



ORICA KURRI KURRI ANE PLANT

ANNUAL ENVIRONMENTAL MANAGEMENT REPORT

JULY 2016



Revision	Date	Description	Author	Approver
0		2016 Annual Environmental Report	F Oberholzer Manufacturing Superintendent Liddell & Kurri ANE Plant	P Skinner Operations Manager Coal

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Attachments:

- Pollution Solutions Sampling Report – September 2015
- Pollution Solutions Sampling Report – December 2015
- Pollution Solutions Sampling Report – March 2016
- Pollution Solutions Sampling Report – June 2016
- Biodiversity Management Plan 2015.16

ABBREVIATIONS

ANE	Ammonium Nitrate Emulsion
ANS	Ammonium Nitrate Solution
CEMP	Construction Environmental Management Plan
CSS	Construction Safety Study
DPI	Department of Planning and Infrastructure
EA	Environmental Approval
EMSO	Environmental Management Strategy Operations
EPL	Environment Protection Licence
FHA	Final Hazard Analysis
FSS	Fire Safety Study
HAZOP	Hazard and Operability Study
ktpa	kilo tonnes per annum
OEH	Office of Environment and Heritage
SHEC	Safety, Health, Environment and Community

1 Introduction

In October 2010 Orica Australia Pty Ltd commenced construction of an Ammonium Nitrate Emulsion (ANE) manufacturing facility located at its Kurri Kurri Technical Centre, NSW. The facility will produce a maximum of 250,000 tonnes of ANE per annum once in full production (**Figure 1**). This plant has been developed to meet an increasing demand for ANE product and projected growth in the mining and quarry / construction sectors in South Eastern Australia. Approval for this project was granted in July 2010 by the Minister for Planning.

The facility began the commissioning process in October, 2011 and began production in February 2012.

This document has been prepared to comply with the requirement of the Project Approval (09_0090) that an Annual Environmental Management Report be prepared for the project and relates to August 2015 – July 2016.



Figure 1: ANE Plant layout

1.1 Facility Description

The facility activities include the following:

- ANE production of up to 250,000 tonnes of product per annum;
- Maintenance of access roads and relevant services infrastructure;

- Operation of storage for raw materials used in the manufacturing process including ammonium nitrate solution (ANS), solid ammonium nitrate, fuel blend ingredients such as palm olein, paraffin and diesel oil, thiourea, urea, acetic acid, caustic soda and water;
- Transport truck weighing, loading and unloading facilities and management;
- Management of the facility office, control room, switch room and quality control laboratory;
- Management of contractors and visitors.

2 Facility Requirement

As a condition of the project consent, this facility is required to prepare an Annual Environmental Management Report.

This report includes the following:

1. *This facility Annual Environmental Report (AEMR) will include the following;*
 - a) *identify the standards and performance measures for the facility;*
 - b) *describe the works carried out in the past 12 months and the works to be carried out in the next 12 months;*
 - c) *include a summary of complaints received in the past year and provide comparison with previous years;*
 - d) *report results of monitoring required by the approval and EPL for this facility;*
 - e) *provide analysis of monitoring results in the context of relevant criteria and limits, previous monitoring results and the predictions made in the EA;*
 - f) *identify any trends in monitoring results over the life of the facility; and*
 - g) *report on compliance with the project approval, summarise non-compliances in the previous 12 months and report on actions taken to rectify non-compliances.*

3 Facility Standards and Performance Measures

This facility meets the standards and conditions detailed in the following documents:

- Project Approval 09-0090 dated 26 July 2010;
- Modification Application MP 09_0090 MOD 1;
- Schedules 2 to 4 of Project Approval;
- Environmental Approval dated December 2009;
- Response to Submissions report dated March 2010;
- Independent Environmental Audit March 2015.

The key standards and performance measures for the operating facility include:

	Standard	Performance Measure	Comment
Noise Management	Noise generated from the operation of the facility does not exceed 35dB (A) at nearest residential receptor at any time.	Proponent shall conduct a Noise Audit for the premises within 3 months of the commencement of operation of the ANE Facility or as otherwise agreed by the Director-General.	Large buffer area around plant. Noise controls have been incorporated into design and equipment selection. The Noise Audit has been completed and submitted to the DPI, no actions were required from the audit.
Air Quality	Dust	All trucks leaving or entering the facility with loads have their loads covered; Trucks movements associated with the facility do not track dirt onto the public road network.	Requirement incorporated into the Environmental Management Plan.
Soil and Water Discharges	Section 120 of the <i>Protection of the Environment Operations Act 1997</i>	Bunding to comply with all relevant Australian Standards and the OEH's Storing and Handling Liquids: Environmental Protection, Participants Manual.	Facility is designed to meet bunding requirements.
Lighting	Australian Standard AS4282(INT)-Control of Obtrusive Effects of Outdoor Lighting	Facility Lighting complies with the requirements of the standard.	Lighting compliance has been assessed during the design phase.
Production Limits	Production not to exceed prescribed levels.	ANE – 250ktpa	Production limits are monitored and documented weekly. Limits not exceeded.

4 Facility Status

4.1 Facility Progress Review

During the previous 12 months covered by this report normal production activities have been undertaken and include:

- 15% production decrease over reporting year;
- Plant operating at 38.8% of Licence Limit of 250,000 T/pa;
- Traffic management and site access;
- Production of ANE, and Companion Solution.
- Unloading of raw materials;
- Loading tankers with ANE;
- Maintenance management and associated activities;
- Contractor & Visitor Induction and Management;
- Production of Ammonium Nitrate Solution from dissolved solid Ammonium Nitrate

- Minor changes of raw materials;
- Significant reduction of vehicle movements on George Booth Drive with the opening of the freeway extension M15.

4.2 Planned Facility Progress

- Static ANE production tonnage as per EA document;
- As per RTP proportional heavy vehicle movements to support raw materials and production schedule.

4.3 Significant Activities Undertaken in the Reporting Period

- Installation of a stand-alone Ultra Filtration system to continuously filter water from recycled water tanks.

The Ultra Filtration system will eliminate generation of used filter cartridge waste stream, improve overall efficiency of process and utilisation of available raw material stormwater, bund water from chemical bunds.

- This system reduces the use of potable water in the manufacturing process, and increases the use of storm water, reducing the overflow discharge of controlled stormwater.

4.4 Important Initiative Planned in the Next Reporting Period

- Installation of a Heat Exchanger and Cooling Tower. The installation of the cooling tower / heat exchanger system is an initiative to cool down certain types of manufactured ANE (Ammonium Nitrate Emulsion), the cooling down of these products is for quality reasons and performance enhancement in the field.
- The project entails the installation of a specialised heat exchanger suited for cooling down emulsions, a cooling tower system and all related pipework.

5 Environmental Monitoring and Complaints Summary

5.1 Environmental Monitoring

Following the commissioning of the ANE Plant, monitoring is undertaken to assess compliance with relevant conditions as outlined in the Project Approval and the EPL.

5.2 Community Complaints

27.07.2010 – 26.07.2011	27.07.2011 – 26.07.2012	27.07.2012 – 26.07.2013
No Complaints	One unsubstantiated complaint	No Complaints
27.07.2013 – 26.07.2014	27.07.2014 – 26.07.2015	27.07.2015 – 26.07.2016
No Complaints	No Complaints	No Complaints

6 Facility Compliance

A review of the status of compliance with the operation of this facility is detailed in the table below.

SUMMARY OF KEY FACILITY COMPLIANCE ACTIVITIES

Issue	Condition	Requirement	Compliance Status
Schedule 3: Specific Environmental Conditions	1	Undertake the following studies and submit to DPI Director-General for approval:	
		a) • Fire Safety Study (FSS)	Complied. The FSS was submitted on 9 February 2011 and a response was received from Fire Rescue NSW (FRNSW) on 3 May 2011. Further information is currently being prepared for FRNSW.
		b) • Hazard & Operability Study	Complied. The HAZOP was submitted to the DPI 15 February 2011. DPI approved the study on 18 February 2011. Hazop Actions completed.
		c) • Final Hazard Analysis	Complied. The Phase 1 FHA was submitted to the DPI on 8 February 2011. DPI approved the study on 18 March 2011.
	d) • Construction Safety Study	Complied. The Construction Safety Study was submitted to DPI on 8 February 2011. Approval was obtained from DPI on 18 February 2011.	
	2	Undertake the following studies and submit to DPI Director-General for approval: <ul style="list-style-type: none"> • Emergency Plan (update) • Safety Management Plan 	Completed
	6	Comply with the requirements of the Director-General in relation to conditions 1-5.	Complied
	10	Prepare a Road Transport Protocol prior to the commencement of construction and operation.	Complied.

Issue	Condition	Requirement	Compliance Status
			A Road Transport Protocol was included in the EMSO. RTP revised and updated with Maps showing M15 freeway extension. Nil NON compliances
	12	Within 6 months of approval implement the offset strategy to the satisfaction of the director general	Complied An application was submitted to OEH to enter into a Voluntary Conservation Agreement. Biodiversity Report attached.
	15	Implement Vegetation Clearing Protocol	Complied Vegetation Clearing Protocol was included in the EMSO and followed for clearing of the site prior to the commencement of construction.
	16	Carry out all reasonable and feasible measures to minimise dust generated by the Project / Facility	Complied EMSO included measures to control dust. All road surfaces sealed for permanent operation.
	17	Trucks entering or leaving the Project site must have their loads covered and must not track dirt onto public roads	Complied. Measures for the control of dust were included in the CEMP.
	18	Noise generated from the construction and operation of the project shall not exceed 35dB(A) at nearest residential receptor	Complied. Post start up Noise Audit completed
	20	Implement the recommendations of the 'Bushfire Threat Assessment' included with the EA and also any additional bushfire hazard reduction measures outlines in the Submissions Report	Complied Requirements included in the design.
	21	Compliance with section 120 of Protection of the Environment Operation Act 1997	Annual Environmental Return submitted to EPA currently in discussions with EPA regarding Licence conditions.
	22	Ensure that all chemicals are stored in appropriately bunded areas	Complied. EMSO included requirements for management of materials. Design incorporates bunding requirements. Emulsifier bund joint seal failure, interim fix in place with Engineer engaged to propose long term fix. Permanent repair completed Oxidiser bund recoated.

Issue	Condition	Requirement	Compliance Status
			Daily shift Housekeeping checks completed and documented.
	23	Prepare a Soil and Water Management Plan	Complied. Measures for the control of erosion and sediment were included in the Construction Environmental Management Plan.
	24	A Stormwater Management Plan must be included in the design	Complied. CEMP included these requirements, where applicable to construction.
	25	An Erosion and Sediment Control Plan is to be prepared	Complied. EMSO included an Erosion and Sediment Control Plan.
	26	Ensure that lighting associated with the Project complies with the latest version of <i>Australian Standard AS 4282(INT)-Control of Obtrusive Effects of Outdoor Lighting</i>	Complied A consultant was engaged to provide a report on external lighting to ensure compliance.
	27	Waste to be classified in accordance with <i>DECCW Guidelines 2008</i> and disposed of to approved premises	Complied. Measures for the control of waste were included in the EMSO. Registered Waste disposal provider engaged for production operations
	28	In the event that skeletal remains, or an Aboriginal object is identified, all construction activities that will or would have the potential to impact on indigenous heritage item(s), shall cease until the DECCW is consulted and their directions complied with	Complied. CEMP and EMSO included requirements. Aboriginal groups were consulted during the construction period.
Schedule 4: Environmental Management, Reporting and Auditing	1	Prepare and implement an Environmental Management Strategy for the Facility to the satisfaction of the Director-General.	The Facility Environmental Management Strategy was submitted on 24 February 2012.
	2	Prepare an Annual Environmental Management Report and submit to the DPI Director-General <ul style="list-style-type: none"> a. Identify the standards & performance measures for the Facility b. Describe the works carried out in the past 12 months and the works to be carried out in the next 12 months c. Include a summary of complaints received in the past year and provide comparison with previous years d. Report results of all monitoring required by this approval and an EPL for the Facility 	Submission of this document is the fifth annual report <ul style="list-style-type: none"> a. See section 3 this report b. See section 4.3 and 4.4 above c. See section 5 this report d. See Appendix 1

Issue	Condition	Requirement	Compliance Status
		e. Provide analysis of monitoring results in the context of relevant criteria and limits, previous monitoring results and the predictions made in the EA f. Identify any trends in monitoring results over the life of the Facility g. Report on compliance with the facility approval, summarise non-compliances in the previous 12 months and report on actions taken to rectify non-compliances	e. See Appendix 2 f. Monitoring Point 2. Results have shown a downward trend compared to previous reporting period. g. See Appendix 3
	3	Notify the Director-General and any other relevant agencies of any incident with actual or potential significant off-site impacts	There were no significant incidents relating to the facility during this reporting period that required reporting to the Director General
	4	An independent Environmental Audit within two years of commencement of operations at the ANE Facility and every 3 years thereafter. The audit will; <ul style="list-style-type: none"> a. Be conducted by a suitable, experienced and independent expert whose appointment has been endorsed by the Director General b. Assess the environmental performance of the Facility and its effect on the surrounding environment c. Assess whether the Facility is complying with the relevant standards, performance measures and statutory requirements d. Review the adequacy of any strategy / plan / program required under the approval; and if necessary, e. Recommend measures or actions to improve the environmental performance of the Facility and / or any strategy / plan / program required under the approval 	An independent Auditor has been appointed and endorsed by the Director General to carry out the audit in the last quarter of 2016
	5	The following information regarding the Facility is included on the website: <ul style="list-style-type: none"> • Copy of all current statutory approvals; • Copy of the current environmental management strategy and associated plans and programs; • Copy of any Annual Reports (over the last 5 years); • Copy of any Independent Environmental Audit, and the Proponent's response to the recommendations in any audit; and Any other matter required by the Director-General	Copies of information relating to the facility are included on the Orica Mining Services website (www.oricaminingservices.com)

Appendix 1**DISCHARGE & MONITORING POINT 1 as at 27.07.2012 -- 26.07.2013**

Discharge to Utilisation Area.

Low	Average	High
5250L/day	6875L/day	8500L/day

Max Limit 16800L/day

DISCHARGE & MONITORING POINT 1 as at 27.07.2013 – 26.07.2014

Discharge to Utilisation Area.

Low	Average	High
4500L/day	6350L/day	8500L/day

Max Limit 16800L/day

DISCHARGE & MONITORING POINT 1 as at 27.07.2014 – 26.07.2015

Discharge to Utilisation Area.

Low	Average	High
4625L/day	6063L/day	7500L/day

Max Limit 16800L/day

DISCHARGE & MONITORING POINT 1 as at 27.07.2015 – 26.07.2016

Discharge to Utilisation Area.

Low	Average	High
4500L/day	6000L/day	7500L/day

Max Limit 16800L/day

Appendix 1(cont.)**DISCHARGE & MONITORING POINT 2 as at 27.07.2015 – 26.07.2016**

Wet weather discharge, overflow pipe from water treatment systems 'Stormceptre System' (Pit 17) located at the south-eastern corner of the Ammonium Nitrate Emulsion Production Facility.

POLLUTANT	UNIT OF MEASURE	NO. OF SAMPLES REQUIRED BY LICENCE	NO. OF SAMPLES YOU COLLECTED AND ANALYSED	LOWEST SAMPLE VALUE	MEAN OF SAMPLE	HIGHEST SAMPLE VALUE
AMMONIA	Milligrams per litre	37	37	0.07	0.49	1.65
CONDUCTIVITY	Micro Siemens per centimetre	37	37	16	96.6	292
NITROGEN (TOTAL)	Milligrams per litre	37	37	0.1	2.16	4.4
OIL & GREASE	Visible	37	37	Nil Visible	Nil Visible	Nil Visible
PH	PH	37	37	4.34	6.97	10.5
TOTAL DISSOLVED SOLIDS	Milligrams per litre	37	37	4.34	73.22	178
TOTAL SUSPENDED SOLIDS	Milligrams per litre	37	37	0	94.7	396

Appendix 2

EXTRACTS from QUALITY ASSURANCE DOCUMENT within the EPL

L2 Volume and Mass Limits

Pollution Solutions Sampling Report – September 2015

Pollution Solutions Sampling Report – December 2015

Pollution Solutions Sampling Report – March 2016

Pollution Solutions Sampling Report – June 2016

(Refer to attached reports)

The Orica Australia Technical Centre is compliant with condition L2 and its subsection.

To ensure condition L2 of the sites licence is conformed with, quarterly assessments on the sites treatment plant by a NATA accredited company are undertaken. Part of this quarterly assessment includes the review on the quantity of discharge. From this review an average daily output is identified of which is approximately 50% below the current daily licence limit.

Quantity of discharge amount was consistent with previous year.

L3 Noise Limits

The Orica Australia Technical Centre is compliant with condition L3 and all of its subsections.

A noise survey conducted on April 2012 by independent consult Umwelt during production phase identified compliance with condition L3. No complaints have been received relating to noise generated by the site.

For the period of this report there have been no breach of noise limits and no complaints received.

This survey is readily accessible if an authorised officer of the EPA requests it.

L4 Potentially Offensive Odour

The Orica Australia Technical Centre is compliant with condition L4 and its subsection.

No potentially offensive odours were identified at the site.

Appendix 3 - Projected ANE Annual Tonnages between 2011 and 2023 with total daily truck movements

Year	Total Truck Movements - Projected	Total Truck Movements - Actual Average / day	Total Tonnes - Projected	Total Tonnes - Actual
2011	50	1	125,000	0
2012	55	26	137,500	40,657
2013	60	34	150,000	111,310
2018	80		200,000	
2023	100		250,000	

Appendix 4 – Audit Actions

Recommendations from the Independent Hazard Report – 2016

The requirement to conduct the Hazard Audit forms part of the Project Approval for the ANE Facility, under Section 75J of the Environmental Planning and Assessment Act 1979, dated 26 July 2010 (Application Number 09_0090).

In accordance with Schedule 3.5 listed below is the audit report implementation program of all recommendations made in the audit report.

Recommendation			Priority
Common to all plants			
1. The signatory Orica Policy documents was updated from 2010 (Graham Liebelt) to 2013 (Ian Smith). Having now again changed CEO, the Orica Policy document are again signed by the ex CEO. While the 2013 action was closed it needs to be re-opened again for the 2016 hazard audit.			MEDIUM
Orica Action No.	Ref. No.	Description	Due Date
AP00030488	5.6	Updating of Orica's Policy documents is required. Currently displaying signature of ex CEO.	30.09.2016
2. Opportunity for improvement: There are some platforms on site – a medical emergency at height would require evacuation from height. It is recommended to schedule an emergency drill for medical evacuation from a platform in the next Hazard Audit period.			LOW
Orica Action No.	Ref. No.	Description	Due Date
AP00030167	5.5	Schedule an emergency drill for medical evacuation from a platform.	30.09.2016
Site responsibility			
Site 1. Check the hydrant at the RL1 plant (back of process building) which appears to be non-compliant (post audit comment from Site: <i>Currently working with Fire protection supplier for compliance with a new packaged unit</i>)			MEDIUM
Orica Action No.	Ref. No.	Description	Due Date
AP00030166	A2.1.1	Check the hydrant at the RL1 plant (back of process building) for compliance.	30.09.2016

ANE Plant			
ANE 1.Reinforce requirements for all fields on the hot work permit to be filled in, including the Gas Test panel			MEDIUM
Orica Action No.	Ref. No.	Description	Due Date
AP00030168	A1.5.1	Reinforce requirements for all fields on the hot work permit to be filled in, including the Gas Test panel	30.12.2016
ANE 2.There appears to be a discrepancy w.r.t. pressure vessel inspection documentation: Records show only six (6) PVs completed of which two (2) PVs did not have any test sheets prepared (PVs 22-4490 & 32-4460); inspection status is uncertain for remaining three (3) PVs (PV 32-4470; 35-4450A; 35-4450B) with no evidence of complete inspection provided during the audit. PV inspection documentation requires upgrading and further checks by ANE personnel is required to ensure that the PV inspections, carried out by contractors, is as per Code requirements			MEDIUM
Orica Action No.	Ref. No.	Description	Due Date
AP00030169	A1.5.1	Upgrade PV inspection documentation and further checks by ANE personnel is required to ensure that the PV inspections, carried out by contractors, is as per Code requirements.	30.09.2016
ANE 3.Overprotective devices on the pumps are currently not included in RV testing regime (though they are drawn as RVs on the P&IDs). Review relief valve register and ensure testing of RVs are carried out as per Code requirement for all applicable RVs			MEDIUM
Orica Action No.	Ref. No.	Description	Due Date
AP00030170	A1.5.1	Review relief valve register and ensure testing of RVs are carried out as per Code requirement for all applicable RVs.	30.09.2016
Research Laboratory (RL1)			
R&D 1.Training matrix used in the R&D plants (currently managed / updated by RL1 Supervisor) should be managed in a more proactive manner as it shows that some training has expired (e.g. magazine keeper). Management attention is required for this system			MEDIUM

Orica Action No.	Ref. No.	Description	Due Date
AP00030209	5.11	Review training matrix used in the R&D plants and provide training for expired competencies.	30.09.2016
R&D 2. Ensure that training against safety critical procedures is carried out as per the set frequency			MEDIUM
Orica Action No.	Ref. No.	Description	Due Date
AP00030209	A4.3	Ensure that training against safety critical procedures is carried out as per the set frequency.	30.09.2016
R&D 3. Formalise Orica in-house ETF training and competency for work within the UN test Unit and within the Friction & impact testing facility			MEDIUM
Orica Action No.	Ref. No.	Description	Due Date
AP00030211	A4.3	Formalise Orica in-house ETF training and competency for work within the UN test Unit and within the Friction & impact testing facility.	30.09.2016
R&D 4. Investigate whether the high pressure reliefs on the water bath heaters and on the ANE refinement unit in ML1 should be on a PM task			MEDIUM
Orica Action No.	Ref. No.	Description	Due Date
AP00030212	A4.5.1	Investigate whether the high pressure reliefs on the water bath heaters and on the ANE refinement unit in ML1 should be on a PM task	30.09.2016

Biodiversity Offset Area 2015-16 Outstanding Action

Creek erosion - remediation plan implemented

This work was planned for early this year but due to the fact that it was identified that the upstream mouth widening causing the erosion and downstream sedimentation issues of which the control works need to be completed are not on our site. The works to be completed to rectify this issue is in the Sugarloaf State Conservation Area owned and managed by the NSW National Parks and Wildlife Services. We are in the processes of requesting permission from this organisation to complete these works as well as utilising fire and electrical easement trails as access to the required location is difficult.