AECOM

Prepared for:

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Proposed Ammonium Nitrate Facility Expansion
Submissions Report

AECOM

26 August 2009

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Environment

Distribution

Proposed Ammonium Nitrate Facility Expansion
Submissions Report

26 August 2009

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Technical Peer Reviewer:	**Date:**
Ruth Baker Principal Environmental Consultant	

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1.0 Introduction

1.1 Overview of Proposal

Orica Australia Pty Ltd (Orica) is seeking approval for the proposed expansion to the Ammonium Nitrate Facility located on Kooragang Island. The proposed expansion of the Ammonium Nitrate Facility includes the following:

- An additional Nitric Acid Plant (NAP4);
- An additional Ammonium Nitrate Plant (ANP3);
- Modification of the existing Ammonia Plant;
- Additional storages for nitric acid, solid ammonium nitrate and ammonium nitrate solution; and
- Upgrading of existing infrastructure such as cooling towers, air compressors, loading facilities, electrical systems, effluent treatment systems and the steam system.

Currently, ammonium nitrate (AN) is produced onsite as a precursor for use in the manufacture of commercial explosives for the mining and quarry industries. AN product is produced either in solution form or as one of three solid forms. Minor quantities of ammonia and nitric acid from the facility are also sold.

The Kooragang Island Facility is located on the south eastern most part of Kooragang Island, located within the Port of Newcastle. The area is industrial and the nearest residential premises to the facility are located at Stockton, approximately 800m east of the facility.

The proposed expansion of the facility falls within the type of development identified in Group 3 of Schedule 1 to *State Environmental Planning Policy (Major Development) 2005 (SEPP 2005)* and is therefore eligible for assessment under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). A project approval is therefore being sought for the proposed works.

1.2 Overview of Environmental Impact Assessment Process

The proposed project requires approval under Part 3A of the EP&A Act and, as such, the Minister for Planning is the approval authority. The proposal is deemed a 'major project' under the Act. Section 75(F) of the Act requires that, for a major project, a Project Application must be accompanied by an Environmental Assessment (EA) prepared by or on behalf of the applicant.

An EA is part of a larger assessment process in which the proponent of a project:

- Identifies a need;
- Considers alternatives and identifies a preferred option;
- Assesses the likely environmental impacts and identifies mitigation measures; and
- Presents the EA to the Department of Planning (DoP) for public exhibition.

The DoP:

- Exhibits the EA and notifies stakeholders in accordance with statutory requirements;
- Seeks comments from other government agencies;
- Considers public comments on the EA and prepares an assessment report recommending one of the following:
  - support for the proposal in the EA;
  - rejection of the proposal in the EA;
  - support for the proposal, with modifications.

Under the EP&A Act, the EA is required to be publicly exhibited for a minimum of 30 days for review by the public.

1.3 Purpose of this Report

During the public exhibition of the EA, government and non-government organisations as well as the community are invited to provide comment on the Project Application via lodging a submission with the DoP. Following completion of public exhibition, the DoP compile the submissions and request the proponent to respond to the issues raised in the submissions. The response to these submissions is contained within a Submissions Report.

1.4 Structure of Submissions Report

This Submissions Report has been structured in a manner which clearly sets out the issues raised in the submissions on the EA and addresses each issue.

Section 2 of the Submissions Report provides a summary of the issues raised during the public exhibition of the EA and identifies the relevant section in the report where the issues have been addressed. These issues have been classified into three categories, which are defined as follows:

- Section reference – this is an issue which is explained in further detail in Section 3 of the report;
- Agreed – this is an issue or comment that is agreed to by Orica; and
- Not a relevant planning issue – this is an issue that is not considered relevant to the planning process for this Project Application. Issues within this category can often be addressed outside the planning process.

Section 3 provides a detailed response to the issues raised.

2.0 Summary of Submissions

A total of twelve submissions were received comprising private submissions from government and non-government organisations/businesses.

Issues raised during the public exhibition of the EA have been summarised and set out in **Table 1** of this report. The table identifies the submission, provides a summary of the issues raised and identifies the section in this report where the issue has been addressed.

In a number of instances, comments received were replicated in a number of submissions. The authors have therefore, in some instances, recorded the comment which sets out the general concern rather than repeat the issue several times. It is noted, however, that this approach is adopted only on a few occasions.

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Table 1: Submission Issues for Proposed Ammonium Nitrate Facility Expansion (08_0129)

Respondent Number	Issue Raised	Response and Relevant Section in this Report
Department of Water & Energy	Any bores for the purpose of testing, extraction, temporary dewatering and monitoring will require licence approval under Part 5 of the *Water Act (WA) 1912*.	Agreed.
	Discharge of the water extracted as part of any dewatering will require a separate licence approval from the relevant authority under provisions of the *Protection of the Environment Operations Act 1997*.	Agreed.
	If there are excavation works on *waterfront land* as defined in the *Water Management Act (WMA) 2000* associated with the upgrade of the existing or proposed stormwater pipelines/outlets or other infrastructure (not forming part of the project proposal) there may be a requirement for a controlled activity approval under section 91 of the *WMA 2000*.	Agreed.
Private Submission	PWCS requests that it be consulted regarding any potential disruption of access to Kooragang 4, 5 and 6 wharfs which are accessed off Heron Road.	Agreed.
	Orica emergency response procedures for the proposed project include communication details for PWCS in the event of an incident that may potentially affect PWCS Carrington and / or Kooragang Terminals including wharf facilities.	Agreed.
Newcastle Port Corporation (NPC)	NPC does not support the technique of site infiltration for stormwater as there is a known existence of land and groundwater contamination on Walsh Point.	Stormwater management (Section 3.2.1).
	NPC requests that Orica carry out an engineering assessment of the existing stormwater systems' capacity to accept additional stormwater flows.	Orica will consult with NPC regarding additional stormwater flows crossing NPC property
	Consent to connect the stormwater management system to the existing stormwater system (which will be owned by NPC) should be negotiated with NPC.	Orica will consult with NPC regarding additional stormwater flows crossing NPC property

Respondent Number	Issue Raised	Response and Relevant Section in this Report
	NPC does not support the use of the existing road for parking and requests that all required parking is to be provided on the Orica site. As NPC will be the future owner of the road there may be a future need to alter the road network and therefore the availability of the road for parking cannot be guaranteed.	Not a relevant planning issue but further information provided in Traffic and Transport (Section 3.3).
	Aerial photography shows some 100 cars parked on Greenleaf Road with additional cars on land opposite the Orica site. This has the potential to compromise the use of the road network and adjoining lands as NPC (road owners) may alter the road network.	Not a relevant planning issue but further information provided in Traffic and Transport (Section 3.3).
	All internal driveways and accesses/exits are to be designed in accordance with Australian Standards AS2890.1 and AS 2890.2.	Agreed.
	NPC requests that appropriate environmental management procedures be emplaced to ensure that there is no adverse affects to the adjoining lands or provide a hindrance to the future development of the strategically important port lands.	Land Use (Section 3.4) and Property Damage and Accident Propagation Risks (Section 3.1.3).
	The location of some of the proposed Orica structures has the potential to impact on the functionality of the new navigational aids to be erected by NP on lands adjoining the Orica site. This issue has been raised directly with Orica and an appropriate outcome is being negotiated.	Not a relevant planning issue. Discussed directly with NPC
NSW Maritime	Notes that Orica must obtain permission for the installation of new stormwater and drainage systems under section 13TA of the *Maritime Services Act*, prior to discharging stormwater or effluent into the Hunter River.	Agreed.

Respondent Number	Issue Raised	Response and Relevant Section in this Report
NSW Police Force	The EA contains limited information relating to some of the strategies that may be employed to prevent crime, such as crime prevention through environmental design. These design considerations include: • Surveillance considerations; • Access Control; • Territorial Reinforcement; and • Space Management.	Not a relevant planning issue and is addressed through the site security plan which forms part of SSAN legislative requirements
Private submission	Suggests that the major proposed risk reduction modifications (Sec 2.4.6 of PHA) could be implemented immediately to reduce the risks of the existing facility towards ALARP. For example: • Timber pallets could be withdrawn from AN bag storage to reduce fire risks and AN storage reconfigured to reduce the consequences of an unlikely explosion; and • Pressurised ammonia storage could be reduced and additional detection and isolation implemented. As a result, the site's offsite risk profile for the expansion Project would be increased, and not be significantly reduced, as claimed.	Proposed Risk Reduction Modifications (Section 3.1.1).
	Identifies that the risk of multiple fatalities in the surrounding industrial areas and on-site have not been included in the PHA.	HIPAP 4 Risk Criteria (Section 3.1.2).
	Identifies that the 14kPa overpressure damage and propagation risk contour (Figure 6.5 of PHA) extends off-site into land zoned as industrial. Incitec Pivot recommends that the 14kPa overpressure risk contour does not extend beyond the Orica site boundary.	Property Damage and Accident Propagation Risks (Section 3.1.3) and Adjacent Land Uses (Section 3.4).

Respondent Number	Issue Raised	Response and Relevant Section in this Report
	Identifies that the Project Location (Section 2.1 of PHA) does not include the proposed Toll Intermodal Goods Terminal.	Other Developments (Section 3.1.4).
	Have separation distances between process units and storages to prevent knock-on impacts between units and storages on the site been evaluated?	Plant Separation Distances (Section 3.1.5).
	Has an on-site occupied buildings risk assessment been conducted?	Plant Separation Distances (Section 3.1.5).
	The risk assessment does not appear to have considered storm surge and changes to flood levels for future climate change.	Sea Level Rise and Flooding Impacts (Section 3.1.6).
	The Base Case risk contours in the PHA do not show risk contours for ammonia ship transfers at the port. A reduction factor from the Purple Book (pg AVI-xxvi) has been applied inappropriately and incorrectly in the PHA to the baseline frequency for a leak from an unloading arm.	Ammonia Shipping (Section 3.1.7).
	The base frequency of leaks from ship collisions in the PHA are not in accordance with the Purple Book.	Ammonia Shipping (Section 3.1.7).
	The equipment frequency reduction factors applied to the ammonia tanker loading / unloading in the PHA compared to the Purple Book base frequencies is highly optimistic.	Equipment Frequency Reduction Factors for Tankers (Section 3.1.8).

Respondent Number	Issue Raised	Response and Relevant Section in this Report
	The use of equipment frequency risk reduction factors for existing plant that is up to 40 years old is not conservative, and is inconsistent with other recent QRAs with similar process and requires further justification.	Equipment Frequency Reduction Factors for Existing Plant (Section 3.1.9).
	The numbers of hazardous scenarios for existing plants are less detailed then for the new plant. Why are the numbers of hazardous scenarios so different, and what impact does this have on the Baseline and Project risk profiles?	Hazardous Scenarios (Section 3.1.10).
NSW Health – Hunter New England Population Health	NSW Health request that any works that may require soil remediation due to possible contamination from past and existing land uses should be undertaken in strict compliance with the requirement of the DECC	Agreed.
	The amplification of the existing reticulated water supply must ensure that sufficient water quantity and quality is maintained to alleviate any environmental and public health concerns and meet the water quality standards of the *Australian Drinking Water Guidelines (2004).*	Agreed.
	Ensure there is minimal impact from the proposed development on the water quality of surrounding natural waterways, particularly from stormwater runoff.	Stormwater and Effluent management (Section 3.2.1 and 3.2.2).
	A mosquito risk assessment should be included to ensure any potential mosquito breeding sites are identified (e.g. natural or constructed wetlands, stormwater drains etc).	Not a relevant planning issue.
	A mosquito management plan should also be developed for the site to prevent both nuisance biting mosquitoes and disease transmitting mosquitoes affecting employees, visitors and the local population.	Not a relevant planning issue.
	NSW Health recommends that best practice design principles for developments be incorporated to prevent risks to both public health and environment contamination.	Agreed.

Respondent Number	Issue Raised	Response and Relevant Section in this Report
	Recommended that a strategy be put in place to eliminate the impact of any odours or noise emanating from the proposal that may potentially affect any adjoining properties or the local population.	The EA did not identify any potential impacts resulting from continuous odour emissions. Odour is managed through the site EPL. Noise Management (Section 3.6)
	Recommended that the installation, operation and maintenance of any Water Cooling System be in accordance with the Australian Standards AS 3666 and AS 1668 and that the system/s be registered with Newcastle City Council.	Agreed.
	Recommended that the Emergency Management Plan for the subject site incorporate procedures that outline a strategic Early Warning System (EWS) for any incident/emergency emanating from the development that may affect adjoining properties and the local population.	Hazard Management (Section 3.1.11).
The City of Newcastle Council	Council recommends the timeframe for implementation of the recommended engineering technology regarding air quality for the existing prill tower be clarified and provided for via appropriate consent conditions or within the required *Protection of the Environment Operations Act 1997* Environment Protection Licence issued by the DECC.	Future Abatement of Emissions – PM_{10} (Section 3.6.1).
	Council recommends the timeframe for implementation of the abatement technology regarding greenhouse gases be clarified and provided for via appropriate consent conditions or within the required *Protection of the Environment Operations Act 1997* Environment Protection Licence issued by the DECC.	Future Abatement of Emissions – N_2O (Section 3.6.2).
	Council recommends Scope 3 emissions be included within the Greenhouse Gas Assessment as the primary consumer of the manufactured product is the mining industry.	Director General's Requirements (Section 3.7).
	Council recommends the noise control measures are provided via appropriate consent conditions or within the required *Protection of the Environment Operations Act 1997* Environment Protection Licence 'Pollution Reduction Program' issued by the DECC.	Noise Management (Section 3.6).

Respondent Number	Issue Raised	Response and Relevant Section in this Report
	Council recommends an assessment of the potential impact of rail noise be included within the noise impact assessment.	Director General's Requirements (Section 3.7).
	Council recommends that the final hazard analysis and HAZOP be included as part of the consent conditions.	Agreed.
	A Safety Management System should be prepared for the proposed facility to ensure on-going hazard analysis and HAZOP management goals are met.	Agreed. Orica's existing SMS will be updated to reflect this project.
	Council recommends further detail be provided regarding water saving initiatives in regards to address the principles of Ecologically Sustainable Development (ESD).	Water Cycle Management (Section 3.2.3).
	Council recommend a comprehensive water cycle management plan be prepared for the proposed development.	Water Cycle Management (Section 3.2.3).
	Council recommends sampling be undertaken in the development footprint of the proposed expansion facilities to identify any contamination issues and contribute to the on-going knowledge base and monitoring requirements of the current Voluntary Remediation Agreement.	Construction, Safety, Environmental Management Plan (Section 3.5).
	Council recommends that appropriate design and management procedures be included within assessment reports to address potential contamination impacts from the proposed uprating of the facility.	Construction, Safety, Environmental Management Plan (Section 3.5).
	The Section on Sea Level Rise in the EA should include reference and discussion on the NSW Government's '*Draft Sea Level Rise Policy Statement*' and the DECC's '*Draft Technical Note for Scientific basis of the 2009 sea level rise benchmark*'.	Sea Level Rise and Flooding Impacts (Section 3.1.6).

Respondent Number	Issue Raised	Response and Relevant Section in this Report
	Council recommends that the Acid Sulfate Soils Management Plan included within the CEMP should be prepared in accordance with the Acid Sulfate Soil Management Advisory Committee's '*Acid Sulfate Soils Manual*'.	Construction, Safety, Environmental Management Plan (Section 3.5).
	The requirement for the submission of an Acid Sulfate Soil Management Plan can be addressed by an appropriate consent condition.	Construction, Safety, Environmental Management Plan (Section 3.5).
	Environmental issues associated with the construction of the proposed fuel storage facility, including noise, vibration, sediment, erosion and dust may be addressed in the CEMP and be addressed by appropriate consent conditions.	Not relevant to this Project Application.
NSW Fire Brigades	Ensure that any new building proposals and substantial alterations to existing buildings are to comply with the current Building Code of Australia and relevant Australian Standards.	Agreed.
Roads and Traffic Authority (RTA)	Proposed vehicular accesses shall be constructed in accordance with AS 2890.1-2004 and AS 2890.2-2002 and to Council requirements.	Agreed.
	All vehicular entrances to the development shall be designed such that vehicles awaiting entry through gates or doors should not obstruct the roadway or footway.	Agreed.
	The swept path of the longest vehicle entering and exiting the subject site and manoeuvrability through the site is to be in accordance with AS 2890.2-2002 and to Council satisfaction.	Agreed.
	Car parking associated with the subject development including, aisle widths, parking bay dimensions, and loading bay should be in accordance with AS 2890.1-2004 and AS 2890.2-2002.	Agreed.
	The number of car parking spaces associated with the subject development should be to Council satisfaction.	Agreed.
	All the vehicles shall be able to enter and exit the subject site in a forward direction.	Agreed.
	All activities including, loading and unloading associated with this development are to take place with in the subject site.	Agreed.

<table>
<tr><th>Respondent Number</th><th>Issue Raised</th><th>Response and Relevant Section in this Report</th></tr>
<tr><td></td><td>The movement of oversized loads to the site shall be in accordance with RTA requirements and separate approval from the RTA.</td><td>Agreed.</td></tr>
<tr><td></td><td>A Construction Traffic Management Plan (CTMP) should to be prepared and include a Vehicle Control Plan and Traffic Control Plan. It shall be prepared with the intention of causing minimal impact to traffic operation on surrounding road network during construction stage. CTMP shall be submitted to Council for review and approval prior to any construction activities occurring on site.</td><td>Construction, Safety, Environmental Management Plan (Section 3.5).</td></tr>
<tr><td></td><td>All works associated with the proposed development shall be at no cost to the RTA.</td><td>This is not a relevant planning issue.</td></tr>
<tr><td>Department of Environment and Climate Change (DECC)</td><td>DISCHARGES TO AIR AND WATER AND APPLICATIONS TO LAND
P1 Location of monitoring/discharge points and areas
P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits of the emission of pollutants to the air from the point.</td><td>Agreed.</td></tr>
<tr><td></td><td>Air
<table>
<tr><th>Identification no.</th><th>Type of Monitoring Point</th><th>Type of Discharge Point</th><th>Description of Location</th></tr>
<tr><td>25</td><td>Discharge to air</td><td>Discharge to air</td><td>New Pre-Reformer Furnace Stack (PRF)</td></tr>
<tr><td>26</td><td>Discharge to air</td><td>Discharge to air</td><td>Nitric Acid Plant Stack (NAP4)</td></tr>
<tr><td>27</td><td>Discharge to air</td><td>Discharge to air</td><td>Ammonium Nitrate Plant 3 Final Scrubber Stack (E3)</td></tr>
<tr><td>28</td><td>Discharge to air</td><td>Discharge to air</td><td>New Boiler Stack (E5)</td></tr>
</table></td><td>Agreed.</td></tr>
</table>

<table>
<tr><th>Respondent Number</th><th>Issue Raised</th><th>Response and Relevant Section in this Report</th></tr>
<tr><td></td><td>P1.2 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for discharges of pollutants to water from the point.
Water
<table><tr><th>Identification no.</th><th>Type of Monitoring Point</th><th>Type of Discharge Point</th><th>Description of Location</th></tr><tr><td>29</td><td>Stormwater monitoring point</td><td></td><td>Catchment 7 stormwater outlet</td></tr></table></td><td>Agreed.</td></tr>
<tr><td></td><td>L3.1 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.</td><td>Agreed.</td></tr>
</table>

<table>
<tr><th>Respondent Number</th><th>Issue Raised</th><th>Response and Relevant Section in this Report</th></tr>
<tr><td></td><td>
Air
POINT 20
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>100 percentile concentration limit</th></tr>
<tr><td>Nitrogen Oxides</td><td>grams per cubic metre</td><td>0.234</td></tr>
</table>
POINT 25
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>100 percentile concentration limit</th></tr>
<tr><td>Nitrogen Oxides</td><td>grams per cubic metre</td><td>0.234</td></tr>
</table>
POINT 27
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>100 percentile concentration limit</th></tr>
<tr><td>Total Solid Particles</td><td>milligrams per cubic metre</td><td>20</td></tr>
</table>
POINT 28
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>100 percentile concentration limit</th></tr>
<tr><td>Nitrogen Oxides</td><td>grams per cubic metre</td><td>0.234</td></tr>
</table>
NOTE: Nitrogen Oxides means a combination of Nitrogen Oxide (NO) and Nitrogen Dioxide (NO_2).
</td><td>Agreed.</td></tr>
<tr><td></td><td>L3.5 Special air emission limits for acid plant start-up and shut-down</td><td>Agreed.</td></tr>
</table>

<table>
<tr><th>Respondent Number</th><th>Issue Raised</th><th>Response and Relevant Section in this Report</th></tr>
<tr><td></td><td>POINT 26
No. 4 Nitric acid plant
<table><tr><th>Pollutant</th><th>Units of measure</th><th>99 percentile concentration limit</th></tr><tr><td>Nitrogen Oxides</td><td>parts per million</td><td>150</td></tr></table>
NOTE: Nitrogen Oxides means a combination of Nitrogen Oxide (NO) and Nitrogen Dioxide (NO_2).</td><td>Agreed.</td></tr>
<tr><td></td><td>M2 Requirement to Monitor Concentration of Pollutants Discharged

Error! Unknown document property name. For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:</td><td>Agreed.</td></tr>
</table>

<table>
<tr><th>Respondent Number</th><th>Issue Raised</th><th>Response and Relevant Section in this Report</th></tr>
<tr><td></td><td>
POINT 25
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Nitrogen Oxides</td><td>grams per cubic metre</td><td>yearly</td><td>TM-11</td></tr>
</table>
POINT 26
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Nitrogen Oxides</td><td>parts per million</td><td>continuous</td><td>CEM-2</td></tr>
</table>
POINT 27
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Total Solid Particles</td><td>milligrams per cubic metre</td><td>yearly</td><td>TM-15</td></tr>
</table>
POINT 28
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Nitrogen Oxides</td><td>grams per cubic metre</td><td>yearly</td><td>TM-11</td></tr>
</table>
</td><td>Agreed.</td></tr>
</table>

<table>
<tr><th>Respondent Number</th><th>Issue Raised</th><th>Response and Relevant Section in this Report</th></tr>
<tr><td></td><td>POINT 29
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Arsenic</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Chromium (hexavalent)</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Nitrogen (total)</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Phosphate</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>Total suspended solids</td><td>milligrams per litre</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
<tr><td>pH</td><td>pH</td><td>Monthly during discharge</td><td>Grab sample</td></tr>
</table></td><td>Agreed.</td></tr>
<tr><td rowspan="3">Ministry of Transport</td><td>The Ministry recommends the consideration of the following initiatives and their potential inclusion in any terms of approval that may be negotiated in regard to the proposal:
• The use of ‘car share’ schemes for employees on-site</td><td>Not a relevant planning issue but noted by Orica.</td></tr>
<tr><td>• Potential assistance for employees to access work by public transport, through salary packaging options and other incentives;</td><td>Not a relevant planning issue but noted by Orica.</td></tr>
<tr><td>• The preparation of a Travel Access Guide (TAG) to inform staff and visitors to the site of public and active transport options; and</td><td>Not a relevant planning issue but noted by Orica.</td></tr>
</table>

Respondent Number	Issue Raised	Response and Relevant Section in this Report
	• The provision of adequate and secure bicycle storage facilities as well as cyclist amenities for both staff and visitors as part of the development. The Ministry recommends the Department of Planning's *Guidelines for Walking and Cycling (2004)* for review.	Not a relevant planning issue but noted by Orica.

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3.0 Issued Raised

This section provides further detail in response to the issues raised in the submissions for the EA of the proposed expansion of the Orica facility (see Table 1).

3.1 Hazard and Risk

3.1.1 Proposed Risk Reduction Modifications

The Orica site has been in operation for nearly 40 years and has a strong history of progressive risk reduction as is demonstrated in the Preliminary Hazard Analysis (PHA) (see **Appendix H** of the EA) through the contraction of risk contours between current operations and the 1992 NSW Department of Planning Area Risk Assessment study. Similarly Orica is continuing to progress its Major Hazard Facility (MHF) safety case which contains processes to systematically identify and reduce risk towards As Low As Reasonably Practicable (ALARP). The project also contains risk reduction measures to further reduce the site risk. It is noted that a submission suggested a number of activities which could be implemented immediately to reduce risk.

The suggested removal of timber pallets from the ammonium nitrate (AN) bag storage would require extensive modifications to accommodate this operation as the existing store is not set up for a palletless operation. Over the operational life of the facility, Orica has continued to undertake numerous measures to reduce the risk associated with the store including the limiting of stack sizes, stack separation and total storage of packaged AN.

The reconfiguration of the Ammonia storages is an expensive proposition (in the order of millions of dollars) and a complex project intrinsically linked to the new plant operating configurations and is not able to be implemented prior to the proposed expansion of the facility. However, elements of the gas detection system have been identified as being able to be implemented during the early phases of the project and are planned for early implementation.

As stated in the EA and PHA, Orica is committed to ALARP processes and will take the opportunity to reduce risk where, and when, practical and reasonable.

3.1.2 Compliance with HIPAP 4 Risk Criteria

During the preparation of the PHA, the methodology for consideration of the scope of population within the societal risk analysis was agreed with the DoP and is consistent with the indicative risk criteria applied in the draft revised HIPAP4 (2008) which is based on application to residential/community populations. There is no requirement in the Draft HIPAP4 for inclusion of onsite populations in the calculation of societal risks. The current HIPAP4 does not contain definitive societal risk criteria whilst the Draft HIPAP4 emphasises that its proposed societal risk criteria are indicative and provisional only.

Utilising the methodology agreed with the DoP, the PHA's societal risk results demonstrate that the societal risk curve is reduced through the implementation of the project. The curve retracts from the 'ALARP' region to the 'negligible' region as demonstrated in **Figure 10.7** and **10.11**, and also **Appendix H** of the EA.

3.1.3 Property Damage and Accident Propagation Risks

As shown in **Figure 10.5** and **Appendix H** of the EA, the 14kPa Overpressure contour for new plant and equipment of 50 $x10^{-6}$/yr marginally extends offsite. The contour extends onto Greenleaf Road to the east and marginally into the adjacent storage facility (frequency of 66 $x10^{-6}$/yr at the Orica boundary) to the south.

This criterion is associated with the escalation of a potential incident on the Orica site having a knock-on effect initiating further hazardous incidents on a neighbouring site. The adjacent storage facility is a fertiliser storage depot and is not a potentially hazardous installation. Therefore, it is considered that under the current operating conditions of the adjacent facility that the HIPAP 4 criterion is met. The risk of Overpressure damage also needs to be reviewed in conjunction with the DoP Guidance Notes, which state that the nature of activities and the presence of workers on site should be considered when applying the criterion. As such, the storage facility is a storage depot with only a few workers and the administration offices present on the site are located on the southern boundary and outside of the predicted Overpressure planning contour. Nevertheless, Orica will continue to investigate options to further reduce its impact on neighbouring installations.

3.1.4 Other Developments

The proposed Toll Intermodal Goods Terminal is also being considered by the DoP under Part 3A of the EP&A Act and has recently completed Public Exhibition. The proposed Toll Project is located approximately 1km to the north of the Orica site and is a potential storage facility for dangerous goods such as ammonium nitrate. Whilst the PHA and EA do not specifically reference the Toll project located to the north of the Orica site, the HIPAP 4 Risk contours for the Orica site presented in the PHA (**Figures 6.1**, **6.2**, **6.3**, **6.4**, **6.5**, **6.6**, **6.7**, **6.8** and **6.9** of **Appendix H** of the EA) do not impact upon the location or operation of the proposed Toll Project.

3.1.5 Plant Separation Distances

The proposed expansion involves the addition of several new items of plant and equipment. However, it is not considered that the project represents a significant increase in the congestion of hazardous plant. The project increases the number of plants on-site. However each item is constructed with practical and appropriate separation distances between process units and plants are located with suitable separation distances from adjacent plants.

The design of the proposed expansion has also considered safety distances between each item of plant. Additionally, it should be noted that the site has also conducted extensive on-site building risk assessments following the BP Texas City disaster in 2004.

3.1.6 Sea Level Rise and Flooding Impacts

Section 5.2.1 and **Section 6.4** of the PHA address flooding through the potential loss of Ammonium Nitrate (AN) to waterways (Hunter River) as a result of flooding. The PHA concluded that the likelihood of flooding on the site is very low. Based on the current flood certificate for the site, the Hunter River flood event 1% Annual Exceedance Probability (AEP) has a flood level of 2.35 RL for current conditions and climate.

The Flood Planning Level, which is 0.3m above the 1% AEP, is well below the site's current average ground level of 4.4m RL. The risk of flooding then causing a hazardous event is similarly very low as equipment can be shutdown and isolated prior to the occurrence, and is considered emergency planning rather than hazard management.

Section 16.3.2 of the EA also outlines the potential Sea Level Rise (SLR) impacts to the site. The most authoritative and most recent (at the time of EA writing) report on climate change is produced by Intergovernmental Panel for Climate Change (IPCC). The IPCC predicts a global average SLR of between 0.2 and 0.8m by 2100, compared with 1980 levels. These predictions are consistent with the NSW Government's *Draft Sea Level Rise Policy* and *Scientific basis of the 2009 Sea Level Rise Benchmark*: *Draft Technical Note*.

The potential for the site to be affected by direct wave action is low considering the site location, which is approximately 4km from where the Hunter River meets the sea. Nevertheless, storm surge in association with the anticipated SLR may potentially impact Kooragang Island if the sea walls were breached. It is considered that the current likelihood of such an event occurring is quite low.

3.1.7 Ammonia Shipping

It has been noted that an error was made in calculating the Ammonia Ship Arm failure frequency. The Purple Book (Committee for the Prevention of Disasters, 1999) failure figure was incorrectly assumed to be per annum and not per transhipment.

Using the Purple Book Question & Answers update (published in July 2003), the correct failure frequencies for these events are given in **Table 2.** The amended figures presented are similar to those presented in the PHA (see Appendix VI of **Appendix H** of the EA). Therefore, the impact on the predicted risk profile is expected to be minimal.

The PHA also calculated the frequency of leaks from ship collisions. The base frequency of leaks from ship collisions was sourced from the Health and Safety Commission, Advisory Committee on Dangerous Substances, *"Major hazard aspects of the transport of dangerous substances - report and appendices"*, Appendix 7, London, HMSO, 1991. Should the figures within the Purple Book be utilised, the calculated frequencies are similar to those used in the PHA. This is demonstrated in **Table 3.**

3.1.8 Equipment Frequency Reduction Factors for Tankers

A private submission has noted that an error was made in calculating the road tanker loading arm failure. This figure has been amended utilising the correct figure within the Purple Book and is given in **Table 4**. As shown in **Table 4**, the new failure frequencies are slightly higher than that used in the PHA (**Appendix H** of the EA) but this is not expected to affect the predicted risk profile noticeably.

3.1.9 Equipment Frequency Reduction Factors for Existing Plant

Within the PHA, the use and application of risk reduction factors has been justified and additional information has been provided to the DoP. The information does not believe that the age of the site (nearly 40 years old) is a consideration in the application of the risk reduction factors, provided that equipment is properly managed and maintained.

The frequency data collected has been based on existing plant data and the risk reduction factors have been based on an assessment of the effectiveness of the maintenance and inspection regimes in place on the site.

For example, the PHA provides the following statement for the ammonia pressure equipment.

"In calculating the release frequency, specifically for equipment handling ammonia, the generic raw failure leak frequency used has been reduced by a factor of 0.1. This has been justified based on the following:

- *'Best practice' in maintenance at the KI facility which includes equipment life plans (ELP) for all critical equipment, critical pipe register, equipment monitoring using latest technologies, equipment and critical pipe inspection during major shutdowns;*
- *No significant loss of containment (LOC) incidents recorded at the site in the 40 year operating history of the facility. There have been some minor releases of ammonia vapour including the ammonia PSV release which was detected at Stockton.*
- *Continuous improvement program with respect to process safety and equipment reliability;*
- *Process safety management systems and procedures which includes the Orica model procedures;*
- *Periodic hazard study of existing operations and hazard study process for new projects; and*
- *Highly trained and competent work force."*

The above example of the justification of the application of risk reduction factors is considered appropriate for the PHA.

3.1.10 Hazardous Scenarios

The PHA contains hazardous scenarios for various plants located within the site. The PHA contains additional scenarios for the new plants when compared to the number of scenarios for existing plants. The inclusion of these hazardous scenarios was to enable a thorough assessment of the risk from the new plants when assessed in isolation. A number of smaller events in the existing nitric acid (NAPs) and ammonium nitrate plants (ANPs) were not included within the PHA as these hazardous scenarios were considered unlikely to affect the off site risk when incorporated into the integrated site risk assessment. For this reason, the PHA contains only those potentially hazardous scenarios for the existing NAPs and ANPs that were considered to be able to affect the off site risk.

3.1.11 Hazard Management

The site has an existing Emergency Management Plan referred to as an Emergency Response Plan (ERP) which is required to meet the requirements of HIPAP 1 (Emergency Planning Guidelines). These guidelines are administered by the DoP and the preparation of the plan involves consultation with the relevant Emergency Services to ensure that the Plan satisfies the relevant requirements.

The current ERP for the site is comprehensive and addresses items such as various levels of emergency, types of emergency, emergency response, interaction with the emergency services, and interaction with the broader community. The ERP includes contact lists for industrial neighbours and large community facilities located near the site, such as the Stockton Centre. The ERP also contains processes for liaising with the emergency services should broader communication to the general public be required, and which is carried out by the Police.

It is expected that the existing Emergency Response Plan and the Safety Management System for the site will be updated prior to commissioning of the project.

Table 2: Ship Unloading Arm

Event ID	Failure Event	Purple Book (Table 3.21 revised 2003)	Ship unloading hours per year (existing facility)	Ship unloading hours per year (expanded facility)	Reduction Factor	Recalculated Failure Frequency (per annum) Existing	QRA Failure Frequency (per annum) Existing	Recalculated Failure Frequency (per annum) Expanded	QRA Failure Frequency (per annum) Expanded
SHIP-LDARM	50mm	$3x10^{-7}$ per hour	379	70	0.1	$1.14x10^{-5}$	$2.6x10^{-5}$	$2.1x10^{-6}$	$6.24x10^{-6}$
	Rupture	$3x10^{-8}$ per hour	379	70	0.1	$1.14x10^{-6}$	$2.6x10^{-6}$	$2.1x10^{-7}$	$6.24x10^{-7}$

Table 3: Ship Collision

Event ID		Purple Book (Table 3.21 revised 2003))	Ship loading hours per shipment – t (existing facility)	Number of ammonia ships – N (existing facility)	Ship loading hours per shipment – t (expanded facility)	Number of ammonia ships – N (expanded facility)	Recalculated Failure Frequency (per annum) Existing	QRA Failure Frequency (per annum) Existing	Recalculated Failure Frequency (per annum) Expanded	QRA Failure Frequency (per annum) Expanded
SHIP TANK	External small spill	$0.006*f_o$	24	15.8	35	2	$9.15x10^{-8}$	$2.96x10^{-7}$	$1.69\ x10^{-8}$	$7.11x10^{-8}$
	External large spill	$0.0015*\ f_o$	24	15.8	35	2	$2.29\ x10^{-8}$	$3.29x10^{-8}$	$4.22\ x10^{-9}$	$7.9x10^{-9}$

$f_o = 6.7x10^{-11} * T * t * N$, T = 600 pa. Shipping statistics from www.pwcs.com.au: The majority of ships in the vicinity are for loading of coal through pwcs. 1000 ships were loaded in 2008 at Kooragang and Carrington ports. There are 5 berths in total and 3 berths are upstream of Kooragang Island berth, this reduces the number of ships present near the Kooragang Island berth by factor of 0.6. This results in 600 (T) ships near Kooragang Island berth with the potential for interaction with the ammonia ship.

Table 4: Road Tanker Loading Arm

Event ID	Failure Event	Purple Book (Table 3.19)	Tanker loading hours (Existing Facility)	Tanker loading hours (Expanded facility)	Reduction Factor	Recalculated Failure Frequency (per annum) Existing	QRA Failure Frequency (per annum) Existing	Recalculated Failure Frequency (per annum) Expanded	QRA Failure Frequency (per annum) Expanded
LDARM-NH3	50mm	$3x10^{-7}$ per hour	1400	571	0.1	$4.2x10^{-5}$	$9.59x10^{-6}$	$1.71x10^{-5}$	$4.8x10^{-6}$
	Rupture	3×10^{-8} per hour	1400	571	0.1	$4.2x10^{-6}$	$9.59x10^{-7}$	$1.71x10^{-6}$	$4.8x10^{-7}$

3.2 Water Management

Water management at Orica's facility at Kooragang Island involves the management of stormwater and the management of effluent. The proposed expansion of the facility involves an integrated design approach for the stormwater and effluent management systems to ensure that current Environment Protection Licence (EPL) limits are complied with and to ensure to minimise the potential for potentially contaminated stormwater being discharged into the Hunter River. The following sections outline the proposed stormwater and effluent management systems as a result of the expansion.

3.2.1 Stormwater Management

As stated in **Section 2.2** of **Appendix J of the EA**, Orica is investigating options in the new plant areas to minimise the potential for the contamination of stormwater and also to identify opportunities to reduce the volume of stormwater that may require management via a first flush system. Any additional first flush storage required as a result of detailed engineering calculations within a catchment would be installed as needed.

Orica's approach to site stormwater management would be to classify impervious surfaces depending on the risk of stormwater contamination and the surface area to be managed. Using such an approach would allow Orica to:

- Minimise the area of polluting surfaces contributing to stormwater runoff / first flush volumes by excluding high pollutant load areas from the stormwater system and directing surface water in these areas to the effluent system;
- Make first flush capture more efficient and targeted at the areas that need it, that is, make sure only first flush is captured in the tanks and not 'clean' stormwater that follows; and
- Reducing the first flush volume collected from areas less likely to contribute to stormwater contaminant loading.

Areas of the site that will be developed are mostly grassed areas which currently allow infiltration of stormwater. A significant proportion of the developed areas will be either buildings or hard-stand areas and hence impervious. In **Section 2.2** of **Appendix J of the EA**, a number of strategies are recommended to minimise the generation of contaminated stormwater into the catchments which include opportunities for the adoption of 'water-sensitive design' (WSD) engineering approaches (rather than hard engineering solutions) for low intensity areas where appropriate. The site is believed to overlie mainly sandy soils and is therefore hydrologically suitable for installation of bio-retention and infiltration measures.. Orica would consider the opportunities to adopt a 'water-sensitive design' (WSD) engineering in certain parts of the site where appropriate and with consideration of pollutant risk. The detailed design of stormwater management would consider the potential for WSD options to impact on existing areas of contamination.

The consideration of WSD approaches for the proposed expansion would also consider potential groundwater impacts in the development of an operational stormwater management plan. As stated in **Section 14.4.5** of the EA, the design of the proposed expansion will incorporate:

- Sealed floors in plant areas to minimise the potential for ingress of process solutions into the groundwater as a result of failure;
- Use of secondary containment for underground pits and pipework in accordance with relevant Orica and Australian standards; and
- Bunding of all process areas and tanks in accordance with relevant Orica and Australian Standards.

The classification of risk of stormwater contamination would be determined during site detailed design and layout, where each area will be assessed to determine the potential to generate contaminated stormwater. The implementation of these design strategies will ensure that stormwater from 'high intensity use' areas is not directed to landscaped areas for treatment.

It is considered that the design strategy outlined in **Section 12** and **Appendix J** of the EA for the stormwater management of the Orica facility is sufficient and would ensure prevention of potentially contaminated stormwater impacting either the groundwater or the adjacent waterway.

3.2.2 Effluent Management

Effluent management investigations (see **Appendix J** of the EA) state that approximately 2ML/day of effluent is currently discharged from the site into the Hunter River via a licensed discharge point with DECC as a result of existing operations.

The proposed expansion would result in a daily effluent volume increase from additional continuous effluent inputs which will equate to approximately 0.9 ML/day of additional effluent. The additional volume of effluent generated as a result of the facility expansion would remain well within the EPL (No. 828) quantity limit of 4.5 ML/day, and would retain an additional volume capacity of approximately 1.0 – 1.5 ML/day for occasions where effluent volumes above the expected daily average need to be discharged.

As stated in **Section 12.3.2** of the EA, the new plant and equipment would not contribute to the discharge of additional arsenic or hexavalent chromium into the Hunter River as these substances would not be utilised in these plants.

As stated in **Section 12.4.2** of the EA, the new plant design would have a number of design features installed to ensure that the mass discharge limit for nitrogen (200tpa) is not exceeded. The mass discharge of nitrogen for the current operations is currently addressed through a Pollution Reduction Program (PRP), which is managed by DECC

As stated in **Section 12.4.2** of the EA, the new plant design would also have measures integrated into the design to minimise the volume of effluent produced. These measures include the use of equipment to minimise water consumption, and recycling liquid streams within site processes where possible.

These measures will assist Orica in maintaining its effluent management practices to meet DECC Licence limits for effluent quantity, as well as improving site efficiency through effluent reuse. It is considered that the design approach of the effluent management system (in conjunction with the stormwater management system) will ensure that the proposed expansion does not create additional impacts upon the receiving environment. The proposed expansion will also adhere to the current PRP and EPL requirements for the site.

3.2.3 Water Cycle Management

The facility currently utilises potable water supplied via a water line and main ring mains system from Hunter Water Corporation (HWC). The proposed expansion will increase the demand for water by approximately 4.8 ML/day, with consumption increasing from approximately 9.8 ML/day to approximately 14.6 ML/day. Currently, the facility does not have an existing Water Savings Plan prepared, as this has not been a statutory requirement for large water users in the Hunter region given the current availability of water in the region. However Orica will pursue water savings initiatives through the design process of the project and will consider the site's capabilities regarding re-use of process water within the site's operations and infrastructure, as stated in **Section 13.3.1** and **Section 18** of the EA. These water savings investigations will be consistent with the principles of Ecologically Sustainable Development (ESD).

Additionally, as stated in **Section 13** of the EA, HWC is currently investigating opportunities to supply facilities on Kooragang Island with recycled water to reduce the reliance on potable water. Orica is actively involved in discussions with HWC regarding this opportunity which would displace a significant proportion of the potable water used by the facility and would provide a base load for the HWC recycled water plant project.

3.3 Traffic and Transport

Currently, there are 150 employees and 110 contractors working at the site. Given the nature of the 24 hour operations of the facility, shift times and the ad hoc or cyclical nature of many maintenance/contractor needs, a maximum of approximately 210 people are on-site during business hours at any given time.

Parking is available for these employees and the on-site car park has a capacity of approximately 150 car spaces.

The proposed expansion will increase the total numbers working at the site to approximately 180 employees and 130 contractors, with approximately 250 people on site at any one time during business hours. This will equate to an increase of 40 people on site at any one time (20 employees and 20 contractors) during business hours.

The Orica facility is subject to Newcastle City Council's Newcastle Development Control Plan 2005 (DCP 2005), Element 41 – Car Parking. DCP 2005 states that the car parking controls for developments are that one space per 100m^2 of Gross Floor Area (GFA) of one space per two employees be provided, whichever is the greater.

The facility currently contains approximately 3,000m^2 of GFA, which would equate to 30 spaces. Based on employee numbers, the facility is required to provide approximately 75 spaces for the current 150 full time employees, or 105 spaces if all forms of employment during business hours are considered.

For the proposed expansion, Orica will ensure the provision of adequate on-site car park facilities for the additional day-time staffing levels (Orica employees and contractors) anticipated for the expanded facility through increasing the capacity of its on-site car park. This is currently anticipated to be 40 additional spaces and would be in excess of the DCP 2005 default car-parking requirements for the development.

3.4 Adjacent Land Uses

The facility is located in an industrial port area on Kooragang Island. Kooragang Island forms promontory, separating the north and south arm of the Hunter River, with the facility situated on the southern end of the Island. The nearest residential premises are located at Stockton, approximately 800m east of the Orica property boundary. There are also residential properties to the west at Carrington and Mayfield, 1.5km and 2km respectively.

Section 3.1.3 of this Submissions Report discusses the predicted Overpressure risk contours associated with the proposed expansion that extend beyond the Orica boundary onto the property immediately to the south, which is currently a storage facility. It should be noted that the proposed modifications and improvements to the facility associated with this Project improve the existing risk profile of the site.

Whilst this contour extends into the northern edge of the storage facility, the proposed expansion of the Orica facility does not impact upon the operations of the storage facility. Nevertheless, Orica will continue to investigate options to further reduce its impact on neighbouring installations.

Additionally, the predicted environmental impacts assessed in the EA do not significantly impact upon other surrounding land uses, whether it is the immediate industrial neighbours on Kooragang Island or the residential neighbours at Stockton to the east or Carrington and Mayfield to the west.

As stated in **Section 4.2.2** of the EA, the site is situated within the 4(b) Port and Industry Zone and industry is permissible within this zone. An objective of this zone is '*to provide for other development which will not significantly detract from the operation of large scale industries or port-related activities, that is primarily intended to provide services to persons employed in such industries and activities.'*

This is consistent with the zoning of the site and surrounds under the Three Ports amendment to the Major Developments SEPP. The zoning of the site (and surrounds) under this instrument is SP1 Special Activities within which heavy industry is permitted with development consent. The objectives of this zone include:

- Provision for sites with special natural characteristics that are not provided for in other zones,
- Facilitation of development that is in keeping with the special characteristics of the site or its existing or intended special use, and that minimises any adverse impacts on surrounding land,
- Maximisation of the use of waterfront areas to accommodate port facilities and industrial, maritime industrial and bulk storage premises that benefit from being located close to port facilities,
- To enable the efficient movement and operation of commercial shipping, and to provide for the efficient handling and distribution of freight from port areas through the provision of transport infrastructure,
- To facilitate development that by its nature or scale requires separation from residential areas and other sensitive land uses,
- To encourage employment opportunities.

It is considered that the proposed expansion of the facility does not detract from the operation of large scale industries or port-related activities and, in fact, complements the existing port related and industrial activities in the vicinity of Kooragang Island.

3.5 Construction, Safety, Environmental Management Plan (CSEMP)

As stated in **Section 3.15.3** of the EA, all construction activities would be covered by a Construction, Safety, and Environmental Management Plan (CSEMP). This is a document written specifically for this project in conjunction with the main construction contractors. The CSEMP would incorporate the requirements of Orica's Safety, Health and Environment Management System, legal requirements and the Contractor's Company Policies and Procedures in relation to safety and environmental management.

The CSEMP would be specifically designed in accordance with the mitigation measures and Statement of Commitments outlined in the EA.

For example, as discussed in **Section 14.4.4** of the EA, the CSEMP will require soil testing to be conducted on excavated soils to determine the presence of acid sulphate soils (ASS). If sampling of excavated materials returns positive results, then an ASS Management Plan will be developed and implemented in accordance with the Department of Natural Resources (now DWE) "Acid Sulphate Soils Manual". Should an ASS Management Plan be required, then it would be incorporated into the CSEMP.

It is not proposed to undertake any construction activities in the vicinity of the known arsenic or ammonia contamination on site, which is subject to a separate Voluntary Remediation Agreement (VRA) with the DECC. It is not considered that sampling specifically for contamination (in relation to the VRA) in the area of the proposed works would contribute to the VRA process or knowledge of contamination on the site. However, the CSEMP will outline management processes with respect to the excavation of soils. Whilst there are no known sources of contamination in the areas where new plant and equipment are to

be constructed, disturbed soils would be tested for known or suspected contaminants, particularly if removed from site for disposal.

The CSEMP will also include requirements for the assessment of water quality and the management of water generated during any dewatering activities that are required to be undertaken at the site. The CSEMP will also include requirements for monitoring compliance with controls for the prevention of soil and groundwater contamination.

The CSEMP will also include management measures to control traffic flows and volumes during the construction phase of the proposed expansion. It is expected that the CSEMP will be designed to minimise potential impacts to traffic operation on surrounding road network during construction stage.

It is expected that the CSEMP will be submitted to the Director-General for review prior to commencement of construction activities.

3.6 Noise Management

As stated in **Section 9.10.1** of the EA, a design noise goal for the new plant of more than 10 dB(A) lower than the existing plant contributions under neutral calm conditions at the nearest residential properties has been established. Orica will design new plant and equipment to meet this goal incorporating design measures as recommended in the EA to minimise noise impact.

Orica will agree a plan with the DoP and DECC as to how to verify this commitment. Orica propose to prepare a noise report 6 months after completion of the project to demonstrate that the noise emissions from the new plant and equipment meet with the design noise goal.

Noise from current operations is managed under a Pollution Reduction Program (PRP) detailed in the Site EPL. The PRP for noise is a separate document specifically dealing with the reduction of noise emissions from the current plant. The works proposed to be undertaken to reduce noise emissions from the existing plant will continue to be undertaken in accordance with the proposed programme and the DECC will continue to be provided with regular progress reports.

Noise and vibration during construction will be managed via the CSEMP which would include a monitoring program, mitigation options and management practices as outlined in **Section 9.10.2** of the EA.

3.7 Future Abatement of Emissions

3.7.1 PM_{10}

The operation of the facility currently generates PM_{10} and the proposed expansion will marginally increase the emission rates for on-site sources. However, as stated in **Section 7** of the EA, cumulative PM_{10} impacts are not expected to be distinguishable from existing impacts and it is not expected that the DECC guidelines for PM_{10} will be exceeded. Currently, the primary PM_{10} emission source is the existing Prill Tower associated with ANP1.

The scope of the Project Application includes an additional Ammonium Nitrate Plant (ANP3) with a new Prill Tower. Within the new ANP3 Prill Tower particulate abatement technology will be incorporated, which will significantly reduce the emission of PM_{10} from ANP3. However, the scope of the Project Application does not include the installation of this abatement technology on the existing ANP1 Prill Tower.

As stated in **Section 7.7.3** of the EA and within the **Statement of Commitments**, as part of the improvement plans for existing operations, Orica is continuing to investigate options to reduce its particulate and PM_{10} emissions from its existing ANP1 Prill Tower. It has not been considered within this Project Application due to complexities and difficulties in applying new abatement technology to the ANP1 Prill Tower. There are technological, economic, physical and structural constraints that require detailed investigation prior to conducting a feasibility study on a preferred option. Therefore, Orica considers it inappropriate to stipulate a timeframe for the implementation of PM_{10} abatement on the existing ANP1 Prill tower given the considerable unknowns at this stage of its investigations.

3.7.2 N_2O

The Orica facility currently emits nitrous oxide (N_2O) from the Nitric Acid Plants (NAP1, NAP2 and NAP3). The scope of the Project Application includes the installation of abatement within the new NAP4. It is expected that the N_2O abatement technology will reduce N2O emissions from the new acid plant by at least 65%.

As stated within **Section 8** of the EA and within the **Statement of Commitments**, Orica is also currently investigating N_2O abatement technologies for retrofitting to its existing nitric acid plants. It is expected that these technologies can deliver at least a 65% reduction from each plant. The timeframe for the retrofitting of the abatement on the existing nitric acid plants will be determined by technological and economic constraints identified through the investigations conducted by Orica. However, as stated in **Section 8.3** of the EA, it is Orica's intention to have implemented the N_2O abatement technology in the existing NAPs by the completion of the proposed expansion.

3.8 Director General's Requirements

As stated in **Section 9.1** of the EA, a noise assessment was not undertaken for the transportation of product via rail as the scope of the proposed expansion does not involve an alteration to the current situation regarding the transportation of product via rail. Orica has historically utilised the existing rail siding located on site to transport product periodically and is currently investigating the resumption of rail transportation of product equivalent to these historical volumes.

The Director Generals' Requirements, which were issued by the DoP on the 8 August 2008 (see **Appendix A** of the EA), did not contain the requirement to assess the Scope 3 greenhouse gas (GHG) emissions from the proposed expansion of the Ammonium Nitrate Facility. As such, the EA does not contain this assessment. However, as stated in **Section 8.5** of the EA, the scope of the project contains several GHG reduction initiatives and Orica is committed to the maximum practical GHG reduction for its existing and expanded facility as part its company sustainability goals. Following completion of the project, Orica's GHG footprint will reduce by approximately 20% from current levels.

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