



**ORICA KOORAGANG ISLAND**

**ANNUAL ENVIRONMENTAL MANAGEMENT  
REPORT**

**DECEMBER 2013**



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## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION.....</b>	<b>1</b>
1.1	PROJECT DESCRIPTION.....	2
<b>2</b>	<b>PROJECT APPROVAL REQUIREMENT .....</b>	<b>2</b>
<b>3</b>	<b>PROJECT STANDARDS AND PERFORMANCE MEASURES.....</b>	<b>1</b>
<b>4</b>	<b>PROJECT STATUS .....</b>	<b>3</b>
4.1	PROJECT PROGRESS REVIEW.....	3
4.1.1	<i>Phase 1: Ammonia Plant Expansion.....</i>	<i>5</i>
4.1.2	<i>Phase 2: Outside Boundary Limits .....</i>	<i>5</i>
4.1.3	<i>Phase 3: Nitrate expansion.....</i>	<i>6</i>
4.2	PLANNED PROJECT PROGRESS DURING 2013/2014 .....	6
4.2.1	<i>Phase 1 Ammonia Plant Uprate .....</i>	<i>6</i>
4.2.2	<i>Phase 2 - Outside Boundary Limits (OBL).....</i>	<i>6</i>
4.2.3	<i>Phase 3 – Nitrates expansion.....</i>	<i>6</i>
4.2.4	<i>Nitric Acid Tank and Ammonia Flare Development Consent Modification .....</i>	<i>6</i>
<b>5</b>	<b>ENVIRONMENTAL MONITORING AND COMPLAINTS SUMMARY .....</b>	<b>7</b>
5.1	ENVIRONMENTAL MONITORING.....	7
5.1.1	<i>Air Quality.....</i>	<i>7</i>
5.1.2	<i>Noise .....</i>	<i>7</i>
5.1.2	<i>CO<sub>2</sub> Noise Reduction Project.....</i>	<i>9</i>
5.2	COMMUNITY COMPLAINTS .....	9
<b>6</b>	<b>AN1 PRILL TOWER EMISSION REDUCTION INVESTIGATIONS.....</b>	<b>10</b>
6.1	PRILL TOWER PARTICULATE MONITORING DATA .....	11
<b>7</b>	<b>PROJECT APPROVAL COMPLIANCE .....</b>	<b>12</b>

**ABBREVIATIONS**

AN3	No. 3 Ammonium Nitrate Plant
CSEMP	Construction Safety and Environmental Management Plan
DECCW	Department of Environment, Climate Change and Water
DPI	Department of Planning and Infrastructure
EPA	Environment Protection Authority
EPL	Environment Protection Licence
HAZOP	Hazard and Operability Study
ktpa	kilo tonnes per annum
NAP4	No. 4 Ammonium Nitrate Plant
SH&E	Safety, Health and Environment

## 1 Introduction

Orica Australia Pty Ltd (Orica) operates an ammonia nitrate manufacturing facility on Kooragang Island, NSW (**Figure 1**). The facility commenced operations in 1969 and has undergone several projects aimed at increasing the ammonium nitrate production capability of the site since. The current site operations consist of an Ammonia Plant, three Nitric Acid Plants, two Ammonium Nitrate Plants and associated despatch and support infrastructure (Existing Operations).

An approval for the expansion of the Kooragang Island site (the expansion Project) was granted by the Department of Planning and Infrastructure (DoPI) on 1 December 2009 allowing ammonium nitrate production to increase from 500 kilo tonnes per annum (ktpa) to 750ktpa. The expansion project broadly involves the uprate of the existing ammonia plant, construction of an additional Nitric Acid (NAP4) and Ammonium Nitrate Plants (AN3) and the upgrade and expansion of the site's ammonium nitrate storage and ancillary infrastructure.

On 11 July 2012, Orica successfully applied to the NSW Department of Planning and Infrastructure (DoPI) to modify the project's original 2009 approval. The modifications were minor in nature and primarily related to improvements to the post expansion site layout, aimed at further reducing the site's risk profile. Changes resulting from the project's approval modification included:

- The relocation of plant and equipment further away from the closest residential properties;
- Relocation of the No. 3 Ammonium Nitrate Plant closer to the No. 4 Nitric Acid Plant in order to reduce the pipeline distance in which ammonia is required to be transported;
- Rationalisation and upgrade of ammonia storage and distribution infrastructure including a reduction in inventories; and
- Improvements to internal traffic management through rerouting truck movements away from operating plant.

This report has been prepared in accordance with Condition 50 of the expansion project's Development Consent (08-0129) which requires an Annual Environmental Management Report (AEMR) to be submitted to the Department of Planning and Infrastructure.



**Figure 1: Site Location**

## 1.1 Project Description

The activities detailed in the Project Approval include the:

- Upgrade to the existing Ammonia Plant designed at increasing ammonia manufacture capacity from 295 ktpa to 360 ktpa;
- Construction and operation of an additional Nitric Acid Plant (NAP4), capable of manufacturing approximately 260 ktpa of nitric acid;
- Construction and operation of an additional Ammonium Nitrate Plant (ANP3) capable of producing both Ammonium Nitrate Solution (ANS) and the solid prilled product Nitropril®;
- Construction and operation of additional storages for nitric acid, solid ammonium nitrate and ammonium nitrate solution;
- Supporting infrastructure including cooling towers, an effluent treatment system and boiler; and
- Construction of additional minor storage facilities and improvements to product loading facilities for road transport.

## 2 Project Approval Requirement

Condition 50 of Project Development Consent (08-0129) requires that Orca submit an AEMR within the first 12 months of commencing the project and annually thereafter. This report details

environmental compliance of the expansion project between the 1 December 2012 and 30 November 2013 including:

- 50            Within 12 months of this approval, and annually thereafter, the Proponent shall submit an Annual Environmental Management Report (AEMR) for the Project to the Director-General. The report must:
- a) Identify the standards and performance measures for the Project;
  - 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 Project;
  - e) Provide analysis of monitoring results in the context of relevant criteria and limits, previous monitoring results and predictions made in the EA;
  - f) Identify any trends in monitoring results over the life of the Project; 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 Project Standards and Performance Measures

The expansion project is required to meet the standards and conditions detailed in the following documents (Table 1):

- Project Approval 08-0129 dated 1 December 2009
- Project Environmental Assessment dated June 2009
- Statement of Commitments dated August 2009
- Submissions Report dated August 2009
- Modification Application 08-0129 mod 1 and supporting documentation titled Kooragang Island Facility Modification Request dated 20 April 2011;
- Orica Mining Services Report for Kooragang Island Uprate PHA Mod1 Report dated March 2012

**Table 1 - Standards and performance implemented in plant design and construction**

Criteria	Standard	Performance Measure	Comment
Noise Management	No increase in community noise levels as a result of the Project.	Operating Project to be at least 10dB (A) less than the existing plant noise levels.	Noise control measures have been included in new plant design. A noise management plan and monitoring program has submitted and approved by the DoPI. The noise management plan has commenced following the commencement of operations of the uprated ammonia Plant. Quarterly noise data has confirmed compliance to the project's noise performance criteria. A copy of the noise monitoring conducted in the last 12 months is detailed in <b>Appendix A</b> .
Air Quality	Minimisation of particulate emissions associated with the Project.	AN3 stack emissions to be $\leq 20\text{mg}/\text{Nm}^3$	Requirement incorporated into AN3 plant design.
	Minimisation of NOx emissions associated with the project.	Existing Reformer Stack NOx emission $\leq 350\text{mg}/\text{Nm}^3$ (as NO <sub>2</sub> equivalent)	A new purge gas scrubber has been incorporated into the Ammonia Plant expansion.  Annual stack emission test data has demonstrated compliance to the requirement  An air quality verification

Criteria	Standard	Performance Measure	Comment		
			study, in compliance with Condition 23, has been completed and is detailed in <b>Appendix B</b> .		
		Pre-Reformer Furnace Stack NOx emission $\leq 350 \text{ mg/Nm}^3$ (as NO <sub>2</sub> equivalent)	Requirement incorporated into plant design. Annual stack emission testing has been performed following the commencement of operations on the 29 February 2012. An air quality verification study, in compliance with Condition 23, has been completed and is detailed in <b>Appendix B</b> .		
		New Boiler Stack NOx emission $\leq 350 \text{ mg/Nm}^3$ (as NO <sub>2</sub> equivalent)	Requirement has been incorporated into new Boiler design.		
		NAP4 Stack NOx $\leq 150 \text{ ppm}$ (99%tile) (NOx = NO + NO <sub>2</sub> )	Requirement incorporated into design for the new acid plant.		
		Scrubbing of ammonia emissions under normal plant operations to be installed for NAP4 and AN3.	Requirement has been incorporated into design.		
Greenhouse Gas Emissions	Installation of abatement technology on Nitric Acid Plants	Site N <sub>2</sub> O emissions to be reduced by $\leq 65\%$ compared to a “do nothing” approach. Abatement projects to be completed within 6 months of commissioning of NAP4.	A N <sub>2</sub> O emissions reduction strategy for the site is currently being implemented with N <sub>2</sub> O abatement technology now installed in NAP2 and 3 of the site’s existing nitric acid plants from July 2013. N <sub>2</sub> O emissions are continually monitored in these plants.		
Water Emissions	New Plant and Equipment to comply with existing EPL conditions for effluent discharge parameters.		mg/L	Requirement incorporated into design. Effluent discharged from the site is continually monitored and reported in the site’s Annual Return.	
			90% limit		100% limit
		As			0.05
		Oil and Grease			10
		Nitrogen	1500		2000
		Cr (6+)	0.05		0.2
		TSP			50

Criteria	Standard	Performance Measure		Comment
		pH	6.2 – 9.5	
		Temperature	43°C	
		Volume	4500kL/day	
		Nitrogen Mass Discharge	200tpa	
Production Limits	Production not to exceed prescribed levels.	Ammonia – 360ktpa Nitric Acid – 605ktpa Ammonium Nitrate – 750ktpa		Requirement incorporated into design.  Production during the 2012/2013 reporting period was as follows: Ammonia – 337ktpa Nitric Acid – 274ktpa Ammonium Nitrate – 347ktpa

To ensure that environmental performance standards are appropriately integrated into the new plant design and associated construction activities, a Construction Safety and Environmental Management Plan (CSEMP) has been developed and approved for use by Department of Planning and Infrastructure (DoPI) in 2011. Environmental control measures addressed in the CSEMP relate to air quality, water quality, contaminated soil and acid sulphate soil, waste management, traffic, heritage and erosion and sediment control.

## 4 Project Status

### 4.1 Project Progress Review

Orica is undertaking the expansion of the site in a number of construction phases. This approach has been adopted to ensure that construction works associated with the upgrade have minimal impact on the site's existing operations and that upgraded ammonium nitrate product storage and loadout facilities are completed prior to the construction of the new Nitric Acid and Ammonium Nitrate plants. Construction activities are to be implemented in three phases involving:

Phase 1: Ammonia Plant Uprate: including improvement works designed to increase production capacity of the existing ammonia plant from 295ktpa to 360ktpa. This phase was completed, with operation commencing of the uprated Ammonia Plant on 28 February 2012.

Phase 2: Upgrade and improvement works associated with the site's supporting infrastructure: including the construction and upgrade of the site's ammonium nitrate storage facilities and product load out infrastructure. Construction works associated with this phase have been designed to reduce the site's risk profile associated with the storage of ammonium nitrate and the transportation and use of ammonia onsite.

**Phase 3:** Ammonium nitrate expansion: construction works designed to increase ammonium nitrate production capability of the site from 430ktpa to 750ktpa through the construction of a new nitric acid and ammonium nitrate plant.

A summary of construction activities associated with the three phases of the project is detailed in Table 2:

**Table 2 – Construction activities associated with project construction phases**

Phase	Description of Work	Timing
<b>Trident Ammonia Plant Expansion Construction Scheduling</b>		
PHASE1	<b>Ammonia Plant Expansion – Plant Air Compressor Building</b> <ul style="list-style-type: none"> <li>Construction of Plant Air Compressor building shell (compressor installed in Stage 1(b)).</li> </ul>	Complete
	<b>Ammonia Plant Expansion - Installation/Modification of Plant</b> <ul style="list-style-type: none"> <li>Installation of new equipment including new compressor</li> <li>Process vessels, pipework and instruments in the Ammonia Plant.</li> </ul>	Complete
	Final commissioning and operation of the expanded Ammonia Plant.	29/2/2012
<b>Description of Work</b>		<b>Timing</b>
PHASE2	<b>OBL 1(a) –Nitrates Infrastructure &amp; ANS Loadout</b> Installation of new site infrastructure <ul style="list-style-type: none"> <li>The new site entrances</li> <li>Internal access roads</li> <li>Security and weighbridge facilities</li> <li>ANS product storage and despatch facilities</li> <li>WANS storage tank and load out facility</li> <li>First Flush System</li> </ul>	TBA
	<b>OBL 1(b) – Nitrates Despatch &amp; Support Infrastructure</b> <ul style="list-style-type: none"> <li>Construction of new AN Bag store</li> <li>AN Despatch facilities and amenities</li> <li>Demolition of existing AN Bag store and despatch</li> <li>Construction of new AN Bulk Store</li> <li>Modification to existing AN bulk store</li> <li>Duplication of the WANS plant</li> <li>Construction of new control room and electrical infrastructure</li> <li>Installation of a Transtank for storing diesel</li> </ul>	TBA
	<b>OBL 2 – Ammonia Management Improvement (AMI) project</b> <ul style="list-style-type: none"> <li>Simplification of the ammonia distribution network</li> <li>Ammonia detection and monitoring system improvements</li> <li>Ammonia collection and treatment improvements</li> <li>Plant tie ins</li> </ul>	TBA
PHASE3	<b>NAP4 – Nitric Acid &amp; AN Solution plants and Support Infrastructure</b>	TBA

Phase	Description of Work	Timing
	<ul style="list-style-type: none"> <li>• Construction of the NAP4/ ANS Plant and tie-ins</li> <li>• Construction of Nitrates support infrastructure</li> <li>• New Nitric Acid Storage</li> <li>• Ammonia Storage</li> <li>• Boiler</li> <li>• Cooling Tower</li> <li>• Demin Plant expansion</li> <li>• Instrument Air upgrades</li> <li>• New ammonia pumps</li> <li>• Pipebridges &amp; transfer lines.</li> </ul>	
	<p><b>AN3 – AN Prill Plant</b></p> <ul style="list-style-type: none"> <li>• Construction of ANP3 Dry Section plant</li> <li>• Tie-ins</li> </ul>	TBA

Orica is currently undergoing discussions with customers to confirm market growth profile in order to determine the optimal time to commence construction of the remaining two phases of the expansion construction schedule.

A summary of the expansion works completed between 1 December 2012 and 30 November 2013 associated with the three project implementation phases is detailed below.

#### 4.1.1 *Phase 1: Ammonia Plant Expansion*

Works that have been performed in the last 12 months associated with the uprate of the Ammonia Plant include:

- Stack emission testing of Reformer and Pre Reformer monitoring points in accordance with the site's EPL.
- Quarterly compliance noise monitoring in compliance with the noise management plan.
- Noise verification vesting of CO<sub>2</sub> vent.
- Regulatory reporting in accordance with the approvals Condition of Consent.

#### 4.1.2 *Phase 2: Outside Boundary Limits*

Works completed in the previous 12 months associated with Phase 2 activities include:

- No construction activities have commenced in the previous 12 months associated with Phase 2 of the expansion project.
- Submission of all of the required statutory report documentation required for the commencement of construction activities associated with OBL 1(a).
- Submission of required statutory documentation related to OBL 1(b) including construction safety study, fire safety study and HAZOP reports.
- N<sub>2</sub>O abatement technology installed in Nitric Acid 2 and 3 Plants.

#### **4.1.3 Phase 3: Nitrate expansion**

Works completed in the previous 12 months associated with Phase 3 activities include:

- No construction activities have commenced in the previous 12 months associated with Phase 3 of the expansion project.
- Finalisation of NAP4 and ANP3 design.
- Submission of hazard related documentation to DoPI including a HAZOP report, fire safety study and construction safety study reports.

#### **4.2 Planned Project Progress during 2013/2014**

In light of current market conditions, construction works associated with phase 2 and phase 3 of the project is on hold. Orica is currently consulting with customers to determine an appropriate time to complete the project. Orica is still progressing with reporting requirements associated with Phase 1 as detailed in the project approval Condition of Consent.

Project works anticipated to be completed in the following twelve months include:

##### **4.2.1 Phase 1 Ammonia Plant Uprate**

- Environmental monitoring as outlined in the site's Environment Protection Licence (EPL).
- Annual noise monitoring in compliance with the updated project noise monitoring plan.
- Reporting requirements as detailed in the project's Development Consent

##### **4.2.2 Phase 2 - Outside Boundary Limits (OBL)**

- No construction works associated this phase are expected in the next 12 months.

##### **4.2.3 Phase 3 – Nitrates expansion**

- No construction works associated this phase are expected in the next 12 months.

##### **4.2.4 Nitric Acid Tank and Ammonia Flare Development Consent Modification**

Orica is currently seeking approval to modify the expansion project Development Consent. The modification primary involves the installation and operation of three flaring systems and the construction of a 10,000t nitric acid tank. An application to modify the Development Consent and detailed Environmental Assessment (EA) was submitted to DoPI on the 15 November 2013.

## 5 Environmental Monitoring and Complaints Summary

### 5.1 Environmental Monitoring

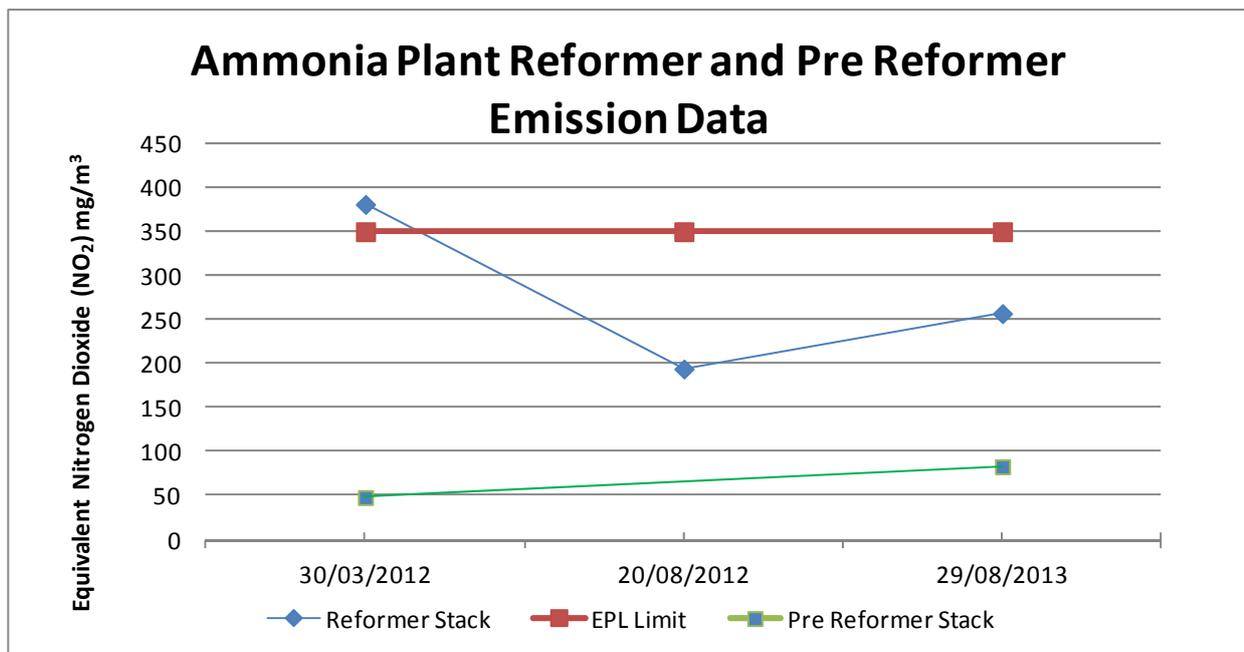
The Project Approval and EPL does not require environmental monitoring to be undertaken during the construction phase of the Project.

The updated Ammonia Plant has completed all required environmental monitoring in accordance with the site Environment Protection Licence (EPL 828).

#### 5.1.1 Air Quality

Orica is required to perform stack emission testing of both the Pre-reformer and Reformer Stacks annually in accordance with the site's EPL anniversary date, 1 April each year. Additional nitrogen oxide (NO<sub>x</sub>) emission sampling was undertaken on the Reformer Stack following the commissioning of a new purge gas scrubber in July 2012, with NO<sub>x</sub> results found to have significantly reduced (Figure 2).

**Figure 2** – Stack emission testing for updated Ammonia Plant



#### 5.1.2 Noise

In order to demonstrate compliance to noise criteria for new plant and equipment associated with the ammonia plant update, the following procedure was developed by Orica and detailed in the expansion project's Noise Management Plan (NMP). This plan was approved by the DoPI in July 2011, with compliance to the project's noise criteria to be demonstrated through the:

- Update of the site's noise model (Table 3) following the commencement of operation of the project to predict the noise contribution for expansion project new plant and equipment in relation to identified reference monitoring locations. This process assisted in the identification of further noise reduction opportunities.
- Undertake attended and unattended noise monitoring to evaluate changes in noise levels and identify trends in ambient noise levels.

Noise modelling detailed in the 2009 environmental assessment predicted that the noise contribution associated with the site expansion would satisfy the 10dB below pre expansion predicted levels consent requirement. As the expansion project is being implemented in three phases, the noise model will be updated following the commencement of operations for each project phase.

**Table 3** – Noise compliance modelling results detailed in 2011 mod 1 report

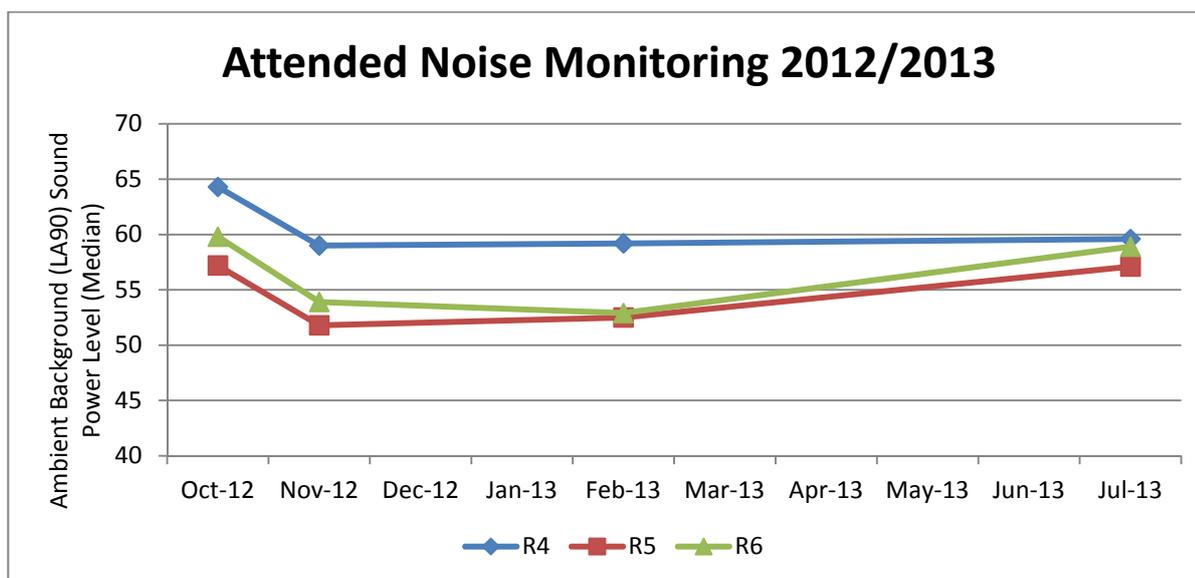
Assessment Location	Predicted Sound Pressure Levels LAeq, 15min	
	Existing Plant	Uprated Plant
Assessment Location R1	50	37
Assessment Location R2	53	41
Assessment Location R3	51	39

The site's noise model was updated following the commencement of operations of the uprated ammonia plant representing the completion of Phase 1 construction activities. This model was updated using noise data collected from near field noise monitoring. Updated site noise modelling results confirmed that that noise level contribution associated with the uprated ammonia plant were less than 10dB below the predicted noise levels for the reference locations in Stockton and therefore did not increase existing noise levels (Table 4).

**Table 4** – Revised compliance modelling results (quarter 1 testing)

Assessment Location	Predicted Sound Pressure Levels LAeq,15min (dBA)		
	Existing Plant	Post Ammonia Plant Uprate	Ammonia Plant contribution
Assessment Location R1	50	50	20
Assessment Location R2	53	52	22
Assessment Location R3	51	50	21

Attended and unattended noise monitoring was also undertaken at the reference locations in order to establish noise trends, consistent with the process previously undertaken in 2011. Whilst it is difficult to directly compare current noise data against historical trends due to variability in the meteorological conditions in which the data was collected, attended and unattended monitoring can be useful in gaining an increased understanding of the individual noise sources that contribute to the overall noise profile of the site. Noise monitoring was undertaken on a quarterly basis for a 12 month period along the Orica boundary (Figure 3).

**Figure 3 – Attended noise results for Kooragang Island**

Following the completion of both attended and unattended monitoring undertaken over the 12 month monitoring period, the data was evaluated against the baseline 2012 data, with medium noise levels found to have decreased (Table 5).

**Table 5: Comparison of baseline and attended and unattended monitoring results**

Reference Measurement Location	Ambient Background LA90 Sound Pressure Levels dBA			
	Baseline Levels (2012)		Measured Levels 2012-2013	
	Median Range	Median	Median Range	Median
R4 - Roadside (South)	61.2 - 62.9	62.0	59.0 - 64.3	59.6
R5 - Riverside (Central)	55.8 - 58.2	57.0	51.8 - 58.0	55.4
R6 - Roadside (North)	58.2 - 60.6	59.8	53.0 - 60.5	57.7

A report detailing the analysis was submitted to the DoPI. This report is detailed in **Appendix C**.

### 5.1.2 CO<sub>2</sub> Noise Reduction Project

A project aimed at reducing the noise generated from the Ammonia Plant CO<sub>2</sub> Vent has been completed, with noise monitoring to be undertaken to assess the effectiveness of the silencer which was installed in November 2012. The noise levels measured during November 2012 are generally lower than the median baseline levels reported in 2011.

## 5.2 Community Complaints

Information on how the community can contact Orica to discuss the project or make a complaint in relation to our activities is provided in community newsletters, which are distributed to adjacent suburbs including Stockton, Fern Bay, Carrington, and areas of Mayfield, Maryville and Tighes Hill, via the Orica Kooragang Island website ([www.orica.com/kooragang](http://www.orica.com/kooragang)) and in monthly advertorials run in the Newcastle Herald and local papers The Star and the Portside Local.

All complaints received by Orica are documented in the site's Safety, Health and Environment Reporting and Management Information System. All complaints are investigated to establish the root cause of the concern.

During the 2012/2013 reporting period 7 complaints were recorded. Although noise related complaints could not be directly be attributed to the uprate of the Ammonia Plant, complaints received following the start of operation of the uprated Ammonia Plant have been included in this report for completeness (Table 6).

**Table 6** – Community complaints potentially attributable to the Project

Year	Total	Concern raised in complaint
2013	7	<ul style="list-style-type: none"> <li>• 6 complaints relating to noise</li> <li>• 1 complaint relating to ammonia odour as a result of an incident in the Ammonia Plant</li> </ul>
2012	27	<ul style="list-style-type: none"> <li>• 18 related to ignition of vent stacks during Ammonia Plant restart</li> <li>• 9 complaints relating to noise</li> </ul>
2011	219	<ul style="list-style-type: none"> <li>• 8 August 2011 hexavalent chromium incident</li> </ul>

## 6 AN1 Prill Tower Emission Reduction Investigations

Condition 27 of the Project Approval requires:

- 27 The Proponent shall investigate and report on the progress to reduce PM<sub>10</sub> emissions from the existing Prill Tower on the Ammonium Nitrate Plant No. 1. The report shall:
- a) be provided annually, and can be reported through the Annual Environmental Management Report required by condition 50; and
  - b) Provide an update on the timeframe for the implementation of emission controls.

In addition to the Development Consent Condition requirements Orica also applied to the NSW EPA to include the particulate investigation program as a Pollution Reduction Program (PRP) in the site's EPL. The EPL PRP requires the following to be undertaken:

**U1.1** *The licensee must undertake a program of works to characterise the emission of particulates from the No. 1 Ammonium Nitrate ("AN1") Prill Tower. The investigation must include, but is not limited to, an assessment of the following:*

- (a) *Monitoring of the concentration of coarse and fine particulates; and, the estimated annual mass discharge of particulates from the AN1 Prill Tower. Monitoring must be undertaken in accordance with the requirements under Australian Standard AS4323.1:1995.*
- (b) *A review of the relationship between plant operating conditions and particulate concentrations and characteristics.*
- (c) *A review of the effect of meteorological conditions on particulate concentrations and characteristics.*

**U1.2** - *The licensee must undertake a review that identifies available options to reduce particulate emissions from the AN1 Prill Tower and assess the feasibility of the options identified, and*

**U1.3** - *The licensee must undertake a detailed evaluation of identified feasible options to reduce particulate emissions from the AN1 Prill Tower.*

In the last 12 months the following activities have been undertaken in accordance with the PRP requirements:

- Completed the isokinetic particulate sampling program as detailed in U1.1 of the PRP. A Report detailing the results was issued to the EPA on the 28 September 2012.
- Completion of the particulate reduction feasible options review as detailed in U1.2 of the PRP. A report detailing the options evaluated during this process was issued to the EPA on the 28 March 2013.
- Completion of a detailed evaluation process, including developing a preliminary implementation plan was presented to the EPA on the 12 December 2013. The report being prepared in accordance with EPL condition U1.3 will be submitted to the EPA prior to 31 December 2013, as required by the licence.

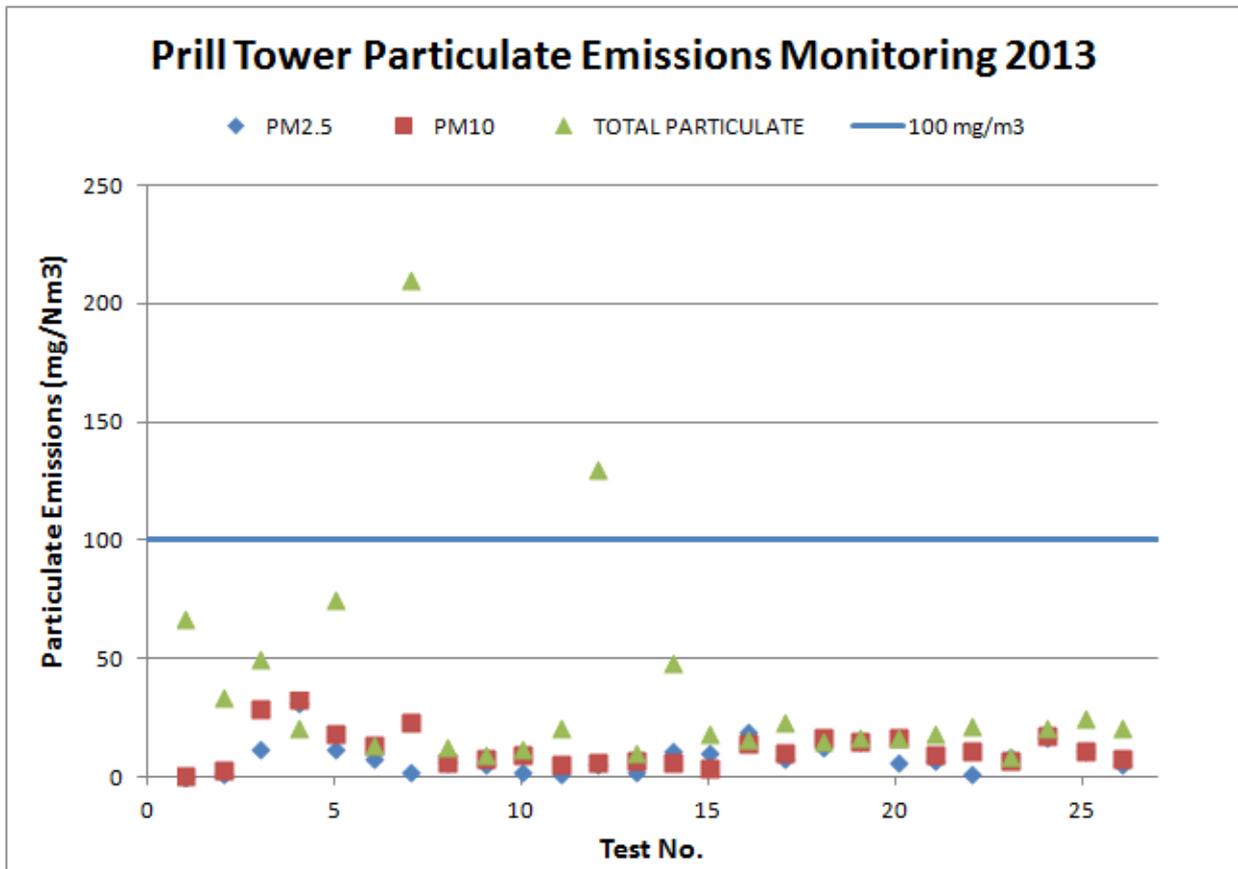
In the next 12 months the following activities are anticipated to be undertaken.

- Continuation of the AN1 prill tower particulate monitoring program in agreement with the EPA.
- Commencement of process improvement activities designed to minimise the generation of coarse particulate from the prill tower in accordance with the commitments outlined to the EPA.

## **6.1 Prill Tower particulate monitoring data**

Orica has completed a particulate monitoring program over the past 12 month period to establish the concentration and characteristics of particulate being emitted from the AN1 prill tower. Results of the sampling program are detailed below in **Figure 4**.

Figure 1: Site Location



The particulate results demonstrated that particulate levels associated with PM 10 and PM 2.5 are significantly below regulatory limit's and also lower than the conservative PM10 concentration data that was utilised in the air quality assessment that was previously submitted to the DoPI to support Orica's expansion project approval.

## 7 Project Approval Compliance

A review of the current status of compliance with the Project Approval 08-0129 is detailed in the table below. Where there was not complete compliance with the condition actions to address the issues are detailed.

**SUMMARY OF KEY PROJECT APPROVALS**

Issue	Condition	Requirement	Compliance Status	Comment
<b>General Responsibilities</b>	1	Implement all reasonable and feasible measures to prevent pollution and minimise harm to the environment.	Compliant	Management plans and project management activities are in place to ensure that environmental harm during construction activities is minimised.
	2	Project to be carried out in accordance with the EA, Statement of Commitments, Project Approval and Submission Approval, Modification report and PHA.	Compliant	Project documentation has been updated to reflect development consent mod1 documentation.
	3	Management of inconsistencies between the various Project Approval documents.	n/a	No issues were identified during the period.
	4	Comply with the requirements of the Director-General	n/a	No issues were identified during the period.
	5	Production capacity limits for ammonia, nitric acid and ammonium nitrate.	Compliant	Ammonia – 337ktpa (360ktpa) Nitric Acid – 274ktpa (605ktpa) Ammonium Nitrate – 347ktpa (750ktpa)
	6	Management of Project Approval conditions in the event that there are delays to the stages of the project.	Compliant	Construction works associated with Phase 2 and 3 of the expansion construction program have been delayed. Regulatory reporting associated with the updated ammonia plant (Phase 1) will continue in accordance with the Conditions of the project approval.
	7	Submission of plans on a progressive basis.	Compliant	Orica has submitted plans on a progressive basis following discussions with the Department of Planning and Infrastructure.
	8	Buildings and structures to be constructed in accordance with the requirements of the Building Code of Australia.	Compliant	Buildings are being designed in accordance with the relevant requirements. Construction and occupation certificates have been obtained for relevant buildings.
	9	The Proponent is required to repair any public infrastructure damaged as a result of the Project.	n/a	Phase 1 – complete, No repairs were required to be undertaken. Phase 2 and 3 – no works associated with these construction stages have commenced during the reporting period.
	10	Undertaking of a dilapidation report prior to the commencement of construction. The report is to be undertaken in consultation with NPC and submitted to the Department of Planning.	Compliant	Phase 1 –complete A revised dilapidation report for Phases 2 and 3 has been prepared in consultation with NPC and submitted to the Department of Planning and Infrastructure.

Issue	Condition	Requirement	Compliance Status	Comment
	11	Obtain approval from service providers prior to commencement of utility construction activities	n/a	There have been no utility related construction activities to date.
	12	Ensure all equipment is maintained and operated in a proper and efficient manner.		Phase 1 - ongoing. Maintenance and training activities associated with Phase 1 have been incorporated into routine plant activities.
	13	Section 94 contribution to NCC.	Complied.	Section 94 contribution was been submitted to NCC in September 2010.
<b>Hazard Management</b>	14	Undertake the following studies and submit to DoP Director-General for approval:		
	a)	<ul style="list-style-type: none"> <li>Fire Safety Study</li> </ul>	Complied.	<p>Site FSS – An update regarding the progress of recommendations detailed in this study was detailed in the site's Independent Hazard Audit submitted to the DoPI on 28 March 2013.</p> <p>Phase 1 - The Phase 1 Fire Safety Study (FSS) was approved by Fire and Rescue NSW on 19 July 2011</p> <p>Phase 2 – OBL 1(a) was submitted to DoPI and FRNSW and approved on 24 May 2012</p> <p>Phase 2 – OBL 1(b) was submitted to DoPI and FRNSW on 6 November 2012</p> <p>Phase 3 – FSS was submitted to DoPI and FRNSW on 7 January 2013.</p>
	b)	<ul style="list-style-type: none"> <li>HAZOP</li> </ul>	Complied.	<p>Phase 1 - Complete</p> <p>Phase 2 - HAZOPs associated with this phase of works have been submitted to the DoPI for approval.</p> <p>Phase 3 –HAZOPs associated with this phase of works have been submitted to the DoPI for approval</p>
	c)	<ul style="list-style-type: none"> <li>Final Hazard Analysis</li> </ul>	Complied.	Phase 1 - complete

Issue	Condition	Requirement	Compliance Status	Comment
				Phase 2/3- no construction works associated with Phase 2 or 3 have commenced
	d)	<ul style="list-style-type: none"> <li>Construction Safety Study</li> </ul>	Complied.	Phase 1 - complete  Phase 2- n./a no construction works associated with Phase 2 or 3 have commenced
	15	Undertake the following studies and submit to DoP Director-General for approval: <ul style="list-style-type: none"> <li>Transport of Hazardous Materials Study</li> </ul>	Complied	A Transport of Hazardous Materials Study was submitted to the DoPI on 16 July 2013.
		<ul style="list-style-type: none"> <li>Emergency Plan</li> </ul>	Complied	Phase 1- This study was prepared and submitted to DoPI on 23/12/2010. DoPI approved the document on 18/07/11.
		<ul style="list-style-type: none"> <li>Safety Management System</li> </ul>	Complied	This study was prepared and submitted to DoPI on 23/12/2010. DoPI approved the document on 11/03/2011
	16	Submission of Pre-Startup Compliance Report	Complied	Phase 1 - This study was been developed and approved by the DoPI
	17	Submission of Post-Startup Compliance Report	Complied	Phase 1 – This report was submitted to the DoPI May 2012 in accordance with the Conditions requirement.
	18	Submission of Risk Reduction Program to reduce risk to neighbouring land	Complied	This Condition is deemed satisfied through the risk reduction measures detailed in the Mod1 PHA.
	19	Undertake a Hazard Analysis of the site operations	n/a	This report was not required to be submitted during the period.
	20	Undertake a comprehensive Hazard Audit of the Project and submit a report to the DoP Director-General	Complied	A Hazard Audit of the site was completed during February 2013, with a report submitted to the DoPI on 28 March 2013.
<b>Air Quality</b>	21	Emission controls detailed in Section 7.8.1 of the Environmental Assessment are to be incorporated into the design.	Complied	The Refrigeration Purge Gas Scrubber has been commissioned and is operating in accordance with the environmental assessment.
	22	Air emission monitoring required by the EPL is to be undertaken for the Project.	Complied	Air emission monitoring has been performed on the uprated ammonia plant in accordance with the requirements of the site's EPL.
	23	Undertake an Air Quality Verification Study	Complied	An Air Quality Verification Study was completed for the Ammonia Plant uprate and submitted to the DoPI on 16 July

Issue	Condition	Requirement	Compliance Status	Comment
				2013.
	24	Implement reasonable and feasible actions to address exceedences identified in the Air Quality Verification Study or routine monitoring.	Complied	No exceedances were identified in the Air Quality Verification Study.
	25	Minimisation of dust generation from Project using reasonable and feasible means.	Complied.	Measures for the control of dust were included in the Construction Environmental Management Plan which was approved by DoPI in February 2010. No construction works were completed during this period of reporting
	26	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 Construction Environmental Management Plan which was approved by DoP in February 2010.
	27	An annual report must be prepared detailing the progress of the project to reduce PM10 emission from the existing Prill Tower	Complied.	A summary of the progress is detailed in this Annual Environmental Management Report.
<b>Greenhouse Gas Emissions</b>	28	Emission reduction technologies to be implemented in accordance with EA commitment	Complied.	The following emission reduction technologies have been included in the Ammonia Plant; a Pre-Reformer, a new compressor powered by a steam turbine and a larger motor generator (Item28b) have been installed in the plant.
	29	Implementation of N <sub>2</sub> O abatement technology on NAP1, NAP2 and NAP3.	n/a during the period.	N <sub>2</sub> O abatement technology was installed in the No. 2 and 3 Nitric Acid Plants during the period. The performance of the technology is currently being assessed.
	40	The Project is to meet the requirements of the EPL in relation to stormwater and effluent discharge	n/a during the period.	n/a during the period.
	37	A Water Efficiency Plan is to be prepared and implemented to the satisfaction of the DoP Director-General	Complied	Phase 1 – Complete The Water Efficiency was submitted to DPI on 20/04/2011 and approved on the 14/06/2011. Phase 2 and Phase 3 – Water efficiency report completed and submitted to the DoPI on 16 July 2013.
	41	Compliance with s120 of POEO	Complied.	There were no water pollution related incidents associated with the Project.
	42	A Stormwater Management Plan is to be prepared and implemented	Complied.	Phase 1 - Completed in May 2010. Phase 2 – the Stormwater Management Plan for Phase 2 and 3 has been submitted to the DoPI.
	43	Bunding design to meet Australian and DECCW requirements	Complied	A bunding specification in accordance with the Australian standard has been implemented into the design of the plants.

Issue	Condition	Requirement	Compliance Status	Comment	
<b>Noise Management</b>	30	Noise emissions from Project to be 10dB(A) below that of the existing operations.	Complied.	Phase 1- Design of plant and equipment has considered the requirements to meet this condition. Phase 2 and 3- Design of plant and equipment has considered the requirements to meet this condition. Noise monitoring undertaken following the commencement of operations of the uprated ammonia plant has confirmed compliance to this requirement.	
	31	Existing Operations Noise Verification Program to be developed and implemented to the satisfaction of the DoP Director-General	Complied.	An updated noise management plan, including details of the projects noise verification program was submitted and approved by the DoPI in May 2012	
	32	A Noise Management Plan is to be developed and implemented. The plan is to be updated annually.	Complied	An updated noise management plan, including details of the projects noise verification program was submitted and approved by the DoPI in May 2012	
	33	Construction hours for the Project are:		Complied.	Phase 1 - Complete. Phase 2 and 3 – no construction activities have commenced during this time. A revised CEMP for Phases 2 and 3 has been developed, with control measures to address noise Conditions associated with the approval, was submitted to DoPI on 05/11/11.
		Monday – Friday	7am to 6pm		
	Saturday	8am to 1pm			
	Sunday and Public Holidays	Nil			
	Construction outside of these hours is permitted if inaudible at the nearest residences.				
	Operational hours for the Project are:		Complied		
	All days	24 hours			
<b>Land Management</b>	38	Provide a Project Site Contamination Plan to the DoP Director-General	Complied.	Phase 1 - Complete. Phase 2 and 3 – no construction activities have commenced at this time. However the revised CEMP for Phase 2 and 3, which includes measures for the management and identification of contamination, was submitted to DoPI on 05/11/2011.	
	39	Prepare an Acid Sulphate Soil Management Plan	Complied.	Phase 1- Complete. Phase 2 and 3 – no construction activities have commenced at this time. However the revised CEMP for Phase 2 and 3, which has measures for the management and identification of ASS, was submitted to DoPI on 05/11/2011.	
	44	Prepare an Erosion and Sediment Control Plan	Complied.	Phase 1 -Complete.	

Issue	Condition	Requirement	Compliance Status	Comment
				Phase 2 and 3 – no construction activities have commenced at this time. However the revised CEMP for Phase 2 and 3, which has measures for erosion and sediment control, was submitted to DoPI on 05/11/2011.
<b>Traffic Management</b>	34	All roads, access points and parking to comply with the nominated Australian Standards	n/a during the period.	
	35	Traffic associated with the Project must not impede traffic on Greenleaf Road and Heron Road	Complied.	Phase 1- Complete. Phase 2 and 3 – no construction activities have commenced at this time. However a revised Construction Traffic Management Plan for Phase 2 and 3, which includes measures for the management of traffic during construction, was submitted to DoPI on 05/11/2011.
	36	A Construction Traffic Management Plan (CTMP) is to be submitted to the DoP Director-General	Complied.	Phase 1 - Complete. Phase 2 and 3 – no construction activities have commenced at this time. However a revised CTMP for Phase 2 and 3, including measures for the management of traffic during construction, was submitted to DoPI on 05/11/2011
<b>Visual</b>	45	Prepare a Landscape Plan for the Project and submit to the DoP Director-General	n/a during the period.	
	46	Lighting to comply with Australian Standards and avoid nuisance to surrounding landusers and roadways.	n/a during the period.	Phase 1 – There was no additional external lighting associated with the project.
<b>Waste Management</b>	47	Waste to be classified in accordance with DECCW guidelines and disposed of to approved premises	Complied.	Phase 1 - Complete. Phase 2 and 3- no construction activities have commenced at this time. However the revised CEMP for Phase 2 and 3, which has measures for the appropriate disposal of waste, was submitted to DoPI on 05/11/2011.
	48	Prepare and implement a Waste Management Plan which has been submitted to the DoP Director-General	Complied	A waste management plan from the uprated Ammonia Plant was submitted to the DoPI on 28 March 2013.
	53	The following information regarding the Project is to be included on the website: <ul style="list-style-type: none"> <li>• Copy of all current statutory approvals</li> </ul>	Complied	Copies of relevant information relating to the project continue to be included on the Kooragang Island website ( <a href="http://www.orica.com/kooragang">www.orica.com/kooragang</a> ).

Issue	Condition	Requirement	Compliance Status	Comment
		<ul style="list-style-type: none"> <li>• Copy of the current EMS and associated plans and programs</li> <li>• Copy of the last 5 years of Annual Reports</li> <li>• Copy of Independent Environmental Audit reports and responses to recommendations</li> </ul>		
	51	The DoP Director-General is to be notified of any incident associated with the Project that results in actual or potential for offsite harm to people or the environment	Complied	A precautionary notification relating to an ammonia release from a pressure relief valve in the Ammonia Plant was made to the DoPI on 11 March 2013.
	50	Prepare an Annual Environmental Management Report and submit to the DoP Director-General	Complied.	Submission of this report annually
	52	An Independent Environmental Audit by a team of experts is to be undertaken in relation to the Project	n/a during the period.	Preparations to identify a suitable experienced auditor to undertake the audit have commenced with the audit to be completed by the 28 February 2014.

## Appendix A

# Appendix B