

10 February 2014

Nicholas Hall
Major Projects Assessment
NSW Department of Planning
23 – 33 Bridge St
Sydney, NSW, 2000

Dear Nick,

**Orica Ammonium Nitrate Expansion Project, Kooragang Island (MP 08_0129 MOD 2)
Response to Submissions Report**

I refer to correspondence received by Orica from the NSW Department of Planning and Infrastructure (DoPI) dated 20 December regarding submissions received following the public exhibition of Orica Kooragang Islands Ammonium Nitrate Facility 08_0129 MOD 2 Environmental Assessment (EA). This letter presents Orica's response to feedback provided in these submissions.

Project overview

Orica Kooragang Island is seeking to modify the site's expansion project Development Consent (08_0129 MOD1) to include the installation and operation of three ammonia flaring systems and the increase of storage capacity of an approved nitric acid tank from 2000 to 10,000 tonnes. The modification is being sought by Orica under Section 75W of the Environmental Planning and Assessment Act 1979 (the EP&A Act).

The modification application was submitted to the DoPI on 15 November 2013 and included a detailed EA. The EA considered the environmental impact associated with the modification to the approval including specific assessment of air quality, noise, visual amenity and hazard and risk environmental factors.

The EA was publically exhibited by the DoPI between Monday 2 December 2013 and Tuesday 17 December 2013, with submissions received during this process supplied to Orica on 20 December 2014.

Stakeholder Consultation

Orica has regularly consulted with relevant stakeholders throughout the concept and project design stages of the project. This has included project briefings to:

- NSW Department of Planning and Infrastructure
- NSW WorkCover

- NSW Environment Protection Authority
- Orica Kooragang Island Community Reference Group (CRG)

To support the assessment process, Orica distributed a fact sheet summarising the project and environmental assessment to neighbouring suburbs including Stockton, Fern Bay, Carrington and Mayfield. In total over 4000 households received the fact sheet. The public exhibition period was further publicised through advertisements in the Newcastle Herald, Portside Local and the Newcastle Star on 7, 5 and 4 December 2013 respectively.

Submissions Received Following Exhibition Period

In total the Department received 11 submissions during the formal public exhibition period, including 6 submissions from members of the general public.

Submissions received from regulatory authorities included:

1. Newcastle City Council on 17 December 2013
2. NSW Department of Health - Hunter New England District on 20 December 2013
3. NSW Department of Planning and Infrastructure on 20 December 2013
4. NSW WorkCover on 24 December 2013
5. NSW Environment Protection Authority on 14 January 2014

Submissions received from members of the general public and relevant interest groups included:

1. Public Submission (Mel Horadam) on 15 December 2013
2. Public Submission (Leween Horadam) on 15 December 2013
3. Public Submission (Pat Hyde) on 17 December 2013
4. Hunter Business Chamber (December 2013)
5. Public Submission 1 (name withheld)
6. Public Submission 2 (name withheld)

This letter presents Orica's response to the submissions in the order in which the submissions were received.

Orica Response to Regulatory Authority Submissions

1. Newcastle City Council Submission (17 December 2013)

Newcastle City Council development assessment team provided comment regarding:

1. The use of tall (temporary and permanent) fixed structures in the vicinity of Newcastle Airport, with reference to the requirements detailed in the Department of Defence document titled '*Operation of cranes and tall structures in the vicinity of Newcastle Airport*'; and
2. Section 94A Development Contributions Plan.

Orica Response:

Orica acknowledges Newcastle Airport notification requirements associated with the operation of cranes and other tall structures, exceeding 30m above ground level, within a 15

km radius of Newcastle Airport. An application will be lodged at least 2 days prior to the intended use of such cranes onsite.

It is Orica's understanding that Section 94 contributions are to assist council in maintaining adequate public infrastructure as a result of increased demand associated with a development. During negotiations between Orica and Newcastle City Council in 2009 it was acknowledged by both NCC and Orica that it was difficult to apply a conventional Section 94 contribution calculation, as there was no clear correlation between the expansion of the Kooragang Island site and increased demand on local public infrastructure, with an argument of whether a Section 94 contribution payment for the project was required at all.

An alternative approach was adopted, based on the estimated cost of the expansion building component, landscaping, site parking areas and fencing and excluding the cost of new plant and equipment. A project Section 94 contribution of \$272,000, towards upgrading Corroba Oval in Stockton, was agreed and honoured by Orica in 2010. This same approach should be used to determine whether a Section 94 contribution is required as a result of this modification. As the modification does not relate to an increase in building size and there will be no increase in demand on local public infrastructure, a renegotiation of the expansion project's Section 94 contribution is not warranted.

2. NSW Department of Health Submission (20 December 2013)

NSW Department of Health provided comment regarding:

1. Ensuring appropriate Emergency Response personnel, including the state Emergency Operations Controller and Fire and Rescue NSW have reviewed the proposed modification.
2. Ensuring Site Emergency Management Plans are updated to reflect the modification.
3. Ensuring the community is consulted regarding the high visibility of the ammonia flares.

Orica Response:

A copy of the modification's EA was supplied to both NSW WorkCover and Fire and Rescue NSW during the public exhibition period.

In accordance with Condition 15(b) of the Project Approval (08_129), Orica will submit an updated Site Emergency Plan for approval to DoPI and Fire and Rescue NSW, prior to commencing commissioning activities associated with the ammonia flares and nitric acid tank.

The visual amenity assessment completed for the modification concluded that there would be minimal impact associated with the operation of the ammonia flares. Unlike hydrocarbon flares which display a "rich" yellow flame when activated, ammonia flares display a blue flame, which will only be visible if activated at night. During standby operations of the ammonia flare there may be a small flame associated with the combustion of purge gas.

The site will continue to utilise the Community Reference Group (CRG) and other media to ensure that the community is appropriately informed of both the project's approval assessment process and the safety function of the three ammonia flares.

3. NSW Department of Planning and Infrastructure Submission (20 December 2013)

DoPI Major Project assessment team requested additional information relating to:

1. Soil and water – requested additional information regarding the anticipated soil and water impacts and proposed mitigation controls associated with the modification.
2. Wastewater, specifically effluent that is anticipated to be generated from the modification.
3. Greenhouse gas emissions

Orica Response:

A response to each point outlined in Appendix 1 of the DoPI submission is detailed in Table 1.

Table 1 – Orica Response to Department of Planning and Infrastructure Submission

EPA Feedback	Orica Response
Soil and Water	
<i>The Department wishes to clarify the anticipated maximum depth of excavations required (if any) to construct the proposed modification (eg Nitric Acid tank). Measures to manage soil and groundwater during excavations should also be detailed in the RTS [Response to Submissions].</i>	The design of the foundations associated with both the nitric acid tank and ammonia flare supporting structures have been designed to minimise the extent of soil disturbance and prevent groundwater interaction. The maximum anticipated excavation depth, below the existing ground level, is estimated to be 1m.
<i>Where mitigation measures outlined in the 2009 EA are proposed during the construction and operation of the modified facility, these shall be detailed in the RTS.</i>	<p>In compliance with Condition 49 of the expansion project approval (08_129), the project has previously submitted an environmental management strategy (EMS) to DoPI, dated December 2009.</p> <p>A requirement of the EMS is the development and implementation of a Construction Environmental Management Plan (CEMP). This plan was submitted to DoPI and approved, dated September 2011. The CEMP outlines the mitigation controls that are to be implemented to minimise the environmental impact associated with construction activities undertaken onsite.</p> <p>The management of soil and water, detailed in the MOD 2 documentation, will be undertaken in accordance with the mitigation controls detailed in the approved CEMP.</p>
<i>It is unclear from the EA if the proposed modification works would impact on any areas of the site that have been identified as contaminated (including Acid Sulphate Soils). This should be clarified in the RTS. If contaminated material is to be disturbed, contaminated management measures (eg. Erosion and sediment controls)</i>	<p>Neither the nitric acid tank, nor the three ammonia flares are located within identified areas of soil contamination or areas that are currently undergoing active remediation as part of a Remedial Action Plan.</p> <p>Consistent with the approach adopted previously</p>

<p>during construction shall be described in detail in the RTS.</p>	<p>by the expansion project, and in compliance with the requirements detailed in the CEMP and Soil Management Plan (January 2010, previously to the DoPI), a preliminary soil investigation has been completed for the nitric acid tank location. The investigation identified that the soil had a low acid sulphate soil propensity, with laboratory analysis collected during the investigation to be utilised in ensuring appropriate offsite disposal of excavated soil.</p>
<p><i>It should be clarified in the RTS if the existing stormwater management system on site would have a sufficient capacity to cater for increased run off generated by the proposed modification?</i></p>	<p>The nitric acid tank will result in a slight increase in the impervious area in Catchment 1. Catchment 1 currently has a total catchment area of 51,804m², with an impervious area of 7278m².</p> <p>The tank and associated infrastructure is expected to result in an increase in the impervious area by approximately 1500m², However no water will be directed to the stormwater system as the tank in tank nitric acid tank design will prevent stormwater from collecting in the secondary bund area.</p> <p>The increase in hardstand associated with the ammonia flare supporting structures is also considered minimal and will not impact stormwater discharge volumes.</p>
<p><i>It is also unclear in the EA if the modified facility would require an increase in potable water use? If so, this increase should be quantified in the RTS and compared to the predicted potable water use of the approved development. It should be demonstrated that Hunter Water Corporation has adequate capacity to supply the facilities requirements or alternative water supply arrangements are available.</i></p>	<p>There will be a slight increase in water usage associated with the modification due to the addition of dilution water supply to the nitric acid tank scrubber.</p> <p>Currently water usage for the scrubber is estimated at approximately 1.6m³/hr of demineralised water. This increase in water demand is within existing site existing water supply limits.</p>
Wastewater	
<p><i>It is unclear from the EA if the proposed modification would result in the generation of increased effluent when compared to the approved facility. It should be clarified in the RTS if the existing effluent management system/s would have capacity to cater for any increase and if the quality and quantity of effluent discharged would meet EPL limits.</i></p>	<p>The modification is expected to result in a negligible increase in effluent.</p> <p>The generation of effluent will be minimal as the discharge from the nitric acid tank scrubber will be recycled back to the nitric acid tank rather being directed to effluent.</p> <p>A small quantity of effluent may be generated in the nitric acid pump and nitric acid scrubber bunded area and also during tank and scrubber maintenance periods; however this volume can be managed within existing EPL requirements.</p>

Greenhouse Gas Emissions	
<p><i>The EA states that an estimation of the Greenhouse Gas emissions (GHG's) of the proposed modification was undertaken however no numerical data is provided in the EA to verify GHG impacts.</i></p> <p><i>In order to finalise its assessment, the Department requires the GHG emissions of the modified facility to be quantified in the RTS and compared to those of the approved facility and as a percentage total GHG in NSW.</i></p>	<p>The main operations likely to contribute to GHG generation (Scopes 2 and 3), as a direct result of the modification include:</p> <ul style="list-style-type: none"> • Electricity consumption associated with the operation of the scrubber and nitric acid transfer pumps; • Natural gas consumed by the ammonia flare pilot flame's and ammonia flare purge gas; and • Nitric acid tank lighting. <p>The 2009 Environmental Assessment Greenhouse Gas assessment identified that the major contributor to greenhouse gas generation was the combustion of natural gas at the site, contributing 720,924 tCO₂e per annum. Total greenhouse gas emissions from the expanded site were estimated at 1.4Mtpa CO₂e/year which corresponded to approximately 6% of Australia's <u>industrial</u> GHG emissions.</p> <p>The additional combustion of natural gas, associated with the ammonia flare pilots and purge gas is estimated to generate an additional 774 tCO₂ eq per year, representing an increase to CO₂ generation contributed to natural gas consumption at the site of 0.1%, or an increase of 0.05% to overall CO₂ generated by the overall expanded site.</p>

4. NSW WorkCover Submission (24 December 2013)

NSW WorkCover provided feedback requesting additional information regarding the Preliminary Hazard Analysis and detailed suggested conditions that should be incorporated into the project's current Development Consent, if the modification approval is successful.

Orica Response

A response to both feedback and suggested conditions is detailed in Table 2.

Table 2 – Orica Response to feedback detailed in NSW WorkCover submission

NSW WorkCover Feedback	Orica Response
<p><i>Appendix D refers to Mod 1 and MOD 2. It is unclear if MOD 1 refers to whole of site operation with MOD 1 and MOD 2 refers to whole of site operation with MOD 2. Clarification is required.</i></p>	<p>Both MOD 1 and MOD 2 Preliminary Hazard Analysis (PHA) reports relate to the overall site including infrastructure associated with the expansion. A history of PHA updates is as follows:</p> <ul style="list-style-type: none"> ➤ In 2009, the site PHA was updated to include addition plant and other supporting infrastructure, associated with the site's expansion project. ➤ In 2011 the PHA was further refined to reflect changes to the post expansion site

	<p>layout (MOD1) including changes to ammonia distribution infrastructure.</p> <p>➤ MOD 2 PHA is a further update to the MOD 1 PHA to reflect further changes to the ammonia distribution system as part of the Ammonia Management Improvement Program (AMI) and to include the operation of three ammonia flares.</p>
<p><i>Risk matrix provided in page 25 of Appendix E classifies catastrophic (multiple fatalities, extremely unlikely) risk as low. Industry practices including Buncefield report recommend the likelihood lower than 10^{-7} for multiple fatalities risk to be considered low. Hence risk matrix should be reviewed and updated.</i></p>	<p>The risk matrix detailed in the Nitric Acid tank PHA is consistent with AS/NZS 31000 methodology.</p> <p>A review of the risk matrix against industry standards will be undertaken. However the proposed matrix amendments will not alter the findings of recommendations or analysis detailed in the Nitric Acid Tank PHA.</p>
<p>NSW WorkCover Suggested Conditions</p>	
<p><i>Prior to commencement of detail design of the works associated with the modification, including the interfaces with existing and proposed works under previous approvals, the proponent must consult with the Major Hazard Facilities Team of WorkCover and include, in the detail design, the requirements of WorkCover to ensure compliance with the WorkHealth and Safety Act(2011) and Regulation(2011).</i></p>	<p>In order to complete the Environmental Assessment, a significant portion of detail design associated with the ammonia flares and nitric acid tank has already to be completed. In compliance with condition 14(b) of the site's approvals; the project is undertaking a Hazard and Operability Study (HAZOP) in accordance with Hazardous Industry Planning Advisory Paper No. 8. An important element to the HAZOP process is ensuring process design is compliant with relevant regulatory legislation including the <i>Work Health and Safety Act(2011) and Regulation(2011)</i>.</p> <p>The HAZOP process is facilitated by a DoPI approved independent qualified person, with the final HAZOP report requiring approval from the Director General prior to the commencement of construction. Orica considers the current arrangements as being robust in ensuring site risk is appropriately managed and does not consider that any changes to the current project conditions is warranted.</p>
<p><i>All hazards related reports and studies that may be required under the conditions of approval shall include sufficient detail to demonstrate compliance with the Work Health and Safety Act (2011) and Regulation (2011).</i></p>	
<p><i>HAZOP and similar studies shall be carried out in consultation with WorkCover to address all changes and interfaces, for both hardware and control systems.</i></p>	<p>Orica will ensure that progress made in completing hazard related Conditions of Consent is detailed in the regular six monthly update letter from Orica to Workcover.</p>

5. NSW Environment Protection Agency (14 January 2014)

The NSW EPA provided feedback on the EA regarding noise, notification requirements and EPL Conditions that should be included in the site's Environment Protection Licence (EPL 828) if the modification is approved.

Orica Response

Table 3 – Orica Response to NSW EPA submission

EPA Feedback	Orica Response												
Should project approval be granted, the EPA recommends that the Department of Planning and Infrastructure include noise conditions consistent with those granted for Project Approval 08_0129 for the facility, which require that noise from any plant be at least 10dB below existing noise emissions from the premises.	Agreed.												
It is recommended that flares be excluded from these limits as flaring is a safety measure implemented during plant upsets.	Agreed.												
Orica's community communication system should include information on and notification during flaring events.	Orica will update the site's Pollution Incident Response Management Plan to include ammonia flaring events. Due to the duration of ammonia flaring events (typically 1 to 2 minutes) it is not practical to notify the community during a flaring event.												
EPL licence Conditions													
Flares:	Agreed.												
<table><tr><td>Pollutant</td><td>Units of measure</td><td>Frequency</td><td>Sampling Method</td></tr><tr><td>Temperature</td><td>oC</td><td>Continuous</td><td>TM-02</td></tr><tr><td>Volumetric flow rate</td><td>m3/s</td><td>Continuous</td><td>CEM-06</td></tr></table>	Pollutant	Units of measure	Frequency	Sampling Method	Temperature	oC	Continuous	TM-02	Volumetric flow rate	m3/s	Continuous	CEM-06	
Pollutant	Units of measure	Frequency	Sampling Method										
Temperature	oC	Continuous	TM-02										
Volumetric flow rate	m3/s	Continuous	CEM-06										
Flare Operations: a) The Flares must be operated so that a visible flame is present at all times when air impurities are required to be treated.	Orica agrees with the intent of the requirement, however proposes the following changes to the wording ,as shown in red or struck through: 1. The Flares must be operated so that a visible pilot flame is present to activate the flare at all times when air impurities are ammonia is required to be treated.												
2. Within 7 days of operating the Point's x, y, and z to flare ammonia at the premises. As a minimum, the investigation report must include: a) Date and time the incident occurred; b) Duration of the incident; c) Quantity of ammonia directed to the flare; d) Operating temperature of the flare during the incident; e) An assessment of off-site impacts; and f) Actions identified to prevent further incidents	Orica does not consider the activation of the ammonia flare a notifiable event as it does not constitute an uncontrolled release of ammonia. Preliminary discussions have been undertaken between Orica, NSW WorkCover and the NSW EPA regarding clarification of this matter. In relation to the proposed EPL Condition Orica proposes the following changes be made to the wording, as shown in red or struck through: a) Agreed; b) Suggested change in wording: Duration of the incident ammonia flare activation:												

	<p>c) Delete. The quantity of ammonia directed to the flare will be difficult to determine and will not reduce the flare's ammonia treatment efficiency or alter the operation of the ammonia flare. The sizing of each of the three ammonia flare has been determined through analysis of the largest volume ammonia release point, located within the individual ammonia collection system.</p> <p>Suggested change in wording: Quantity of ammonia flowrate directed to flare during activation;</p> <p>d) Agreed. Further consultation is required between Orica and EPA regarding the positioning of any temperature monitoring equipment.</p> <p>e) As the three ammonia flares will be operated in accordance with the design detailed in the EA, with captured ammonia being thermally treated forming predominantly nitrogen and water prior to being discharged, there will be no added offsite impact to that modelled in the environmental assessment, therefore no additional environmental impact assessment is warranted.</p> <p>f) Orica will investigate the circumstances that resulted in the flare being activated. Although due to the complexities associated with undertaking the investigation it may not be possible to conclude the investigation within 7 days of activation.</p>
<p><i>Special Condition – Nitric Acid Scrubber</i></p> <p><i>E5.1 An air compliance assessment of the Nitric Acid scrubber stack must be undertaken within three (3) months of commissioning the Nitric Acid Scrubber. The assessment must be prepared by a suitably qualified and experienced person and include:</i></p> <ul style="list-style-type: none"> <i>a) Stack testing of the Nitric Acid tank scrubber stack conducted in accordance with the approved Methods for Sampling and Analysis of Air Pollutants in NSW;</i> <i>b) Qualification of control efficiency(%) achieved by the scrubber;</i> <i>c) Comparison of measured NOx emission with emissions assessed in the air quality assessment;</i> <i>d) Comparison of measured NOx emission with applicable Protection of the Environment Operations (Clean Air) Regulation 2010 emission limits; and</i> <i>e) Where measured emissions exceed</i> 	<p>Agreed.</p> <p>Orica notes that NOx load on the nitric acid tank scrubber may vary between periods of nitric acid storage and tank loading. This may increase in added complexity associated with undertaking the nitric acid scrubber verification testing.</p>

<i>those assessed in the air quality assessment, a revised impact assessment qualifying potential offsite impact should be undertaken.</i>	
<i>E5.2 Within three months of commissioning the Nitric Acid tank and scrubber, a report detailing the results of the compliance assessment undertaken under Condition E5.1 must be prepared and submitted to the EPA's Regional Manager.</i>	Agreed.

Orica Response to Regulatory Authority Submissions

1. Public submission from Mel Horadam (15 December 2013)

The submission opposed the modification application, with issues raised in the submission including:

- Orica's safety record;
- The quantity of nitric acid to be stored and quantity of ammonia flares proposed in relation to Stockton; and
- Planning process (modification vs new development).

Orica Response

Orica is committed to operating in accordance with the site's EPL, Development Consents and other relevant regulatory legislation. Significant investment has been made at the site over the past ten years and in particular during the last 2 years. This has included upgrading the site's existing infrastructure to ensure that the site's safety and operational performance is aligned with community expectations. The installation of the three ammonia flares will provide the site with an additional layer of safety, designed to further reduce the risk associated with the use of ammonia at the site to both the community and onsite personnel. The number of ammonia flares has been designed to ensure optimal operation of the flaring system.

Currently the site has three nitric acid storage tanks capable of storing a total of 2850t of nitric acid. A fourth tank capable of storing an additional 2000t was approved in 2009. The proposed 10,000t tank will replace the fourth tank, and will allow nitric acid to be imported to site by ship. As the site is nitric acid constrained in the manufacture of ammonium nitrate, the additional storage capability for the site will improve plant operational stability, reducing the number of times a plant is required to start-up and shutdown each year. The tank storage capacity is required to be 10,000t to allow the transfer of up to 8000t of nitric acid per shipment. The Nitric Acid Tank has been designed utilising a tank in tank design and includes a scrubber to remove nitric acid fume, to minimise any impact to the environment.

2. Public submission from Leween Horadam (15 December 2013)

The submission opposed the modification application, with issues raised in the submission including:

- a) The size and range of the fact sheet mailbox distribution area;
- b) The timing of the EA public exhibition period;
- c) The level of assessment detailed in the EA compared to a new development;
- d) Orica's safety record.

Orica's Response

To support the regulatory approval process, Orica distributed a project specific fact sheet summarising the environmental assessment undertaken for the project to neighbouring suburbs including Stockton, Fern Bay, Carrington and Mayfield. The distribution area was consistent with the distribution area that has previously been utilised by Orica to distribute the site's bi-monthly newsletter. In total over 4000 households received the fact sheet. The public exhibition period was more broadly publicised through advertisements in the Newcastle Herald, Portside Local and the Newcastle Star on the 7, 5 and 4 December 2013 respectively.

The period and timing of the EA public exhibition period is at the discretion of the DoPI. The duration of the public exhibition period, 14 days, is reflective of the minor modification to the existing site approval being sought by Orica. To support the modification application, Orica completed a detailed EA, with specific assessments undertaken to determine the environmental impact associated with air quality, noise, visual amenity and hazard and risk environmental factors. The EA concluded that the proposed modification would not have a significant impact on the surrounding environment or community.

Orica is committed to operating in accordance with the site's EPL, Development Consents and other relevant regulatory legislation. Significant investment has been made at the site over the past ten years and in particular during the last 2 years. This has included upgrading the site's existing infrastructure to ensure that the site's safety and operational performance is aligned with community expectations. The installation of the three ammonia flares will provide the site with an additional layer of safety, designed to further reduce the risk associated with the use of ammonia at the site to both the community and onsite personnel.

3. Public Submission from Pat Hyde (17 December 2013)

The submission supported the modification application on the basis that:

- The ammonia flares would reduce the risk of fugitive ammonia emissions at Stockton; and
- The additional nitric acid storage reduces the number of plant startup and shutdowns.

Orica Response

Orica agrees with the comments detailed in the submission.

4. Hunter Business Chamber (December 2013)

The submission supported the modification application due to:

- Improved environmental risk management of the site
- The proposal supports future capacity and economical growth opportunities.

Orica Response

Orica agrees with the feedback detailed in the Hunter Business Chamber submission

5. Public Submission 1 (details withheld)

The submission opposed the modification application on the grounds of:

- Orica's safety record;
- Existing noise generated from the site; and
- Location of the site to the community.

Orica Response

Orica is committed to operating in accordance with the site's EPL, Development Consents and other relevant regulatory legislation. Significant investment has been made at the site over the past ten years and in particular during the last 2 years. This has included upgrading the site's existing infrastructure to ensure that the site's safety and operational performance is aligned with community expectations. The installation of the three ammonia flares will provide the site with an additional layer of safety, designed to further reduce the risk associated with the use of ammonia at the site to both the community and onsite personnel.

Orica continues to monitor and implement noise reduction initiatives at the site to further reduce the site's current noise level. A comprehensive noise assessment was completed for the project and found that there would be no increase noise level at the nearest community receptors associated with the operation of the nitric acid pumps, and standby operation of the ammonia flares.

During flare activation it was determined that noise levels would increase, however considering the predicted infrequent operation of the flares, the short duration in which the flares are anticipated to operate (typically less than 5 minutes) and the safety function for which the flares serve, the increase in noise level was deemed to be acceptable.

6. Public Submission 2 (details withheld)

The submission opposed the modification application with issues raised in the submission including:

- a) Fumes produced by the flares, and ammonia gas, should the flares not function properly
- b) Light from the flares, possibly during evening hours
- c) Increase risk of fire spreading from the flares if they malfunction
- d) Noise from the flares as they burn
- e) Increase risk of explosion

- f) Increase volume of ammonia and other chemicals that could possibly leak into the water system
- g) Increased noise from the construction of the flares and tanks
- h) Increase noise from the subsequent increase in production.

Orica Response

- a) The ammonia flares have been designed to ensure 99% treatment efficiency of ammonia. An air quality assessment was completed for the modification and determined that it meets all legislative assessment criteria and would not significantly impact the air quality in the receiving environment. The multi pilot flare design of the ammonia flare significantly reduces the likelihood of the flare not activating when required.
- b) Unlike hydrocarbon flares which display a “rich” yellow flame if activated, ammonia flares display a blue flame, which will only be visible if activated at night. A small flame associated with the combustion of the ammonia flare purge gas may be visible. Typically a flaring event in the nitrates and ammonia plant areas will be short in duration of less than 5 minutes. The installation of the ammonia flares will form an integral component of the site’s safety management system, preventing the requirement for ammonia to be released directly to the environment during plant disruptions but rather thermally oxidising the ammonia to predominantly form nitrogen and water vapour.
- c) The installation of ammonia flares onsite will be managed through the site’s current risk management practices. The ammonia flare supporting structures have been optimally sized to ensure appropriate dispersion of radiant heat, in the event that the flare activates.
- d) A comprehensive noise assessment was completed for the EA and found that there would be no increase to the current noise level, associated with the nitric acid pumps and standby operation of the ammonia flares.

During flare activation it was determined that noise levels would increase, however considering the predicted infrequent operation of the flares, the short duration in which the flares will operate (typically less than 5 minutes) and the safety function for which the flares serve, the increase in noise level was deemed to be acceptable.

- e) The ammonia flares will be continually purged with purge gas (typically consisting of natural gas) to prevent the build-up of flammable gases within the ammonia flare stack. This will significantly reduce the potential for an explosion relating to the ammonia flares. In addition the ammonia flares have been sized according to the largest potential ammonia release volume within the ammonia collection system.
- f) There will not be any increase to ammonia and other chemicals into the site’s effluent or stormwater collection systems.
- g) Noise associated with the construction of both the nitric acid tank and ammonia flares was considered in the noise assessment. Predicted construction noise levels were determined to comply with construction noise guidelines and would not impact the nearest noise-sensitive receivers.

- h) The construction and operation of the nitric acid tank will not increase the rate in which ammonium nitrate is produced however will increase the utilisation of the plants. Noise levels associated with the site will be consistent with existing noise levels. In addition Orica is undertaking further noise reduction initiatives design to reduce existing noise levels.

If you require any further information, or further clarification regarding information detailed in Orica's response to submissions, please do not hesitate to contact me.

Regards



Antony Taylor | Major Projects – Statutory Manager

Kooragang Island Site

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