Appendix D

Noise Report

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ATKINS ACOUSTICS

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NOISE PLANNING ASSESSMENT
MODIFICATION TO SITE LAYOUT
AMMONIUM NITRATE PRODUCTION FACILITY
KOORAGANG ISLAND

1.0 INTRODUCTION

Atkins Acoustics and Associates Pty Ltd *(Atkins Acoustics)* was engaged by AECOM *(AECOM)* onbehalf of Orica Australia Pty Ltd. *(Orica)* to prepare a Noise Impact Assessment for the proposed uprate of the existing Kooragang Island Ammonium Nitrate Production Facility. The project involved the construction of an additional Nitric Acid Plant, an additional Ammonium Nitrate Plant, modifications to the existing Ammonia Plant, uprating the Ammonium Nitrate recovery/recycle systems, additional infrastructure and storage. Findings of the noise assessment are reported in the *Atkins Acoustics report "Orica Australia Pty Ltd. Kooragang Island. Noise Impact Assessment Numbered 39.6357.R1GACD03, Revision 03, dated February 2009".*

During the design development phase of the project two key changes within the project have occurred, they include amendments to the project site layout and the selection of a larger Nitric Acid Plant.

This report presents the results and findings of noise modelling for the project and an assessment of noise impacts resulting from the proposed modifications.

2.0 PROJECT MODIFICATIONS

The key changes to the site layout *(Attachment 1)* are:

- The Ammonium Nitrate (AN3) has been re-located to the northwest and positioned amongst the bulk and bag storage areas;
- The AN3 wet section has been incorporated into the new Nitric Acid Plant (NAP4);
- The existing bag store will be replacement with a new bag store on the southern end of the site.
- The bag and bulk store and container storage areas have been re-located slightly to the west and re-orientated to accommodate AN3; and
- the new boiler has been relocated closer to NAP4.

While the capacity of the plant may be greater, Orica is not seeking to increase the approved capacity amounts. One of the principle means of achieving this operationally would be to run the new copy plant at peak capacity and the older existing plant at the site at lesser capacity. This would achieve the capacity requirements as well as running newer and more efficient plant over the older less efficient plant. *Table 1* presents a summary of the current and future production rates.

Table 1 - Current Production and Future Production Rates

Product / Intermediate	Current *Production Rates* *ktpa*	Future (consent limits) *ktpa*	Possible Capacity Current Selected Plant *ktpa*
Ammonia	295	360	360
Nitric Acid	345	605	**660**
Ammonium nitrate	430	750	**830**

2.1 NAP4 Plant Selection

Orica has identified a preferred technology provider for NAP4.. A “copy plant” has been identified, that is, a proven plant design that has been built and operated elsewhere (Europe). This selection process has an advantage of providing proven operability and track record.

As part of the acoustic design requirements for the project, a sound power level of 112dBA *(Atkins Acoustics June 2010)* was allocation to NAP4. *Orica* has identified that the provider has committed to reducing noise from NAP4 plant to satisfy the design allowance.

3.0 ASSESSMENT NOISE GOALS

The design goal for Stockton and assessing noise from all new development associate with the *Orica* site was set to meet a noise level contribution greater than 10dBA below the predicted existing levels. For comparison *Table 2* presents a summary of the predicted existing levels for Stockton for *Orica:*

Table 2: Existing Orica Noise Level Contributions (Clam Conditions)

Assessment Location	Predicted Sound Pressure Levels LAeq
Assessment Location P1 - Fullerton Street (North)	41
Assessment Location P2 - 186 Fullerton Street	50
Assessment Location P3 - 239 Dunbar Street	49
Assessment Location P4 - 284 Fullerton Street	51
Assessment Location P5 - Boat Ramp	53

4.0 NOISE MODELLING

A computer model based on the *DECC* approved *Environmental Noise Model (ENM)*. was developed for predicting noise levels from the *Orica* site The model considers attenuation factors including distance, shielding from structures, ground absorption, atmospheric absorption, topographical features of the area and the site. The model was calibrated with site attended audit measurements.

4.1 Modelling Results

For the purpose of comparing noise levels for the original layout and the proposed modifications, *Table 3* presents a summary of levels predicted to the Stockton reference assessment locations

Table 3: Predicted Noise Level Contributions (Clam Conditions)

Reference Assessment Location	Predicted Sound Pressure Levels LAeq	
	Original Plant	Modified Plant
Assessment Location P1 - Fullerton Street (North)	26.8	25.8
Assessment Location P2 - 186 Fullerton Street	38.6	35.2
Assessment Location P3 - 239 Dunbar Street	36.3	32.9
Assessment Location P4 - 284 Fullerton Street	36.5	33.7
Assessment Location P5 - Boat Ramp	41.2	39.6

5.0 FINDINGS

The results in *Table 3* show that the proposed plant and site layout modifications would result in an overall reduction in the noise emitted from the modified plant compared to the original site layout. The reductions being primarily associate with the relocation of the Ammonium Nitrate (AN3) plant and shielding provided by onsite buildings.

The findings and recommendations presented in the report are for the purpose of addressing environment noise at Stockton and development approval purposes only.

Yours sincerely,
ATKINS ACOUSTICS & ASSOCIATES PTY LTD.

Graham Atkins

ATTACHMENT 1. MODIFIED SITE LAYOUT