Decision Report

Application for Licence Amendment

Division 3, Part V *Environmental Protection Act 1986*

Licence Number	L5109/1990/13
Licence Holder	Coogee Chemicals Pty Ltd
ACN	008 747 500
File Number	DWERDT226006
Premises	Coogee Chemicals 4 Kwinana Beach Road KWINANA BEACH WA 6167 Lot 1 on Deposited Plan 402573, Lot 2 on Deposited Plan 402573, Lot 3 on Diagram 79782, Lot 12 on Plan 21876, Lot 506 on Diagram 61889, Lot 801 on Plan 68876 and Part of Lot 9002 on Plan 68876 as depicted in Schedule 1.
Date of Report	4 February 2020
Status of Report	Final

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1. Definitions of terms and acronyms

In this Decision Report, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
AS 4323.1	Australian Standard 4323.1: *Stationary source emissions, Method 1: Selection of sampling positions*
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
Decision Report	refers to this document.
Delegated Officer	an officer under section 20 of the EP Act.
Department	means the department established under section 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	Department of Water and Environmental Regulation
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of, and during this Review
Licence Holder	means Coogee Chemicals Pty Ltd
m^3	cubic metres
Noise Regulations	*Environmental Protection (Noise) Regulations 1997* (WA)
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Revised Licence	the amended Licence issued under Part V, Division 3 of the EP Act following the finalisation of this Review.
Risk Event	As described in *Guidance Statement: Risk Assessment*
UDR	*Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA)

2. Purpose and scope of assessment

Coogee Chemicals Pty Ltd (the Licence Holder) proposes to construct and operate a Ferric Sulfate manufacturing plant within an existing building on Lot 506 of Licence Holder's Kwinana Beach facility (the Premises). The infrastructure is to be constructed within an existing prescribed premises for which the Licence Holder holds Licence L5109/1990/13. This Decision Report focuses solely on the construction of the Ferric Sulfate plant and does not assess existing infrastructure, which has been assessed under previous approvals.

As well as assessing the proposed Ferric Sulfate plant, the Delegated Officer has taken the opportunity to incorporate the previous three licence amendments that were authorised via Amendment Notices into the revised amended licence.

This amendment is made pursuant to section 59(2) of the *Environmental Protection Act 1986* (EP Act) to amend Licence L5109/1990/3 granted to the Licence Holder for operation of the Premises.

2.1 Application details

The Department of Water and Environmental Regulation (the department) received the Application, including drawings and supporting information, on 12 September 2019. The Delegated Officer requested additional information on 9 October 2019 and this was received on 29 October 2019.

Table 2 lists the documents submitted during the assessment process.

Table 2: Documents and information submitted during the assessment process

Document/information description	Date received
IR-F09_Application form Licence Amendment (3141375.1) – signed 05.09.2019.pdf	12 September 2019
License Amendment Attachment (314362.1).pdf	12 September 2019
0419 – DWER Requested Information (3199024.3)	29 October 2019

3. Background

Coogee Chemicals was established in 1971 and produces a wide range of industrial, agricultural and mineral processing chemicals for supply to Australian and international markets. Coogee Chemicals also operates a Bulk Liquid Terminal within the premises that provides fuel storage space to major fuel customers. It has the capacity to store 180,000 cubic metres of liquid chemicals including hydrocarbon solvents, alcohols, diesel, petrol and caustic soda. The premises also contains a large acid storage facility with the ability to store 69,000 tonnes of sulfuric acid.

Table 3 lists the prescribed premises categories that currently are on the existing licence.

Table 3: Prescribed Premises Categories in the Existing Licence

Classification of Premises	Description	***Approved Premises production or design capacity or throughput***
Category 31	Chemical manufacturing: premises (other than premises within category 32) on which chemical products are manufactured by a chemical process.	100,000 tonnes per annual period

Classification of Premises	Description	*Approved Premises production or design capacity or throughput*
Category 33	Chemical bending or mixing: premises on which chemicals or chemical products are mixed, blended or packaged in a manner that causes or is likely to cause a discharge of waste into the environment.	18,250 tonnes per annual period
Category 73	Bulk storage of chemicals, etc.: premises on which acids, alkalis or chemicals that – (a) contain at least one carbon to carbon bond; and (b) are liquid at STP (standard temperature and pressure), are stored.	180,000 cubic metres in aggregate

4. Overview of proposed Ferric Sulfate plant

4.1 Operational aspects

The Licence Holder proposes to construct the Ferric Sulfate plant within an existing building on the North Area Lot 506 (given as A2 in Figure 1). The proposed infrastructure is described in Table 4.

The Ferric Sulfate plant will use the following process to manufacture ferric sulfate.

Ferric oxide (FO) powder will be mixed with water in the reaction vessel. Then 98% sulfuric acid is slowly added to the mixture. The temperature of the reaction will be maintained by controlling the rate of acid addition. At mild atmospheric conditions ferric oxide is converted to ferric sulfate.

A wet scrubber will capture air emissions from the reactor. The scrubber system is connected to the reactor where it is expected that minor quantities of sulphuric acid mist (H_2SO_4) will be generated due to the agitation and heat involved in the process.

The scrubber will operate during any transfer or reaction phase(s) of the process. Vapours produced from the process are vented to the atmosphere via vertical stack after passing through the scrubber. Water generated by the scrubber will be periodically dumped into an effluent tank and used within the process.

The scrubber is connected to a stack (F1 in Figure 1), which is located approximately 7.5 metres above ground level. A stack sampling port will be installed upstream of the fan prior to the venting point that is easily accessible from a platform located within the building. The stack sampling port will be installed as per the requirements of Australian Standard 4323.1.

The Licence Holder will conduct stack testing on the scrubber during commissioning to ensure it is operating as per the design specifications.

In addition, the Licence Holder has committed to performing annual stack testing of the scrubber system, which will be routinely inspected with regular scheduled maintenance performed to ensure the system is operating as per the design specifications.

4.2 Infrastructure

The Ferric Sulfate plant infrastructure is detailed in Table 4 and with reference to the Site Plan shown in Figure 1.

Table 4: Ferric Sulfate plant infrastructure

	Infrastructure	Site Plan Reference
	Prescribed Activity Category 31	
Production of ferric sulfate by mixing ferric oxide in solution with sulfuric acid. Maximum production capacity is given as 35,000 tonnes per year with expected production of 10,000 tonnes per year.		
1	Feedstock storage	Storage area for ferric oxide powder. Sulfuric acid will be pumped from existing onsite facilities.
2	Ferric sulfate reactor	Feed systems, reactor, storage tanks and loading facilities.
3	Scrubber system	Wet scrubber system connected to reactor within the plant building. Includes stack (F1) to atmosphere.
4	Utility systems	Associated pumps/piping for air, water and waste water systems. Air and plant water will be supplied from existing onsite facilities.
5	Effluent water tank	Tank to store process water, water collected in sumps, scrubber water and wash down water. Water from effluent tank will be reused in the process. Additionally it is proposed water form exiting sulfur storage handstand will be transferred to the effluent tank.

Figure 1: Site layout and location of proposed plant and emission point (F1)

5. Legislative context

5.1 Department of Mining, Industry Regulation and Safety

The Licence Holder has advised that an amendment application to the existing Dangerous Goods Licence has been submitted to the Department of Mines, Industry Regulation and Safety separately to this application.

6. Location and siting

6.1 Siting context

Coogee Chemicals is located on the Swan Coastal Plain, approximately 2.5 km west of Calista and 2.6 km north-east of Rockingham. 1.3 km to the east is a conservation category wetland and within the premises boundary is an unconfirmed Carnaby's cockatoo feeding area. The premises are within a threatened ecological site buffer. Cockburn Sound is about 650 m to the west.

The Premises is located within the Kwinana Industrial Area (KIA). The proposed Ferric Sulfate plant is to be located at Lot 506, which is at the northern part of the Coogee Chemicals complex. Lot 506 borders to the east on Patterson Road and to the south on Kwinana Beach Road and to the west on a railway. Surrounding land use is light and heavy industry.

6.2 Residential and sensitive premises

The distances to residential and sensitive receptors are detailed in Table 5.

Table 5: Receptors and distance from Premises boundary

Sensitive Land Uses	Distance from Prescribed Premises
Bottle shop with owner's residence (within KIA)	1,500 m west
Calista, residential area	2,500 m east
East Rockingham, residential area	2,600 m south-west

6.3 Specified ecosystems

Specified ecosystems are areas of high conservation value and special significance that may be impacted as a result of activities at or emissions and discharges from the Premises. The distances to specified ecosystems are shown in Table 6. Table 6 also identifies the distances to other relevant ecosystem values which do not fit the definition of a specified ecosystem.

Table 6: Environmental values

Specified ecosystems	Distance from the Premises
Cockburn Sound	650 m to the west

6.4 Groundwater and water sources

The distances to groundwater and water sources are shown in Table 7. Information given in Table 7 have been sourced from the *Perth Groundwater Map* accessible via the department website.

Table 7: Groundwater and water sources

Groundwater and water sources	Distance from Premises	Environmental value
Groundwater	Depth to groundwater encountered at approximately 4 m below ground level (5 m relative to AHD). There are two bores located on Lot 506.	Salinity 500-1000 mg/L

6.5 Soil type

The Premises is located on soil that is generally described as Safety Bay Sand (Passmore, 1967, 1970; Playford & Low, 1972). A CSIRO report to the Cockburn Sound Management Council (2006) specifies that Safety Bay Sand is visible along the coastal margin while aeolian sand dunes extends offshore into Cockburn Sound. Safety Bay Sand is primarily comprised of quartz skeletal sand, humic quartz sand (soil), calcreted sand, medium and coarse sand, shelly sand and beach rock. Due to the nature of the proposed work there is no risk to human health associated with the soil.

6.6 Meteorology

6.6.1 Wind direction and strength

Based on wind direction and speed from the Bureau of Meteorology's weather station at Medina Research Centre, morning winds are predominately east and north/south-easterly. Afternoon winds are predominately southwest and westerly. It is important to note that this wind rose shows historical wind speed and wind direction data for Medina Research Centre and should not be used to predict future data.

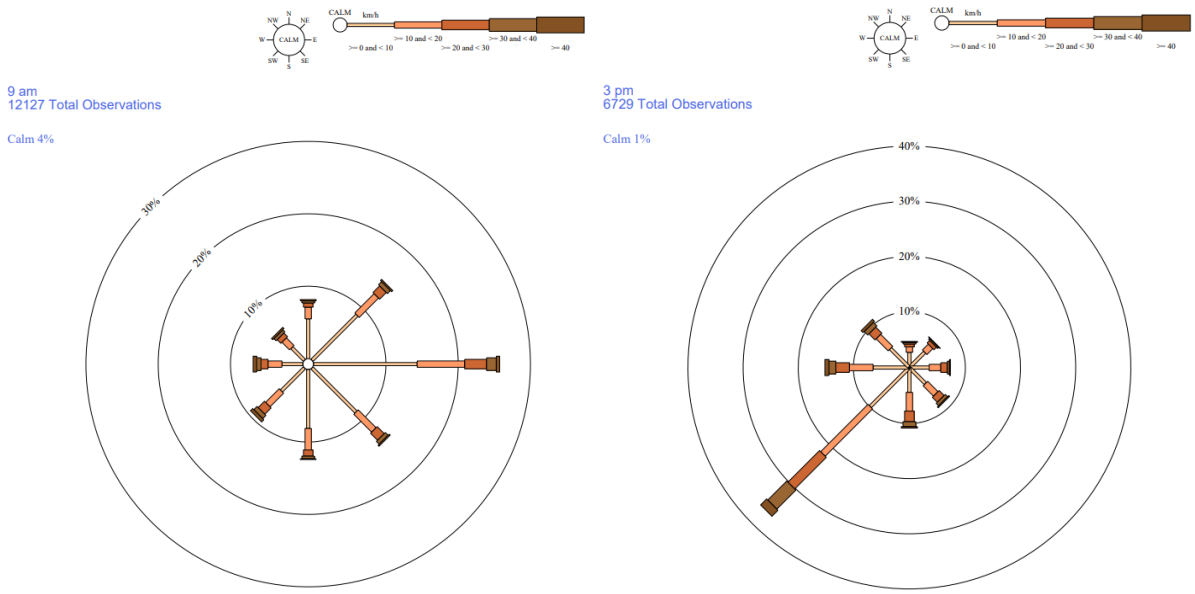

Figure 2: Roses of Wind Direction and Wind Speed in km/hr (April 1983 to Jan 2018)

6.6.2 Rainfall and temperature

The weather at Kwinana is warm and temperate with a Mediterranean climate of hot dry summers and cool wet winters. The average temperature across the year is 18.4 degrees Celsius.

7. Risk assessment

7.1 Determination of emission, pathway and receptor

In undertaking its risk assessment, the Department of Water and Environmental Regulation will identify all potential emissions pathways and potential receptors to establish whether there is a Risk Event which requires detailed risk assessment.

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission. Where there is no actual or likely pathway and/or no receptor, the emission will be screened out and will not be considered as a Risk Event. In addition, where an emission has an actual or likely pathway and a receptor which may be adversely impacted, but that emission is regulated through other mechanisms such as Part IV of the EP Act, that emission will not be risk assessed further and will be screened out through Table 9.

The identification of the sources, pathways and receptors to determine Risk Events are set out in Table 8 and Table 9 below.

Table 8: Identification of emissions, pathway and receptors during construction

Risk Event					Consequence Rating	Likelihood Rating	Risk	Reasoning	Regulatory controls
Source/Activities	**Potential Emissions**	**Potential Pathway**	**Potential Receptor & Negative Impact**	**Licence Holder Controls**					
Construction of the Ferric Sulfate plant	Noise.	Air – wind dispersion.	Amenity impact to bottle shop / shared residence 1,500 m to the south-west.	Construction activities to occur within an existing building. Separation distance.	Minor	Rare	Low	The Delegated Officer considers that the risk of negative noise impacts from construction works is unlikely and as such emissions and discharges during construction of the Ferric Sulfate plant are expected to be acceptable.	The Licence amendment specifies equipment and infrastructure design and installation requirements including pollution control equipment. *Environmental Protection (Noise) Regulations 1997* applies.

Table 9: Identification of emissions, pathway and receptors during operations

Risk Event					Consequence Rating	Likelihood Rating	Risk	Reasoning	Regulatory Controls
Source	**Potential Emissions**	**Potential Pathway**	**Potential Receptor & Negative Impact**	**Licence Holder Controls**					
Operation of the Ferric Sulfate plant	H_2SO_4 vapours generated during operations	Air	Neighbouring industrial premises. Amenity impacts.	The Licence Holder will be installing a scrubber system to manage emissions from the ferric sulfate manufacturing process. The scrubber is connected to a stack about 7.5 m above ground level. The scrubber system will have a sampling point as per AS4323.1 and be fitted with control and monitoring capabilities.	Minor	Rare	Low	The Licence Holder has estimated that the volume of gaseous emission from the stack will be 0.2 mg/m^3 H_2SO_4 per minute (0.000069 g/s).	Based on these calculations, the location of the premises in an industrial area and the discharge stack height, the Delegated Officer has determined that the consequence is *minor* and the likelihood to be *rare*, therefore, considers the overall risk of odour emission to be *low*. Conditions will be included in the amended licence authorising construction of the Ferric Sulfate plant and specifying Licence Holder controls, including the scrubber system and emission point stack height.
	Noise – generated by machinery and pumping equipment	Air	Bottle shop / shared residence 1,500 m to the south-west. Nuisance / amenity impacts.	The Ferric Sulfate plant is located inside a building. Equipment used is not noisy. Premises is located in KIA.	Slight	Rare	Low	Based on the operation and location of the premises in an industrial area, the Delegated Officer has determined that the consequence is *slight* and that the likelihood will be *rare*. The Delegated Officer, therefore, considers the overall risk of noise emissions to be *low*.	No specific additional regulatory controls required as the *Environmental Protection (Noise) Regulations 1997* applies and can sufficiently control noise emissions.

Risk Event					Consequence Rating	Likelihood Rating	Risk	Reasoning	Regulatory Controls
Source	**Potential Emissions**	**Potential Pathway**	**Potential Receptor & Negative Impact**	**Licence Holder Controls**					
	Spills or leaks of chemicals, including ferric sulfate, sulphuric acid or wastewater, leading to discharge outside of containment areas	Infiltration to groundwater, direct discharge to surface water	Groundwater located at approximately 4 m depth; Cockburn Sound approximately 650m west	Wastewater will be collected to be reused in the process. Area of operation is bunded and managed under Dangerous Goods Licence.	Minor	Rare	Low	Based on the operational controls and location of the premises in an industrial area, the Delegated Officer has determined that the consequence is *minor* and that the likelihood will be *rare*. The Delegated Officer, therefore, considers the overall risk of spills or leaks of chemicals to be *low*.	No specific additional regulatory controls required. The bunding is regulated under the Dangerous Goods Licence and any potential spills or leaks can be enforced through the *UDR 2004* or general provisions of the EP Act.

8. Consultation

The draft Amendment Report and the draft Amended Licence were sent to the Licence Holder for comment on 8 January 2020. The Licence Holder provided the following comments on 22 January 2020:

1. The Licence Holder requested a Category 73 capacity limit increase from 180,000 m^3 to 256,000 m^3. This capacity increase is to include 38,000 m^3 of alkali product and 38,000 m^3 of non-dangerous goods material.
2. Label of "Table 2.2.2" was used twice. The second "Table 2.2.2" should be renamed "Table 2.2.6"
3. Text referencing the second "Table 2.2.2" was also misnumbered.

The Delegated Officer included the corrections identified in points 2 and 3.

In respect to point 1, considering that this increase to capacity limit does not involve an increase to production or emissions the Delegated Officer agrees to this change in the final amended Licence.

9. Conclusion

This assessment of the environmental risk from the construction and operation of the Ferric Sulfate plant has been undertaken with due consideration of a number of factors, including the documents and policies specified in this Decision Report (summarised in Appendix 1).

Based on this assessment, the Delegated Officer has determined that the construction and operation of the Ferric Sulfate plant presents a low risk to the surrounding environment and amenity and can be therefore be approved. An amended Licence will be granted subject to conditions that are deemed necessary based upon the environmental risk of the premises as shown in Table 9. In accordance with the *Guidance Statement: Risk Assessments* (DER 2017) the Licence Holder's proposed controls, including an air emissions scrubber system will be conditioned on the amended Licence as they lower the assessed likelihood of the risk event.

Three changes were made to the draft amended Licence during the finalisation of the document. The requirements within Table 5.1.5 were edited to correctly reference the relevant Australian Standard AS 4323.1, the condition for annual testing of the Ferric Sulfate stack was removed and the condition (and definitions) related to the Annual Audit Compliance Report were updated to reflect the current process.

The approval of the Ferric Sulfate plant has been included as part of a consolidated amended Licence that also includes historical changes made to the licence conditions via Amendment Notices.

The Delegated Officer notes that the appropriateness and adequacy of controls of the conditions may be reviewed at any time and that, following a review, the department may initiate amendments to the approval under the EP Act.

Carmen Standring
A/Manager, Process Industries
REGULATORY SERVICES

Delegated Officer under section 20 of the *Environmental Protection Act 1986*

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	Licence L5190/1990/3 – Coogee Chemicals Pty Ltd	L5109/1990/3	accessed at www.der.wa.gov.au
2.	Licence amendment DWERDT199904 – Ferric Sulfate plant	DWERDT199904	DWER records (DWERDT199904)
3.	DER, July 2015. *Guidance Statement: Regulatory principles.* Department of Environment Regulation, Perth.	N/A	accessed at www.dwer.wa.gov.au
4.	DER, October 2015. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.		
5.	DER, August 2016. *Guidance Statement: Licence duration.* Department of Environment Regulation, Perth.		
6.	DER, February 2017. *Guidance Statement: Risk Assessments*. Department of Environment Regulation, Perth.		
7.	DWER, June 2019. *Guideline: Decision Making*. Department of Water and Environmental Regulation, Perth.		
8.	DWER, June 2019. *Guideline: Industry Regulation Guide to Licensing.* Department of Water and Environmental Regulation, Perth.		

Attachment 1: Amended Licence L5109/1990/3