within 72 hours of receipt of the complaint the Licensee must respond to the complainant;

(b) within 10 days of receipt of the complaint the Licensee must provide feedback, including but not limited to, investigation outcomes and action(s) taken (if any are appropriate) in relation to the complaint, unless such feedback is not requested by the complainant as a result of the response under part (a); and

(c) where the complainant has requested written feedback and has provided a physical or email address the Licensee must ensure that the feedback provided as per part (b) is in writing

Information

43. The Licensee must maintain accurate records including information, reports and data in relation to the calculation of fees payable in respect of this Licence.

Reporting

44. If the Licensee exceeds a limit specified in this licence they must notify the CEO no later than 5pm on the next ***usual working day*** after becoming aware of the exceedance.

45. The Licensee must by the 28th day of each month, provide to the CEO reports satisfying the requirements of Table 18, Schedule 7, for the previous month with the exception that:

(a) TRS, O_2, and CO CEMS data reporting is subject to the installation and commissioning of each CEMS, following commissioning, as specified in condition 8; and

(b) ambient data reporting for monitoring points AM1, AM2, AM3, AM4 and AM5 listed in Table 11 is subject to the installation and commissioning of each ambient monitoring systems specified in condition 23.

46. The Licensee must by 1 April in each year, provide to the CEO an Annual Environmental Report satisfying the requirements of Table 19, Schedule 7, for the previous ***Calendar Year***.

47. The Licensee must submit to the CEO within 90 days after the end of the ***Calendar Year***, an ***Annual Audit Compliance Report*** indicating the extent to which the Licensee has complied with the Conditions in this Licence for the ***Calendar Year***.

Definitions and Interpretation

Definitions

In this Licence, the following terms have the following meanings:

Anniversary Date means the anniversary of the date of grant of this Licence.

Annual Audit Compliance Report means a 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.

AS/NZS3580.1.1 means the Australian/New Zealand Standard AS 3580.1.1 *Methods for sampling and analysis of ambient air- Guide to siting air monitoring equipment.*

AS/NZS3580.9.11 means the Australian/New Zealand Standard AS 3580.9.11 *Methods for sampling and analysis of ambient air- Determination of suspended particulate matter – PM_{10} beta attenuation monitors.*

AS/NZS 3580.9.13 means the Australian/New Zealand Standard AS 3580.9.13 *Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM2.5 continuous direct mass method using a tapered element oscillating microbalance monitor*.

AS/NZS 3580.14 means the Australian /New Zealand Standard AS/NZS 3580.14 Methods for sampling and analysis of ambient air – Meteorological monitoring for ambient air quality monitoring applications.

AS 4323.1 means the Australian Standard AS 4323.1 *Stationary source emissions – Method 1: Selection of sampling positions*.

AS/NZS 5667.11 means the Australian/New Zealand Standard AS/NZS 5667.11 *Water quality – Sampling – Part 11: Guidance on sampling groundwaters*.

Calendar Year means a 12 month period commencing from 1 January to 31 December.

CEMS means continuous emissions monitoring system.

CEMS Code means the current version of the *Guideline: Continuous Emission Monitoring System (CEMS) Code for Stationary Source Air Emissions*, Department of Environment Regulation, Government of Western Australia.

CEO for the purposes of notification means:

Chief Executive Officer
Department Div.3 Pt.V EP Act
Locked Bag 10
Joondalup DC WA 6919
info@dwer.wa.gov.au

Condition means a condition to which this Licence is subject under s 62 of the EP Act.

Department means the department established under s.35 of the Public Sector Management Act 1994 and designated as responsible for the administration of Division 3 Part V of the Environmental Protection Act 1986.

Discharge has the same meaning given to that term under the EP Act.

Emission has the same meaning given to that term under the EP Act.

Environmental harm has the same meaning given to that term under the EP Act.

EP Act means the *Environmental Protection Act 1986* (WA).

EPP means *Environmental Protection (Kwinana)(Atmospheric Wastes) Policy 1999*.

General Description means the description of activities and operations carried out on the Premises as set out in Schedule 2 of this Licence.

Inert Waste Type 1 takes the meaning in the *Landfill Waste Classification and Waste Definitions 1996* (as amended), December 2009.

Licence refers to this document, which evidences the grant of Licence by the CEO under s 57 of the EP Act, subject to the Conditions.

Licensee 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.

Material environmental harm has the same meaning given to that term under the EP Act.

Monthly means that monitoring is undertaken at least 15 days apart.

NATA means the National Association of Testing Authorities, Australia.

NATA accreditation 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.

Pollution has the same meaning given to that term under the EP Act.

PM means particulate matter.

$PM_{2.5}$ means particulate matter with an aerodynamic diameter of less or equal to 2.5µm;

PM_{10} means particulate matter with an aerodynamic diameter of less or equal to 10µm;

Premises refers to the premises to which this Licence applies, as specified at the front of this Licence and as shown on the map in Schedule 1 to this Licence.

Quarterly means that monitoring is undertaken at least 45 days apart.

RATA means relative accuracy test audit.

Relevant Determination means a determination under clause 7(3) of the EPP, determining the sulfur dioxide limits for the licensee.

Reliable Data in relation to stack emissions monitoring, ambient air monitoring and meteorological monitoring systems in Schedule 5 means to provide accurate, precise and representative data for at least 90% of the time over any interval of a calendar month and for at least 95%of the time over any interval of 365 days.

Serious environmental harm has the same meaning given to that term under the EP Act.

STP means standard temperature and pressure (0ºCelsius and 101.325 kilopascals respectively);

TSP means Total Suspended Particulate Matter;

Unreasonable emission has the same meaning given to that term under the EP Act.

USEPA means the United States (of America) Environmental Protection Agency.

Usual working day means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia;

VDI 3940-2:2006 means Vereins Deutscher Ingenieure (VDI) 3940-2:2006 Measurement Of Odour Impact By Field Inspection - Measurement Of The Impact Frequency Of Recognizable Odours - Plume Measurement

VDI 3940-3:2010 means Vereins Deutscher Ingenieure (VDI) 3940-3:2010 Measurement Of Odour Impact By Field Inspection - Determination Of Odour Intensity And Hedonic Odour Tone

VOC means volatile organic compounds, including but not limited to reduced sulfur compounds.

Waste has the same meaning given to that term under the EP Act.

Interpretation

In this Licence:

(a) the words ‘including’, ‘includes’ and ‘include’ will be read as if followed by the words ‘without limitation’;

(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;

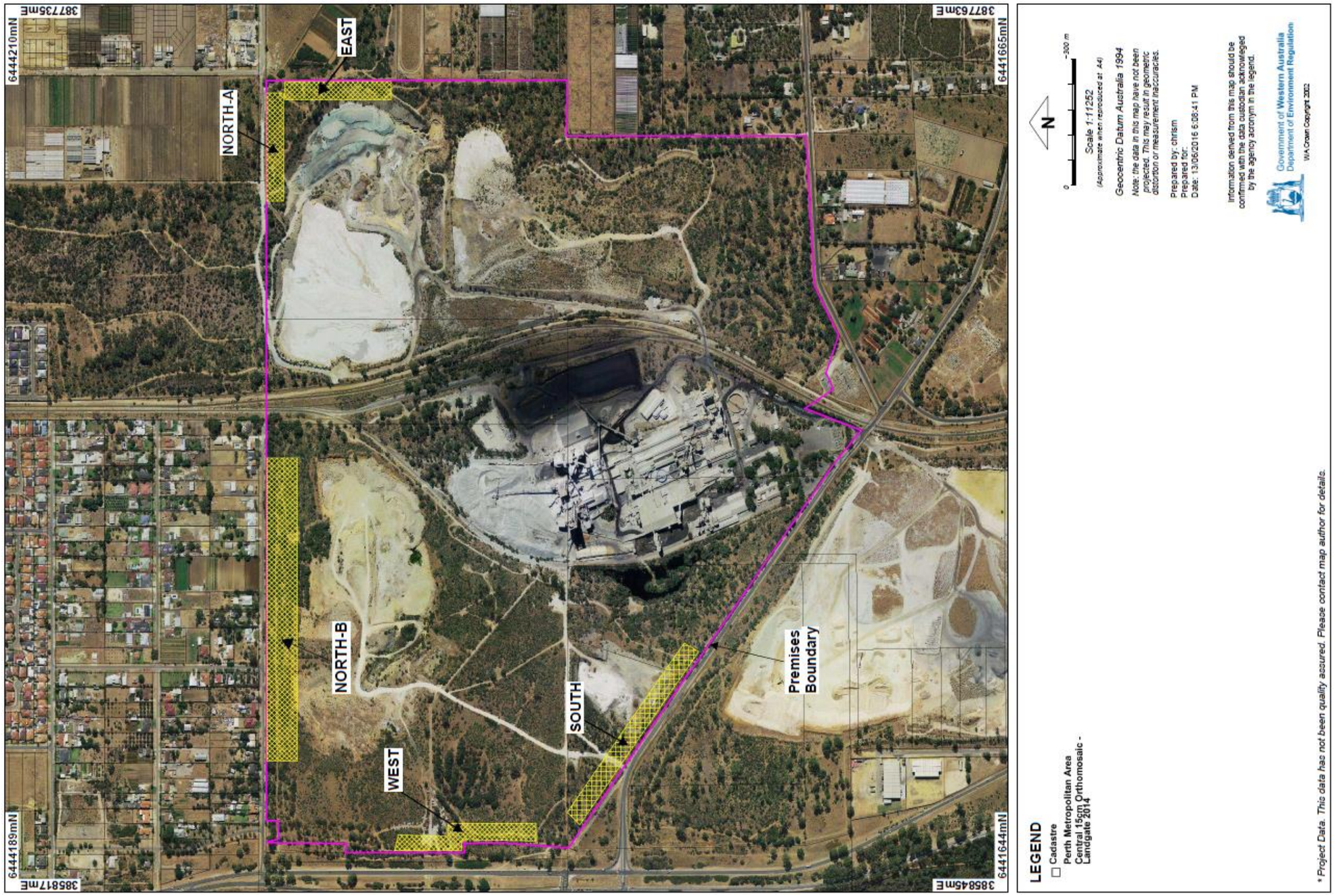
(c) where tables are used in a Condition, each row in a table constitutes a separate Condition; and

(d) any reference to an Australian or other standard, guideline or code of practice in this Licence means the version of the standard, guideline or code of practice in force at the time of granting of this Licence and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the Licence.

Schedule 1: Plans

Premises Plan A

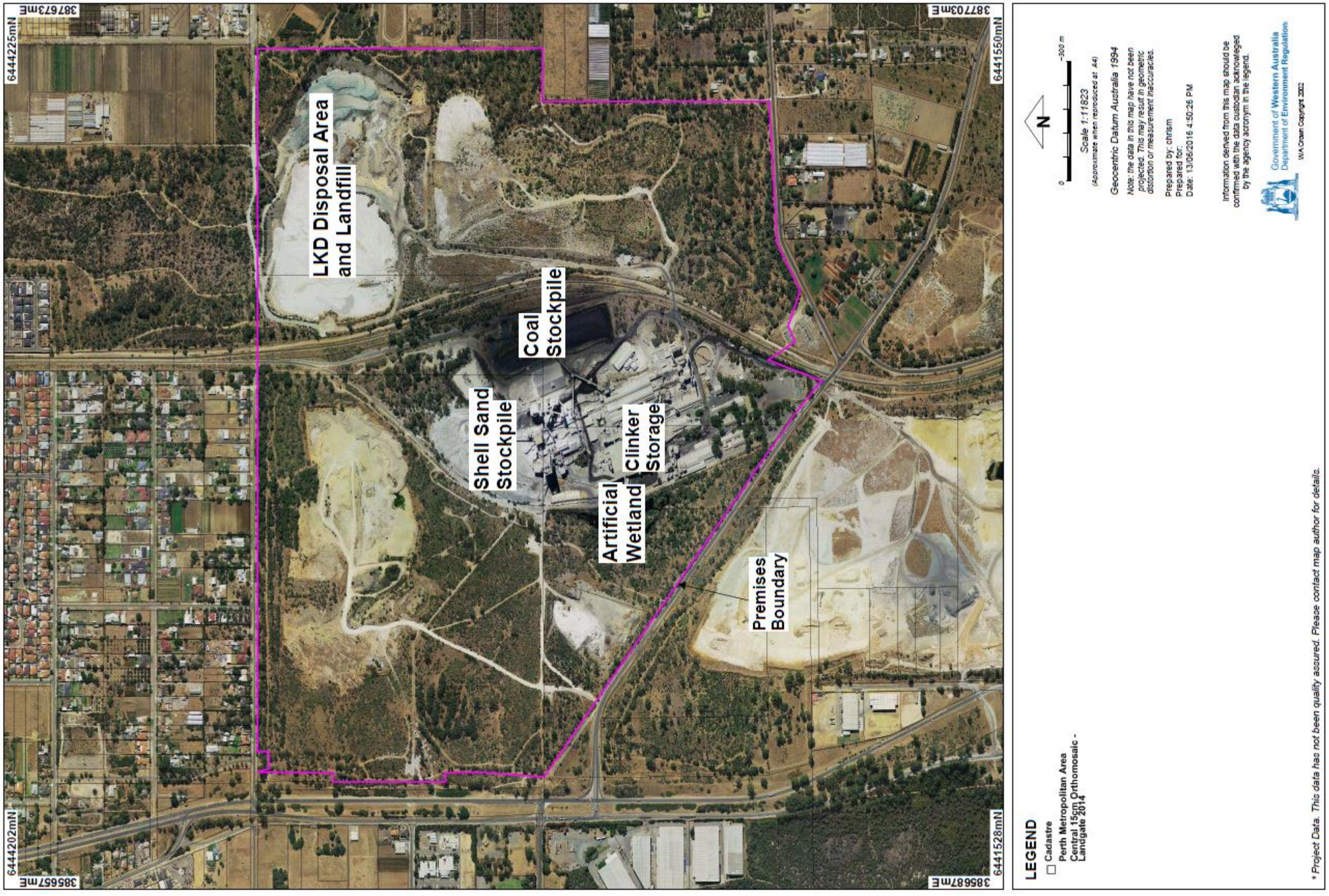
The Premises and Ambient Monitor Installation Locations are shown in the plan below. The pink line depicts the boundary to the Premises and the yellow hatched areas depict locations for locating ambient monitors.



NB: Russell Road and Railway are not part of the Premises

Premises Plan B

The Infrastructure is shown in the plan below.



Premises Plan C

The Groundwater Monitoring Points are shown in the plan below.

Premises Plan D

The discharge to air points are shown in the plan below.

Schedule 2: General Description

At the time of assessment, the following activities and operations were considered in the determination of the risk and related conditions for the Premises.

The activities on the Premises constitute those activities prescribed in Schedule 1 of the *Environmental Protection Regulations 1987* as:

- Category 12 – Screening etc. of material;
- Category 43 – Cement of lime manufacturing;
- Category 61A – Solid waste facility; and
- Category 63 – Class I inert landfill.

Site layout

The infrastructure and equipment are set out on the Premises in accordance with the site layout specified on the plans in Schedule 1.

Schedule 3: Point Source Monitoring

Point Source Monitoring Program

Table 7: Point source monitoring requirements – Kiln 3 and Kiln 4

Discharge Point(s)[1]	Parameter	Method[2,3]	Units[4]	Minimum Averaging Sampling Period	Frequency
Kiln 3 Stack and Kiln 4 Stack	Volumetric Flowrate	USEPA Method 2	m^3/s	N/A	Weekly
	CO	USEPA Method 10	mg/m^3 and g/s	1 minute averages over 30 minutes	
	SO_2	USEPA Method 6C	mg/m^3 and g/s	1 minute averages over 30 minutes	
	NO_x	USEPA Method 7E	mg/m^3 and g/s	1 minute averages over 30 minutes	
	Total Reduced Sulfur	USEPA 16 or 16C	mg/m^3 and g/s	1 minute averages over 30 minutes	
	VOCs	USEPA Method 18	mg/m^3 and g/s	30 minutes	
	Acid Gases; Hydrogen Chloride and Hydrogen Fluoride	USEPA Method 26 or 26A	mg/m^3 and g/s	60 minutes	Annually
	Metals – Mercury, Thallium, Cadmium, Antimony. Arsenic. Lead, Total Chromium, Cobalt, Copper, Manganese and Nickel	USEPA Method 29	mg/m^3 and g/s	60 minutes	

Notes 1: Monitoring only required on 'active' kilns as determined by conditions 3 and 4;
2: Duplicate runs to be conducted consecutively on same sampling day;
3: Where USEPA methods refer to USEPA Method 1 for the sampling plane, this should be read as a referral to AS/NZS 4323.1:2001; and
4: Concentrations to be corrected to ***STP*** at 10% oxygen on a dry basis.

Table 8: Point source monitoring requirements – Kiln 5 and Kiln 6

Discharge Point(s)	Parameter	Method[1,2]	Units[3]	Minimum Averaging Sampling Period	Frequency
Kiln 5 Stack and Kiln 6 Stack	Volumetric Flowrate	USEPA Method 2	m^3/s	N/A	***Quarterly*** with the exception of CO, VOCs and Total Reduced Sulfur that are weekly from November to April inclusive until the installation and commissioning of CEMS in accordance with condition 8
	CO	USEPA Method 10	mg/m^3 and g/s	1 minute averages over 30 minutes	
	SO_2	USEPA Method 6C	mg/m^3 and g/s	1 minute averages over 30 minutes	
	NO_x	USEPA Method 7E	mg/m^3 and g/s	1 minute averages over 30 minutes	
	Total Reduced Sulfur	USEPA 16 or 16C	mg/m^3 and g/s	1 minute averages over 30 minutes	
	VOCs	USEPA Method 18	mg/m^3 and g/s	30 minutes	
	Acid Gases; Hydrogen Chloride and Hydrogen Fluoride	USEPA Method 26 or 26A	mg/m^3 and g/s	60 minutes	Annually
	Metals – Mercury, Thallium, Cadmium, Antimony. Arsenic. Lead, Total Chromium, Cobalt, Copper, Manganese and Nickel	USEPA Method 29	mg/m^3 and g/s	60 minutes	

Notes 1: Duplicate runs to be conducted consecutively on same sampling day;
2: Where USEPA methods refer to USEPA Method 1 for the sampling plane, this should be read as a referral to AS/NZS 4323.1; and
3: Concentrations to be corrected to STP at 10% oxygen on a dry basis.

CEMS Monitoring Program

Table 9: CEMS requirements

Discharge Point[1]	Parameter[2,3]	Units	Averaging Period	Method	Required Availability
Kiln 3 Stack, Kiln 4 Stack, Kiln 5 Stack and Kiln 6 Stack	Volumetric Flow Rate	m^3/s	60-minute clock	CEMS Code	≥90% of the time per Calendar Month
	PM	Optical density converted to mg/m^3 and g/s			
	NO_x	mg/m^3 and g/s			
	SO_2				
Kiln 5 Stack and Kiln 6 Stack	CO				
	O_2				
	Total Reduced Sulfur (as SO_2)				

Notes 1: Monitoring only required on 'active' kilns as determined by condition 3;
2: TRS, O_2, and CO monitoring to commence following completion of condition 8 and
3: Concentrations to be corrected to STP at 10% oxygen on a dry basis.

Table 10: Air monitoring limits

Discharge Point	Parameter	Averaging Period	Limit (mg/m^3)
Kiln 3 Stack	PM	60 minute clock	150
Kiln 4 Stack			
Kiln 5 Stack			50
Kiln 6 Stack			

Schedule 4: Ambient Monitoring

Table 11: Ambient monitoring program

Monitoring Point and Reference	Parameters	Method[1]	Units	Averaging Period
A. (Lot 450) Opposite TAFE	***TSP*, *PM_{10}*, *$PM_{2.5}$***	OSIRIS	$\mu g/m^3$	1-hour and 24-hour
C. Britannia Avenue				
D. South Coogee Primary School				
E. Water Corporation				
AM1[2]	***PM_{10}***	***AS/NZS 3580.9.11***		
AM2[2]				
AM3[2]				
AM4[2]				
AM5[2]				
Weather station	Wind Speed	***AS/NZS 3580.14***	m/s	
	Wind Direction		Degrees	
	Air Temperature		^oC	

Notes 1: Monitors are to be maintained and operated in accordance with the provisions of specified methodology
2: Following installation of ambient monitors required by condition 23.

Table 12: Ambient monitor requirements

Monitoring Point	Parameters	Required Data Availability
A. (Lot 450) Opposite TAFE	***TSP, PM_{10}, $PM_{2.5}$***	≥90% of the time per Calendar Month
C. Britannia Avenue		
D. South Coogee Primary School		
E. Water Corporation		
AM1[1]	***PM_{10}***	
AM2[1]		
AM3[1]		
AM4[1]		
AM5[1]		
Weather station	Wind Speed, Wind Direction, and Air Temperature	

Note 1: Following installation of ambient monitors required by condition 23.

Table 13: Ambient monitoring limits and response levels

Parameter	Limit ($\mu g/m^3$)	Averaging Period
TSP	260	24-hour
PM_{10}	50	
Parameter	**Response level ($\mu g/m^3$)**	**Averaging Period**
TSP	150	1-hour
PM_{10}	90	

Table 14: Management Response

Site Location	Management Actions[1]
LKD disposal area	• cessation of dust generating activities; • application of a dust suppressant agent; • activation of perimeter water misting systems; and/or • activation of sprinkler systems.
Landfill area[1]	• cessation of dust generating activities; • application of a dust suppressant agent; • reducing the tipping face height; • reducing the linear length of the defined tipping area; • activation of perimeter water misting systems; and/or • activation of sprinkler systems.
Coal stockpile Shell sand stockpile	• cessation of dust generating activities; • application of a dust suppressant agent; • activation of perimeter water misting systems; and/or • activation of sprinkler systems.
Processing area – low level sources	• cessation of dust generating activities; • covering vehicular loads; • reducing vehicular traffic and/or speeds; • use of loading socks; • activation of dust collector systems; and/or • reducing flow rate.
Site wide housekeeping	• cessation of dust generating activities; • use of road sweepers; • use of water carts; • use of vacuum trucks; • reducing vehicular traffic and/or speeds; and/or • application of shell grit on unsealed haul roads.
Quarry	• cessation of dust generating activities; • use of water carts; • application of a dust suppressant agent; and/or • reducing the size of the exposed area.

Note 1: The requirement to undertake management actions in the Landfill area does not negate the requirements of condition 36 that applies at all times.

Schedule 5: *Environmental Protection (Kwinana) (Atmospheric Wastes) Policy 1999*

Implementation Conditions

SULFUR DIOXIDE EMISSION LIMITS – PLANT

1. The Licensee must control the discharge of sulfur dioxide from the industrial sources listed in the Relevant Determination and located within the boundary of the licensed Premises to ensure that the quantities of sulfur dioxide discharged comply with the Relevant Determination.

MONITORING REQUIREMENTS OF THE EPP

2. The Licensee must establish and maintain a constant 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.

3. The emissions monitoring system must measure or otherwise estimate using approved procedures the following quantities for each specified source:
   (a) Mass emission rate of sulfur dioxide in g/s;
   (b) Total volume emission rate of waste gases in m^3/s; and
   (c) Density of the waste gases in g/m^3.

AMBIENT SULFUR DIOXIDE MONITORING

4. The Licensee must cause to be undertaken a program to monitor the ambient concentration of sulfur 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.

Table 15: Ambient Monitoring Stations

Site	Location
4	Western Power gas pumping station, Abercrombie Road, Kwinana
5	Proposed BP pumping station, Miguel Road, Cockburn
8	Tindal Avenue, Beeliar

****See note after condition 12****

5. Prior to the commissioning of ambient sulfur dioxide monitoring and data acquisition equipment the Licensee must obtain approval from the CEO for its use and the relevant procedures to be followed.

6. The Licensee must ensure that the approved monitoring equipment is operated and calibrated in accordance with approved procedures and is maintained so as to provide Reliable Data.

METEOROLOGICAL MONITORING

7. The Licensee must obtain meteorological data from a meteorological monitoring system comprised of approved instruments and data acquisition equipment, at each location at which sulfur dioxide concentrations are being monitored. The following meteorological parameters must be monitored at each location:
   (a) Wind speed;
   (b) Wind direction; and
   (c) Air temperature.

8. The following additional meteorological parameters must be monitored at an approved site:
   (a) Wind direction standard deviation;
   (b) Differential air temperature;
   (c) Relative humidity or a related parameter;
   (d) Barometric pressure;
   (e) Net radiation; and
   (f) Rainfall.

9. The meteorological monitoring system must be maintained so as to provide Reliable Data.

REPORTING OF METEOROLOGICAL AND AMBIENT SULFUR DIOXIDE MONITORING DATA

10. The Licensee must provide to the CEO data from each of the meteorological and sulfur dioxide monitoring stations at which monitoring is occurring in accordance with conditions 5 and 7-9:
   (a) The meteorological data must be provided as a time series listing on an approved computer-readable medium or via telemetry and in a format approved by the CEO.
   (b) The sulfur dioxide data must be summarised in the form of one calendar month tables, one for each monitoring station, and must contain for each day in the one month period the following:
      (i) daily average;
      (ii) maximum one-hour average, which may span midnight; and
      (iii) percentage data recovery for the day.
   (c) The sulfur dioxide data from each monitoring station must be provided as time-series records of the recorded sulfur dioxide data on an approved computer-readable medium or via telemetry and in a format approved by the CEO.
   (d) The meteorological and sulfur dioxide monitoring data must be provided to the CEO no later than 14 days after the last day of the period to which the data relates or within such longer period of time as is approved by the CEO.

11. If the ambient sulfur dioxide concentration measured at any of the monitoring sites at which monitoring is occurring in accordance with conditions 4 to 9 exceeds the standard or limit for that site, for any of the averaging periods as established by the EPP, then the Licensee must advise the CEO that this has occurred within two working days. Further, the Licensee must provide in writing within five working days in the format approved in accordance with Condition 4 a listing of sulfur dioxide emissions 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.

12. As and when requested by the CEO the Licensee must provide in written form within five working days of that request, data from the meteorological and sulfur dioxide monitoring systems. The requested data must be provided as a time-series listing of the data in an approved format and must cover the period requested by the CEO.

Note on conditions 4 – 12

Without limiting the licensee's responsibility and obligation to fulfil all of the requirements for monitoring and reporting specified in conditions 4 – 12, 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 exceedances of the standard or limit together with sulfur dioxide emissions during those exceedances as required by conditions 10 to 12 must be provided directly by the Licensee.

Condition 4 requires that a total of three ambient sulfur 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. The third monitoring station must be relocated in accordance with condition 4. A period of one month is allowed for relocation of the monitoring station.

Schedule 6: Land and Groundwater

Infrastructure

Table 16: Infrastructure requirements for materials storage and treatment

Infrastructure and Reference on Premises Plan B	Purpose	Material	Specifications
Artificial Wetland	Treatment and storage	Contaminated or potentially contaminated stormwater and wastewater generated on the premises (excluding stormwater from the employee and contractor carpark)	Primary Sump with concrete liner
			Secondary Sump with plastic liner
			Wetland (including lagoon and billabong) with plastic liner
LKD Disposal Area	Disposal	Lime Kiln Dust, cement kiln dust, high alkaline dust or any other material collected from hoppers	None – Exhausted limestone quarry
Landfill	Disposal	Inert Waste Type 1 generated on the premises or at the Kwinana facility	None – Exhausted limestone quarry
Shell Sand Stockpile	Storage	Shell sand	None – in situ soils
Coal Stockpile	Storage	Coal	None – in situ soils
Clinker storage	Storage	Clinker	Shed

Groundwater Monitoring

Table 17: Groundwater Monitoring Program

Monitoring Bores and Reference on Premises Plan C	Parameter[1,2.3]	Frequency
A, B, C, D, E, F, G, H, I2, M2, MB1, MB2, X, Y and Z(R).	Standing Water Level, pH, electrical conductivity, total dissolved solids and temperature	Monthly
L2	Standing Water Level, pH, electrical conductivity, temperature, total dissolved solids and total alkalinity (as $CaCO_3$) Metals: As, Cd, Cr(III), Cr(VI), Cu, Pb, Ni, Zn and Hg	Quarterly
LKD Disposal Area: LKD1, LKD2, and LKD3	Standing Water Level, pH, electrical conductivity, temperature, total dissolved solids and total alkalinity (as $CaCO_3$) Metals: As, Cd, Cr(III), Cr(VI), Cu, Pb, Ni, Zn and Hg	Quarterly commencing within one month of installing bores in accordance with condition 38
Coal stockpile: CS1 and CS2	Standing Water Level, pH, electrical conductivity, total dissolved solids, temperature, Sulfate and Polyaromatic Hydrocarbons Metals: As, Cd, Cr(III), Cr(VI), Cu, Pb, Ni, Zn and Hg	
Artificial Wetland: W1 and W2	Standing Water Level, pH, electrical conductivity, total dissolved solids, temperature, total alkalinity (as CaCO3), Sulfate, Polyaromatic Hydrocarbons, Total Petroleum Hydrocarbons Metals: As, Cd, Cr(III), Cr(VI), Cu, Pb, Ni, Zn and Hg	
Shell Sand Stockpile: SS1	Standing Water Level, pH, electrical conductivity, total dissolved solids and temperature	

Notes 1: pH, electrical conductivity, total dissolved solids and temperature to be determined at one meter intervals from the water's surface to the bottom of each bore. All other parameters to be measured from a discrete sample taken from the upper screened section of the monitoring bore.
2: With the exception of Stand Water Level (m AHD), pH (no units), electrical conductivity (µS/cm) and temperature (°C), parameters are to be reported in mg/L.
3: MB1 not monitored for pH.

Schedule 7: Reporting Requirements

Table 18: Monthly Reporting Requirements

Subject to Condition(s)	Requirements
13	Stack monitoring – weekly monitoring data[1]
7, 10, 11, 12	CEMS data: (a) Monitoring data, provided in one minute and one hour averages; (b) Calibration and availability data, as required under Section 5 and 6 of the CEMS code; and (c) Correlation curve in accordance with the requirements of USEPA Performance specification 11
18A	Odour Assessment – Field Odour Survey parameters and reporting parameters
25 and 28	Ambient monitoring: (a) Data provided in one minute and one hour averages; (b) Calibration and availability data; and (c) Details of management actions undertaken including corrective actions

Note 1: Summary and copies of original reports to be provided.

Table 19: Annual Reporting Requirements

Condition	Requirements
13	Stack monitoring – data[1] (excluding weekly monitoring data)
39	Groundwater monitoring: (a) Data; and (b) Review, assessment and interpretation of the data including comparison to historical trends
41 and 42	Complaints – summary of records and actions

Note 1: Summary and copies of original reports to be provided.

Schedule 8: Discharges to Air (Low Level Sources)

Minor Discharge Points			
MA Doc. No.	Plant No.	Unit Description	Customer Reference
CCL-035	4:004	64S-6-20	PLANT 4:004 K3 & 4
CCL-008	4:006	DLMV 20	PLANT 4:006
CCL-036	4:026	DCE DLM	PLANT 4:026 K3 & 4
CCL-039	4:035	A216F	PLANT 4:035, K3 & 4
-	4:043	-	Kiln 2 cream hopper
CCL-098	4:050	100S-10-TR20	PLANT 4:050
CCL-009	4:180	16S-TR6-20	PLANT 4:180 SILO K2
CCL-020	4:367	A216F	PLANT 4:367 KILN 3 & 4
CCL-019	4:378	A216FL	PLANT 4:378 SILO K3 & 4
CCL-097	4:385	-	PLANT 4:385
CCL-104	4:466	A340FLH POP TOP	KILN 4
CCL-106	4:490	A216FH	K4 HA HOPPER
CCL-007	4:478	36S-TR8-20	PLANT 4:478 SILO K3 & 4
CCL-022	6:354	LUHR MWF 2.5/4.5/S.5	PLANT 6:354 NORTH LUHR DUST COLLECTOR
CCL-023	6:356	LUHR MWF 2.5/4.5/2.5	PLANT 6:356 SOUTH LUHR DUST COLLECTOR
CCL-044	6:429	DCE DLM	PLANT 6:429 CEMENT MILL
CCL-024	6:454	LUHR MWF 2.5/6.5/2.5	PLANT 6:454 WEST LUHR DUST COLLECTOR
CCL-025	6:456	LUHR MWF 2.5/6.5/2.5	PLANT 6:456 EAST LUHR DUST COLLECTOR
CCL-045	6:470	49S-TR10-20	PLANT 6:470 CEMENT MILL
CCL-102	6:490	225S-TR12 POP TOP	PLANT 6:490
CCL-103	6:491	31-6-200	PLANT 6:491
CCL-026	8:101	DLM V2	PLANT 8:101 SILO 1
CCL-027	8:102	DLM V2	PLANT 8:102 SILO 1
CCL-002	8:105	DLMV 20	PLANT 8:105 SILO 2
CCL-001	8:106	DLMV 20	PLANT 8:106 SILO 2
CCL-032	8:109	DCE DLM	PLANT 8:109 SILO 3
CCL-033	8:110	DCE DLM	PLANT 8:110 SILO 3
CCL-050	8:113	DCE DLM	PLANT 8:113 SILO 4
CCL-051	8:114	DCE DLM	PLANT 8:114 SILO 4
CCL-028	8:117	DLMV2	PLANT 8:117 SILO 5
CCL-029	8:118	DLMV2	PLANT 8:118 SILO 5

Minor Discharge Points			
MA Doc. No.	Plant No.	Unit Description	Customer Reference
CCL-030	8:119	DLMV2	PLANT 8:119 SILO 5
CCL-031	8:120	DLMV2	PLANT 8:120 SILO 5
CCL-012	8:121	DLM	PLANT 8:121 SILO 6
CCL-015	8:122	DLMV 20	PLANT 8:122 SILO 6
CCL-052	8:126	DCE DLM	PLANT 8:126 SILO 7
CCL-005	8:125	DLMV 20	PLANT 8:127/125 SILO
CCL-053	8:133	DCE DLM	PLANT 8:133 SILO 9
CCL-054	8:134	DCE DLM	PLANT 8:134 SILO 9
CCL-055	8:137	DCE DLM	PLANT 8:137 SILO 10
CCL-056	8:138	DCE DLM	PLANT 8:138 SILO 10
CCL-004	8:141	DLMV 20F	PLANT 8:141 SILO 11
CCL-057	8:142	DCE DLM	PLANT 8:142 SILO 11
CCL-013	8:143	DLM	PLANT 8:143 SILO 11
CCL-058	8:144	DCE DLM	PLANT 8:144 SILO 11
CCL-059	8:145	DCE DLM	PLANT 8:145 SILO 12
CCL-060	8:149	DCE DLM	PLANT 8:149 SILO 13
CCL-016	8:150	DLM	PLANT 8:150 SILO 13
CCL-061	8:151	DCE DLM	PLANT 8:151 SILO 13
CCL-062	8:152	DCE DLM	PLANT 8:152 SILO 13
CCL-063	8:153	A216FL	PLANT 8:153 SILO 15
CCL-064	8:154	A216FL	PLANT 8:154 SILO
CCL-065	8:155	A216FL	PLANT 8:155 SILO
CCL-066	8:156	A216FL	PLANT 8:156 SILO
CCL-067	8:161	DCE DLM	PLANT 8:161 SILO 18
CCL-068	8:163	A165FL	PLANT 8:163 SILO 19
CCL-069	8:200	25S-TR10-20	PLANT 8:200 SILO 1-4
CCL-070	8:420	A141FL	PLANT 8:420
CCL-071	8:431	A141FL	PLANT 8:431
CCL-073	8:605	100S-TR10-20	PLANT 8:605 OLD PACKING PLANT
CCL-074	8:706	DCE DLM	PLANT 8:706 RAIL LOADOUT
CCL-075	9:046	DCE SHAKER 29 POCKET	PLANT 9:046 NEXT TO K5 EAST
CCL-076	9:071	100S-TR10-20	PLANT 9:071 LIME SILO
CCL-077	9:072	100S-TR10-20	PLANT 9:072 SILO LOAD OUT LIME
CCL-078	9:087	A216FL	PLANT 9:087 LIME SILO NO. A

Minor Discharge Points			
MA Doc. No.	Plant No.	Unit Description	Customer Reference
CCL-094	9:088	42R-8-20	PLANT 9:088 SILOS
CCL-079	9:089	DCE DLM	PLANT 9:089 CONVEYOR TO SILOS A,B,C,D
CCL-080	9:094	81S-TR10-20	PLANT 9:094 KILN 3 & 4 TRANSPORT SYSTEM
CCL-014	9:204	100S-TR8-20	PLANT 9:204
CCL-095	9:210	DLMV 20	PLANT 9:206/9:210
CCL-082	9:211	81S-TR10-20	PLANT 9:211 LIME TRANSPORT NEXT TO K5
CCL-083	9:214	168S-TR10-20	PLANT 9:214 NEXT TO K5
CCL-084	9:216	DCE DLMV 20/10F6	PLANT 9:216 SILO 9:217
CCL-101	9:301	DCE DLM	LIME VAC. SYSTEM
CCL-085	9:334	640S-TR12-20-HR C/LESS	PLANT 9:334 NEXT TO CONTROL K5
CCL-086	9:689	A165FL	PLANT 9:689 LKD HOPPER K5 & 6
CCL-096	9:699	-	PLANT 9:699
CCL-011	9:760	DF 6.0/5.0/2.3	PLANT 9:760 KILN 6
CCL-010	9:804	100S-TR10-20	PLANT 9:804 KILN 6
CCL-088	9:831	LUHR DVF	PLANT 9:831 SILO
CCL-003	9:832	LUHR DVF	PLANT 9:832 REJECT SILO K6
CCL-089	9:841	LUHR DVF	PLANT 9:841 K5 & 6 SILO
CCL-090	9:842	LUHR DVF	PLANT 9:842 K5 & 6 SILO
CCL-091	9:843	LUHR DVF	PLANT 9:843 K5 & 6 SILO
CCL-092	9:930	LUHR DVF	PLANT 9:930 50 TON SILO RAIL
CCL-093	9:931	LUHR DVF	PLANT 9:931 50 TON SILO RAIL