

ANNEXURE 11

Documentation Supporting Regularisation of Non-Enclosure of Existing Plant

**22, 24, 171 and 220
Bolong Road, Bomaderry**



Contact: Georgia Dragicevic
Phone: 4224 9477
Fax: 4224 9470
Email: Georgia.Dragicevic@planning.nsw.gov.au

Mr Brian Hanley
Manager Energy & Sustainability
Shoalhaven Starches Pty Ltd
36 Bolong Road
BOMADERRY NSW 2541

Dear Mr Hanley

**Shoalhaven Starches Plant (MP 06_0228)
Independent Environmental Audit 28 January 2009 – 21 April 2017**

I refer to the Independent Environmental Audit Report for the reporting period from 28 January 2009 to 21 April 2017 (Audit Report) for Shoalhaven Starches Plant, submitted for the Secretary's consideration, in accordance with the terms of the Audit, approved by the Department on 21 July 2016.

I also refer to your correspondence, dated 22 February 2018 in response to the Department's correspondence, dated 8 February 2018 in relation to the Audit Report requesting confirmation whether the fermenter tanks' transfer pumps and molecular sieve pumps and compressors have been enclosed.

The Department notes that the fermenter tanks' transfer pumps and molecular sieve pumps and compressors have not been enclosed and notes the associated revised noise assessment concluding the previously proposed noise enclosures are not required given the noise limits compliance and the attenuation of current structures, which were not considered at the time.

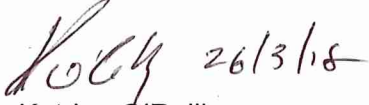
Notwithstanding the above, the Department advises that the enclosure of the fermenter tanks' transfer pumps and molecular sieve pumps and compressors is required under Schedule 2, Condition 2A a) of the approval. Consequently, you shall remain in non-compliance until those structures are either enclosed or the non-enclosure is approved by the Department. Should you wish to regularise the non-enclosure of the fermenter tanks' transfer pumps and molecular sieve pumps and compressors, an application for modification is to be submitted to the Department.

The Department also advises, should there be noise related complaints and/or exceedances of the noise criteria, the Department will undertake further investigations, in accordance with the Department's Compliance Policy, and based on the outcome may result in the Department undertaking further enforcement action(s) and/or requesting additional measures to be implemented.

Should you wish to discuss the above; or any Independent Environmental Audit & Annual Report requirements; or general compliance matters; please contact Georgia Dragicevic, Senior Compliance Officer, on telephone number (02) 4224 9477 or by email to Georgia.Dragicevic@planning.nsw.gov.au

For all Post Approval matters under project approval MP 06_0228; including any Management Plans, Programs or Strategies; Hazard Studies; Validations Reports and endorsement of experts or Independent Auditors, please contact Joanna Bakopanos, Team Leader Industry Assessments, on telephone number (02) 9274 6387 or by email to Joanna.Bakopanos@planning.nsw.gov.au

Yours sincerely

Handwritten signature of Katrina O'Reilly in dark ink, followed by the date 26/3/18.

Katrina O'Reilly

Team Leader Compliance
as nominee of the Secretary



MANILDRA GROUP

Postal Address
P.O Box 123 Nowra
N.S.W Australia 2541
Telephone: (02) 4423 8200
Fax: (02) 8003 9181

SHOALHAVEN STARCHES PTY LTD - MANILDRA ENERGY AUSTRALIA PTY LTD - MANILDRA FLOUR MILLS PTY LTD -
MANILDRA STARCHES PTY LTD - MANILDRA SUGARS - HONAN HOLDINGS PTY LTD -
MANILDRA MILLING CORPORATION - U.S.A.

Katrina O'Reilly
Team Leader Compliance
NSW Department of Planning and Environment

22nd February 2018

Dear Katrina,

We refer to the Department's letter titled 'Shoalhaven Starches Plant (MP 06_0228) Independent Environmental Audit 28 January 2009 – 21 April 2017', dated 8/2/18.

In this audit the recommended noise controls from an Acoustical Assessment prepared by The Acoustic Group Pty Ltd in June 2008, were found to be non-compliant with the statement of commitments in Shoalhaven Starches Environmental Assessment (EA) dated August 2008.

Shoalhaven Starches engaged the services of Harwood Acoustics to conduct a noise validation assessment and provide acoustic advice on the recommended noise controls derived from the Acoustical Assessment prepared by The Acoustic Group Pty Ltd in June 2008 (see attached)

Noise measurements conducted by Harwood Acoustics on the Fermenter Tank transfer pumps and Molecular Sieve pumps demonstrated all pumps are well below the noise limits described in the Shoalhaven Starches Environment Protection Licence 883 at all receptor locations.

The attached report titled 'Shoalhaven Starches Previously Recommended Noise Controls Acoustical Advice', dated 16 February 2018, by Harwood Acoustics, concludes the previously recommended noise controls are not required for these specific items of plant, likely due to the original predictions not considering attenuation from future (now existing) structures as details of such were not known at the time.

The pumps outlined in this assessment produce low levels of noise when compared to other items of plant and processes and noise control resources will be better focused on future projects.

Based on the attached noise advice, the enclosing of the Fermenter Tank transfer pumps and Molecular Sieve pumps is not required and we seek the Department's approval on this matter.

Further, Shoalhaven Starches advises the Department that compressors have not been installed with the Molecular Sieves.

Shoalhaven Starches is committed to completing the remaining non-compliances identified in the 2017 audit in a timely manner.

Regards,

A handwritten signature in black ink, reading "B. A. Hanley". The signature is written in a cursive style with a large, stylized 'H'.

Brian Hanley
Manager Energy & Sustainability
Shoalhaven Starches Pty Ltd



50 Junction Street, Nowra, NSW 2541

T: 02 4421 4583
M: 0414 315 775

matthew@harwoodacoustics.com.au
www.harwoodacoustics.com.au

ABN: 71634 997 937

Manildra Group
Shoalhaven Starches Pty Ltd
PO Box 123
Nowra NSW 25541

Reference: 1802008e-l.docx

Attention: Mr John Studdert
Telephone: 02 4423 8200
Email: john.studdert@manildra.com.au

20 February, 2018

Dear John,

**SHOALHAVEN STARCHES - PREVIOUSLY RECOMMENDED NOISE CONTROLS
ACOUSTICAL ADVICE**

Shoalhaven Starches Pty Ltd is part of the Manildra Group of companies and their existing Bomaderry complex produces a range of products including starch, gluten, glucose, ethanol and stock feed.

Their existing facility is located on the southern side of Bolong Road, Bomaderry, NSW, on the northern side of the Shoalhaven River. The surrounding area is a mix of commercial, industrial and residential premises. The nearest residences are located in the township of Bomaderry to the north-west, on rural land to the north-east and across the Shoalhaven River in Nowra to the south and Terara to the south-east.

In 2009 Shoalhaven Starches received Project Approval from the Minister for Planning for the Shoalhaven Starches Expansion Project (SSEP), reference 06_0228.

As part of the application for the above approval an Environmental Assessment Report (EAR) was prepared in 2008 by Cowman Stoddart Pty Ltd, for the proposed ethanol production upgrade including proposed odour reduction and waste water treatment measures for existing Shoalhaven Starches operations.

The EAR included a Statement of Commitments, the commitments contained within the EAR relating to noise were derived from an Acoustical Assessment, reference 38.3849.R52:ZJM, prepared by The Acoustic Group Pty Ltd in June 2008 (AA).

The recommended noise controls in the AA and EAR included, among others, reducing noise emission from the transfer pumps servicing the fermenters and the pumps servicing the molecular sieves.

Harwood Acoustics has been engaged by Shoalhaven Starches to undertake an assessment of the need for these previously recommended noise controls in light of the location and operation of these particular items of plant amid the current facility.

The author has carried out numerous noise assessments for Shoalhaven Starches and full details of the operation of the facility, location of the site and environs, surrounding area, Environment Protection Licence noise limits, noise management plan and noise producing plant and equipment can be seen in previous reports. The following sections provide a summary and overview to give context to the findings of this assessment.

1.0 SITE AND ENVIRONS

The Shoalhaven Starches complex is located on the southern side of Bolong Road across the Shoalhaven River from Nowra.

The area surrounding Shoalhaven Starches is a mix of commercial, industrial and residential premises with vacant land, owned by the Manildra Group, to the north.

The nearest residential receptor locations to the proposal are as follows:-

- Location 1 – Nobblers Lane, Terara approximately 1500 metres to the south east
- Location 2 – Riverview Road, Nowra approximately 1000 metres to the south west;
- Location 3 – Merroo Street, Bomaderry approximately 555 metres to the north west;
- Location 4 – Other areas in Bomaderry approximately 675 metres to the north west in Coomea Street and 700 metres to Railway Street;

Locations are listed in keeping with the order shown in Environment Protection Licence number 883, as detailed in Section 3.1 of this report. Distances are based on the location of the molecular sieve pumps as a reference only and distances from the fermentation transfer pumps vary from these.

The Shoalhaven Starches site, surrounding area and receptor locations are shown in Figure 1.



Figure 1. Location Plan – Shoalhaven Starches, Bomaderry, NSW (source: Google Maps © 2016)

2.0 ACCEPTABLE NOISE LIMITS

Shoalhaven Starches operates under Environment Protection Licence 883 issued by the NSW Environment Protection Authority.

Section L5 'Noise Limits' of the licence states:-

"L5.1 the L_{A10} (15min) sound pressure level contribution generated from the premises must not exceed the following levels when measured at or near the boundary of any residential premises:

- a) 38 dBA at locations in Terara on the south side of the Shoalhaven River;*
- b) 38 dBA at locations in Nowra on the south side of the Shoalhaven River;*
- c) 42 dBA at locations in Merroo Street, Bomaderry;*
- d) 40 dBA at other locations in Bomaderry."*

These noise limits apply to the overall operation of the Shoalhaven Starches complex.

The original Project Approval incorporates noise mitigation measures recommended in the 'Acoustical Assessment, Proposed Ethanol Upgrade, Shoalhaven Starches' – prepared by The Acoustic Group Pty Ltd, ref 38.3849.R52:ZJM, dated 26 June 2008. This document forms part of the EA and statement of commitments and it is implicit that the noise control recommendations within this document are required to be implemented as part of the Project Approval.

3.0 PUMP NOISE MEASUREMENTS AND PREDICTIONS

The author visited the Site on Tuesday 13 February 2018 to measure the level of noise emission from the operation of the fermentation transfer pumps and the molecular sieve pumps. The pumps were operating under typical conditions and the fermentation transfer pumps, which have variable speed drives, were switched to full speed during the noise survey. The average level of noise emission from each of the pumps was approximately 90 – 92 dBA in close proximity to the pump. This is in keeping with the sound power levels ascribed to the pumps in the original Acoustic Assessment and subsequent acoustic assessments prepared by Harwood Acoustics for similar plant.

The measured noise level of each of the pumps has been used to predict the overall level of noise at each receptor location, as shown in Table 1 below.

The external noise level at each receptor has been calculated from the formula:-

$$L_{eq} = L_w + Dc - A$$

Where:

- L_w is the sound power level of the noise source;
- Dc is directivity correction; and
- A is the attenuation that occurs during the propagation from source to receiver.

Table 1 Predicted Noise Levels at Receptor Locations – Pumps

Description	Predicted Noise Level $L_{10, 15 \text{ minute}}$ (dBA) at Receptor Location			
	Location 1	Location 2	Location 3	Location 4
Fermentation Transfer Pumps	<5	<5	<10	23*
Molecular Sieve Pumps	<5	<5	<10	<10
Acceptable Noise Limit ($L_{10, 15 \text{ minute}}$)	38	38	42	40
Complies	✓	✓	✓	✓

Calculations and predictions consider distance loss to each receptor as well as the following:-

- Five (5) of each pump type considered cumulatively;
- Attenuation from the structures around the pumps, with the exception of the following;
 - * two pumps with direct line of sight to Location 4, assumed in this instance to be in Railway Street, Bomaderry – see Figure 1;
 - Ground absorption to this location only of a maximum 2 dB.

It can be seen that the predicted noise levels from all pumps considered are well below the acceptable noise limits derived the Environment Protection Licence 883 at all receptor locations.

The recommended noise controls detailed in the original Acoustic Assessment are not required for these specific items of plant. This is likely due to the original predictions not considering attenuation from future (now existing) structures as details of such were not known at the time.

It is worth noting that Shoalhaven Starches are required to have six monthly Environmental Noise Compliance Monitoring to be conducted in January and July (weather permitting).

Bi-annual compliance testing was carried out by The Acoustic Group Pty Ltd on Monday 30 January and Tuesday 1 August 2017. Report references 47.3849.R79:MCC dated 7/02/17 and 47.3849.R80:MCC dated 7/08/17 respectively.

Full details of the noise monitoring methodology and results can be seen in each of the reports.

Both assessments concluded that the contribution of noise from the overall Shoalhaven Starches complex at each of the receptor locations detailed in Section 2 above were with the noise limits set by Environment Protection Licence 883.

It is noted that the during both 'Acoustic Compliance Monitoring' assessments the pumps detailed in this assessment were fully operational.

Shoalhaven Starches have recently approved modifications to their Expansion Project Approval that require significant noise controls and are proposing additional modifications in the future. The pumps outlined in this assessment produce low levels of noise when compared to other items of plant and processes and noise control resources will be better focused on future projects.

4.0 CONCLUSION

An assessment of the need for previously recommended noise controls for fermentation and molecular sieve pumps at Shoalhaven Starches existing facility on Bolong Road, Bomaderry, NSW has been undertaken.

Noise measurements and predictions show that the level of noise emission from the operation of these pumps as they currently operate is well below the noise limits set by Environment Protection Licence 883.

Consequently there is no need to implement the previously recommended noise controls for these items of plant.

Please do not hesitate to contact the undersigned should you require any further information or clarification.

Yours faithfully

Matthew Harwood, MAAS
Principal Acoustical Consultant

Attachments:-

- Appendix A – Noise Survey Instrumentation

Noise Survey Instrumentation	Appendix A
------------------------------	------------

The instrumentation used during the noise survey consisted of:-

Description	Model No.	Serial No.
SvanTek Sound Level Meter	SVAN 957	15395
Acoustical Calibrator	SV34A	58762

The sound level meter conforms to Australian Standards AS IEC 61672.1-2004 : 'Electroacoustics - Sound level meters – Specifications' as a Class 1 precision sound level meter and AS 1259 as a Type 1 precision sound level meter.

The calibration of the meters was checked before and after the measurement period. No significant system drift occurred over the measurement period. The sound level meter and calibrator have been checked, adjusted and aligned to conform to the factory specifications and issued with conformance certificates as required by the regulations.



THE ACOUSTIC GROUP PTY LTD
CONSULTING ACOUSTICAL & VIBRATION ENGINEERS

ACOUSTICAL ASSESSMENT
PROPOSED ETHANOL UPGRADE
SHOALHAVEN STARCHES, BOMBADERRY
38.3849.R52:ZJM

Prepared for: *Cowman Stoddart Pty Ltd*
PO Box 738
NOWRA NSW 2541

Date: *26th June, 2008*

CONTENTS

	<u>Page No</u>
1.0 Introduction	1
2.0 Ethanol Upgrade Acoustic Design Targets	3
3.0 Acoustical Assessment	5
4.0 Construction Noise	15
5.0 Noise Emission From Construction of the Plant	17
6.0 Conclusion	18

APPENDICES

- A: Site and Reference Measurement Locations
- B: Proposed Plant – Noise Data
- C: Road Traffic Route Map



1.0 INTRODUCTION

The purpose of this report is to present the results of an acoustical assessment for the proposed ethanol upgrade at the Shoalhaven Starches premises off Bolong Road, Bomaderry.

As part of the assessment process for the proposed Ethanol Upgrade at Shoalhaven Starches (Nowra) an EIS is to be prepared. The Director General's requirements necessitated an audit of the existing plant noise emission which was undertaken in March 2008. The Acoustic Group report 38.3849.R50 dated 5th June, 2008, found compliance with noise conditions issued by the NSW EPA (now part of the DECC).

The acoustic audit nominated noise criteria for the Ethanol Upgrade project, based upon the Shoalhaven Starches Noise Reduction Program 7 (PRP7) and Chapter 12 of the EPA's *Industrial Noise Policy* (INP).

The EPA Licence issued for the subject premises requires the company to achieve specific noise contribution levels at four reference residential boundaries nominated to the south and north as:

The L_{A10} (15 minute) sound pressure level contribution generated from the site must not exceed the following levels when measured at or near the boundary of any residential premises:

- 38 dB(A) at locations in Terara on the south side of the Shoalhaven River;
- 38 dB(A) at locations in Nowra on the south side of the Shoalhaven River;
- 42 dB(A) at locations in Meroo Street, Bomaderry; and
- 40 dB(A) at other residential locations in Bomaderry.

To ensure any new plant does not increase the overall noise emission from the site one needs to specify a noise contribution at least 10 dB below the Licence target.



The acoustic assessment for the Pollution Reduction Program 7 (PRP7) project utilised an acoustic design goal of 10 dB below the EPA Licence conditions. The PRP7 acoustical assessment evaluated noise propagation from the site to reference residential locations under various wind and temperature conditions and determined an effective sound power level for the proposed upgrade with respect to the nominated monitoring areas.

The use of weather data obtained from the site and assessing noise propagation in accordance with the EPA's Industrial Noise Policy document, for this site the PRP7 noise assessment did not require an assessment in terms of wind or temperature inversions, and that the design goals were to be assessed for neutral weather conditions. This assessment considers neutral weather conditions.

The Ethanol Upgrade involves additional plant on the current Shoalhaven Starches site, a packing plant on the vacant site north of the Shoalhaven Starches site and additional truck and rail movements.

We have been instructed that there are four major routes that can be utilised by trucks to/from from the site. Route 1 is west along Bolong Road and then north along the Princess Highway (19% of the traffic). Route 2 is north along Railway Street then north along Meroo Road (58% of the traffic). Route 3 is north along Railway Street then west along Canbewarra Road (16% of the traffic). Route 4 is along Bolong Road then south along the Princess Highway (7% of the traffic).

We are instructed that during the night time (10pm to 7 am) there will be a maximum of 19 additional truck movements in the night which averages out to 2 per hour. Therefore the most affected residential location will be on Railway Street which can have a maximum of 2 truck movements per hour during the night time.

With respect to the day time (7am to 10pm), we are instructed that there will be a maximum of 19 additional movements in the day which averages out to 1 per hour.



With respect to train movements, there are currently at most two train movements during the night time period (one movement before midnight and one after midnight). On a weekly basis there are nine night time train movements per week (six movements before midnight and three movements after midnight) but not equally distributed throughout the week, i.e. not all days of the week have the two train movements during the night time period. The proposal will not result in more than the current maximum of two train movements for each night time period. The proposal will generate a maximum of two train movements during the night time period for every day of the week. This will result on a weekly basis fourteen night time train movements per week.

2.0 ETHANOL UPGRADE ACOUSTIC DESIGN TARGETS

For the ethanol upgrade project the residential noise emission target has been set at 15 dB(A) below the EPA Licence noise limits at the reference location targets so as to ensure the upgrade does not increase the site noise emission levels:

The L_{A10} (15 minute) sound pressure level contribution generated from the Ethanol Upgrade must not exceed the following levels when measured at or near the boundary of any residential premises:

- 23 dB(A) at locations in Terara on the south side of the Shoalhaven River;
- 23 dB(A) at locations in Nowra on the south side of the Shoalhaven River;
- 27 dB(A) at locations in Meroo Street, Bomaderry; and
- 25 dB(A) at other residential locations in Bomaderry.

The noise design target, if taken as a $L_{eq}(15 \text{ minutes})$ goal 15 dB(A) below the EPA Licence criteria, reveals that the INP intrusive noise goal is satisfied with a significant safety margin.



As the above noise limit is 15 dB below the License Conditions then compliance with that criterion will result in the INP amenity noise target automatically being satisfied.

The INP covers truck and rail movements whilst on the subject land, but such traffic movements when external to the site fall under different criteria.

For road traffic one refers to the NSW EPA's *Environmental Criteria for Road Traffic Noise* ("ECRTN"). The critical location with respect to additional traffic is the residences on Railway Street which in acoustic terms can be classified as a collector road (whilst Cambewarra Road and Meroo Road would be classified as arterial/sub-arterial). Development type 8 (identified as developments with potential to create additional traffic on collector road) in Table 1 of the ECTN has a day time criterion of $L_{eq(1hr)}$ 60 dB(A) and a night time criterion of $L_{eq(1hr)}$ 55 dB(A). Under the technical notes to the table, notes vii and ix proposes that traffic from the development should not lead to an increase in existing noise levels of more than 2 dB.

Existing rail traffic is assessed under the noise control guideline Chapter 163 of the NSW EPA's *Environmental Noise Control Manual* ("ENCM"). This guideline sets out noise levels in relation to rail movements as they may impact upon residential receivers. The criterion specifies a 24 hour L_{eq} level of 60 dB(A) for existing operations with a maximum passby level of 85 dB(A).

In 2003 the Rail Infrastructure Corporation and the State Rail Authority issued an Interim Guideline For Councils which has a internal day time criterion of an $L_{eq(1hr)}$ 40 dB(A) and an internal night time criterion of an $L_{eq(1hr)}$ 35 dB(A) with all windows and doors closed. A typical attenuation from an external space into an internal space with all windows and doors closed is 20-25 dB(A). On a conservative basis utilising the 20 dB(A) attenuation will result in the external goal of an $L_{eq(1hr)}$ 60 dB(A) for the day time and an $L_{eq(1hr)}$ 55 dB(A) for the night time.



3.0 ACOUSTIC ASSESSMENT

The majority of the equipment that are of a high noise emission are housed in concrete rooms with the external building envelope in colourbond or composite wall/roof system. The overall design concept identifies different areas of equipment which may be classified as:

- 1 x Product Dryer (and its associated equipment)
- 3 x Fermenters (with its associated pumps and motors)
- 6 x Additional Fermenter cooling towers
- 1 x Molecular Sieve and associated 2 x cooling towers
- 8 x Additional DDG cooling towers
- 6 x DDG Dryers (and its associated equipment)
- 1 x DDG Pellet Plant
- 1 x Odour Scrubber
- 1 x Evaporator
- 1 x Co-Generator
- 1 x Gas Fired Boiler
- 1 x Packing Plant
- Container Loading area (Forklift)
- 9 x Blowers at the Manildra Environmental Farm
- 2 x Emergency Fire System pumps

For the purpose of assessing the noise controls associated with the nominated plant we have run the EM computer model for Shoalhaven Starches under neutral weather conditions to establish in-plant shielding and the attenuation to the reference residential locations.



At the EIS stage the manufacturer's noise data for the various plant times has been expressed generally in a dB(A) format rather than octave bands. For this ENM assessment we have utilised a broadband spectrum to derive the attenuation to residential reference locations.

From our analysis of the proposed plant items set out in Appendix B the provision of buildings without any additional noise control measures would exceed the overall EPA noise limits and obviously the more stringent criteria nominated for the project.

As a result of our analysis in order to meet compliance with the residential design goals the noise control measures that are required are set out below.

3.1 PRODUCT DRYER

The majority of the equipment will be housed in a building that will be constructed of Ultrapanel having an Rw of not less than 35. The upper 3 floors of the building and the roof is to be constructed of material having an Rw of not less than 17 (colorbond or similar).

Any equipment that has a sound power level above 80 dB(A) is to be enclosed in a separate room with the walls and ceiling/floor having an Rw of not less than 40.

3.2 FERMENTERS

With respect to the fermenter pumps and motors associated with the Ethanol Upgrade no additional noise control measures are necessary except for the transfer pumps which are to be enclosed with material having an Rw of not less than 15.

3.3 FERMENTERS – COOLING TOWERS

During the night time period, the fan speed of the 6 cooling towers is to be reduced to 60% of full fan speed. The fan speed reduction is to be automatically adjusted (computer or time clock controlled) rather than by manual controls.



3.4 MOLECULAR SIEVE

The molecular sieve pumps and compressors associated with the Ethanol Upgrade are to be enclosed with material having an Rw of not less than 35.

3.5 MOLECULAR SIEVE – COOLING TOWERS

During the night time period, the fan speed of the 6 cooling towers is to be reduced to 60% of full fan speed. The fan speed reduction is to be automatically adjusted (computer or time clock controlled) rather than by manual controls.

3.6 DDG – COOLING TOWERS

During the night time period, the fan speed of the 6 cooling towers is to be reduced to 60% of full fan speed. The fan speed reduction is to be automatically adjusted (computer or time clock controlled) rather than by manual controls.

Water pumps numbers 1-4 are to have noise control measures (or replaced) in order to have a sound pressure level of 68 dB(A) at 1 metre.

3.7 DDG DRYERS

The majority of the equipment will be housed in a building that will be constructed of Ultrapanel having an Rw of not less than 35.

Any equipment that has a sound power level above 90 dB(A) is to be enclosed in a separate room with the walls and ceiling/floor having an Rw of not less than 40.

3.7 DDG PELLET PLANT

The majority of the equipment will be housed in a building that will be constructed of Ultrapanel having an Rw of not less than 35.



Any equipment that has a sound power level above 90 dB(A) is to be enclosed in a separate room with the walls and ceiling/floor having an Rw of not less than 40.

3.8 ODOUR SCRUBBER

The equipment will be housed in a building (walls and ceilings/roof) that will be constructed of material having an Rw of not less than 35 such as Ultrapanel.

3.9 EVAPORATOR

The majority of the equipment will be housed in a building (walls and ceilings/roof) which has to be constructed of material of an Rw of not less than 25.

The two turbo fans are to be enclosed in a separate room with the walls and ceiling/floor having an Rw of not less than 40.

3.10 CO-GENERATOR

At this stage of the development application, sound level data for the Co-Generator is not available. However the maximum sound power level of 93 dB(A) from all discharges from the Co-Generator building has been derived to maintain compliance with the design criteria.

3.11 GAS FIRED BOILER

We have been provided with the sound power level of the discharge duct of the boiler. To maintain compliance with the design criteria the discharge of the duct is to achieve an attenuation of 25 dB(A) so that the sound pressure level from the discharge duct does not exceed 72 dB(A) at 1 metre.



3.12 PACKING PLANT

All walls and the roof/ceiling of the packing plant is to be constructed of material having an R_w of not less than 35 dB(A).

3.12 CONTAINER LOADING AREA

The forklift (new item) that is used for the loading and stacking of containers is to have a maximum sound pressure level of 80 dB(A) at 1 metre.

The northern end of the container loading area is to have a solid masonry wall not less than 8.5 metres in height and the western and eastern end of the container loading area is to have a solid masonry wall not less than 8 metres in height.

We have been instructed that there will be no train movements on the spur line that forms part of the container loading area between the night time period of 10 pm to 7 am.

As part of the management plan of the container loading area during the night time period (10 pm to 7 am) the forklift trucks will only stack two containers high at locations within 10 metres from the wall and only one container high above the ground for locations more than 10 metres from the wall. No loading of the train in the proposed container loading area will take place during the night time period.

3.13 BLOWERS AT MANILDRA ENVIRONMENTAL FARM

With respect to the blowers, we are instructed that they will have enclosures that result in a sound pressure level of 70 dB(A) at 1 metre.



3.14 EMERGENCY FIRE SYSTEM

The fire pumps are only utilised for emergency and a maximum of 1 hour per week during the day time for testing purposes only , and do not form part of the EPA criteria under normal plant operations.

With the above noise control measures, the noise contribution from the Ethanol Upgrade will meet the design goals as shown in Table 1.

TABLE 1: Noise Emission Contributions

	Riverview Rd	Nobbers Ln	Meroo Rd (town)	Meroo Rd (hill)
Product Dryer	-7	-15	1	17
Fermenters	7	5	17	17
Fermenters - Cooling Towers	5	3	15	15
Molecular Sieve	8	9	22	20
Molecular Sieve - Cooling Towers	3	4	17	14
DDG - Cooling Towers	19	6	4	-1
DDG Dryers	8	-17	3	-6
DDG Pellet Plant	2	-23	-3	-12
Odour Scrubber	-12	-37	-17	-25
Evaporator	12	-13	7	-1
Co-Generator	17	-8	12	4
Gas Fire Boiler	3	-5	7	2
Packing Plant	3	0	17	14
Container Loading Area	9	6	22	22
Blowers at Environmental Farm	15	13	15	17
Contribution	23	16	27	27
Criteria	23	23	27	27



3.15 ROAD TRAFFIC

With respect to road traffic noise, associated with the proposal the critical acoustic issue would relate to truck movements during the night time period of 10pm to 7 am.

Figure 1.3.3 of the traffic impact assessment report prepared by Christopher Stapleton Pty Ltd nominates four traffic routes (see Appendix C). Section 2.7 of the traffic report identifies the percentage break up of truck movements whilst section 4.2 identifies that the proposed Ethanol Upgrade could generate up to an additional 19 heavy vehicles per day (38 movements). We are instructed by Shoalhaven Starches that their planning regime has the additional truck movements evenly distributed throughout the day and night with the majority of the trucks seeking to travel to and from the north.

Ambient noise levels were carried out in the PRP7 project by the use of unattended loggers located adjacent to the truck routes and revealed the ambient traffic Leq in the day time period is significantly greater than that during the night time period. As the trucks will be evenly distributed throughout the day and night, then any traffic noise contribution arising from the proposed Ethanol Upgrade would not approach the EPA's ECRTN criteria for the different road classifications in the day time period, whilst the night time movements are expected to generate some minor increases in the traffic/ambient Leq levels.

With respect to road traffic movements, the EPA has a separate noise policy identified as Environmental Criteria for Road Traffic Noise ("ECRTN"). Table 1 of the ECRTN nominates criteria for different road classifications for both the noise emission level for daytime and night time operations. Category 7 covers the matter of land use developments with potential to create additional traffic on existing freeway/arterials and nominates a daytime criteria of 60 dB(A) L_{eq} and a night time criterion of 55 dB(A). If the either criterion is already exceeded, the EPA place a specification that traffic arising from the development should not lead to an increase in existing noise levels of more than 2 dB.



EPA Road Traffic Development Category 8 is identified as a land use development with potential to create additional traffic on collector roads, where the daytime criteria is expressed as an L_{eq} 60 dB(A) for a one hour period and night time criterion of L_{eq} 55 dB(A) (one hour). Again if either criterion is already exceeded, the traffic arising from the development should not lead to an increase in existing levels more than 2 dB.

A guide to the terms used in Table 1, as set out in the ECRTN, indicates that an existing freeway/arterial road is a road that includes sub-arterial roads is a road that handles through traffic, with characteristically heavy and continuous traffic flows during peak periods, where through traffic is passing through a locality bound for another locality. A collector road is defined as a road situation in a built-up area that collects local traffic leaving a locality and connects to a sub-arterial road. In the PRP7 application it was concluded that from the aerial maps for the area that Railway Street leading up to Cambewarra Road could be considered as a collector road or a sub-arterial road, but that Cambewarra Road, Meroo Road and Bolong Road (west of the development) having being identified as sub-arterial roads, then would be classified as freeway/arterial roads by the ECRTN.

Therefore the criterion applied for the assessment of road traffic will vary upon the road classification and the need to consider whether the EPA criterion is already exceeded or not, and whether as a result of the subject development the criteria would then be exceeded.

By examination of the map in Appendix C, Railway Street would experience the majority of night time traffic (14 movements during the night) and does not influence/impact residential dwellings until the intersection of Railway Street and Cambewarra Road at the railway overpass. For an equitable distribution of heavy vehicles, the residential dwellings north of the railway bridge could experience an additional 14 truck movements during the night or 1.56 truck movements per hour.



Ambient logger measurements conducted on the property immediately south of Cambewarra Road, but between Meroo Road and the railway line obtained a night time $L_{eq(9 \text{ hr})}$ of 54.6 dB(A) thereby leading to an overall EPA noise limit for trucks of 56.6 dB(A).

Attended measurements during the day time found $L_{eq(1 \text{ hr})}$ levels greater than that recorded for the PRP7 project but individual truck movements similar to the values identified in the PRP7 assessment.

Attended measurements of heavy vehicle operations at the intersection of Cambewarra Road and Railway Street found a mean sound exposure level (SEL) 85.3 dB(A) at the nearest residential boundary. If Railway Street is considered to be a collector road on the basis of two vehicle movements in any one hour would result in a sound level contribution of 49.2 dB(A) at the residential facade which when added to the existing night time ambient $L_{eq(9 \text{ hr})}$ of 54.6 dB(A) would result in an overall Leq level of 55.7 dB(A) which complies with the EPA design target.

If however the above intersection is to be ranked as a sub-arterial road, then one is required to assess the resultant Leq level from the passage of 14 movements during the night that would result in an $L_{eq(9 \text{ hr})}$ contribution of 48.2 dB(A). This contribution when added to the existing $L_{eq(9 \text{ hr})}$ of 54.6 dB(A) would realise a total Leq level of 55.5 dB(A). This level satisfied the ECRTN requirements.

Similarly, traffic movements on Meroo Road north of Cambewarra Road (route 2) would be subject to an additional 11 truck movements throughout the night. Route 2 is designated as a sub-arterial road and therefore under the ECRTN falls into the freeway/arterial road classification. From an average SEL of 83.8 dB(A) at the residential boundary, the Leq 9 hour contribution determined at the residential facade from the 11 truck movements would be 45.6 dB(A). When added to a night time Leq level of 54.6 dB(A) results in a Leq level of 55.1 dB(A) which satisfies the ECRTN requirements.



Similarly, traffic movements on Cambewarra Road (route 3) would be subject to an additional 3 truck movements throughout the night. Route 3 is designated as a sub-arterial road and therefore under the ECRTN falls into the freeway/arterial road classification. From an average SEL of 83.5 dB(A) at the residential boundary, the Leq 9 hour contribution determined at the residential facade from the 3 truck movements would be 39.7 dB(A). When added to a night time Leq level of 55.8 dB(A) results in a Leq level of 55.8 dB(A) which satisfies the ECRTN requirements.

3.16 RAIL TRAFFIC

With respect to the additional rail traffic noise, a rail traffic noise assessment was carried out for the PRP7 project and the measurement results were presented in the PRP7 acoustic assessment report prepared by Steven Cooper Acoustics (report number 32.3849.R17:NSC dated December 2002).

For the critical night time period, the subject proposal doesn't use the packing plant spur line at night. The additional train movements arising from the proposed Ethanol Upgrade and the existing train movements will for the night time period not exceed 2 movements (one departure and one arrival).

The trains (when arriving from the north) would move onto the existing spur line (i.e. does not go into Bombaderry Station), crossing Railway Street and continues round at a slow speed to enter the site. Then for departing, the train would cross Railway Street and then along the spur line out onto the main line. The train then reverses back down the main line to a siding at Bombaderry Station where the train remains until its scheduled departure to Sydney.



At the nearest residence to the railway line (Railway Street) the following sound exposure levels from the different train activities were derived:

<u>Activity</u>	<u>SEL dB(A)</u>	<u>L_{eq}(1 hr) dB(A)</u>
Train crossing Bolong Road	77.7	42
Train up onto main line and reverse to station	88.4	53
Train arrived on main line	87.0	52
Train departure on main line	81.2	46

All the above activities would not occur in a one hour period and the activities that could fit into one hour would be a train arriving on the main line and crossing Railway Street or the train crossing Railway Street and up to the main line and reversing to the station. On a worst case basis, the activities in one hour would be for the train crossing Railway Street and up to the main line and reversing to the station resulting in an SEL of 88.4 dB(A) which is an external L_{eq}(1hr) of 53 dB(A). This external level would for closed window situation reduce an L_{eq}(1hr) of 28-33 dB(A) and is below the Interim Guidelines for Rail Traffic Noise.

4.0 CONSTRUCTION NOISE

Construction noise is not part of the EPA Licence and utilises different noise indices to that for the operating plant.

The current EPA Licence conditions relate to criteria derived from night time ambient measurements and the EPA Environmental Noise Control Manual (the “ENCM”) that utilised the concept of an average maximum (L10) noise level versus the average minimum (L90 background) level.

Contained in the ENCM are a set of Noise Control Guidelines for various types of noise emission sources. A Construction Site Noise Guideline is set out in Chapter 171 of the ENCM and indicates the following criteria may be specified in a development consent or building application:



The $L_{A10,T}$ noise levels emanating from the construction site shall not exceed the background levels by the following criteria, in the interval specified:

- 20 dB(A) for construction activity period up to 4 weeks
- 10 dB(A) for construction activity period over 4 weeks and up to 26 weeks.
- 5 dB(A) for construction activity period over 26 weeks.

Time Restrictions of Monday to Friday, 7am to 6pm, and Saturday 7am to 1pm if audible on residential premises and no construction work to take place on Sundays or Public Holidays.

The ENCM indicates the $L_{A10,T}$ sound pressure levels shall be measured or computed at any point within one metre of the boundary of the nearest affected residential premises. Measurements shall be made over a 10 to 15 minute interval (T), using the “fast” response of the sound level meter. The $L_{A10,T}$ is the A-weighted sound pressure level which is exceeded for 10 percent of the time over the measurement interval T.

As the sites associated with the Ethanol Upgrade are already level cleared ground the principal noise emission construction activities for the erection of the buildings are associated with the piling and foundation works associated with the proposed concrete slabs, and pouring of the slabs. This work is carried out on an infrequent basis. The construction of the buildings proper and fit out of the buildings generates significantly lower noise levels.

Based on other construction projects at Shoalhaven Starches there will be piles driven throughout the site of the various slabs, where such piles are driven by a pile driving rig.

The total works associated with all the slabs will take a period of up to 4 months, being 3 months for all the pile driving operations (occurring on an infrequent basis) and 1 week for the preparation/pouring of the slabs. The actual pouring of all the slabs will be conducted over a month.



This same form of construction (including the driving of piles) has occurred on the Shoalhaven Starches site over the last eleven years without receipt of any noise complaints.

Due to the location of the various plant items being significantly removed from residential premises and the existing ambient levels, primarily as a result of traffic in the area, normal construction activities are not envisaged to create a noise impact. However, the proposed concrete foundation slabs requires the driving of piles (by a pile rig) into the ground, which creates a greater level of noise than for normal building and excavation works.

On past experience it is not envisaged there would be any noise disturbance in relation to the piling operations for the proposed concrete slabs, if such operations were restricted to the daytime period.

The Company has an ongoing building works program that has not given rise to any noise complaints and as such the forming and pouring of the slab and any other site works associated with the subject application is not envisaged to generate any noise impacts.

5.0 NOISE EMISSION FROM CONSTRUCTION OF THE PLANT

In order to consider the likelihood of noise emission from the proposed construction, we have utilised noise data from previous projects, as set out in Table 2 below.

Table 2: Sound Power Noise Emission Levels of Plant Items – dB(A)

ITEM	TYPICAL PLANT OR EQUIPMENT	MAX. NOISE LEVEL L ₁₀ at 7 metres	SOUND POWER LEVEL
Bulldozer	Caterpillar D7	88	113
Front End Loader	Wheeled	90	115
Crane	Truck Mounted	85	110
Piling Hammer	for piles	93	118



The piling operations occur on an infrequent basis and is spread over a period of time which reduces the noise impact from the operations.

Therefore other than the piling operations for the packing plant, all other construction activities would not exceed background +10 dB(A) and therefore would satisfy the EPA secondary criterion of background +10 dB(A) for construction works less than 26 weeks.

6.0 CONCLUSION

An acoustical assessment of the proposed Ethanol Upgrade at the Shoalhaven Starches plant has been undertaken with reference to the INP requirements and the EPA Licence for the plant.

A site noise audit was carried out in March 2008 and found compliance with noise conditions issued by the EPA.

For the proposed Ethanol Upgrade a design target of 15 dB(A) below the EPA Licence conditions at the residential reference locations has been used so as to ensure the upgrade does not increase the current site noise emission levels.

Other than for day time construction activities, the critical period for noise assessment is the night time period of 10 pm to 7 am where the ambient approaches the EPA Licence limits.

Various noise control measures (in terms of construction and management) are set out in the report above.

An assessment of rail traffic movements during the night time period revealed compliance with the EPA rail traffic noise guidelines and the RIC Interim Guidelines.



An assessment of the additional truck movements as a result of the Ethanol Upgrade project has revealed compliance with the EPA's ECRTN requirements.

We trust this meets with your immediate requirements.

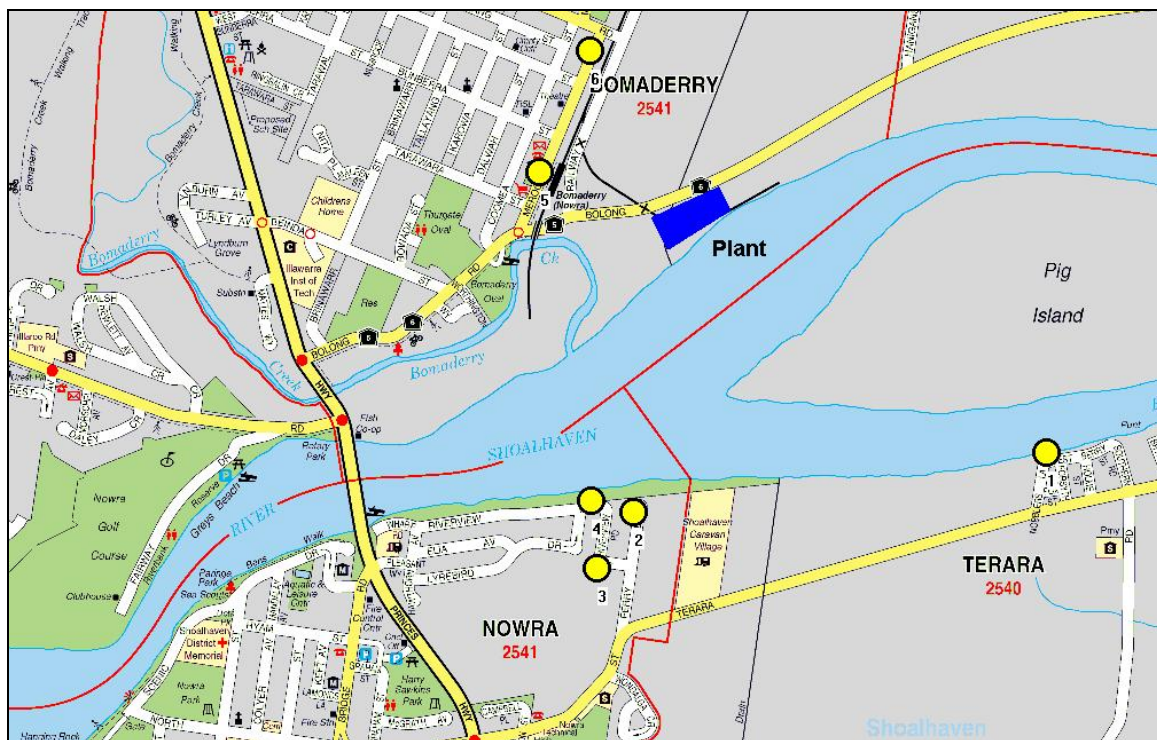
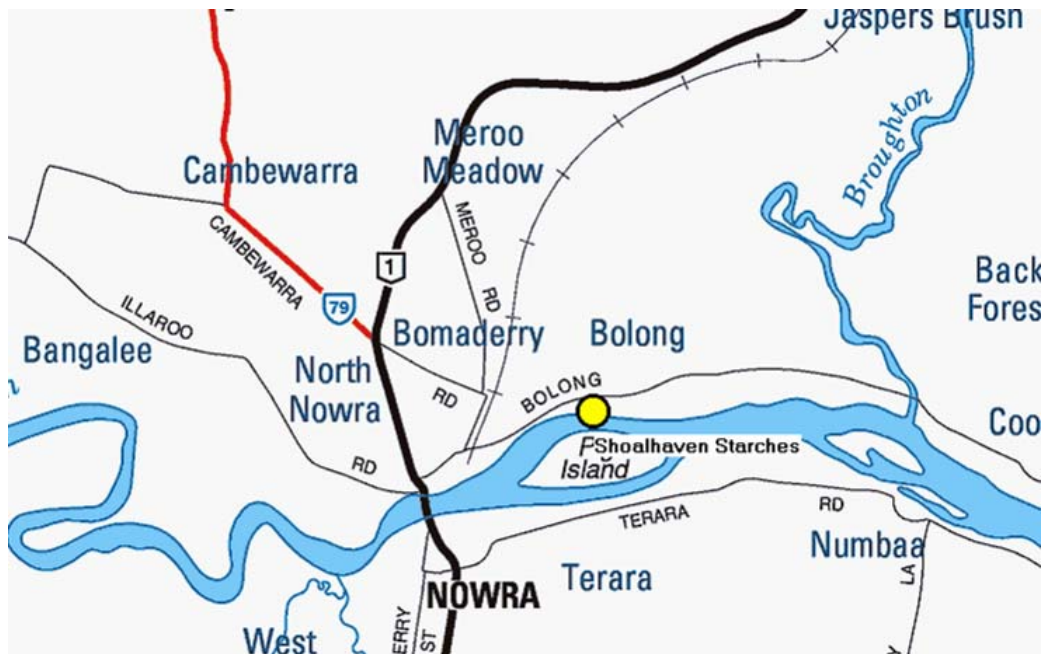
THE ACOUSTIC GROUP PTY LTD



JOHN MAUNG



APPENDIX A: Site and Reference Measurement Locations



APPENDIX B: Proposed Plant - Noise Data

Location	Lw dB(A)
-----------------	-----------------

PRODUCT DRYER

Vetter press motor cooling fan	48
Milling bag filter product rotary valve motor	48
Spare	48
Buffer hopper product rotary valve motor	48
Mill lubrication pump motor	48
Silo #1 vibrator motor	48
Hopper mill bypass rotary valve motor	48
Mill lid motor	48
Silo #1 dust collector motor	48
Diverter hopper dust collector motor	48
Silo #1 outlet rotary valve motor	48
Dryer product rotary valve motor	48
Contrashear motor	48
Spreader screw motor	73
Buffer hopper outlet screw motor	73
Effluent pump #1 motor	73
Effluent pump #2 motor	73
Combustion fan	73
Condensate pump #1 motor	73
Condensate pump #2 motor	73
Sump pump	73
Main bag filter screw #1 motor	73
Main bag filter screw #2 motor	73
Product screw motor	73
Recycle screw motor	73
Gluten feed pump motor	73
Contrashear hopper outlet pump motor	73
Vetter press motor	73
Contrashear spray water feed pump	73
Silo #1 outlet blower	74
Dry gluten blower motor	74
Classifier motor	74
Silverson mixer motor	76
Milling conveyor fan motor	83
Mill motor	110



Main fan motor (HV)	106
Disintegrator motor (HV)	109
Root blower	97
Dust collector fan	96

FERMENTERS

Agitator, Fermenter 13	73
Transfer pump, fermenter 13	88
Transfer pump backup, Fermenter 13	88
Product Recovery Pump 13	73
Agitator, Fermenter 14	73
Transfer pump, fermenter 14	88
Transfer pump backup, Fermenter 14	88
Product Recovery Pump 14	73
Fermenter 14 sump pump	72
Agitator, Fermenter 15	73
Transfer pump, fermenter 15	88
Transfer pump backup, Fermenter 15	88
Product Recovery Pump 15	73
Fermenter 15 sump pump	72

FERMENTER - COOLING TOWER

Cooling Tower 1 - 60%	77
Cooling Tower 2 - 60%	77
Cooling Tower 3 - 60%	77
Cooling Tower 4 - 60%	77
Cooling Tower 5 - 60%	77
Cooling Tower 6 - 60%	77

MOLECULAR SIEVE

Molecular Sieves	106
Thermocompressor	106
Anhydrous Pump	102
Condensate Pump	100
Vacuum pumps	106
Regen transfer	100

MOLECULAR SIEVE - COOLING TOWER



Cooling Tower 1 - 60%	77
Cooling Tower 2 - 60%	77

DDG - COOLING TOWER

Cooling Tower 1 - 60%	77
Cooling Tower 2 - 60%	77
Cooling Tower 3 - 60%	77
Cooling Tower 4 - 60%	77
Cooling Tower 5 - 60%	77
Cooling Tower 6 - 60%	77
Cooling Tower 7 - 60%	77
Cooling Tower 8 - 60%	77
Cooling water pump 1	85
Cooling water pump 2	85
Cooling water pump 3	85
Cooling water pump 4	85
Cooling water pump 5	76
Cooling water pump 6	76

DDG DRYER

Blender (double shaft)	73
Mixer (single shaft)	73
Feed Screw Conveyor	73
Dryer Main Drive	98
Dryer Discharge Screw Conveyor	73
Emergency Dump Screw Conveyor	73
Recirc Screw Conveyor 1	73
Recirc Screw Conveyor 2	73
Recirc Screw Conveyor 3	73
Recirc Screw Conveyor 4	73
Recirc Screw Conveyor 5	73
Recirc Screw Conveyor 6	73
Product Discharge Screw Conveyor	73
Rotary Valve	58
Pneumatic Conveying Blower	83
Scrubber Pump	72
Exhaust Gas Fan	83
Steam Condensate Pump	72



Blender (double shaft)	73
Mixer (single shaft)	73
Feed Screw Conveyor	73
Dryer Main Drive	98
Dryer Discharge Screw Conveyor	73
Emergency Dump Screw Conveyor	73
Recirc Screw Conveyor 1	73
Recirc Screw Conveyor 2	73
Recirc Screw Conveyor 3	73
Recirc Screw Conveyor 4	73
Recirc Screw Conveyor 5	73
Recirc Screw Conveyor 6	73
Product Discharge Screw Conveyor	73
Rotary Valve	58
Pneumatic Conveying Blower	83
Scrubber Pump	72
Exhaust Gas Fan	83
Steam Condensate Pump	72
Blender (double shaft)	73
Mixer (single shaft)	73
Feed Screw Conveyor	73
Dryer Main Drive	98
Dryer Discharge Screw Conveyor	73
Emergency Dump Screw Conveyor	73
Recirc Screw Conveyor 1	73
Recirc Screw Conveyor 2	73
Recirc Screw Conveyor 3	73
Recirc Screw Conveyor 4	73
Recirc Screw Conveyor 5	73
Recirc Screw Conveyor 6	73
Product Discharge Screw Conveyor	73
Rotary Valve	58
Pneumatic Conveying Blower	83
Scrubber Pump	72
Exhaust Gas Fan	83
Steam Condensate Pump	72
Blender (double shaft)	73
Mixer (single shaft)	73
Feed Screw Conveyor	73
Dryer Main Drive	98
Dryer Discharge Screw Conveyor	73



Emergency Dump Screw Conveyor	73
Recirc Screw Conveyor 1	73
Recirc Screw Conveyor 2	73
Recirc Screw Conveyor 3	73
Recirc Screw Conveyor 4	73
Recirc Screw Conveyor 5	73
Recirc Screw Conveyor 6	73
Product Discharge Screw Conveyor	73
Rotary Valve	58
Pneumatic Conveying Blower	83
Scrubber Pump	72
Exhaust Gas Fan	83
Steam Condensate Pump	72
Decanter Feed Transfer Pump 1	88
Decanter Feed Transfer Pump 2	88
Decanter Feed Tank Agitator	73
Decanter Supply Pump 1	73
Decanter Supply Pump 2	73
Decanter Supply Pump 3	73
Decanter Supply Pump 4	73
Decanter Supply Pump 5 (standby)	73
Evaporator Supply Pump 1	88
Evaporator Supply Pump 2	88
P5400 Decanter 1.1	97
P5400 Decanter 1.2	97
P5400 Decanter Oil Pump	72
P5400 Decanter Underflow Screw	73
CC505 Decanter 1.1	97
CC505 Decanter 1.2	97
CC505 Decanter Oil Pump	72
CC505 Decanter Underflow Screw	73
CA755 Decanter 1.1	97
CA755 Decanter 1.2	97
CA755 Decanter Oil Pump	72
CA755 Decanter Underflow Screw	73
Decanter Return Pump 1	73
Sump Pump 1	73
P5400 Decanter 1.1	97
P5400 Decanter 1.2	97
P5400 Decanter Oil Pump	72
P5400 Decanter Underflow Screw	73



CC505 Decanter 1.1	97
CC505 Decanter 1.2	97
CC505 Decanter Oil Pump	72
CC505 Decanter Underflow Screw	73
CA755 Decanter 1.1	97
CA755 Decanter 1.2	97
CA755 Decanter Oil Pump	72
CA755 Decanter Underflow Screw	73
Decanter Return Pump 2	73
Sump Pump 2	73
Evaporator Syrup Transfer Pump 1	73
Evaporator Syrup Transfer Pump 2	73
Evaporator Syrup Feed Pump 1	72
Evaporator Syrup Feed Pump 2	72
Evaporator Syrup Feed Pump 3	72
Evaporator Syrup Feed Pump 4	72
Evaporator Syrup Feed Pump 5 (standby)	72
C.I.P. Pump	73
Evaporator syrup pump	73
Evaporator syrup pump	73
Evaporator syrup pump	73
Mill feed screw	73
Mill feed screw	73
Mill feed screw	73
Mill feed screw	73
Mill feed recycle screw	73
Mill feed rotary valve	58
Mill feed rotary valve	58
Mill feed rotary valve	58
Mill feed rotary valve	58
Mill feed recycle blower valve	83
mill feed silo fan	83
silo vibration	48
Steam condensate pump 1	73
Steam condensate pump 2	73
Steam condensate pump 1	73
Steam condensate pump 2	73
Screw conveyor 1	73
Screw conveyor 2	73
Screw conveyor 3	73
Screw conveyor 4	73



Screw conveyor 5	73
Screw conveyor 6	73
Screw conveyor 7	73
Screw conveyor 8	73
Screw conveyor 9	73
Screw conveyor 10	73
Screw conveyor 11	73
Screw conveyor 12	73
Shed rotary screw 1	76
Shed rotary screw 2	76
Shed rotary screw 3	76
Shed rotary screw 4	73
Shed rotary screw 5	73
Shed rotary screw 6	73
Bucket elevator 1	73
Bucket elevator 2	73
Dryer Main Drive 1	107
Discharge Screw conveyor 1	73
Discharge Screw conveyor 2	73
Recirc Screw conveyor 1	73
Recirc Screw conveyor 2	73
Recirc Screw conveyor 3	73
Recirc Screw conveyor 4	73
Recirc Screw conveyor 5	73
Recirc Screw conveyor 6	73
Feed Conveyor 1	73
Blender 1	73
Kneader 1	73
Exhaust Gas Fan 1	73
Pneumatic Conveying Blower 1	83
755 Decanter 1.1	97
755 Decanter 1.2	97
Decanter Oil pump 1	72
Dryer Main Drive 1	107
Discharge Screw conveyor 1	73
Discharge Screw conveyor 2	73
Recirc Screw conveyor 1	73
Recirc Screw conveyor 2	73
Recirc Screw conveyor 3	73
Recirc Screw conveyor 4	73
Recirc Screw conveyor 5	73



Recirc Screw conveyor 6	73
Feed Conveyor 1	73
Blender 1	73
Kneader 1	73
Exhaust Gas Fan 1	73
Pneumatic Conveying Blower 1	83
755 Decanter 1.1	97
755 Decanter 1.2	97
Decanter Oil pump 1	72
Sump pump	73
Decanter feed Return pump	73

DDG PELLET PLANT

Rotary valve	58
Rotary valve	58
Rotary valve	58
Rotary valve	58
Rotary valve	58
Rotary valve	58
Screw conveyor	73
Water blender mixer	73
Bin extraction fan	83
Bin discharger	73
Bin Screw Conveyor	73
Bucket elevator	73
Screw conveyor	73
Ring main screw conveyor	73
Feed screw 1	73
Feed screw 2	73
Feed screw 3	73
Feed screw 4	73
Conditioner Screw conveyor	73
Pellet press 1	107
Press feed screw	73
Conditioner Screw conveyor	73
Pellet press 1	108
Press feed screw	73
Geelen Cooler rotary valve	58
Geelen Cooler discharge screw	73
Roller mill	74



Product screw conveyor	73
Bucket elevator	73
Fan	88
Bag house rotary valve	58
Water dosing pump	72
Cross over screw	73
Water blender mixer	73
Screw conveyor	73
Geelen Cooler rotary valve	58
Geelen Cooler discharge screw	73
Water dosing pump	72
Roller mill	74
Product screw conveyor	74
Bucket elevator	73
Fan	88
Bag house rotary valve	58

ODOUR SCRUBBER

Scrubber Fan	88
Standby Scrubber Fan	88
Scrubber Pump	73
Scrubber Pump	73
Scrubber Pump	73
Scrubber Pump	73

EVAPORATOR

E5 Turbo fan	118
E6 Turbo fan	118
E5 - 1st stage recirculation	73
E5 - 2nd stage recirculation	73
E6 - 1st stage recirculation	73
E6 - 2nd stage recirculation	73
Tower water booster pump	73
Tower water booster pump	73
E5 - Product transfer pump	73
E5 - condensate pot pump	73
E6 - Product transfer pump	73
E6 - condensate pot pump	73
CIP dump/transfer pump	73



Feed pump	73
Feed pump	73
Vent condenser vacuum pump	73
Vent condenser vacuum pump	73
Hot wash pump	73
Hot wash pump	73
VH5 Separator transfer pump	48
VH6 Separator transfer pump	48
Vent condenser extraction pump	48
Vent condenser extraction pump	48
Service water	48
Service water	48

BOILER

Inside Duct	106
-------------	-----

PACKING PLANT

Palletiser	100
Power Unit	95

CONTAINER LOADING

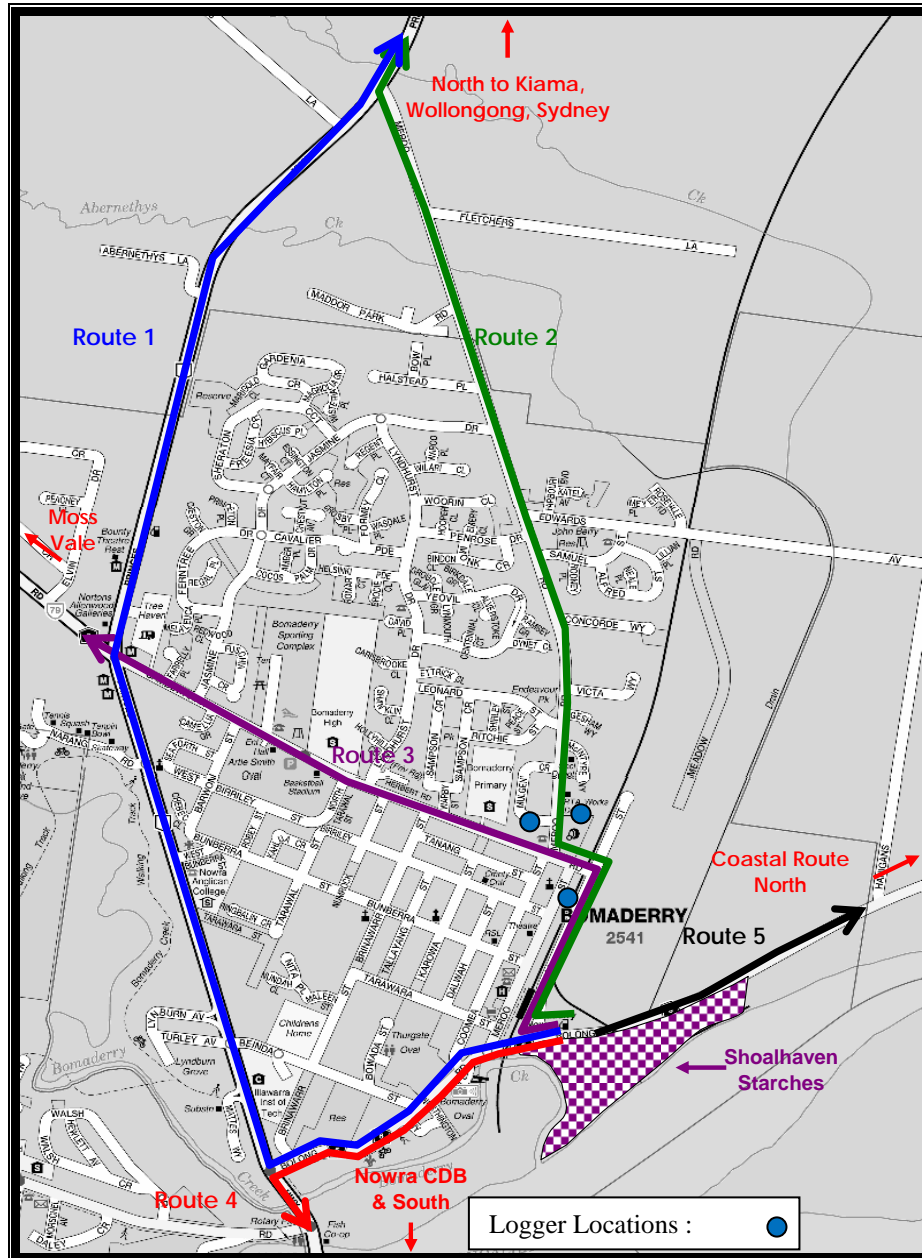
Fork Lift	92
-----------	----

ENVIRNOMENTAL FARM - BLOWERS

Blower 1 - In enclosure (70 dB(A) @ 1m)	79
Blower 2 - In enclosure (70 dB(A) @ 1m)	79
Blower 3 - In enclosure (70 dB(A) @ 1m)	79
Blower 4 - In enclosure (70 dB(A) @ 1m)	79
Blower 5 - In enclosure (70 dB(A) @ 1m)	79
Blower 6 - In enclosure (70 dB(A) @ 1m)	79
Blower 7 - In enclosure (70 dB(A) @ 1m)	79
Blower 8 - In enclosure (70 dB(A) @ 1m)	79
Blower 9 - In enclosure (70 dB(A) @ 1m)	79



APPENDIX C: Road Traffic Route Map



Modified map of Figure 1.3.3 from Traffic Impact Report prepared by Christopher Stapleton Pty Ltd.

