



ORICA KOORAGANG ISLAND

AMMONIA PLANT UPRATE WASTE MANAGEMENT PLAN

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1 Introduction

Orica Australia Pty Ltd (Orica) operates an ammonia nitrate manufacturing facility on Kooragang Island located within the port of Newcastle. The facility commenced operations in 1969 and has undergone several upgrades aimed at increasing the site's ammonium nitrate manufacturing capability since. Currently the site operates an Ammonia Plant, three Nitric Acid Plants, two Ammonium Nitrate Plants and associated despatch and support infrastructure (Existing Operations).

On 1 December 2009 the NSW Minister for Planning granted approval for the expansion of the site's ammonium nitrate manufacturing capability from 500ktpa to 750ktpa (expansion project). The approved expansion program broadly consisted of three construction phases being:

- Phase 1: The uprate of the existing Ammonia Plant to enable the increase manufacture of ammonia from 860 to 1050 tonnes/day.
- Phase 2: Upgrade to the site's supporting infrastructure including the construction of new ammonium nitrate storage and product dispatch facilities.
- Phase 3: The construction of an additional nitric acid plant (NAP4) and ammonium nitrate plant (ANP3).

Whilst construction activities associated with phase 2 and 3 have yet to commence, the Ammonia Plant uprate has been completed with operations commencing on the 29 February 2012. In compliance with Condition 48 of the expansion project Development Consent, Orica has developed an Ammonia Plant Waste Management Plan.

Condition 48 of the expansion project's approval states:

The proponent shall prepare and implement a Waste Management Plan for the Project to the satisfaction of the Director-General. This Plan must:

- a) Be submitted to the Director-General for approval within 1 year of the commencement of operations of the project;*
- b) Characterise the various waste streams of the Project and include details of quantities and destinations of all waste materials;*
- c) Describe what measures that would be implemented to avoid, reuse or recycle the waste generated by the Project;*
- d) Identify a waste reduction target for the project and detail procedures for measuring the Projects performance against the target; and*
- e) Include a program to monitor the effectiveness of these measures.*

This waste management plan is focused primarily on the management of wastes generated from the uprated Ammonia Plant. An additional waste management plan for the site will be developed following the completion of the remaining 2 phases of the expansion project.

2 Relevant Legislation, Guidelines and Policies

2.1 Relevant Legislation

Key legislation covering the management of waste includes:

[Protection of the Environment Operations Act 1997 \(POEO Act\)](#)

The POEO Act aims to protect, restore and enhance the quality of the environment. Under the Act, (Part 5.5 Section 142A) it is an offence to pollute the environment. The Act has consolidated several pieces of previous environmental legislation. The Act administers a number of related regulations, and also controls the transport and disposal of wastes.

[Protection of the Environment Operations \(Waste\) Regulation 2005](#)

This regulation contains general environmental obligations for waste activities, waste facilities and waste transporters, and special provisions relating to matters such as contaminant immobilisation approvals and the management of particular wastes (including asbestos waste).

[NSW DECCW Waste Classification Guidelines 2009](#)

All wastes must be classified in accordance with the DECCW 2009 Waste classification Guidelines prior to disposal. These guidelines provide practical guidance in the relevant requirements of the POEO Act and Waste Regulation

[DECC Guidelines on Resource Recovery Exemptions \(Land Application\), April 2008](#)

This guidance note outlines the criteria that DECCW will use in considering an application to apply waste or waste-derived material to land. It also provides assistance on preparing an application to DECCW to exempt a waste from the waste regulatory framework.

[Waste Avoidance and Resource Recovery Act 2001 \(WARR Act\)](#)

The WARR Act replaced the *Waste Minimisation and Management Act 1995* and controls waste generation and waste reduction.

All wastes must be classified in accordance in accordance with the *DECCW 2009 Waste Classification Guidelines* prior to disposal. These guidelines provide practical guidance in the relevant requirements of the POEO Act and the Waste Regulations.

[Occupational Health and Safety Act 2000](#)

The NSW *Occupational Health and Safety Act 2000*, aims to protect the health, safety and welfare of people at work. It identifies general requirements which must be met at all places in NSW.

[Environmentally Hazardous Chemicals Act 1985 \(EHC Act\)](#)

The Act provides a mechanism for regulating chemicals of environmental concern throughout their entire life cycle. The EHC Act allows DECCW to regulate activities, chemicals or groups of chemicals of environmental concern. These requirements are set out in chemical control orders and may require a licence or prohibit certain activities.

2.2 Orica Guidelines and Policies

Orica is committed to operating within the principles outlined in the Waste Avoidance and Resource Recovery Act 2001, which includes the efficient use of resource inputs and ensuring that resource management options are considered against a hierarchy of the following order:

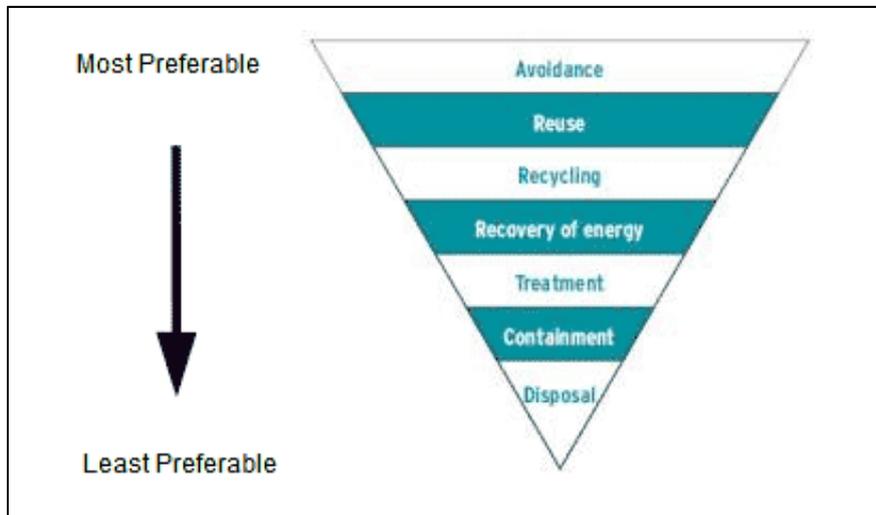


Figure 1 – Waste management hierarchy

These objectives are achieved through the implementation of Orica's Waste Management Model Procedure MP-EP-004F, Kooragang Island Waste Management Procedure, and the expansion project Construction Waste Management Plan (March 2010).

2.3 Ammonia Plant Waste Management Strategy

Waste materials generated onsite are recycled where possible, with a comprehensive recycling programme implemented onsite. Due to residual contamination contained in certain materials recycling may not always be feasible. Reuse and recycling options have been incorporated into the ammonia plant design aimed at minimising the generation of both solid and liquid wastes. All non-recyclable wastes are assessed in accordance with EPA guidelines and disposed of at an approved waste facility.

Waste streams generated as a result of the Ammonia Plant uprate have been divided into three categories being:

1. Construction wastes generated during plant improvement and modification activities and include scrap metals, concrete, timber and packaging wastes.
2. Maintenance wastes resulting from maintenance activities undertaken on ammonia plant and equipment. Maintenance wastes are typically generated periodically, corresponding to planned maintenance periods. Maintenance wastes include spent oils, greases, oil rags, absorbents and process residues include wash water and cooling tower precipitates.
3. Operational wastes that are generated during normal operation of the ammonia plant and supporting activities. Operational wastes include spent catalyst, effluent and general refuse.

Disposal of materials is only undertaken by licensed waste contractors; with Orica ensuring final disposal strategy is consistent with NSW waste legislation. Orica's Kooragang Island waste management strategies are outlined in Table 1.

Table 1: Ammonia Plant waste management strategy

Description	Avoidance / Minimisation/ Recycling Strategy
Wastes Generated during Construction Activities	
Scrap metal	<ul style="list-style-type: none"> Waste scrap metals are segregated into different disposal bins including for ferrous, copper and aluminium and recycled through a scrap metal merchant.
Timber	<ul style="list-style-type: none"> Pallets are reused onsite where possible Excess untreated pallets are transferred to an external party to be recycled as compost.
Concrete	<ul style="list-style-type: none"> Concrete is tested for the presence of contaminants and if suitable recycled through an external provider.
Asbestos	<ul style="list-style-type: none"> Disposed of at an appropriately licensed waste facility
Waste Generated during Maintenance Activities	
Water containing oil	<ul style="list-style-type: none"> Liquid assessed in accordance with the Waste Classification Guidelines (DECC, 2008) and disposed of to appropriately licensed facilities. Oil water waste streams are collected and treated through an oil water separator, whereby oil is concentrated and transported to an external facility for recycling.
Waste oil & grease	<ul style="list-style-type: none"> Equipment oils are placed through a filtration system and returned to the plant. Excess oil is sent to an external facility for recycling.
Oily rags/absorbents	<ul style="list-style-type: none"> Thorough assessment of risks in maintenance work to minimise the likelihood of any loss of containment requiring the use of absorbent materials. Oil is separated from oily rags and recycled.
Process precipitates	<ul style="list-style-type: none"> Process precipitates are assessed in accordance with the Waste Classification Guidelines (DECC, 2008) and disposed at an appropriately licensed facility.
Mineral fibre	<ul style="list-style-type: none"> Mineral fibre is disposed at an appropriately licensed waste facility.
Operation generated Wastes	
Ammonia Plant Catalyst	<ul style="list-style-type: none"> Orica is currently undertaking investigations into recycling opportunities for catalyst material. Ammonia catalyst is

	currently being stored onsite.
General refuse	<ul style="list-style-type: none"> Segregation of recyclable materials to minimise volume of waste disposed to landfill.
Paper and cardboard	<ul style="list-style-type: none"> Paper and Cardboard is segregated in designated collection bins for recycling.

3 Ammonia Plant Generated Waste streams

A list of each waste stream's qualities and disposal location is detailed in Table 2.

Table 2: Waste streams and qualities associated with the Ammonia Plant Update

Description	Source	Quantity*	Disposal Provider
Wastes generated during Construction Activities			
Scrap metal	Decommissioning of redundant equipment	138,715kg	SIMS Metals
Timber	Packaging timbers including pallets.	18,780kg	Newline Road Landfill (SITA)
Concrete	Plant modification and sustenance projects.	37,240kg	Boral
Asbestos	Legacy contamination. Orica is currently implementing a program of works aimed at progressively removing asbestos from site.	1,520kg	Newline Road as a special waste
Waste generated during Maintenance Activities			
Water containing oil	Water collected from site effluent oil collection zones.	42,964L	Renewable Oil Services
Waste oil	Generated from plant washdown and collection systems.	18,780L	Renewable Oil Services
Oily rags/absorbents	Generated predominantly during planned maintenance periods.	950kg	Renewable Oil Services
Precipitates	Precipitates collected during periodic maintenance activities cleaning out of cooling tower basins, heat exchangers and bunds.	10,996L	Transpacific Industries
Insulation materials	Replacement of pipe insulation.	0	Newline Road as special waste

Waste water containing arsenic	Generated during cooling tower maintenance, and also due to site legacy contamination.	44,480L	Transpacific Industries
Miscellaneous chemicals	Various operational and maintenance activities such as chem cleans.	2,268L	HAZMAT
Operation generated wastes			
Ammonia plant catalyst	Orica is currently undertaking investigations into recycling of catalyst wastes in compliance with the Hazardous Waste (Regulation of Exports and Imports Act 1989	145,000Kg	Stored onsite
General refuse	Generated by plant and support activities	134,816Kg	Newline Road Landfill (SITA)
Paper and cardboard	Generated by plant and support activities	6,272Kg	Visy

* Quantity generated during the period January 2012 to December 2012

4 Kooragang Island Waste Reduction Targets and Opportunities

Orica aspires to become a business that does no harm to people and the environment, in a commercially responsible way. This means becoming:

- Carbon neutral – no net generation of greenhouse gases to the atmosphere;
- Water neutral – no net consumption of potable water;
- Zero waste – no net generation of waste to landfill and requires innovative ways to prevent, reduce, reuse and recycle by product streams; and
- Environmentally friendly operations, products and services.

To support this vision Kooragang Island is committed to reducing total waste generated by the site by 5% over the next plant turnaround cycle. To achieve this waste reduction the site is currently implementing:

- Improved segregation for general waste to promote additional recycling opportunities;
- Implementation of a site waste management plan, outlining waste minimisation strategies associated with each waste generated onsite;
- Increased compliance auditing of site waste management practices;
- Employee training including defined waste management role responsibilities;
- Improved waste tracking and reporting capabilities;
- Increase site awareness of waste stream sources; and

- Improved waste management planning during planned plant maintenance.

Due to the periodic nature of waste generation onsite, normally associated with periods of planned plant maintenance, performance against this waste reduction target will be determined through annually reporting. In addition to reducing the site's waste disposal quantities, Orica will continue to explore further recycling opportunities for different waste streams both domestically and internationally.