

ENVIRONMENTAL ASSESSMENT

**APPLICATION PURSUANT TO SECTION 75W
OF THE ENVIRONMENTAL AND
PLANNING ASSESSMENT ACT 1979**

**PROPOSED MODIFICATION TO SHOALHAVEN
STARCHES EXPANSION PROJECT
(PROJECT APPROVAL MP 06_0228)**

**USE OF FORMER PAPER MILL SITE IN CONJUNCTION
WITH SHOALHAVEN STARCHES FACTORY OPERATIONS**

Lots A DP 384559 and Lot 1 DP 130968
340 Bolong Road, Bomaderry

Prepared for
Shoalhaven Starches Pty Ltd

December 2017

Environmental Assessment

Project	Proposed Modification to Shoalhaven Starches Expansion Project (Project Approval MP 06_0228) Use of Former Paper Mill Site in Conjunction with Shoalhaven Starches Factory Operations
Address	Lot A DP 384559 & Lot 1 DP 130968 340 Bolong Road, Bomaderry
Our ref:	17/67
Prepared by	Peta Church
Review by	Steve Richardson
Final	21/12/2017

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Town Planning, Agricultural & Environmental Consultants

Stephen Richardson, M.App.Sc., BTP, Grad. Dip. Env. Mgt, CPP, MPIA
Stuart Dixon, B. Urb. & Reg. Plan., CPP, MPIA

Associates: Peter Cowman, B.Sc.Agr., MAIAST
Angela Jones, BA Hons, MSc
Toni Wearne, BA (Hist.), Grad. Dip. Urb. & Reg. Plan.

The Holt Centre, 31 Kinghorne Street, Nowra
Telephone (02) 4423 6198 (02) 4423 6199
Fax (02) 4423 1569

PO Box 738, Nowra NSW 2541
www.cowmanstoddart.com.au
info@cowmanstoddart.com.au



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CERTIFICATION OF ENVIRONMENTAL ASSESSMENT
PREPARED PURSUANT TO PART 3A OF THE *ENVIRONMENTAL PLANNING*
AND ASSESSMENT ACT 1979

**ENVIRONMENTAL ASSESSMENT
PREPARED BY**

Name: S. D. Richardson

Qualifications: M. Appl. Sc., B.T.P., Grad. Dip. Env. Mgt,
CPP, MPIA

Address: Cowman Stoddart Pty Ltd
31 Kinghorne Street
NOWRA NSW 2541

in respect of

PROJECT TO WHICH PART 3A APPLIES

Proponent Name: Shoalhaven Starches Pty Ltd

Proponent Address: Bolong Road, Bomaderry

Land to be developed: Address 340 Bolong Road, Bomaderry

Lot No., DP/MPS, Vol/Fol etc. Lot A DP 384559 and
Lot 1 DP 130968

Project Development: Shoalhaven Starches Expansion Project (MP 06_0228)

Proposed Modification to Project: Proposed modification to Project Approval (MP06_0228)
involving proposed use of former Paper Mill Site in
conjunction with Shoalhaven Starches Factory
Operations.

Environmental Assessment An Environmental Assessment is attached

Certification

I certify that I have prepared this environmental
assessment and to the best of our knowledge

- It has been prepared in accordance with Section 75W of the *Environmental Planning and Assessment Act 1979*,
- The information contained in the Environmental Assessment is neither false nor misleading.

Signature:



Name:

S. D. Richardson

Date:

21 December 2017

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EXECUTIVE SUMMARY

Shoalhaven Starches is a member of the Manildra Group of companies. The Manildra Group is a wholly Australian owned business and the largest processor of wheat in Australia. It manufactures a wide range of wheat based products for food and industrial markets both locally and internationally.

The Shoalhaven Starches factory located on Bolong Road, Bomaderry produces a range of products for the food, beverage, confectionary, paper and motor transport industries including: starch, gluten, glucose and ethanol.

Project Approval MP06_0228 was granted by the Minister for Planning on the 28th January 2009 for the Shoalhaven Starches Expansion Project. This approval also consolidated previous approvals for the site into one overall approval for the site (at that time).

The Shoalhaven Starches Expansion Project is a 'transitional Part 3A Project' for the purposes of Schedule 6A of the Environmental Planning & Assessment Act.

The Shoalhaven Starches Expansion Project sought to increase ethanol production at the Bomaderry plant in a staged manner from 126 million litres per year to 300 million litres per year. To accomplish the increase in ethanol production, this project required a series of plant upgrades and increase in throughput of raw materials, principally flour and grain. The Project included the following alterations and additions:

- The provision of an additional product dryer;
- Additional equipment and storage vessels for the ethanol plant including additional fermenters, additional cooling towers and molecular sieves;
- Upgrades to the Stillage Recovery Plant, including additional DDGS Dryers, Decanters, chemical storage and evaporators. This proposal also included the installation of a DDGS Pellet Plant; and
- The establishment of a new packing plant, container loading area and rail spur line on the northern side of Bolong road.

Following the Minister's determination Shoalhaven Starches have been implementing and commissioning works in accordance with this approval.

Shoalhaven Starches Pty Ltd has purchased the former Australian Paper Mill Site at 340 Bolong Road and now intend to use this site in conjunction with operations conducted at the Shoalhaven Starches factory site which is located to the west at 160 Bolong Road. The Paper Mill Site will provide buffer storage for the approved factory operations of Shoalhaven Starches and will accommodate the storage of plant and materials used in the construction of the various

construction projects that are now taking place at the factory site in accordance with the Project Approval MP 06_0228 and its subsequent modifications.

Essentially Shoalhaven Starches seek to use the former Paper Mill Site for:

- The use of existing buildings on the site for the storage of finished products, as well as engineering plant;
- The use of existing storage tanks for the storage of syrups;
- The use of external areas on the site to lay down plant and materials that are to be used in the construction of approved plant on the Shoalhaven Starches factory site as well as temporary and overflow shipping container storage;
- The use of existing administration buildings for office staff; and
- The use of existing workshops for maintenance purposes.

This project will constitute a modification to the existing Shoalhaven Starches Expansion Project (SSEP) approved by the NSW Minister for Planning (MP06_0228).

The modified proposal will not result in any increase in production from the site over that which has been the subject of past approvals.

The application is made pursuant to Section 75W of the Environmental Planning & Assessment Act 1979.

The preparation of this Environmental Assessment has been undertaken following consultation with relevant Government agencies, including:

- The Department of Planning and Environment;
- Shoalhaven City Council;
- NSW EPA; and
- NSW Office of Water

This Environmental Assessment has been prepared to address issues detailed in requirements.

The EA is supported by expert assessments addressing:

- Noise Impacts – the EA is supported by a Noise Impact Assessment prepared by Harwood Acoustics which demonstrates the level of noise emission from the proposed use of the former Paper Mill site complies with relevant noise assessment criteria of the NSW EPA's Noise Policy for Industry 2017 at all residential receptor locations.
- Traffic and Car Parking Assessment prepared by ARC Traffic and Transport that identifies that there are no access, traffic or parking impacts associated with the proposal that would significantly impact on the efficiency and/or safety of the local traffic environment or

existing on-site, or Shoalhaven Starches, operations. ARC state the proposal is not expected to generate any additional trips over those approved under the SSEP Approval.

- Flood - the EA is supported by a Flood Compliance Report prepared by WMA Water Pty Ltd. This assessment detailed the potential impacts that the proposed use of the site will have on flood waters within the locality. As part of this assessment WMA have undertaken a hydraulic impact assessment of the site to determine the degree of loss of hydraulic conveyance and the resultant increase in flood levels. TUFLOW hydraulic modelling was used by WMA to produce flood impact maps to determine the hydraulic effects (change in flood levels, flows or velocities) of the proposed works and produced flood impact maps for the 1% AEP and PMF events. WMA found the proposed works do not significantly increase the 1% AEP or Extreme event flood level on lands outside those owned by Shoalhaven Starches. WMA further state there is no significant incremental increase in flood impacts as a result of these works.
- A Riverbank Stability Assessment has been prepared by GHD Pty Ltd. This report addresses the possible impact the proposal may have on riverbank stability to the Shoalhaven River. This assessment considers: the proximity of the proposed works to the northern bank of the Shoalhaven River; the current profile of the bank; the surface conditions between the bank and the proposed works; the subsurface conditions in the vicinity of the works; and the loads induced on the upper soil profile. This assessment concludes that the proposal will not adversely affect the stability of the nearby northern bank of the Shoalhaven River.

Following an assessment of the key issues associated with this proposal, this Environmental Assessment concludes that the proposal is suitable for the site and this locality.

The Minister's approval is sought for this modification application.

1.0 INTRODUCTION

1.1 BACKGROUND TO SHOALHAVEN STARCHES

Shoalhaven Starches is a member of the Manildra Group of companies. The Manildra Group is a wholly Australian owned business and the largest processor of wheat in Australia. It manufactures a wide range of wheat based products for food and industrial markets both locally and internationally.

The Shoalhaven Starches factory produces a range of products for the food, beverage, confectionary, paper and motor transport industries including: starch, gluten, glucose and ethanol. During these processes, treated waste water is produced and spray irrigated onto pastures of the Company's Environmental Farm, which comprises over 1000 ha of land situated to the north of the factory site.

Project Approval MP06_0228 was granted by the Minister for Planning on the 28th January 2009 for the Shoalhaven Starches Expansion Project. This approval also encapsulated previous approvals for the site into one overall approval for the site (at that time).

The Shoalhaven Starches Expansion Project is a 'transitional Part 3A Project' for the purposes of Schedule 6A of the Environmental Planning & Assessment Act.

The Shoalhaven Starches Expansion Project sought to increase ethanol production at the Bomaderry plant in a staged manner from 126 million litres per year to 300 million litres per year. To accomplish the increase in ethanol production, this project required a series of plant upgrades and increase in throughput of raw materials, principally flour and grain.

Following the Minister's determination Shoalhaven Starches have been implementing and commissioning works in accordance with this approval.

The primary objective of the Shoalhaven Starches Expansion Project was to increase the Company's ethanol production capacity by upgrading the existing plant to meet the expected increase in demand for ethanol arising from Federal and State Government policy initiatives to mandate the use of ethanol in fuel supplies.

As a result, the Manildra Group planned to increase its ethanol production capacity to meet the expected increase in demand for ethanol arising from these initiatives by upgrading the existing ethanol plant, located at the Shoalhaven Starches Plant at Bomaderry.

The Project Approval for the Shoalhaven Starches Expansion Project (SSEP), enabled Shoalhaven Starches subject to certain conditions to increase ethanol production in a

staged manner at its Bomaderry Plant from the previous approved level of 126 million litres per year to 300 million litres per year.

Since obtaining this Project Approval Shoalhaven Starches have acquired the former Dairy Farmers factory complex further to the east of the Company's factory site and the former Paper Mill Site.

This Environmental Assessment has been prepared to address the key environmental issues associated with a proposal by Shoalhaven Starches Pty Ltd to utilise the former Australian Paper Mill Site in conjunction with operations conducted at the Shoalhaven Starches factory site which is located to the west at 160 Bolong Road.

1.2 THE PROPONENT

Cowman Stoddart Pty Ltd has prepared this Environmental Assessment on behalf of Shoalhaven Starches Pty Ltd.

Proponent's name: Shoalhaven Starches Pty Ltd

Postal address: PO Box 123, Nowra 2541

2.0 THE SITE AND SURROUNDING LOCALITY

2.1 LOCAL AND REGIONAL CONTEXT

The former Australian Paper Mill Site is located at 340 Bolong Road, Bomaderry, within the City of Shoalhaven. This site, associated with this modification proposal comprises two separate allotments as outlined below:

<i>Allotment</i>		<i>Area in ha</i>
Lot A	DP 384559	15.005 ha
Lot 1	DP 130968	7.923 ha

This site is located on the southern side of Bolong Road on the northern bank of the Shoalhaven River and is situated approximately 1 km east of the Shoalhaven Starches Factory complex.

Figure 1 is a site locality plan.

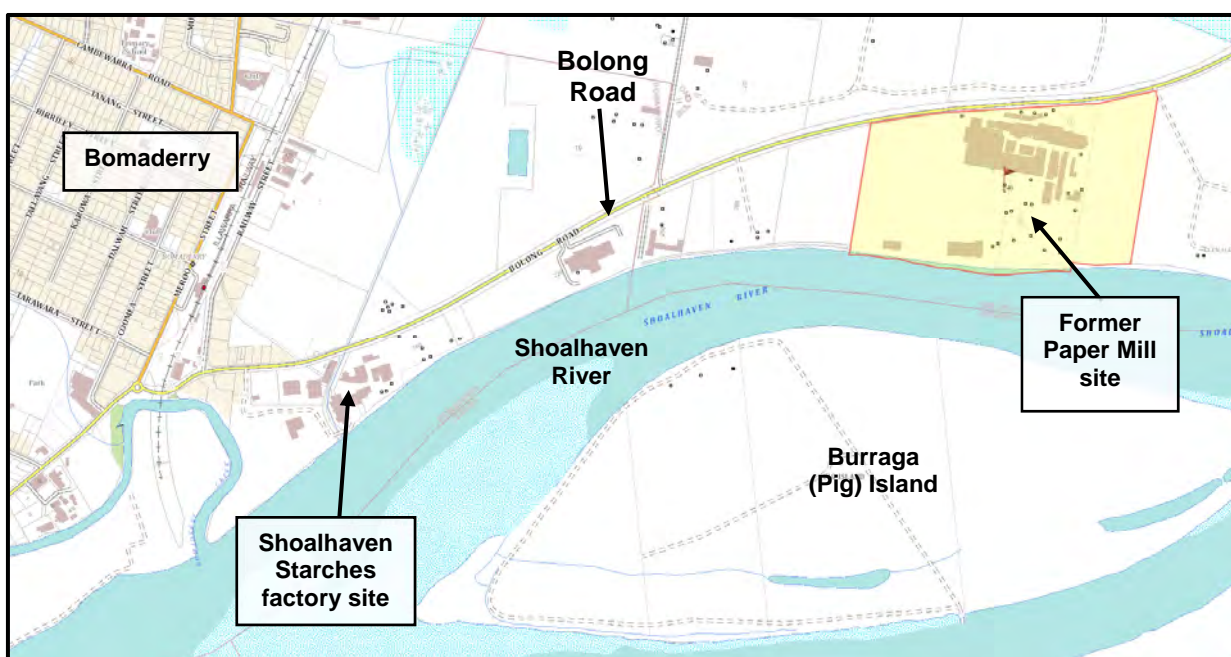


Figure 1: Site locality plan.

The town of Bomaderry is located 1.8 km (approx.) to the west of the factory site, and the Nowra urban area is situated 5.2 km to the south west of the site. The village of Terara is situated approximately 1.2 kilometres to the south west of the site, across the Shoalhaven River. Burraga (Pig) Island is situated between the former Paper Mill Site and the village of Terara and is currently used as a dairy farm.

There are a number of industrial land uses which have developed on the strip of land between Bolong Road and the Shoalhaven River. Industrial activities include a metal fabrication factory and the Shoalhaven Starches site. The industrial area is serviced by a privately owned spur railway line that runs from just north of the Nowra-Bomaderry station to the Shoalhaven Starches plant.

The state railway terminates at Bomaderry with a separate, privately owned spur line to the Shoalhaven factory site. Shoalhaven City Council sewerage treatment works is situated between the railway line and the factory.

Figures 2 and 3 are aerial photographs of the locality and the site respectively.

The former Paper Mill Site has direct road frontage to Bolong Road to the north.

The Shoalhaven River flows along the southern boundary of the factory site.



Figure 2: Aerial photograph of the locality.



Figure 3: Aerial photograph of site.

3.0 BACKGROUND

3.1 PRODUCTION PROCESSES

The production process at the Shoalhaven Starches plant has developed over a number of years. Originally the plant was primarily concerned with the production of starch and gluten from flour. However, the Company has pursued a number of technological innovations particularly with respect to reducing the environmental impacts of the Company's operations. As a result, Shoalhaven Starches has been moving towards a "closed" system of production. Essentially this entails the efficient use of end products to ensure wastage is reduced to a minimum.

The first step in the production process is the delivery of flour and grain, by rail, from the Company's flour mills at Manildra, Gunnedah and Narrandera. The trainloads are brought into the plant via the switching yard at Bomaderry.

The Company received approval from the Minister for Planning for the erection of a flour mill on site to enable the milling of part of the Company's flour requirements to be processed directly on the site. This flour mill has now been commissioned. The remainder of the Company's flour requirement will continue to be sourced from the Company's off-site flour mills.

Flour is transferred via storage to the "wet end" of the plant where fresh water is added. The subsequent mixing and separation process produces starch and gluten.

The gluten is dried to enable it to be packaged and distributed as a high protein food additive for human consumption. This product is then taken from the site after packaging for both local and export markets. Starch is used for fermentation and distillation to produce ethanol.

The starch that is separated from the flour is either dried or remains in liquid form. The dried and liquid starch is sold to the paper and food industries. The starch is used for food, cardboard, paper and other industrial purposes. Liquid starch is used in the ethanol production process.

Starch is also used in the production of syrups on the site. The syrups plant products include glucose and brewer's syrup. These are used for foods, chocolates, confectionery, beer, soft drinks and fruit juice. The syrups plant products can also be used in the ethanol process.

The waste products from the starch, gluten and syrup production processes are combined to feed the fermentation and distillation stage of ethanol production. The outputs are fuel,

industrial and beverage grade ethanol. Industrial grade ethanol is used in producing pharmaceuticals, printer's ink and methylated spirits.

Ethanol production results in some liquid and solid by-products, which are processed through the stillage recovery process plant (which was approved as part of PRP No. 7 in 2005). The solids in the stillage are recovered as DDGS (Dried Distillers Grains Syrup), dried and sold as a high protein cattle feed with the remaining water used for irrigation. The waste water resulting from the ethanol production is treated in the wastewater treatment plant and is re-used in the Starch Plant and the surplus is irrigated onto Shoalhaven Starches Environmental Farm to the north of Bolong Road. This farm land is used for fodder crops, pasture and cattle grazing.

3.2 OPERATING WORKFORCE

3.2.1 Operations

The existing factory operates 24 hours per day, 7 days a week, 365 days of the year.

3.2.2 Workforce- Shoalhaven Starches Overall

The plant employs a total of 300 staff, covering all components of production - operators, administrative personnel and maintenance staff. Employee breakdown and hours of shifts are as follows:

A total of around 300 employees	Management, Technical & Administration	60
	Day Workers	65
	Shift Production (spread over 4 shifts)	175

Hours of Shifts

Plant:	6:00 am to 6:00 pm	-	88 employees
	6:00 pm to 6:00 am	-	88 employees
Day	7:00 am to 3:00 pm	but variable	75 employees, 60 Management, Technical & Administration
Farm:	5:00 am to 5:00 pm	-	3 employees
	5:00 pm to 5:00 am	-	3 employees
	7:00 am to 3:00 pm	-	3 employees

Shift work at both the factory and farm is undertaken on a continuous roster basis.

3.2.3 Shoalhaven Starches Workforce – Former Paper Mill Site

As a result of this Modification Proposal it is proposed that up to 24 staff could be employed at the former Paper Mill Site at any one time including:

- One (1) full time storeman, potentially supplemented by two (2) additional storemen. The working hours of the storemen will be 7:00 am to 4:00 pm Monday to Friday;
- One (1) additional storeman employed during peak periods with the hours of 7:00 am to 4:00 pm Monday to Friday;
- Ten (10) administration and IT personnel (8:00 am to 5:00 pm Monday to Friday); and
- Up to ten (10) contractors (engineering) working works of 7:00 am to 4:00 pm Monday to Friday.

This allocation of staff is not in addition to the total starches workforce but represents a transfer of duties from the Starches factory site to the Former Paper Mill Site.

3.3 PROJECT APPROVAL MP 06_0228

On the 28th January 2009 the then Minister for Planning, issued Project Approval MP 06_0228 for the Shoalhaven Starches Expansion Project.

The primary objective of the Shoalhaven Starches Expansion Project was to increase the Company's ethanol production capacity to meet the expected increase in demand for ethanol primarily, arising from the NSW Government's mandate to increase ethanol content by volume in petrol in NSW from 2% to 6% from October 2011, by upgrading the existing ethanol plant.

The approval will, subject to certain conditions, enable Shoalhaven Starches to increase ethanol production in a staged manner at its Bomaderry Plant from 126 million litres per year to 300 million litres per year.

To accomplish the increase in ethanol production, the Project Approval enabled Shoalhaven Starches to upgrade plant and increase throughput of raw materials, principally comprising flour and grain.

The following additions and alterations have been approved to the existing factory site as part of this Project Approval:

- the provision of an additional dryer for the starch/gluten plant;
- additional equipment and storage vessels for the ethanol plant including 3 additional fermenters, additional cooling towers and molecular sieves;
- upgrades to the Stillage Recovery Plant including 6 additional Dried Distillers Grains Syrup (DDGS) dryers; 10 decanters; chemical storage and two evaporators. The proposal includes the installation of a DDGS Pelletiser Plant within this part of the site; and

- the establishment of a new packing plant, container loading area and a rail spur line. The establishment of this facility on the northern side of Bolong Road will require the provision of an overhead bridge structure to allow product and safe pedestrian movement across Bolong Road.

In addition, as part of the Project Approval, Shoalhaven Starches will undertake comprehensive odour reduction measures for both the existing factory site and the works associated with the Expansion Project. In 2006, the Land and Environment Court required Shoalhaven Starches to engage a suitably qualified person to conduct a comprehensive environmental audit of the factory and Environmental Farm. This environmental audit was undertaken GHD Pty Ltd. The audit report includes a number of recommendations for the implementation of works to the existing site, some of which require development approval. These works were included within this Project Approval.

The Project Approval enables a staged implementation of the expansion project. Up to 200 million litres of ethanol will be able to be produced at the Bomaderry Plant and eventually increased up to 300 million litres.

The Project Approval also enables the biological treatment of waste waters from the factory site and the re-use of over half the treated waste water within the factory processes, with the remainder irrigated onto the Company's Environmental Farm.

The Project Approval also consolidated all previous approvals including Project Approval MP 07_0021 (the Flour Mill) into the one Project Approval.

3.4 APPROVAL HISTORY FOLLOWING MP 06_0228

DA 10/1843 – Upgrade Vehicle Entrance (Former Dairy Farmers Factory Site)

Project Approval MP 06_0228 required vehicle access points to the Bomaderry site to be upgraded to the satisfaction of Council and the RMS.

The subsequent upgrading works included the construction of a concrete median along the centre of Bolong Road to the east of Abernethy's drain in such a manner that prevented vehicles travelling east along Bolong Road turning right into the central vehicle access point to the Shoalhaven Starches site and prevented vehicles turning right out from this access point and travelling east along Bolong Road.

These works also prevented vehicles turning right out from the BOC Carbon Dioxide Plant located opposite the Shoalhaven Starches site.

Shoalhaven Starches therefore sought approval from Shoalhaven City Council to upgrade the former Dairy Farmers site vehicular access and relocate the access to enable vehicles

to enter Access Point 2 from the east. These works would also allow vehicles wishing to travel west from BOC Carbon Dioxide Plant to leave this site to first travel east; by allowing vehicles to travel to the former Dairy Farmers Factory Complex and using the upgraded access to turn around before travelling west along Bolong Road.

RA 11/1002 Interim Packing Plant

Following Project Approval MP 06_0228 Shoalhaven Starches also obtained a separate development approval to use an existing factory building located at 22 Bolong Road (Lot 21 DP 100265) as an Interim Packing Plant from Shoalhaven City Council (RA 11/1002 dated 26th October 2011). This Interim Packing Plant operates in conjunction with the Company's existing Packing Plant which is located within the existing factory site.

As outlined in Section 3.5 above, Project Approval MP 06_0228 made provision for a new Packing Plant to be located on land owned by the company on the northern side of Bolong Road.

Following the granting of MP 06_0228 however the Manildra Group of Companies acquired the former Dairy Farmers factory site located at 220 Bolong Road. The Company has therefore been reconsidering the best location for the future Packing Plant.

In the interim period however, the Flour Mill and a new product dryer were commissioned resulting in a subsequent increase in production of dried product from these new plants. Interim Packing Plant facilities were therefore required until the final location for the new packing plant is determined. It is intended that the Interim Packing Plant would operate on a temporary basis until a final location for the new Packing Plant is identified.

Shoalhaven Starches have held initial consultation with the Department of Planning & Environment with respect to submitting a separate modification application which will seek to relocate the approved Packing Plant (and dryer). Shoalhaven Starches are currently reviewing options for the final packing plant location. Once the new Packing Plant has been constructed, the need for the Interim Packing Plant will become superfluous and the development consent for the interim plant will be surrendered, and the use will cease.

DA 11/1855 – Widening of Driveway

A further development application (DA 11/1855) was submitted to Shoalhaven City Council on the 4th August 2011 seeking approval to widen the driveways serving 22 Bolong Road Bomaderry (ie. the site of the Interim Packing Plant) to accommodate semi-trailers. This development application was approved by Shoalhaven City Council on the 24th August 2011.

DA 13/1713 – Demolition of Dimethyl Ether Plant

On the 5th July 2013 Shoalhaven Starches submitted a development application to Shoalhaven City Council seeking the demolition of a Dimethyl Ether Plant on the site. This development application was approved by Shoalhaven City Council on the 15th July 2013.

DA 14/2161 – Additional Two (2) Grain Silos

On the 19th September 2014 Shoalhaven Starches submitted a development application to Shoalhaven City Council seeking development consent to erect two additional grain silos on the factory site within the vicinity of the existing Flour Mill, to provide security of raw material storage and supply when there are closures of the Illawarra rail line serving the Shoalhaven Starches site. Shoalhaven City Council approved this development application on the 27th April 2017.

3.5 OTHER APPROVALS

There have been other approvals that have been issued by Shoalhaven City Council that associated with the Shoalhaven Starches operations, but which do not directly relate to the operations of Shoalhaven Starches including:

- DA 11/1936 – Algae Demonstration Plant for evaluation of algae production and processing for alternative fuel and CO₂ sequestration. Proponent – Algae Tec Pty Ltd at 220 Bolong Road (former Dairy Farmers factory site).
- DA 14/1327 – Alterations to existing building (former Dairy Farmers Factory Building) and re-use as a meat processing plant. Proponent – Candal Investments Pty Ltd at 220 Bolong Road (former Dairy Farmers factory site).

4.0 STATUTORY SITUATION

4.1 PART 3A OF THE EP&A ACT

The introduction of Part 3A to the Environmental Planning & Assessment Act 1979, and the introduction of *State Environmental Planning Policy (Major Development)* in 2005, brought about a change in the regime concerning the assessment of state significant development. Part 3A initially targeted the streamlining of the assessment of projects deemed to be of state significance, including critical infrastructure projects.

Following the 2011 election, the NSW Government implemented measures seeking to change the planning legislative and policy regime applicable to projects previously subject to Part 3A.

Under these legislation changes no new applications for any of the development that was previously identified as Part 3A in the Major Development SEPP will be accepted and assessed during this interim period.

The NSW Parliament subsequently passed amendments to the *Environmental Planning & Assessment Act 1979* (the EP&A Act). These amendments created an alternative assessment system which allows the NSW Government to assess and determine projects which are of State significance.

The amended EP&A Act established two separate assessment frameworks for either State Significant Infrastructure (SSI) or State Significant Development (SSD). Projects that fall under these two categories will be assessed by the Department of Planning and Infrastructure (the 'Department').

To this end, the Act largely returns to the situation before Part 3A where two separate assessment pathways were in place for projects to be assessed by the State, namely

- Linear public infrastructure projects such as railways, water supply systems, pipelines and transmission lines, or other development by a State agency which has a significant environmental effect; and
- Significant development types which require consent such as mines, chemical and manufacturing plants, warehousing and distribution facilities, hospitals and associated ancillary development.

The Act also introduces a number of changes to the operation and make-up of the Planning Assessment Commission (PAC) and Joint Regional Planning Panels (Regional Panels), seeking to provide additional transparency and greater local government input.

Supporting regulations and an associated new State Environmental Planning Policy (SEPP) have been introduced and came into effect from the 1st October 2011. These supporting provisions provide additional detail with respect to the classes and thresholds for development to be considered as State Significant.

State Environmental Planning Policy (State and Regional Development) 2011 (otherwise known as the “State and Regional Development SEPP”), approximately halved the number of proposals dealt with by the State when compared with the former Part 3A system.

The *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) has also been amended to update a number of procedural and administrative arrangements.

This is an interim assessment system which will be reviewed as part of the proposed overall review of the NSW planning system that the new NSW Government has also instigated.

The approved Shoalhaven Starches Expansion Project however is termed a *Transitional Part 3A Project* under the amended EP&A legislation.

These circumstances are clarified in Planning Circular PS 11-021 issued by the Department of Planning & Infrastructure on the 30th September 2011. This Circular confirms that Part 3A continues to apply to certain projects subject to transitional provisions identified in Schedule 6A of the Act.

Schedule 6A of the *EP&A Act* makes provisions for such projects. Essentially a *Transitional Part 3A Project* includes:

- (a) *an approved project (whether approved before or after the repeal of Part 3A),*
- (b) *a project for which environmental assessment requirements were notified or adopted before the repeal of Part 3A,*
- (c) *a project that is the subject of a Part 3A project application and that the regulations declare to be a transitional Part 3A project.*

As the Shoalhaven Starches Expansion Project was approved on the 28th January 2009 this project is considered a *Transitional 3A Project* for the purposes of this legislation.

Clause 3 of Schedule 6A provides for the continuation of Part 3A and Transitional Part 3A projects. Essentially it states that Part 3A continues to apply to and in respect of *Transitional Part 3A* projects. Clause 3 reads:

3 Continuation of Part 3A – transitional Part 3A projects

- (1) *Part 3A continues to apply to and in respect of a transitional Part 3A project.*
- (2) *For that purpose:*
 - (a) *any State environmental planning policy or other instrument made under Part 3A, as in force on the repeal of that Part and as amended after that repeal, continues to apply to and in respect of a transitional Part 3A project, and*
 - (b) *declarations, orders, directions, determinations or other decisions with respect to a transitional Part 3A project continue to have effect and may continue to be made under Part 3A (including for the purpose of the application or continued application of Part 4 or 5 or other provisions of this Act in relation to the project).*
- (3) *The regulations may modify provisions of Part 3A (and the instruments or decisions referred to in subclause (2)) as they apply to a transitional Part 3A project.*
- (4) *The declaration of development as a project under Part 3A (or as a critical infrastructure project) is revoked if the development is not, or ceases to be, a transitional Part 3A project.*
- (5) *A transitional Part 3A project is not State significant development or State significant infrastructure.*
- (6) *This clause is subject to the other provisions of this Schedule.*

Given these circumstances Part 3A will continue to apply for the proposed Shoalhaven Starches Expansion Project.

Part 3A continues to apply to the Shoalhaven Starches Expansion Project. State Environmental Planning Policy (Major Projects) continues to support Part 3A of the Act.

Section 75W of the Environmental Planning & Assessment Act makes provision for the modification of Major Projects to which Part 3A applied and continues to apply.

4.2 SECTION 75W AND MODIFICATION PROPOSALS

Section 75W of the EPA Act relates to modifications to approvals issued by the Minister for Planning and states:

75W Modification of Minister's approval

- (1) *In this section:*

Minister's approval *means an approval to carry out a project under this Part, and includes an approval of a concept plan.*

modification of approval means changing the terms of a Minister's approval, including:

- (a) *revoking or varying a condition of the approval or imposing an additional condition of the approval, and*
 - (b) *changing the terms of any determination made by the Minister under Division 3 in connection with the approval.*
- (2) *The proponent may request the Minister to modify the Minister's approval for a project. The Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.*
- (3) *The request for the Minister's approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.*
- (4) *The Minister may modify the approval (with or without conditions) or disapprove of the modification.*
- (5) *The proponent of a project to which section 75K applies who is dissatisfied with the determination of a request under this section with respect to the project (or with the failure of the Minister to determine the request within 40 days after it is made) may, within the time prescribed by the regulations, appeal to the Court. The Court may determine any such appeal.*
- (6) *Subsection (5) does not apply to a request to modify:*
 - (a) *an approval granted by or as directed by the Court on appeal, or*
 - (b) *a determination made by the Minister under Division 3 in connection with the approval of a concept plan.*
- (7) *This section does not limit the circumstances in which the Minister may modify a determination made by the Minister under Division 3 in connection with the approval of a concept plan.*

This application is made pursuant to Section 75W of the EPA Act.

4.3 LOCAL PLANNING PROVISIONS

Shoalhaven Local Environmental Plan (SLEP) 2014

The site is zoned IN1 (General Industrial) zone under the provisions of SLEP 2014 (refer **Figure 4**). The objectives of the IN1 zone are:

- *To provide a wide range of industrial and warehouse land uses.*
- *To encourage employment opportunities.*
- *To minimise any adverse effect of industry on other land uses.*
- *To support and protect industrial land for industrial uses.*

- *To allow a diversity of activities that do not significantly conflict with the operation of existing or proposed development.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area.*

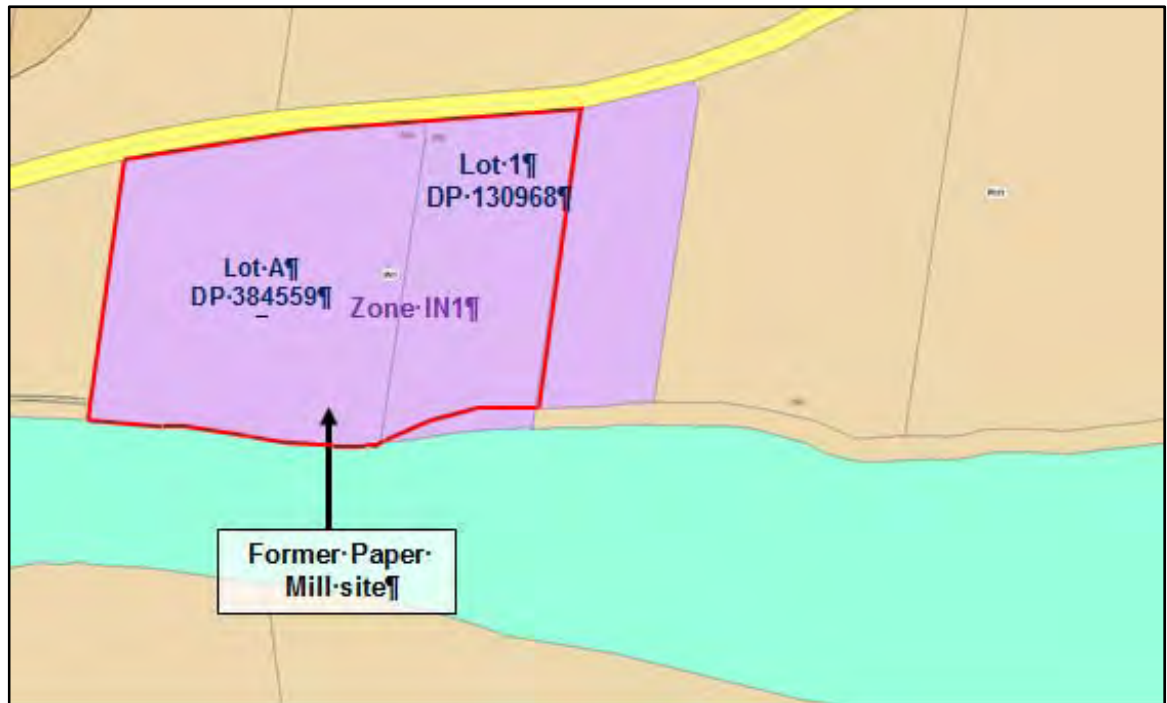


Figure 4: Zoning provisions applying under Shoalhaven LEP 2014.

It is our view that the proposal is consistent with these objectives as the proposal, in effect, involves the change of use of an existing industrial site for industrial purposes; and purposes ancillary to industrial activities.

This modification ensures an existing industrial site which is currently dormant is used for industrial uses, thereby protecting the industrial use of this land. The proposal will not conflict with the operation of Shoalhaven Starches but represents a reallocation of some of the Shoalhaven Starches factory operations to the former Paper Mill site; and will enable this site to be used for storage of plant and materials used in construction activities taking place on the Shoalhaven Starches factory site.

Furthermore, the proposal includes measures to minimise the effects of the proposal.

Industry is a permissible use within this zone. The proposal is permissible subject to Council's consent (see **Table 1** below).

Table 1
Land Use Permissibility – IN1 Zone (Shoalhaven LEP 2014)

Permitted without consent	Nil.
Permitted with consent	Bulky goods premises; Depots; Freight transport facilities; General industries ; Industrial training facilities; Kiosks; Light industries; Markets; Neighbourhood shops; Roads; Take away food and drink premises; Timber yards; Warehouse or distribution centres
Prohibited	Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Child care centres; Correctional centres; Crematoria; Eco-tourist facilities; Educational establishments; Environmental facilities; Exhibition villages; Extractive industries; Farm buildings; Forestry; Function centres; Health services facilities; Highway service centres; Home-based childcare; Home businesses; Home occupations; Home occupations (sex services); Information and education facilities; Marinas; Mooring pens; Moorings; Office premises; Open cut mining; Places of public worship; Registered clubs; Residential accommodation; Respite day care centres; Restricted premises; Retail premises; Sex services premises; Tourist and visitor accommodation; Water recreation structures; Wharf or boating facilities.

The SLEP 2014 also has a number of specific provisions that apply to the land. The implications that these provisions have in relation to this proposal are discussed in **Table 2** below:

Table 2
Shoalhaven Local Environment Plan Provisions

SLEP 2014 Clause	Provisions	Comments
5.5 <i>Development within the coastal zone</i>	<p>(1) <i>The objectives of this clause are as follows:</i></p> <p>(a) <i>to provide for the protection of the coastal environment of the State for the benefit of both present and future generations through promoting the principles of ecologically sustainable development,</i></p> <p>(b) <i>to implement the principles in the NSW Coastal Policy, and in particular to:</i></p> <p>(i) <i>protect, enhance, maintain and restore the coastal environment, its associated ecosystems, ecological processes and biological diversity and its water quality, and</i></p> <p>(ii) <i>protect and preserve the natural, cultural, recreational and economic attributes of the NSW coast, and</i></p> <p>(iii) <i>provide opportunities for pedestrian public access to and along the coastal foreshore, and</i></p>	<p>The subject land is located within the coastal zone.</p> <p>The proposal is not considered to adversely affect the coastal zone based on the following:</p> <ul style="list-style-type: none"> • The proposal does not affect or impinge on public access to or along the coastal foreshore. • The proposed development will be undertaken on an existing industrial site. Such is considered suitable development given its type, location and design. The development is also consistent with the zoning objectives for the land.

Table 2 (continued)

SLEP 2014 Clause	Provisions	Comments
5.5 continued	<p>(iv) recognise and accommodate coastal processes and climate change, and</p> <p>(v) protect amenity and scenic quality, and</p> <p>(vi) protect and preserve rock platforms, beach environments and beach amenity, and</p> <p>(vii) protect and preserve native coastal vegetation, and</p> <p>(viii) protect and preserve the marine environment, and</p> <p>(ix) ensure that the type, bulk, scale and size of development is appropriate for the location and protects and improves the natural scenic quality of the surrounding area, and</p> <p>(x) ensure that decisions in relation to new development consider the broader and cumulative impacts on the catchment, and</p> <p>(xi) protect Aboriginal cultural places, values and customs, and</p> <p>(xii) protect and preserve items of heritage, archaeological or historical significance</p> <p>(2) Development consent must not be granted to development on land that is wholly or partly within the coastal zone unless the consent authority has considered:</p> <p>(a) existing public access to and along the coastal foreshore for pedestrians (including persons with a disability) with a view to:</p> <p>(i) maintaining existing public access and, where possible, improving that access, and</p> <p>(ii) identifying opportunities for new public access, and</p> <p>(b) the suitability of the proposed development, its relationship with the surrounding area and its impact on the natural scenic quality, taking into account:</p> <p>(i) the type of the proposed development and any associated land uses or activities (including compatibility of any land-based and water-based coastal activities), and</p> <p>(ii) the location, and</p>	<ul style="list-style-type: none"> • The development will not lead to overshadowing of foreshore areas. • The scenic qualities of the area will not diminish. Visual impact is further addressed in Section 8.3 this EA. • The proposal will not lead to adverse impacts on threatened fauna and flora.

Table 2 (continued)

SLEP 2014 Clause	Provisions	Comments
5.5 continued	<p>(iii) <i>the bulk, scale, size and overall built form design of any building or work involved, and</i></p> <p>(c) <i>the impact of the proposed development on the amenity of the coastal foreshore including:</i></p> <p style="padding-left: 20px;">(i) <i>any significant overshadowing of the coastal foreshore, and</i></p> <p style="padding-left: 20px;">(ii) <i>any loss of views from a public place to the coastal foreshore, and</i></p> <p>(d) <i>how the visual amenity and scenic qualities of the coast, including coastal headlands, can be protected, and</i></p> <p>(e) <i>how biodiversity and ecosystems, including:</i></p> <p style="padding-left: 20px;">(i) <i>native coastal vegetation and existing wildlife corridors, and</i></p> <p style="padding-left: 20px;">(ii) <i>rock platforms, and</i></p> <p style="padding-left: 20px;">(iii) <i>water quality of coastal waterbodies, and</i></p> <p style="padding-left: 20px;">(iv) <i>native fauna and native flora, and their habitats, can be conserved, and</i></p> <p>(f) <i>the cumulative impacts of the proposed development and other development on the coastal catchment.</i></p> <p>(3) <i>Development consent must not be granted to development on land that is wholly or partly within the coastal zone unless the consent authority is satisfied that:</i></p> <p style="padding-left: 20px;">(a) <i>the proposed development will not impede or diminish, where practicable, the physical, land-based right of access of the public to or along the coastal foreshore, and</i></p> <p style="padding-left: 20px;">(b) <i>if effluent from the development is disposed of by a non-reticulated system, it will not have a negative effect on the water quality of the sea, or any beach, estuary, coastal lake, coastal creek or other similar body of water, or a rock platform, and</i></p> <p style="padding-left: 20px;">(c) <i>the proposed development will not discharge untreated stormwater into the sea, or any beach, estuary, coastal lake, coastal creek or other similar body of water, or a rock platform, and</i></p> <p style="padding-left: 20px;">(d) <i>the proposed development will not:</i></p> <p style="padding-left: 40px;">(i) <i>be significantly affected by coastal hazards, or</i></p>	

Table 2 (continued)

SLEP 2014 Clause	Provisions	Comments
5.5 continued	<ul style="list-style-type: none"> (ii) have a significant impact on coastal hazards, or (iii) increase the risk of coastal hazards in relation to any other land. 	
5.10 Heritage Conservation	<p>(1) The objectives of this clause are:</p> <ul style="list-style-type: none"> (a) to conserve the environmental heritage of Shoalhaven; and (b) to conserve the heritage significance of heritage items and heritage conservation areas including associated fabric, settings and views; and (c) to conserve archaeological sites; and (d) to conserve Aboriginal objects and Aboriginal places of heritage significance. <p>(2) Development consent is required for any of the following:</p> <ul style="list-style-type: none"> (a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance): <ul style="list-style-type: none"> (i) a heritage item, (ii) an Aboriginal object (iii) a building, work, relic or tree within a heritage conservation area, (b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item, (c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being, discovered, exposed, moved damaged or destroyed, (d) disturbing or excavating an Aboriginal place of heritage significance, (e) erecting a building on land: <ul style="list-style-type: none"> (i) on which a heritage item is located or that is within a heritage conservation area; (ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance, 	<p>There are no heritage items within the subject land. And the subject site is not located within a heritage conservation area.</p> <p>The site is a highly disturbed industrial site that has been used for industrial purposes for decades. No excavation is proposed as such the proposal is not expected to disturb any Aboriginal objects or relics.</p>

Table 2 (continued)

SLEP 2014 Clause	Provisions	Comments												
5.10 continued	<p>(f) subdividing land:</p> <p>(i) on which a heritage item is located or that is within a heritage conservation area, or</p> <p>(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.</p>													
7.1 Acid sulfate soils	<p>(1) The objective of this clause is to ensure that development does not disturb, expose or drain acid sulfate soils and cause environmental damage.</p> <p>(2) Development consent is required for the carrying out of works described in the Table to this subclause on land shown on the Acid Sulfate Soils Map as being of the class specified for those works, except as provided by this clause.</p> <table><tr><th>Class of Land</th><th>Works</th></tr><tr><td>1</td><td>Any works.</td></tr><tr><td>2</td><td>Works below the natural ground surface. Works by which the watertable is likely to be lowered.</td></tr><tr><td>3</td><td>Works more than 1 metre below the natural ground surface. Works by which the watertable is likely to be lowered more than 1 metre below the natural ground surface.</td></tr><tr><td>4</td><td>Works more than 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered more than 2 metres below the natural ground surface.</td></tr><tr><td>5</td><td>Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.</td></tr></table> <p>(3) Development consent must not be granted under this clause for the carrying out of works unless an acid sulfate soils management plan has been prepared for the proposed works in accordance with the Acid Sulfate Soils Manual and has been provided to the consent authority.</p>	Class of Land	Works	1	Any works.	2	Works below the natural ground surface. Works by which the watertable is likely to be lowered.	3	Works more than 1 metre below the natural ground surface. Works by which the watertable is likely to be lowered more than 1 metre below the natural ground surface.	4	Works more than 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered more than 2 metres below the natural ground surface.	5	Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.	<p>Whilst the subject site is identified as potentially containing acid sulphate soils – class 3 and 4, the proposal does not seek to undertake any excavation works which may expose such soils. As such it is considered an investigation will not need to be undertaken to determine the existence (or otherwise) of acid sulphate soils.</p>
Class of Land	Works													
1	Any works.													
2	Works below the natural ground surface. Works by which the watertable is likely to be lowered.													
3	Works more than 1 metre below the natural ground surface. Works by which the watertable is likely to be lowered more than 1 metre below the natural ground surface.													
4	Works more than 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered more than 2 metres below the natural ground surface.													
5	Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.													

Table 2 (continued)

SLEP 2014 Clause	Provisions	Comments
7.1 continued	<p>(4) Despite subclause (2), development consent is not required under this clause for the carrying out of works if:</p> <p>(a) a preliminary assessment of the proposed works prepared in accordance with the Acid Sulfate Soils Manual indicates that an acid sulfate soils management plan is not required for the works, and</p> <p>(b) the preliminary assessment has been provided to the consent authority and the consent authority has confirmed the assessment by notice in writing to the person proposing to carry out the works.</p> <p>(5) Despite subclause (2), development consent is not required under this clause for the carrying out of any of the following works by a public authority (including ancillary work such as excavation, construction of access ways or the supply of power):</p> <p>(a) emergency work, being the repair of the works of the public authority required to be carried out urgently because the works have been damaged, have ceased to function or pose a risk to the environment or to public health and safety,</p> <p>(b) routine management work, being the periodic inspection, cleaning, repair or replacement of the works of the public authority (other than work that involves the disturbance of more than 1 tonne of soil).</p> <p>(c) minor work, being work that costs less than \$20,000 (other than drainage work).</p> <p>(6) Despite subclause (2), development consent is not required under this clause to carry out any works if:</p> <p>(a) the works involve the disturbance of less than 1 tonne of soil, and</p> <p>(b) the works are not likely to lower the watertable.</p>	
7.3 Flood Planning	<p>(1) The objectives of this clause are as follows:</p> <p>(a) to minimise the flood risk to life and property associated with the use of land,</p> <p>(b) to allow development on land that is compatible with the land's flood hazard, taking into account projected changes as a result of climate change,</p>	<p>The Flood Planning Area Map that accompanies the SLEP 2014 identifies the subject land as being flood prone land.</p> <p>The application is supported by a Flood Compliance Report undertaken by WMA</p>

Table 2 (continued)

SLEP 2014 Clause	Provisions	Comments
7.3 continued	<p>(c) to avoid significant adverse impacts on flood behaviour and the environment</p> <p>(2) This clause applies to:</p> <p>(a) land identified as “Flood Planning Area” on the Flood Planning Area Map, and</p> <p>(b) other land at or below the flood planning level.</p> <p>(3) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development:</p> <p>(a) is compatible with the flood hazard of the land, and</p> <p>(b) will not significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and</p> <p>(c) incorporates appropriate measures to manage risk to life from flood, and</p> <p>(d) will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and</p> <p>(e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding, and</p> <p>(f) will not affect the safe occupation or evacuation of the land.</p> <p>(4) A word or expression used in this clause has the same meaning as it has in the Floodplain Development Manual (ISBN 0 7347 5476 0) published by the NSW Government in April 2005, unless it is otherwise defined in this clause.</p> <p>(5) In this clause:</p> <p>flood planning level means the level of a 1:100 ARI (average recurrent interval) flood event plus 0.5 metre freeboard.</p>	Water (Annexure 5). This issue is discussed further in Section 8.2 of this EA.
7.4 Coastal Risk Planning	<p>(1) The objectives of this clause are as follows:</p> <p>(a) to avoid significant adverse impacts from coastal hazards,</p> <p>(b) to ensure uses of land identified as coastal risk are compatible with the risks presented by coastal hazards,</p> <p>(c) to enable the evacuation of land identified as coastal risk in an emergency,</p>	<p>The Coastal Risk Planning Map that accompanies the SLEP 2014 does <u>not</u> identify the subject land as a “Coastal Risk Planning Area”.</p> <p>The provisions of this clause therefore do not apply to the subject site.</p>

Table 2 (continued)

SLEP 2014 Clause	Provisions	Comments
7.4 continued	<p>(d) to avoid development that increases the severity of coastal hazards.</p> <p>(2) This clause applies to the land identified as "Coastal Risk Planning Area" on the Coastal Risk Planning Map.</p> <p>(3) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development:</p> <p>(a) will avoid, minimise or mitigate exposure to coastal processes, and</p> <p>(b) is not likely to cause detrimental increases in coastal risks to other development or properties, and</p> <p>(c) is not likely to alter coastal processes and the impacts of coastal hazards to the detriment of the environment, and</p> <p>(d) incorporates appropriate measures to manage risk to life from coastal risks, and</p> <p>(e) is likely to avoid or minimise adverse effects from the impact of coastal processes and the exposure to coastal hazards, and</p> <p>(f) provides for the relocation, modification or removal of the development to adapt to the impact of coastal processes and coastal hazards, and</p> <p>(g) has regard to the impacts of sea level rise.</p> <p>(4) A word or expression used in this clause has the same meaning as it has in the NSW Coastal Planning Guideline: Adapting to Sea Level Rise (ISBN 978-1-74263-035-9) published by the NSW Government in August 2010, unless it is otherwise defined in this clause.</p> <p>(5) In this clause:</p> <p>coastal hazard has the same meaning as in the Coastal Protection Act 1979.</p>	
7.5 Terrestrial Biodiversity	<p>(1) The objective of this clause is to maintain terrestrial biodiversity, by:</p> <p>(a) protecting native flora and fauna,</p> <p>(b) protecting the ecological processes necessary for their continued existence, and</p> <p>(c) encouraging the recovery of native flora and fauna, and their habitats.</p>	The Terrestrial Biodiversity Map that accompanies the SLEP 2014 does <u>not</u> identify the subject land as including areas of Biodiversity - habitat corridor and/or Biodiversity - significant vegetation.

Table 2 (continued)

SLEP 2014 Clause	Provisions	Comments
7.5 continued	<p>(2) <i>This clause applies to land:</i></p> <p>(a) <i>identified as “Biodiversity—habitat corridor” or “Biodiversity—significant vegetation” on the Terrestrial Biodiversity Map, and</i></p> <p>(b) <i>situated within 40m of the bank (measured horizontally from the top of the bank) of a natural waterbody.</i></p> <p>(3) <i>Before determining a development application for development on land to which this clause applies, the consent authority must consider:</i></p> <p>(a) <i>whether the development is likely to have:</i></p> <p>(i) <i>any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and</i></p> <p>(ii) <i>any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and</i></p> <p>(iii) <i>any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and</i></p> <p>(iv) <i>any adverse impact on the habitat elements providing connectivity on the land, and</i></p> <p>(b) <i>any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.</i></p> <p>(4) <i>Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:</i></p> <p>(a) <i>the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or</i></p> <p>(b) <i>if that impact cannot be reasonably avoided by adopting feasible alternatives—the development is designed, sited and will be managed to minimise that impact, or</i></p> <p>(c) <i>if that impact cannot be minimised—the development will be managed to mitigate that impact.</i></p> <p>5) <i>For the purpose of this clause:</i> bank <i>means the limit of the bed of a natural waterbody.</i></p>	<p>The proposal involves the use of an industrial site for a range of uses including the storage of plant and equipment. The site is substantially cleared (with perimeter plantings) and is highly disturbed.</p> <p>Long term storage areas will be located over 75 m from the Shoalhaven river bank.</p> <p>Given the nature of the site the proposal is unlikely to have any adverse impacts on the ecological value of the land.</p>

Table 2 (continued)

SLEP 2014 Clause	Provisions	Comments
7.5 continued	<i>bed, of a natural waterbody, means the whole of the soil of the channel in which the waterbody flows, including the portion that is alternatively covered and left bare with an increase or diminution in the supply of water and that is adequate to contain the waterbody at its average or mean stage without reference to extraordinary freshets in the time of flood or to extreme droughts.</i>	
7.6 Riparian land and watercourses	<p>(1) <i>The objective of this clause is to protect and maintain the following:</i></p> <ul style="list-style-type: none"> (a) <i>water quality within watercourses,</i> (b) <i>the stability of the bed and banks of watercourses,</i> (c) <i>aquatic and riparian habitats,</i> (d) <i>ecological processes within watercourses and riparian areas.</i> <p>(2) <i>This clause applies to all of the following:</i></p> <ul style="list-style-type: none"> (a) <i>land identified as "Riparian Land" on the Riparian Lands and Watercourses Map,</i> (b) <i>land identified as "Watercourse Category 1", "Watercourse Category 2" or "Watercourse Category 3" on that map,</i> (c) <i>all land that is within 50 metres of the top of the bank of each watercourse on land identified as "Watercourse Category 1", "Watercourse Category 2" or "Watercourse Category 3" on that map.</i> <p>(3) <i>Before determining a development application for development on land to which this clause applies, the consent authority must consider:</i></p> <ul style="list-style-type: none"> (a) <i>whether or not the development is likely to have any adverse impact on the following:</i> <ul style="list-style-type: none"> (i) <i>the water quality and flows within the watercourse,</i> (ii) <i>aquatic and riparian species, habitats and ecosystems of the watercourse,</i> (iii) <i>the stability of the bed and banks of the watercourse,</i> (iv) <i>the free passage of fish and other aquatic organisms within or along the watercourse,</i> (v) <i>any future rehabilitation of the watercourse and its riparian areas, and</i> (b) <i>whether or not the development is likely to increase water extraction from the watercourse, and</i> 	<p>The <i>Riparian Lands and Watercourses Map</i> that accompanies the SLEP 2014 identifies a class 1 watercourse, (Shoalhaven River) along the southern boundary of the subject site.</p> <p>GHD have undertaken an assessment of the potential impacts associated with the development on riverbank stability for the Shoalhaven River (Annexure 6).</p> <p>According to GHD the proposal will not adversely affect the stability of the northern bank of the Shoalhaven River. This is further discussed in Section 8.4 of this EA.</p> <p>As such the development will not have any adverse effect on water quality, flows within the watercourses, aquatic and riparian species or habitats and ecosystems of the watercourses.</p>

Table 2 (continued)

SLEP 2014 Clause	Provisions	Comments
7.6 continued	<p>(c) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.</p> <p>(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:</p> <p>(a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or</p> <p>(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or</p> <p>(c) if that impact cannot be minimised—the development will be managed to mitigate that impact</p> <p>(5) For the purpose of this clause:</p> <p>bank means the limit of the bed of a watercourse.</p> <p>bed, of a watercourse, means the whole of the soil of the channel in which the watercourse flows, including the portion that is alternatively covered and left bare with an increase or diminution in the supply of water and that is adequate to contain the watercourse at its average or mean stage without reference to extraordinary freshets in the time of flood or to extreme droughts.</p>	
7.7 Landslide risk and other land degradation	<p>(1) The objective of this clause is to maintain soil resources and the diversity and stability of landscapes, including protecting land:</p> <p>(a) comprising steep slopes, and</p> <p>(b) susceptible to other forms of land degradation.</p> <p>(2) This clause applies to the following land:</p> <p>(a) land with a slope in excess of 20% (1:5), as measured from the contours of a 1:25,000 topographical map, and</p> <p>(b) land identified as “Sensitive Area” on the Natural Resource Sensitivity—Land Map.</p> <p>(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider any potential adverse impact, either from, or as a result of, the development in relation to:</p> <p>(a) the geotechnical stability of the site, and</p> <p>(b) the probability of increased erosion or other land degradation processes.</p>	<p>The proposed works involve land identified as sensitive land under the SLEP 2014 mapping. Under these circumstances the provisions of this clause will apply to this proposal.</p> <p>GHD have undertaken an assessment of the potential impacts associated with the development on riverbank stability for the Shoalhaven River and GHD assesses that the proposal will not adversely affect the stability of the northern bank of the Shoalhaven River.</p> <p>This is further discussed in Section 8.4 of this EA.</p>

Table 2 (continued)

SLEP 2014 Clause	Provisions	Comments
7.7 continued	<p>(4) Before granting consent to development on land to which this clause applies, the consent authority must be satisfied that:</p> <p>(a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or</p> <p>(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or</p> <p>(c) if that impact cannot be minimised – the development will be managed to mitigate that impact.</p> <p>(5) In this clause, topographical map means the most current edition of a topographical map, produced by Land and Property Information division of the Department of Finance and Services, that identifies the Council's local government area and boundary.</p>	
7.8 Scenic protection	<p>(1) The objective of this clause is to protect the natural environmental and scenic amenity of land that is of high scenic value.</p> <p>(2) This clause applies to land identified as "Scenic Protection" on the Scenic Protection Area Map.</p> <p>(3) In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must:</p> <p>(a) consider the visual impact of the development when viewed from a public place and be satisfied that the development will involve the taking of measures that will minimise any detrimental visual impact, and</p> <p>(b) consider the number, type and location of existing trees and shrubs that are to be retained and the extent of landscaping to be carried out on the site, and</p> <p>(c) consider the siting of the proposed buildings.</p>	<p>The subject land is <u>not</u> identified as being within a "Scenic Protection" area by Scenic Protection Area Mapping that accompanies the SLEP 2014.</p> <p>The provisions of this clause therefore do not apply to the subject site.</p> <p>The visual impact associated with this proposal are discussed in Section 8.3 of this EA.</p>

4.4 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT

The existing Shoalhaven Starches factory site and Environmental Farm has an Environmental Protection Licence (EPL) under the Protection of the Environment Operations Act 1997 (POEO Act) (EPL No. 883). The licence imposes requirements in terms of:

- discharges to air, water and land;

- irrigation controls;
- management of irrigation;
- maintenance of irrigation reticulation;
- odour control.

If approved, the proposed modification may require the terms/provisions of this licence to be reviewed.

5.0 THE MODIFICATION PROPOSAL

5.1 THE PROPOSED MODIFICATION

A number of modifications to the Shoalhaven Starches factory operations have been undertaken since Project Approval MP06_0228 was granted for the Shoalhaven Starches Expansion Project by the Minister for Planning. The deferment of long planned projects such as the construction of the packing plant on the northern side of Bolong Road have arisen as a result of competing company priorities for capital investment on the site. Shoalhaven Starches have been required to invest (and in effect re-direct) capital investment into the construction of the new Starch Dryer (Mod. 7) and undertaking modifications to the ethanol plant to increase the production of “beverage grade” ethanol (Mod. 12) as opposed to the construction of the new packing plant on the northern side of Bolong Road. The construction of such modifications has led to an intensification of the use of the Starches factory site.

Shoalhaven Starches intend to use an existing facility, being the former Australian Paper Mill, in conjunction with the approved factory operations located further west at 160 Bolong Road Bomaderry. The former Paper Mill site will provide buffer storage for the approved factory operations of Shoalhaven Starches and will accommodate the storage of plant required for the various modifications away from the potentially congested construction sites within the factory complex.

It is proposed to seek to utilise the former Paper Mill for:

- The use of the existing buildings on the site for the storage of finished product, as well as engineering plant. Product that would have otherwise been dispatched directly to customers from the Starches site will now be stored on the former Paper Mill Site, due to the constricted space on the Shoalhaven Starches site. This will require the transport (by truck) of finished product from the Shoalhaven Starches site to the former Paper Mill site (for storage) and then the transport (at a later date) of that stored product from the former Paper Mill Site direct to customers via the regional road network. Packing consumables currently delivered to the Starches site will also be delivered to and stored at the former Paper Mill Site, and brought to the Shoalhaven Starches site for use when required.
- The use of existing storage tanks (with a volume of 12 ML) for the storage of syrups. Syrup will be transported by truck from the Shoalhaven Starches factory site to the proposed storage at the former Paper Mill site.

- The use of external areas on the site to lay down plant and materials that are to be used in the construction of approved projects on the Shoalhaven Starches factory site. The former Paper Mill site will essentially relieve the use of the factory site for the storage of these plant and materials.
- The former Paper Mill site will also be used as temporary and overflow shipping container storage.
- The use of existing administrative buildings for office staff.
- The use of workshop areas for maintenance purposes.

Figure 5 shows the proposed layout of the activities proposed under this modification. Plan details of the proposal form **Annexure 2** to this EA.

The various elements of the proposed modification will be accommodated on the former Paper Mill site as per the following:

External storage for plant and equipment

Two areas for the proposed external storage of plant and equipment are located to the immediate east and south-east of the existing former Paper Mill factory.

The area to the east of the factory is L-shaped and comprises an area of 2,100 m².

The area to the south-east of the existing factory comprises an area of 4,400 m².

These areas are shown in light blue in **Figure 5**.

Proposed storage of syrup

Seven (7) existing storage tanks with a total capacity of 12 ML may be used for the storage of syrups manufactured at the factory site. The existing tanks to be used are coloured in dark blue in **Figure 5**.

Proposed overflow shipping container storage

An area of 1,750 m² has been set aside for overflow storage for shipping containers. This area, shown in orange in **Figure 5**, is an irregular shaped area comprising 1750 m².

External storage for the laydown of plant and equipment, to be used in approved Shoalhaven Starches projects, and for temporary shipping container storage.

Five separate areas are proposed for the external laydown area for plant and material to be used in the construction of approved Shoalhaven Starches projects and for the temporary storage of shipping containers.

These areas, which are coloured pink in **Figure 5**, are all irregularly shaped and will comprises the following characteristics:

Storage Area	Area in m²
1	2,300
2	7,300
3	2,400
4	2,300
5	2,470

Internal storage for finished products and engineering plant

Existing buildings on site highlighted in red in **Figure 5** will be utilised for the storage of finished product and engineering plant.

Offices

Existing buildings located in the northern part of the site will be used for offices. These buildings area highlighted in yellow.

Workshop

A workshop for the maintenance of plant and equipment will be located in an existing building on the paper mill site. This area is shown in black in **Figure 5**

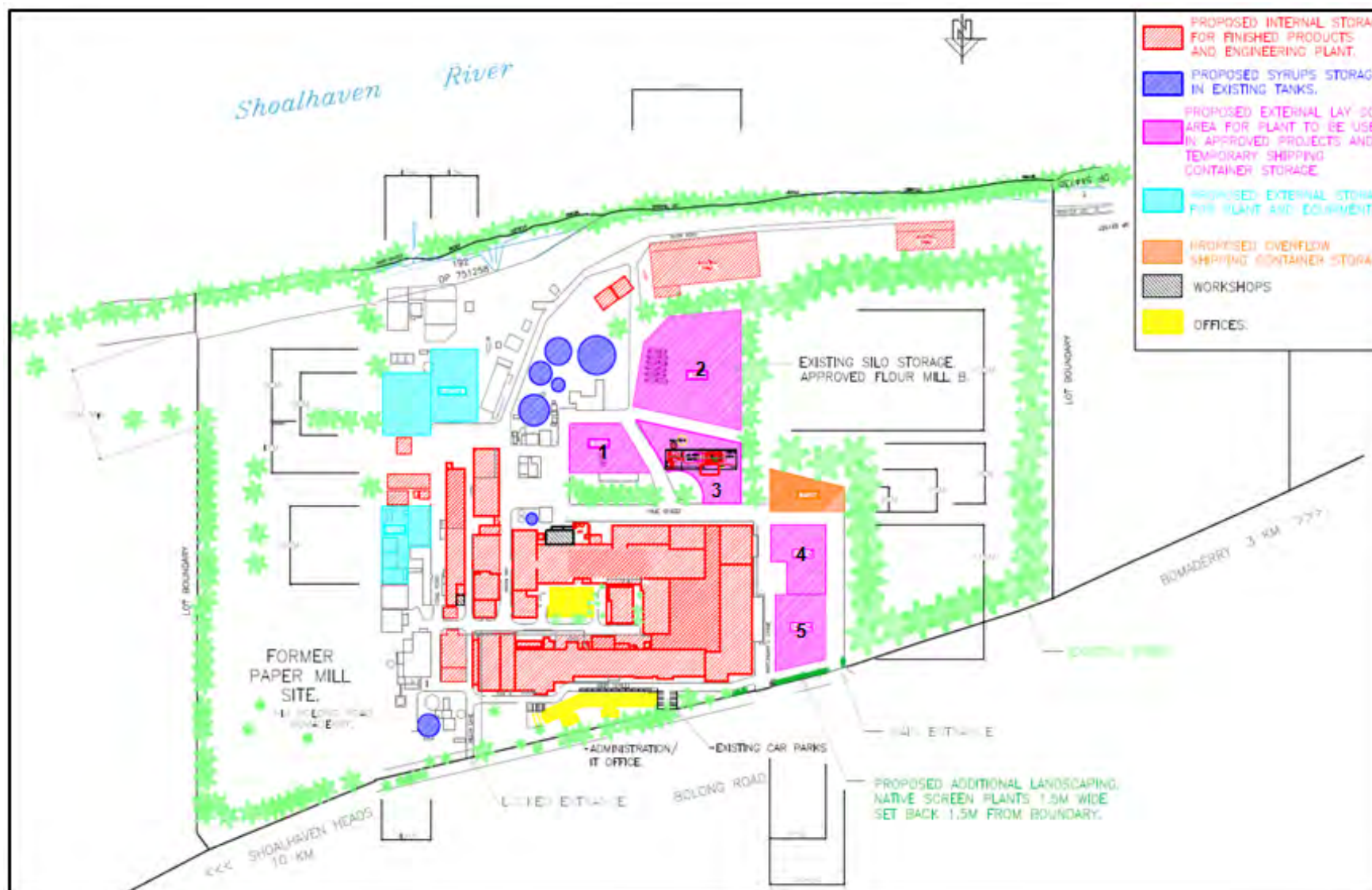


Figure 5: Site plan of Paper Mill Site under proposed Modification.

6.0 CONSULTATION

The preparation of this Environmental Assessment has been undertaken following consultation with relevant Government agencies, including:

- The Department of Planning and Environment;
- The NSW EPA;
- NSW Office of Water; and
- Shoalhaven City Council;

Cowman Stoddart submitted a scoping submission to the Department of Planning & Environment by letter dated 6th September 2017 on behalf of the proponent with respect to this proposal seeking the Department's requirements for the preparation of this EA. The Department issued their requirements by email dated 28th September 2017 and in summary noted that the issues detailed in the scoping submission were sufficient in terms of meeting the requirements for the EA. A copy of the Department's requirements is contained in **Annexure 1** to this EA.

Consultation with Shoalhaven City Council, the EPA and the NSW Office of Water was also undertaken by email dated 6th September 2017. No response has been received to date from either the EPA or NSW Office of Water.

It is noted that correspondence between the EPA and acoustic consultant for this EA (Harwood Acoustics) was undertaken in relation to the new Noise Policy and implications for the proposed use of the Paper Mill Site and existing Environmental license for Shoalhaven Starches. This is further discussed in Section 8.1.

A response from Shoalhaven City Council was received by email dated 3rd November 2017 and is detailed below in addition to also being included in **Annexure 1** to this EA.

Department of Planning & Environment

As outlined above our firm have consulted with staff from the Department of Planning & Environment with respect to this proposal. The following is a summary of the matters confirmed by the Department to be addressed in this EA (refer **Table 3**).

Table 3
Department of Planning & Environment SEARs

DoPE Issue	Comments
Noise	Refer Section 8.1 of EA.
Flooding	Refer Section 8.2 of EA.
Traffic and access	Refer Section 8.5 of EA.
Riverbank Stability	Refer Section 8.5 of EA.
Identification of the land parcels that the proposed modification is seeking to include in project approval 06_0228	Land Parcels identified within Section 2.0 of this EA

Shoalhaven City Council

The following matters have been raised by Shoalhaven City Council as matters that should be addressed in the EA (refer **Table 4**):

Table 4
Issues Raised by Shoalhaven City Council

SCC Issue	Comments
<i>Traffic and Transport Comments and/or Requirements:</i>	
<p>1. A Traffic Impact Assessment (TIA) is required and should include an analysis of the following:</p> <ul style="list-style-type: none"> a) Consistency with current traffic and transport requirements associated with other approved and pending Modifications; b) A parking analysis to ensure that sufficient parking/hard storage is provided on site to cater for all intended uses, including office and other staff uses, storage of shipping containers and storage of other plant and materials; c) The TIA should also identify what changes there will be, if any, to the number, frequency, length and times of trains as a result of this proposal; d) The TIA should review current and proposed traffic impacts at the access point, how these conditions may have changed since the Paper Mill provided the current right and left turn treatments on Bolong Road, and review the adequacy of the current treatments against AUSTROADS guidelines, noting Council's view that the Highway upgrades are unlikely to significantly change traffic volumes on Bolong Road; and 	<p>A Traffic Impact Assessment has been prepared by ARC Traffic and Transport which addresses the matters raised by Council.</p> <p>Refer Section 8.5 of EA. and Annexure 4</p>

Table 4 (continued)

SCC Issue	Comments
e) <i>In reviewing the proposed traffic movements at the access point, the TIA should examine the likely traffic movements outside of daylight hours and review adequacy against AS1158 for lighting improvements at the access.</i>	
Environmental Health Comments and or Requirements:	
<p>2. <i>A Noise Impact Assessment is required with regard to the use of noise generating machinery and equipment.</i></p> <p>3. <i>As no excavation works appear to be proposed, a Site Contamination Assessment will not be required.</i></p> <p>4. <i>With regard to the storage of DCS, the licence that used to be associated with this site was surrendered when the Paper Mill closed and final works were conducted to remediate the site as per the licence conditions.</i> <i>Pending comments from the Environmental Protection Agency (EPA), consideration should be given to the possibility that the storage of the DCS at this site will come under (i.e. storage of product made at their existing plant).</i> <i>In the case that the EPA does not consider the storage of the DCS at this site an extension of the existing licence, a plan of the proposed storage area and management of this area should be submitted.</i></p>	<p>The EA is supported by a Noise Impact Assessment prepared by Harwood Acoustics. Refer Section 8.1 and Annexure 3 of EA.</p> <p>Noted</p> <p>This application represents a modification of operations conducted at the Shoalhaven Starches Factory site – whereby Syrup produced under current approvals will be stored with existing tanks located on the former Paper Mill site. The storage of the DCS will be undertaken in accordance with the existing licence for Shoalhaven Starches</p>
Flooding Comments and or Requirements:	
5. <i>This site is categorised as high hazard floodway and the proposal is located predominantly at high hazard floodway including high hazard flood storage. A detailed flood assessment report is required on how the proposal will achieve all relevant objectives, performance criteria and/or acceptable solutions of Shoalhaven Development Control Plan 2014, as prescribed in Section 5.1 and 5.2 (if filling is proposed) of Chapter G9. Particular attention is required to the change of land use (if any) as the proposal involves use of an existing facility.</i>	The EA is supported by a Flood Compliance Report prepared by WMAwater which addresses the issues raised by Council. Refer Section 8.2. and Annexure 5 of EA.

Table 4 (continued)

SCC Issue	Comments
<p>6. <i>Given the proposed riverbank stability works adjacent to Shoalhaven River, the following will need to be submitted:</i></p> <p>a) <i>Plans confirming the location and detailed design of stabilisation works;</i></p>	<p>No riverbank stability works are proposed as part of this modification. Shoalhaven Starches are undertaking riverbank stability works adjacent to the internal railway on Lot 6 DP 621040. This is a separate to this proposal. A Riverbank Stability Assessment for this proposal has been prepared by GHD for this application. GHD found that the proposed modification will not impact on the stability of the northern bank of the Shoalhaven River.</p>
<p>b) <i>The flood assessment report with:</i></p> <p>i) <i>A hydraulic impact assessment report to prove that the proposal will not increase flood hazard or flood damage to other properties or adversely affect the flood behaviour for a 5% AEP up to a 1% AEP flood event; and</i></p>	<p>Flood Assessment includes hydraulic impact assessment. See Annexure 5 and Section 8.2 the EA.</p>
<p>ii) <i>An appropriate consulting engineers report for earthworks (if earthwork is proposed) with a length of more than 20m and that these earthworks will not increase flood hazard, flood damage or adversely affect other properties for a 5% AEP up to the PMF scenario.</i></p>	<p>N/A – No earthworks are proposed.</p>
<p>c) <i>An Acid Sulfate Soils (ASS) Management Plan.</i></p>	<p>N/A – not required as no earthworks proposed.</p>
Shoalhaven Water Comments and or Requirements:	
<p>7. <i>Only domestic waste from the administrative/office activities are to be disposed of at the Bomaderry Wastewater Treatment Plant (via septic pump out). Any industrial trade waste from the proposed mechanical activity, or any other type of activity, is to be separated and taken to the Manildra Wastewater Treatment Plant.</i></p>	<p>Any industrial trade waste generated from the proposed mechanical activity will be separated and taken to the Manildra Wastewater Treatment Plant</p>
Building Comments/Requirements:	
<p>8. <i>It is assumed that the application will be referred to NSW Fire & Rescue for comment.</i></p>	<p>The Paper Mill Site has been maintained fully operational for all fire systems as per AS1851-2005 for all buildings.</p>

7.0 RISK ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACTS

The purpose of this section of the EA is to provide a risk assessment of the potential environmental impacts associated with the project. This section (**Table 5**) compares the potential impacts from the proposed modification against the approved project. The comparison uses the key environmental impacts assessed in the EA and summarises the relative change in environmental impacts associated with the proposed modification.

Table 5
Risk Assessment

Issue	Relative Change in Environmental Impact	Additional Management or Mitigation Measures Required	Significance of Issue with this Modification Proposal
<i>Air Quality (including Odour) Assessment</i>	One of the primary issues that was addressed in the original EA for the Shoalhaven Starches Expansion Project concerned the need for a comprehensive odour assessment and reduction as part of the project.	No specific mitigation measures or design considerations required in relation to Air Quality	Air quality is not considered to be a key issue arising from this modification application. This Modification Application does not involve any new processes or production of goods. Neither the Department of Planning and Environment, nor Shoalhaven Council, identified Air Quality (or Odour impacts) as a key issue associated with this modification proposal.
<i>Greenhouse Gas Emissions</i>	Greenhouse gas emissions from the modification proposal would be predominantly associated with the electrical energy required for the operation of the plant, equipment and lighting. Given the modification is primarily for the storage and not the use of plant any greenhouse emission is expected to be minimal	No additional management or mitigation measures proposed.	Not a key issue.
<i>Wastewater Treatment</i>	<p>Water Discharges</p> <p>The Shoalhaven Starches Factory and Environmental Farm are licensed premises under the Protection of the Environment Operations Act. Wastewater discharges from the site are licensed by the DEC (EPL 883).</p> <p>The plant has a licensed outfall into the Shoalhaven River. The outfall point is a 50 cm diameter metal pipe discharging at the end of an existing jetty. It also has a cooling water discharge comprising a 50 cm diameter pipe which discharges onto a gabion spillway.</p>	No additional management or mitigation measures proposed.	Not a key issue.

Table 5 (continued)

<i>Issue</i>	<i>Relative Change in Environmental Impact</i>	<i>Additional Management or Mitigation Measures Required</i>	<i>Significance of Issue with this Modification Proposal</i>
<i>Wastewater Treatment (continued)</i>	<p>Under the terms of the Company's EPL water waste streams associated with the plant include:</p> <ul style="list-style-type: none"> • river water passed through the boiler condensers and the primary side of the heat exchangers; • boiler water treatment plant regeneration waters; and • pH adjusted glucose plant ion exchange unit regeneration waters. <p>All these must be discharged from the cooling water discharges.</p> <p>The limiting conditions in relation to these discharges include:</p> <ul style="list-style-type: none"> • The volume of water discharged from the cooling water discharges must not exceed 100,000 kilolitres per day. • The waste waters discharged at both points shall not exceed a temperature of 32°C. <p>This Modification Proposal will not involve any changes to these discharges waters.</p>		
<i>Site Stormwater Management</i>	<p><i>Existing Site Stormwater Management System</i></p> <p>Shoalhaven Starches existing site stormwater management system is divided into three zones. The zones are:</p>		

Table 5 (continued)

<i>Issue</i>	<i>Relative Change in Environmental Impact</i>	<i>Additional Management or Mitigation Measures Required</i>	<i>Significance of Issue with this Modification Proposal</i>
<i>Site Stormwater Management (continued)</i>	<ul style="list-style-type: none"> • eastern portion of the site – all site stormwater is collected and pumped to the WWTP. During heavy rainfall events stormwater is passed through a first flush pit to remove gross solids and pollutants prior to discharge to the Shoalhaven River; • central portion of the site – all site stormwater is collected in pits and drainage channels and conveyed to the Environmental Farm WWTP. No stormwater from this zone is discharged to the Shoalhaven River; and • the Western portion of the site – all stormwater is collected and passed through a first flush system prior to discharge to the Shoalhaven River. <p>This Modification Proposal will not involve any changes to the stormwater site management of the Shoalhaven Starches site.</p> <p>No additional buildings will be constructed for this modification. External storage areas will be located in existing hardstand areas. It is not expected that the stormwater arrangements for the Paper Mill Site will be significantly altered under this modification.</p>	No additional management or mitigation measures proposed.	Not a key issue
<i>Effluent Irrigation and Storage</i>	<p>This proposal will not change the total flour processed on the Shoalhaven Starches. Consequently, wastewater volumes will remain unchanged.</p> <p>The treatment and management of wastewater from the factory operation is therefore not envisaged to be a key issue that will need consideration as part of the Environmental Assessment.</p> <p>No change in environmental impacts from that originally identified in EA.</p>	No additional management or mitigation measures proposed.	Not a key issue.

Table 5 (continued)

<i>Issue</i>	<i>Relative Change in Environmental Impact</i>	<i>Additional Management or Mitigation Measures Required</i>	<i>Significance of Issue with this Modification Proposal</i>
<i>Site Contamination and Acid Sulphate Soils</i>	<p>Whilst the subject site is identified as potentially containing acid sulphate soils the proposal does not seek to undertake any excavation works which may expose such soils. As such it is considered an investigation will not need to be undertaken to determine the existence (or otherwise) of acid sulphate soils nor will an Acid Sulphate Soils Management Plan be required.</p> <p>Similarly, as the proposal does not seek to undertake any excavation works it is considered that a Phase 1 Site Contamination Assessment will not need to be undertaken for the development site in accordance with the provisions of the <i>State Environmental Planning Policy No. 55 – Remediation of Land</i>.</p>	No additional management or mitigation measures proposed.	Not a key issue.
<i>Riverbank Stability</i>	<p>GHD have been engaged by Shoalhaven Starches to undertake a Riverbank Stability Assessment with respect to this Modification Proposal. A copy of GHD's assessment is included as Annexure 6 to this EA.</p> <p>This report addresses the possible the impact that the proposed works has on riverbank stability given the proximity of works associated with this development to the Shoalhaven River.</p> <p>GHD conclude that the proposed storage and redevelopment areas are unlikely to influence the stability of the riverbank.</p>	<p>The Riverbank Assessment prepared by GHD makes the following recommendations in relation to this modification proposal:</p> <ul style="list-style-type: none"> • a clear distance of 11.5 m away from the riverbank crest at all locations is maintained for long term storage. • short term lightly loaded storage (within the clear distance of 11.5 m and to the north of the fence line is acceptable. • the southern limit of the storage area is off set to the north of the existing fence line to maintain the required setback of 11.5 m from crest of bank. • existing vegetation over the riverbank be maintained and managed, and that the rock protection of the toe of the bank be repaired if damaged by flooding. 	Riverbank stability impacts are further addressed in Section 8.4 of this EA.

Table 5 (continued)

<i>Issue</i>	<i>Relative Change in Environmental Impact</i>	<i>Additional Management or Mitigation Measures Required</i>	<i>Significance of Issue with this Modification Proposal</i>
<i>Noise (continued)</i>	<p>The EA is supported by a Noise Impact Assessment prepared by Harwood Acoustics Pty Ltd. Shoalhaven Starches are licensed under the POEOP Act (Environment Protection Licence No. 883) which sets noise limits for the operation of the overall Starches factory complex. However, the activities to be undertaken at the former Paper Mill Site will not be scheduled under the licence (as advised to HA by the EPA). Consequently, this noise assessment is carried out in accordance with the NSW EPA's Noise Policy for Industry 2017 (the Policy) which replaced the Industrial Noise Policy 2000 in October 2017.</p> <p>A copy of the Noise Impact Assessment is included in Annexure 3 to this EA. Noise Impacts are further addressed in Section 8.2 of this EA.</p> <p>Harwood Acoustics conclude that the noise emission from the modification proposal is within the intrusiveness noise trigger levels derived from the NSW EPA's Noise Policy for Industry 2017 at all residential receptor locations without the need for mitigation measures other than the replacement of tonal reversing alarms.</p>	<p>The Noise Impact Assessment prepared by Harwood Acoustics makes the following recommendations in relation to this modification proposal:</p> <ul style="list-style-type: none"> • Tonal reversing alarms on all items of mobile plant should be replaced with broadband alarms to ensure that noise emission does not exhibit tonal characteristics. 	Noise impacts are further addressed in Section 8.2 of this EA
<i>Transport & Traffic</i>	<p>The SEARs for this project identified that a traffic assessment is required to be undertaken in relation to this proposed modification. The EA is supported by a Traffic Impact Assessment prepared by Anton Reisch Consulting (ARC) (Annexure 4).</p> <p>ARC has concluded that the Modification would have no significant impact on the local traffic environment and is acceptable in regard to access, traffic and parking considerations.</p> <p>In summary:</p>	<p>The Traffic Assessment prepared by ARC states no additional management or mitigation measures are proposed but notes all vehicle movements to or from the Mill Site are expected to occur during daylight hours. ARC advise should vehicles movements outside of daylight hours be proposed in the future, a review of lighting requirements will be required.</p>	<p>This issue has been recognised by both the Department of Planning and Environment and Shoalhaven Council as a key issue.</p> <p>Traffic issues are further addressed in Section 8.5 of this EA.</p>

Table 5 (continued)

<i>Issue</i>	<i>Relative Change in Environmental Impact</i>	<i>Additional Management or Mitigation Measures Required</i>	<i>Significance of Issue with this Modification Proposal</i>
<i>Traffic & Transport (continued)</i>	<ul style="list-style-type: none"> • The Modification will utilise the existing auxiliary intersection infrastructure at the Bolong Road access driveways, and there is significant existing on-site access infrastructure for truck access to all parts of the Mill Site. Security gates are located well away from Bolong Road to ensure that on-site queueing would not extend to Bolong Road. • The Modification would generate significantly fewer trips to the Mill Site than previous generated by the Paper Mill • The Modification would not generate any additional trips over those approved under the SSEP Approval. • All key intersections along Bolong Road will continue to operate at good Levels of Service through 2027 even further to consideration of higher than forecast through flows in Bolong Road, and would be appropriately provided for by the significant existing auxiliary infrastructure at the Bolong Road & Mill Site intersection, • Existing on-site parking is in excess of the peak staff parking demand and located in close proximity to the key staff buildings. • On-site hardstand storage areas provide significant capacity, and there is no information to suggest that these areas would not provide fully for the storage demands of the Mill Site. • The Modification would have no bearing on current approved Modifications across the broader Starches site. • The Modification would have no bearing on existing approved train operations. <p>All vehicle movements to or from the Mill Site are expected to occur during daylight hours.</p>		

Table 5 (continued)

<i>Issue</i>	<i>Relative Change in Environmental Impact</i>	<i>Additional Management or Mitigation Measures Required</i>	<i>Significance of Issue with this Modification Proposal</i>
<i>Hazards</i>	<p>The SEARs for this project have indicated that a Preliminary Hazard Analysis (PHA) is not required to be undertaken in relation to this proposed modification.</p> <p>Having regard to SEPP 33, Shoalhaven Starches are of the view that the proposal should not be considered potentially hazardous. Therefore, a PHA is unnecessary for this project. This is based upon the following:</p> <ul style="list-style-type: none"> • The DC syrup is a water based material and non-hazardous, ie. it is not combustible or toxic. • The dried product is to be stored in bags only. The bags are to be filled on the Shoalhaven Starches factory site and then transported to the former Paper Mill site for storage prior to being transported to the market. As the starch and gluten will remain within the sealed bags then the risk of a dust explosion is negligible. • Starch is not defined as a combustible solid (it will not support combustion). Gluten may be combustible at high temperatures. That is, both products are combustible solids. SEPP 33 does not require a PHA for combustible liquids and correspondingly a PHA is not deemed necessary for combustible food products. • The former Paper Mill site has been maintained fully operational for all fire systems as per AS1851-2005 for all buildings. <p>Given the above circumstances, it is Shoalhaven Starches view that this proposal should not be subject to the provisions of SEPP No. 33 – Offensive & Hazardous Industry. A Preliminary Hazard Analysis has therefore not been prepared in support of this EA.</p>	No additional management or mitigation measures proposed.	<p>This issue has not been identified as a Key Issue.</p> <p>A PHA is not required.</p>

Table 5 (continued)

Issue	Relative Change in Environmental Impact	Additional Management or Mitigation Measures Required	Significance of Issue with this Modification Proposal
<i>Flooding</i>	The EA is supported by a Flood Compliance Report prepared by WMA Water (Annexure 5). This assessment has detailed the potential impacts that the proposed works will have on flood waters within the locality, and examines measures that are proposed to mitigate such impacts. WMA found the proposed works do not significantly increase the 1% AEP or PMF/Extreme event flood level on lands outside those owned by Shoalhaven Starches. Consequently, WMA state it was not necessary to consider the cumulative effects of the proposed works as there is no significant incremental increase as a result of these works.		A Flood Compliance Report has been prepared for the Modification Proposal by WMA Water Pty Ltd and forms Annexure 5 to this EA. Flooding is discussed further in Section 8.2 of this EA.
<i>Visual Impact</i>	The works associated with this modification, will be situated within an existing industrial development.	No additional management or mitigation measures proposed.	This is a key Issue identified by this EA. The visual impacts associated with this proposal are addressed in Section 8.3 of this EA.
<i>Flora and Fauna</i>	The proposed works associated with this modification will all be located within an existing factory site which is largely cleared of vegetation. Adverse impacts to flora and fauna are not expected as a result of this modification.	No additional management or mitigation measures proposed.	Not a key issue.
<i>Heritage and Archaeological Issues</i>	The proposed works associated with this modification will be located within an existing factory site. This site has not been identified as an area subject to either Aboriginal or European cultural heritage significance. The site is a highly disturbed site that has been used for industrial purposes for decades and no excavation is proposed. As such the proposal is not expected to disturb any Aboriginal objects or relics.	No additional management or mitigation measures proposed.	Not a key issue.

Following the above risk assessment of the potential environmental impacts of the proposed modification the key issues for assessment (and including that identified by the DGRs for this project) are:

- Noise impacts;
- Visual impact;
- Traffic;
- Flood; and
- Riverbank Stability

8.0 KEY ISSUES

8.1 NOISE IMPACTS

Existing Project Approval

Project Approval for Application No. 06_0228, provided by the Minister for Planning, dated January 2009, Schedule 2, Condition 2, 'Terms of Approval' states:

"The proponent shall carry out the project generally in accordance with the:

- a) EA and associated site plans (see Appendix 2);*
- b) Statement of commitments; and*
- c) Conditions of this approval."*

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.

Schedule 3, Conditions 11 to 14 inclusive of the Project Approval, also refer to noise emission and are summarised as follows:

Condition 11 relates to restricted hours of construction activities. Condition 12 reiterates the noise limits contained with Environment Protection Licence 883. Condition 13 requires that all feasible and reasonable noise mitigation measures must be implemented during the construction phase of the project. Condition 14 required the preparation of a noise management plan.

Environment Protection Licence 883

Shoalhaven Starches operates under Environment Protection Licence 883 issued by the NSW Office of Environment and Heritage.

Section L5 stipulates the Noise Limits of this licence. These noise limits apply to the overall operation of the Shoalhaven Starches complex.

NSW Environment Protection Authority Advice

This Modification Application is supported by a Noise Impact Assessment prepared by Harwood Acoustics Pty Ltd (HA). A copy of the Noise Impact Assessment, prepared by Harwood Acoustics, forms **Annexure 3** to this EA. This section of the EA is based upon the findings of this assessment.

Harwood Acoustics state that advice has been received from the NSW EPA that the activities undertaken at the subject site will not be scheduled under Shoalhaven Starches' existing Environment Protection Licence 883. Consequently, this Environmental Noise Impact Assessment is to be carried out in accordance with current guidelines.

The area surrounding the site is a mix of industrial, rural and residential properties with the nearest residences located toward the east along Bolong Road, north-west on Hanigans Lane, south west on Pig (Burruga) Island and further south in Terara.

The nearest residential receptors (refer **Figure 6**) are as follows:

- R1 – 390 Bolong Road, Bomaderry, approximately 570 metres to the south-east;
- R2 – Pig (Burruga) Island, approximately 750 metres to the south-west;
- R3 – 39 Hanigans Lane, Bomaderry approximately 760 metres to the north-west;
- R4 – 1 Bryant Street, Terara approximately 1200 metres to the south.



Figure 6: Location of closest residential receptors to subject site (Harwood Acoustics).

8.1.1 Noise Criteria

NSW Environment Protection Authority Advice

The NSW EPA has advised that the activities undertaken at the subject site will not be scheduled under Shoalhaven Starches' existing Environment Protection Licence 883. Consequently, this Environmental Noise Impact Assessment has been carried out in accordance with the following guidelines.

NSW EPA's Noise Policy for Industry 2017

The NSW Environment Protection Authority (EPA) published the NSW Noise Policy for Industry in October 2017 (the Policy). The Policy replaced the Industrial Noise Policy (INP) 2000.

The Noise Policy for Industry is designed to assist industry and authorities ensure that potential noise impacts associated with industrial projects are managed effectively.

The purpose of the policy is to ensure noise impacts associated with particular industrial developments are evaluated and managed in a consistent and transparent manner. It provides noise levels for assessing the potential impact of noise from industry and includes a framework for considering feasible and reasonable noise mitigation measures.

Section 2 of the Noise Policy for Industry 2017 sets out the procedure used to determine the **project noise trigger levels** relevant to particular industrial development.

Harwood Acoustics advise the project noise trigger level provides a benchmark or objective for assessing a proposal or site. It is not intended for use as a mandatory requirement. The project noise trigger level is a level that, if exceeded, would indicate a potential noise impact on the community, and so 'trigger' a management response; for example, further investigation of mitigation measures.

The project noise trigger level, feasible and reasonable mitigation, and consideration of residual noise impacts are used together to assess noise impact and manage the noise from a proposal or site. It is the combination of these elements that is designed to ensure that acceptable noise outcomes are determined by decision makers.

The trigger level is tailored for each specific circumstance to take into account a range of factors that may affect the level of impact, including:

- the receiver's background noise environment;
- the time of day of the activity;
- the character of the noise;

- the type of receiver and nature of the area.

According to Harwood Acoustics, the scientific literature indicates that both the increase in noise level above background levels (that is, intrusiveness of a source), as well as the absolute level of noise are important factors in how a community will respond to noise from industrial sources. The project noise trigger level established in the Policy addresses each of these components of noise impact.

The project noise trigger level is the lower (that is, the more stringent) value of the project **intrusiveness noise level** and project **amenity noise level**.

Project Intrusiveness Noise Level

According to Harwood Acoustics, the intrusiveness of an industrial noise source may generally be considered acceptable if the level of noise from the source (represented by the **L_{Aeq} descriptor**), measured over a 15-minute period, does not exceed the background noise level by more than 5 dB when beyond a minimum threshold. This intrusiveness noise level seeks to limit the degree of change a new noise source introduces to an existing environment.

Harwood Acoustics indicate that to account for the temporal variation of background noise levels, the method outlined in Fact Sheet A is required for determining the background noise level or rating background noise level (RBL) to be used in the assessment. The outcome of this approach aims to ensure that the intrusiveness noise level is being met for at least 90% of the time periods over which annoyance reactions can occur (taken to be periods of 15 minutes).

The intrusiveness noise level is determined as follows:

$$L_{Aeq, 15 \text{ minute}} = \text{rating background noise level} + 5 \text{ dB}$$

where:

L_{Aeq, 15 minute} represents the equivalent continuous energy average A-weighted sound pressure level of the source over 15 minutes.

and:

Rating background represents the background level to be used for assessment purposes, as determined by the method outlined in Fact Sheets A and B.

According to Harwood Acoustics intrusiveness noise levels are not used directly as regulatory limits. They are used in combination with the amenity noise level to assess the potential impact of noise, assess reasonable and feasible mitigation options and subsequently determine achievable noise requirements. Minimum assumed RBLs are

applied in the Policy and these result in minimum intrusiveness noise levels. These are shown in Table 2.1 in the Policy and are replicated in **Table 6** below.

Table 6
Minimum assumed RBLs and project intrusive noise levels (EPA Table 2.1)

<i>Time of Day</i>	<i>Minimum Assumed Rating Background Level dBA</i>	<i>Minimum Project Intrusive Noise Level (L_{eq}, 15 minute, dBA)</i>
Day (7:00 am to 6:00 pm)	35	40
Evening (6:00 pm to 10:00 pm)	30	35
Night (10:00 pm to 7:00 am)	30	35

Amenity Noise Levels and Project Amenity Noise Levels

To limit continuing increases in noise levels from application of the intrusiveness level alone, the ambient noise levels within an area from all industrial noise sources combined should remain below the recommended amenity noise levels specified in Table 2.2 where feasible and reasonable (Table 2.2 is replicated in **Table 7** below).

The recommended amenity noise levels will protect against noise impacts such as speech interference, community annoyance and some sleep disturbance. The recommended amenity noise levels have been selected on the basis of studies that relate industrial noise to annoyance in communities (Miedema and Voss, 2004). They have been subjectively scaled to reflect the perceived differential expectations and ambient noise environments of rural, suburban and urban communities for residential receivers. They are based on protecting the majority of the community (90%) from being highly annoyed by industrial noise.

The recommended amenity noise levels represent the objective for total industrial noise at a receiver location, whereas the project amenity noise level represents the objective for noise from a single industrial development at a receiver location.

To ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a project amenity noise level applies for each new source of industrial noise as follows:

Project amenity noise level for industrial developments = recommended amenity noise level (Table 2.2) minus 5 dB.

Table 7
Amenity Noise Levels (EPA Table 2.2)

Receiver	Noise Amenity Area	Time of Day	<i>L</i>_{Aeq}, dBA
Residential	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45
Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks	See column 4	See column 4	5 dB(A) above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day
School classroom – internal	All	Noisiest 1-hour period when in use	35 (see notes for table)
Hospital ward	All	internal	Noisiest 1-hour
		external	Noisiest 1-hour
Place of worship – internal	All	When in use	40
Area specifically reserved for passive recreation (e.g. national park)	All	When in use	50
Active recreation area (e.g. school playground, golf course)	All	When in use	55
Commercial premises	All	When in use	65
Industrial premises	All	When in use	70
Industrial interface (applicable only to residential noise amenity areas)	All	All	Add 5 dB(A) to recommended noise amenity area

(see EPA Table 2.3 to determine which residential receiver category applies)

Notes:

The recommended amenity noise levels refer only to noise from industrial sources. However, they refer to noise from all such sources at the receiver location, and not only noise due to a specific project under consideration. The levels represent outdoor levels except where otherwise stated.

- Industrial interface – an area that is in close proximity to existing industrial premises and that extends out to a point where the existing industrial noise from the source has fallen by 5 dB or an area defined in a planning instrument. Beyond this region the amenity noise level for the applicable category applies. This category may be used only for existing situations (further explanation on how this category applies is outlined in Section 2.7).*

- *Commercial – commercial activities being undertaken in a planning zone that allows commercial land uses.*
- *Industrial – an area defined as an industrial zone on a local environment plan; for isolated residences within an industrial zone the industrial amenity level would usually apply.*
- *Time of day is defined as follows:*
 - *Day – 7 am to 6 pm Monday to Saturday or 8 am to 6 pm on Sundays and public holidays;*
 - *Evening – 6 pm to 10 pm;*
 - *Night – the remaining periods.*

The recommended amenity noise level from **Table 7** represents the **total** industrial noise level from all sources (new and proposed).

Measured Background Noise Levels

In order to establish the project specific intrusiveness noise level it is necessary to determine the background noise levels in the vicinity of all potentially affected residential receptors.

The background noise level is represented by the $L_{AF90, 15min}$ descriptor when undertaking short-term monitoring. The rating background noise level (as defined in Section A1.2 of the Policy) is the single-figure background noise level derived from monitoring over a representative period of time, typically one full week. The rating background noise level is used for assessment purposes.

The background noise levels to be measured are those that are present at the time of the noise assessment and without the subject development operating.

There are two procedures for determining background noise: the long-term method to be used at the planning and approval stage, and the short-term method for complaint and compliance assessment purposes.

In this instance the long-term method has been used by Harwood Acoustics and a noise logger was placed at 390 Bolong Road, Bomaderry shown as receptor R1 in **Figure 6**.

Harwood Acoustics measured background noise levels at receptor R1 between Thursday 23 November and Thursday 30 November 2017. According to Harwood Acoustics this location is considered representative of all residential receptors in the vicinity of the site.

The results of the background noise survey are summarised in **Table 8** below.

Table 8
Rating Background Levels – 390 Bolong Road, Bomaderry

<i>Time of Day</i>	<i>Rating Background Level (L_{90})</i>	<i>Existing Ambient Noise Levels (L_{eq})</i>
Day (7 am to 6 pm)	35 dBA	47 dBA
Evening (6 pm to 10 pm) Night (10 pm to 7 am)	37 dBA 34 dBA	49 dBA 42 dBA

The rating background level in the day is 35 dBA ($L_{90, 15 \text{ minute}}$) and this level is equal to the minimum assumed day time background noise level (see **Table 8**). As such this level is used to establish project specific intrusiveness trigger levels at all residential receptors in proximity to the site.

8.1.2 Project Specific Noise Goals

Harwood Acoustic advise the most relevant noise trigger level is as follows:

- All residential receptors
 - $(35 + 5 \text{ dB} =) \textbf{40 dBA}$ ($L_{eq, 15 \text{ minute}}$) during the day (between 7 am and 6 pm)

8.1.3 Source Noise Levels

The operation of a container forklift and truck movements associated with the use of site for storing plant, equipment and materials are the only sources of noise according to Harwood Acoustics.

Table 9 below provides a schedule of overall 'A' frequency weighted sound power levels, in decibels re: 1 pW, of noise sources associated with proposed modification.

Harwood Acoustics advise these are derived from previously measured noise levels taken at Shoalhaven Starches existing facility.

Table 9
L10 Sound Power Levels – Plant and Equipment

Description	$L_{eq, 15 \text{ minute}}$ Sound Power Level (dBA)
32 tonne forklift movement	104
Truck movement on site	100

8.1.4 Noise Level Predictions

For all outdoor noise sources, Harwood Acoustics has calculated the external noise level at each receptor.

Predicted noise levels at each receptor location are shown in **Table 10** below.

Table 10
Predicted Noise Levels at Receptor Locations

<i>Description</i>	<i>Predicted Noise Level $L_{eq, 15 \text{ minute}}$ (dBA) at Receptor Location</i>			
	<i>R1</i>	<i>R2</i>	<i>R3</i>	<i>R4</i>
Intrusiveness Noise Trigger Level	40	40	40	40
Truck and Forklift movements	31 – 36	29 – 34	25 – 30	24 – 29
Complies	Yes	Yes	Yes	Yes

Harwood Acoustic state the calculations and predictions in **Table 10** consider distance loss to each receptor as well as the following:

- *An adjustment for the forklift operating at full sound power at the closest location to any given receptor for 7.5 minutes in any given 15 minute period;*
- *An adjustment for the truck operating at full sound power at the closest location to any given receptor for 5 minutes in any given 15 minute period;*
- *Ground absorption to receptor R3 only.*

Harwood Acoustics note that even without the adjustments to duration of mobile plant operating at full sound power for a full 15 minutes, the intrusiveness noise trigger levels would still be met at each receptor location. The assumptions simply represent a realistic operational worst-case scenario.

It can be seen from the **Table 10** that the predicted noise levels at all residential receptor locations are below the intrusiveness noise trigger levels and are therefore acceptable, as long as the recommendations made in Section 6 of the Noise Impact Assessment are implemented and maintained.

8.1.5 Noise Mitigation Measures

Harwood Acoustics recommend that tonal reversing alarms on all items of mobile plant should be replaced with broadband alarms to ensure that noise emission does not exhibit tonal characteristics.

8.1.6 Conclusion

Harwood Acoustics have undertaken an assessment of the potential noise impact from the proposed use of the former Paper Mill Site by Shoalhaven Starches. Harwood Acoustics advise that the level of noise emission from the proposed use of the subject site is within the intrusiveness noise trigger levels derived from the NSW EPA's Noise Policy for Industry 2017 at all residential receptor locations without the need for mitigation measures (other than the use of broadband alarms on mobile plant).

8.2 FLOODING

The locality is identified by Shoalhaven City Council's Floodplain Management Study and Plan to be a High Hazard Floodway.

Table 11
Flood Levels

<i>Flood Event</i>	<i>Existing (m AHD)</i>	<i>Projected 2050</i>	<i>Projected 2100</i>
Flood Planning Level	Not Applicable	5.5 AHD	5.5 AHD
Probable Maximum Flood Level (PMF)	7.0 AHD	7.0 AHD	7.1 AHD
1% AEP (ie. 100 year)	4.9 AHD	5.0 AHD	5.0 AHD
2% AEP (ie. 50 year)	4.5 AHD	4.5 AHD	4.5 AHD
5% AEP (ie. 20 year)	3.9 AHD	3.9 AHD	3.9 AHD
10% AEP (ie. 10 year)	3.4 AHD	3.4 AHD	3.5 AHD
Velocity (1% AEP flood event)	3.5 m/s	3.5 m/s	3.5 m/s

The Modification Application is supported by a Flood Assessment detailing the potential impacts that the proposed works will have on flood waters within the locality. The Flood Assessment has been prepared by WMA Water Pty Ltd (WMA) and forms **Annexure 5** to this EA.

The former Paper Mill Site is inundated in the 1% Annual Exceedance Probability (AEP) flood event by floodwaters from the Shoalhaven River and the Flood assessment prepared by WMA Water assesses the implications of the proposed modification on flood levels, flows and velocities. This section of the EA is based upon the findings of this assessment.

8.2.1 Compliance with Chapter G9: Development of Flood Prone Land of the Shoalhaven Development Control Plan 2014.

WMA have assessed the proposed development against the provisions of Section 5.1 of Chapter G9. Compliance with those performance criteria relating to subdivision, excavation or fill have not been addressed in the flood assessment as the proposed development does not involve those elements.

Table 12 below, which has been reprinted from the Flood Assessment prepared by WMA, addresses the performance criteria of Section 5.1.

Table 12
Compliance against Performance Criteria (Section 5.1 of the SDCP)

<i>Performance Criteria</i>	<i>Response</i>
P1: Development or work on flood prone land will meet the following	
<i>The development will not increase the risk to life or safety of persons during a flood event on the development site and adjoining land</i>	Up to approximately 24 workers from Shoalhaven Starches will be on the site during business hours but there will be no workers on site at night. Thus, the proposed development will increase the number of workers from Shoalhaven Starches who may be subject to flood risk. The use of this site is further away from high ground than the existing site at 160 Bolong Road, thus rescue during a flood will be more hazardous. However, there are a large number of buildings on the site which have areas for safe refuge above even the PMF / Extreme event.
<i>The development or work will not unduly restrict the flow behaviour of floodwaters.</i>	Refer Hydraulic Impact Assessment below.
<i>The development or work will not unduly increase the level or flow of floodwaters or stormwater runoff on land in the vicinity.</i> <i>The development or work will not exacerbate the adverse consequences of floodwaters flowing on the land with regard to erosion, siltation and destruction of vegetation.</i>	The proposed development is within existing built up industrial land which is largely clear of vegetation. Due to there being no increase in building footprint and all runoff under existing and future conditions reaching the ground in nearly identical locations, the works will have no impact on erosion or siltation.
<i>The structural characteristics of any building or work that are the subject of the application are capable of withstanding flooding in accordance with the requirements of the Council.</i>	A separate structural report will be provided. (Note: structural report will be provided at the CC stage.)
<i>The development will not become unsafe during floods or result in moving debris that potentially threatens the safety of people or the integrity of structures.</i>	A separate structural report on the potential failure of existing buildings and stored equipment and product will be provided.
<i>Potential damage due to inundation of proposed buildings and structures is minimised.</i>	Inundation of the site and the existing buildings will damage unprotected product, stored goods and office plant. However, the syrup product stored in the existing containers are sealed and should suffer no damage due to inundation, unless the structure itself fails. Potentially there will be some damage to electrical and other components feeding the equipment. Damage to product and equipment are to be considered in an updated Shoalhaven Starches Flood Plan. Of importance is the potential risk from stored (either temporary or permanent) equipment being moved by floodwaters from the site. This issue will be addressed in the updated Shoalhaven Starches Flood Plan.

Table 12 (continued)

Performance Criteria	Response
<i>The development will not obstruct escape routes for both people and stock in the event of a flood.</i>	The works will not occupy escape routes or cause workers to become trapped.
<i>The development will not unduly increase dependency on emergency services.</i>	The works will increase the number of workers from Shoalhaven Starch who may be subject to flood risk. These issues will need to be examined in an updated Shoalhaven Starches Flood Plan.
<i>Interaction of flooding from all possible sources has been taken into account in assessing the proposed development against risks to life and property resulting from any adverse hydraulic impacts</i>	Refer Hydraulic Impact Assessment below.
<i>The development will not adversely affect the integrity of floodplains and floodways, including riparian vegetation, fluvial geomorphologic environmental processes and water quality.</i>	<p>The works will be on land designated as high hazard floodway in the 1% AEP event. The site is industrial land with limited existing vegetation and is beyond the influence of normal fluvial geomorphic processes. The works will have no impact on water quality.</p> <p>The siting of the proposed storage areas is shown in Appendix A (to limit storage areas to outside 75 m from the northern river bank) to ensure that the proposed storage areas are not in floodway areas (refer Hydraulic Impact Assessment below)</p>

8.2.2 Hydraulic Impact Assessment – Works within the Former Paper Mill Site

No additional buildings will be constructed on site or excavation undertaken and the only change in external land use activities are the proposed external lay down area and proposed external storage for plant and equipment.

The position of the proposed lay down / storage areas are partially surrounded by an extensive array of existing buildings / storage tanks. As such WMA advise the flow path of floodwaters from the Shoalhaven River over the river bank and towards Bolong Road through the Paper Mill Site is already significantly impeded but this will be increased with the proposed lay down / storage areas.

WMA state the construction of any works on the floodplain will cause a loss of temporary floodplain storage and a loss of hydraulic conveyance. The resulting increase in flood levels will depend upon the magnitude of these losses. Given that not all the proposed lay down / storage areas are solid structures and the floodplain storage area of the Shoalhaven River floodplain is of the order of 100 km² WMA advise the loss of temporary floodplain storage due to the proposed works is too small to be evaluated.

The loss of hydraulic conveyance depends on the extent of the restriction to a flow path caused by the works. In compliance with the provisions of Chapter G9, WMA have undertaken a hydraulic impact assessment of the site to determine the degree of loss of hydraulic conveyance and the resultant increase in flood levels.

Prior to construction of the Paper Mill plant in 1957 there would have been significant flow through the site during a flood. However, since then the construction of the plant has significantly blocked the flow path through the site.

The hydraulic effects (change in flood levels, flows or velocities) of the proposed works at the former Paper Mill Site were analysed by WMA using the TUFLOW hydraulic model established for the Shoalhaven Starches 2013 *Shoalhaven River Flood Study*. This model was calibrated to match the historical flood level data for the 1974, 1975, 1978 and 1988 floods and used to provide updated design flood levels for the Shoalhaven River downstream of Nowra.

The modelling process compares the peak flood levels in each grid cell for the existing and proposed scenarios. The existing scenario represents the floodplain as at the time of the WMA October 2015 Report Titled *Proposed Modification Application to Mp06-0228, Shoalhaven Starches Expansion Project, Relocation of Product Dryer, Flood Impact Assessment*. The proposed scenario reflects the floodplain but including the construction of the proposed development. Using the comparison between the *Existing* and *Proposed* scenarios WMA have produced flood impact maps for the 1% AEP and PMF events (see **Annexure 5** for flood impact maps).

More frequent events, smaller than the 1% AEP, have not been modelled as WMA advise the northern river bank of the Shoalhaven River is not overtopped to any significant extent until an event larger than the 5% AEP. Thus, WMA indicate in these small, more frequent events, there would be nil impact on peak flood levels. According to WMA events larger than the 1% AEP will occur but these events are obviously extremely rare and are not used for flood related planning determinations by Councils except when their failure has potential catastrophic consequences (such as dam failure).

None of the proposed laydown/storage areas associated with the proposed modification are located within 75 metres of the Shoalhaven riverbank. WMA advise that at the Paper Mill Site there are higher velocities as the flood flow crosses over the northern river bank into the extensive flood storage areas northwards. Beyond 70 m WMA state the land is flood storage rather than floodway and the proposed laydown/ storage areas would have nil effect on possible geomorphic processes within the river (ie. no impact on river bank stability).

The flood impact maps prepared by WMA show the proposed works slightly decrease the amount of floodwaters from entering the northern floodplain across the river bank. Thus, immediately south and east of the proposed works there is a slight increase in peak level in the 1% event. According to WMA this increase in level is largely within the confines of land owned by Shoalhaven Starches and the potential impact of the proposed works is much reduced as they are sheltered behind existing buildings and structures that already inhibit the flow path. In the Extreme / PMF event WMA state there is an increase in flood level of greater than 0.05 m to the immediate west (upstream) of the existing buildings and nil increase to the east (downstream).

8.2.3 Conclusion

WMA conclude the proposed works do not significantly increase the 1% AEP or PMF/Extreme event flood level on lands outside those owned by Shoalhaven Starches. Consequently, WMA state it was not necessary to consider the cumulative effects of the proposed works as there is no significant incremental increase as a result of these works. (The assessment of cumulative impacts was discussed in WMA's October 2015 Report Titled *Proposed Modification Application to MP06-0228, Shoalhaven Starches Expansion Project, Relocation of Product Dryer, Flood Impact Assessment.*)

8.3 VISUAL IMPACTS

8.3.1 The Scenic Character and Environment

The Former Paper Mill Site is located on Bolong Road, one of the main gateway entrances to the Nowra/Bomaderry urban areas, and a significant tourist route along this section of the South Coast. This area currently contains predominantly industrial land uses, although lands to the north have a rural character. These different land uses contrast with each other and result in a mixed visual character.

The rural areas, much of which comprises the Shoalhaven Starches Environmental Farm, are generally flat to gently undulating and planted with pasture grasses. These areas have a typical rural/agricultural character, common throughout the region. To the north and forming a background to the rural landscape are the timbered slopes of the Cambewarra escarpment.

The former Paper Mill complex is characterised by typical industrial structures with an overall bulk and scale that dominates the immediate locality. The factory complex, despite being partially screened by vegetation along Bolong Road and the Shoalhaven River visually dominates the locality. The overall complex is particularly exposed to view along Bolong Road. Some of the works associated with this proposal will be visible from along

Bolong Road although they will be situated within the broader industrial complex. This view reveals some of the internal structures within the site including storage tanks, car park and factory buildings. Overall the appearance of the site is typical of an industrial facility.

The proposal will involve not involve the construction of any new buildings. The main visual impact arising for the proposal will involve the use of external areas for the storage of plant, equipment and containers. Proposed external storage areas to the east of the existing plant are screened by vegetation and the existing factory complex. The primary area which will be visible is the proposed external storage area which utilises an existing hardstand area (the former car parking area of the paper mill). The visual impact of the proposed works will need to be taken into consideration in context of existing development on this site, and the setting of the site within the broader landscape.

The most relevant vantage points from where the overall factory site is visible would include:

Bolong Road – Bolong Road runs along the frontage of the site. Views of the factory are possible when travelling in both an easterly or westerly direction. Some attempts have been made to provide some tree planting along the boundaries to “soften” the appearance of the development. The existing building forms and structures are however clearly visible to motorists travelling along this stretch of Bolong Road.

Burruga (Pig) Island – Burruga Island is situated in the middle of the Shoalhaven River and provides the closest vantage point to the southern boundary of the site. The island however is privately owned and not accessible to the public. Vegetation screening along the riverbank adjacent to the site also reduces the visibility of the existing buildings and structures.

Bomaderry urban area – The existing plant is visible from a number of locations within the eastern outskirts of Bomaderry. Bomaderry is slightly elevated and some locations within the urban area do have glimpses of the site.

Terara – Distant views of the Plant are possible from a number of vantage points in and around the village of Terara on the southern bank of the River. The visual impact of the site however is reduced by distance, the intervening landform of Burruga (Pig) Island and the vegetated riverbanks. The proposed long term storage areas will be set back a minimum of 75 m from the northern bank of the Shoalhaven River.

Cambewarra Lookout – Cambewarra lookout is a popular tourist lookout providing panoramic views over the Shoalhaven floodplain and estuary. Shoalhaven Starches and other significant industrial sites along Bolong Road are visible from the lookout.

8.3.2 Visual Impact of Proposal

The proposed modifications to use the former Paper Mill Site in conjunction with the operations of the Shoalhaven starches factory operations does not involve the construction of any new buildings. The main visual impact arising for the proposal will involve the use of external areas for the storage of plant, equipment and containers. The proposed works associated with this modification are consistent with the character of development which currently exists on the site. The Paper Mill Site comprises a range of different buildings and building heights. Some of the works associated with this modification will utilise these existing structures whilst the proposed external storage of plant and containers will be located within the broader industrial complex. The proposed use of the former Paper Mill Site in conjunction with Shoalhaven Starches operations reflects a character and scale that is consistent with the existing former paper mill factory and the surrounding industrial development along Bolong Road.

The visual impact of these works from the identified vantage points (refer **Figure 7**) is described as follows:

Bolong Road

The existing factory site is clearly visible from Bolong Road, by vehicles approaching from the east, and along the frontage of the site refer (**Plates 1 and 2**).



Plate 1: Approaching site travelling from the east along Bolong Road

Whilst structures from the existing paper mill factory are visible when viewed from the eastern approach the facility is screened to some degree by existing vegetation.



Plate 2: Front of site from Bolong Road
(proposed landscape screen along this frontage).

The front of the factory and former parking area, which will be used for storage of plant and temporary shipping containers, is clearly visible from Bolong Road.

However, the proposed works associated with this modification are not out of context with the industrial facility in which they will be located. In addition, it is proposed to provide additional landscaping in the form of native plantings to provide a screen to this area (see plans **Annexure 2**).

Existing vegetation effectively screens the factory from the western approach with glimpses of the existing factory visible (refer **Plate 3**). No new construction works are associated with this modification. Works proposed in this modification are not visible from this approach.



Plate 3: View of former Paper Mill factory site travelling west along Bolong Road.

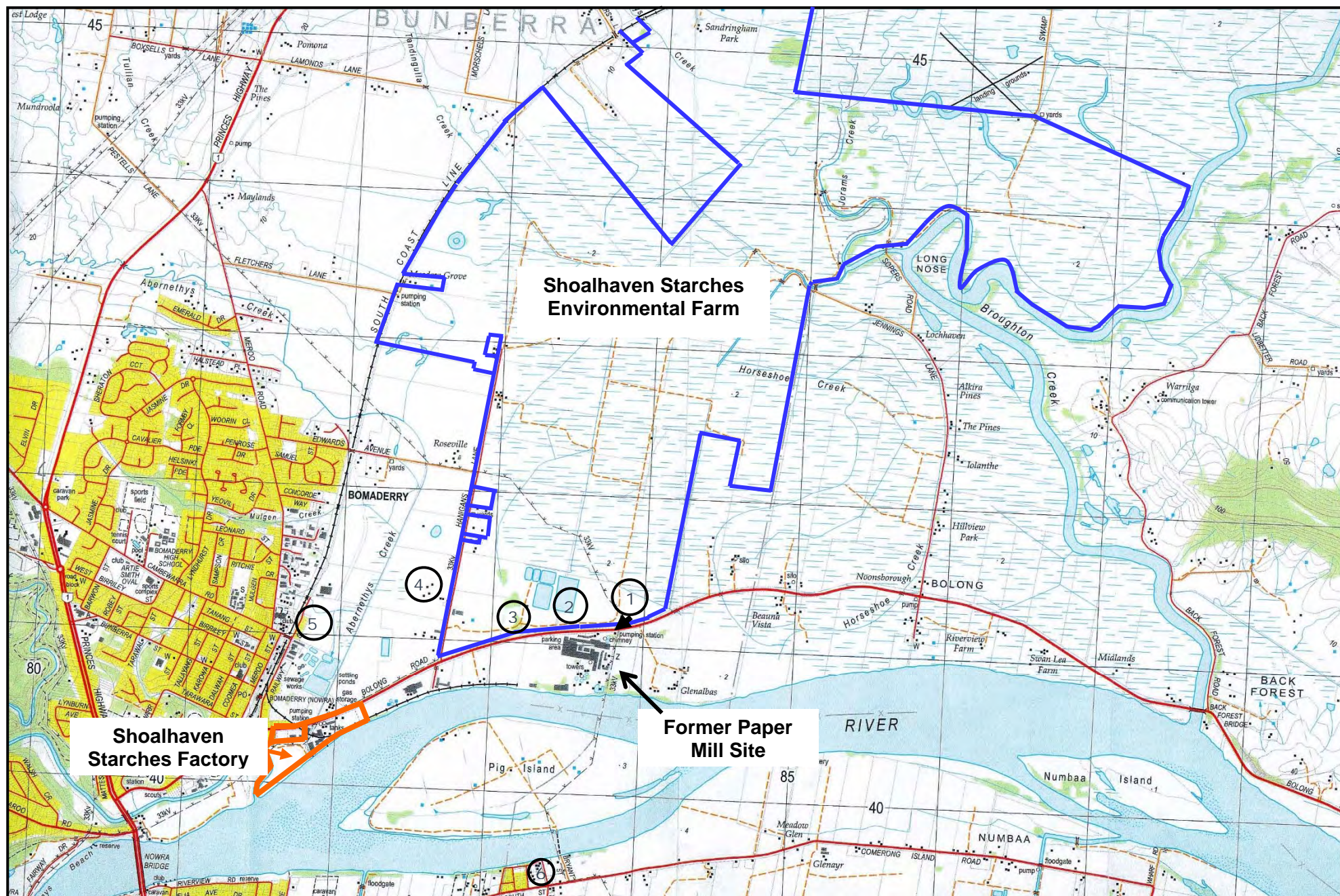


Figure 7: Vantage Points for Plates.

Hanigans Lane – Vantage Point 4

The existing Paper Mill Site is clearly visible from Hanigans Lane across the Shoalhaven Starches Environmental Farm (**Plate 4**). However, the existing parking area which will be used for storage of plant and temporary storage of containers is well screened by existing vegetation from this vantage point. It is proposed to provide additional landscaping along the front of the existing parking area which will further screen the proposed activities. This vantage point will not be adversely visually impacted by the works proposed in this Modification.



Plate 4: View of Paper Mill Site from Hanigans Lane



Plate 5: View of Paper Mill Site from Railway Street Bomaderry

Bomaderry Urban Area – Vantage Point 5

The township of Bomaderry is slightly elevated and some locations within this urban area have a distant view of the site (refer **Plate 5**).

The existing paper mill factory is partially visible from this vantage point. However due to the intervening terrain, distance and obstruction by existing vegetation the visual impact of the existing site is insignificant. The proposed storage areas are screened by existing vegetation. It is not expected the proposed works will adversely impact visual amenity or scenic impact from this vantage point.

Terara – Vantage Point 6

The village of Terara is approximately 1.2 kilometres from the factory. The view of the former paper mill factory site as seen from the banks of the Shoalhaven River adjacent to the village of Terara is shown in **Plate 6**.

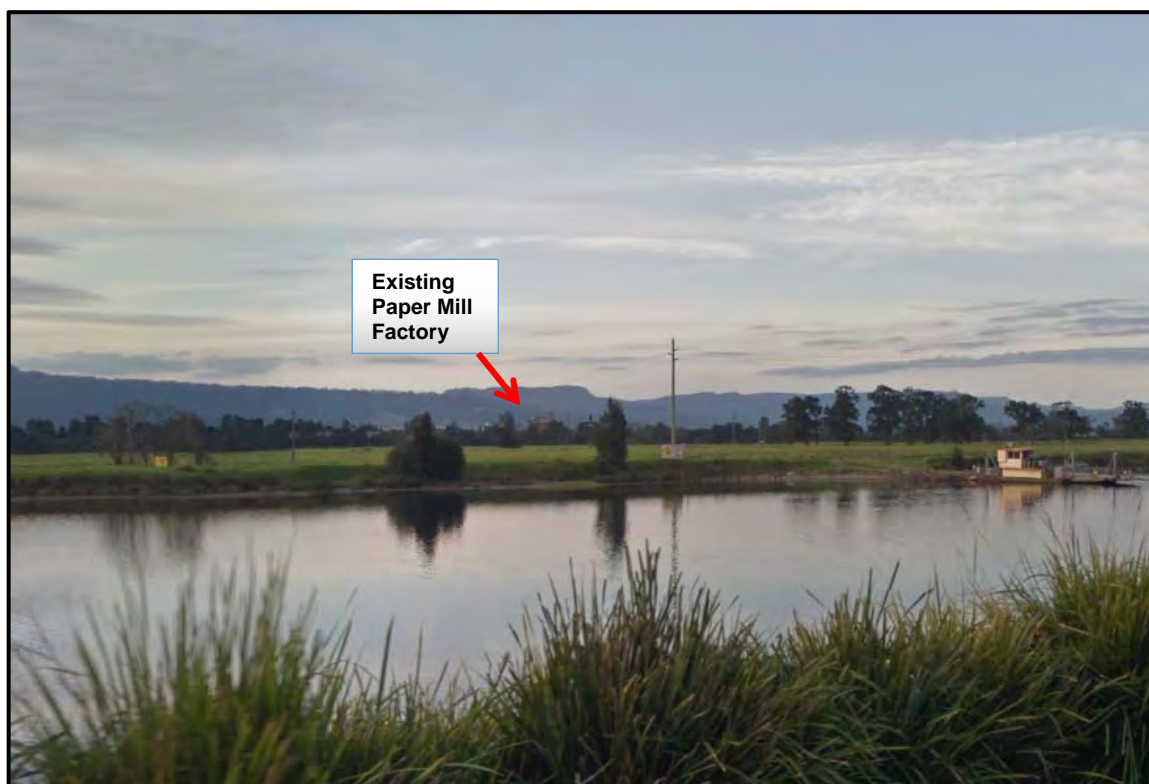


Plate 6: View of former Paper Mill factory site from Berry Street in the village of Terara.

The visual impact of the site however is reduced by distance, the intervening landform of Burruga (Pig) Island and the vegetated riverbanks. Riverside vegetation along the northern bank considerably screens the Paper Mill Site. Much of the proposed activities associated with this proposal will be situated within the existing buildings and as such will not add to the visual impact of the site. The nearest proposed external storage areas will be located a minimum of 75 metres from the banks of the Shoalhaven River and as such are unlikely to be clearly visible from this vantage point. The proposed modification will not be out of context in terms of the existing factory development when viewed from this vantage point. The proposed works are not considered to adversely impact visual amenity or scenic impact from this location.

Cambewarra Lookout

Cambewarra Lookout is situated about 7 km to the northwest of the site. Views from the lookout are from an elevation over 620 m ASL, and encompass the Shoalhaven River floodplain and the coast including Jervis Bay. Whilst the Bomaderry industrial area is visible from this vantage point, due to scale of the view, it would be extremely difficult to make out the works associated with the project from this vantage point.

Overall it is considered that the proposed works will not create a significant adverse visual impact due, principally, to the fact much of the proposed activities will be undertaken within the existing buildings on the site and as such will not add to the visual impact of the site.

The proposed external storage areas are screened by vegetation on the southern and western boundaries and are sited within the existing industrial complex.

8.4 RIVERBANK STABILITY

A Riverbank Stability Assessment for the various existing structures and proposed storage areas near the northern bank of the Shoalhaven River has been prepared by GHD Pty Ltd (GHD) (**Annexure 6**).

In preparing this assessment GHD undertook the following:

- Desktop study including a review of existing subsurface information from previous test holes in the vicinity of the proposed structures;
- Site visit by a principal geotechnical engineer to observe the existing surface conditions over the sites of the proposed storage within existing structures and external storage areas. The general surrounds including the condition of the riverbank were also observed; and
- Numerical modelling and assessment of the effects of the proposed modifications on the riverbank stability taking into account both existing loads and additional loads applied by the proposed modification/s' and

The objective of this assessment is to provide geotechnical advice in relation to the proximity of the existing structures and proposed storage areas proposed to the northern bank of the Shoalhaven River and potential effects of the structures/proposed storage areas on the stability of the river bank.

8.4.1 Site Observations

A GHD Principal Geotechnical Engineer undertook a site walkover for this assessment on 19 October 2017. The walkover assessment was conducted with Manildra employees familiar with the site, Mr John Studdert and Mr John Bishop.

According to GHD the riverbank is typically about 4 m to 5 m above the low tide level and the bank has been graded to about 1H:1V with some locally steeper areas near the toe and locally higher on the bank where erosion has occurred. GHD note the bank is also locally steeper at the eastern end of the development area where the bank geometry changes near a drainage outlet structure. GHD indicates the toe of the bank is partially protected by large rocks positioned along the shoreline and advise that the riverbank erosion is likely to be the result of long term tidal and wave effects as well as raised river levels during flood events.

GHD note the ground surface at the top of the bank is gently sloping to near level to the fence with only a gentle fall towards the river. Beyond the fence, GHD advise, the surface

remains near level with some slight undulations. Vegetation along the riverbank mainly comprise scattered medium size trees, thick grass and weed cover. According to GHD, most of the trees were not showing any sign of distress, however a few trees have fallen into the river possibly due to previous erosion of the lower banks during raised river levels.

8.4.2 Local Geology and Hydrogeology

With reference to the 1:100,000 Kiama Soil Landscape Series Sheet (9028, First Edition), the site is located on Shoalhaven Soils. GHD indicates these soils are described as moderately deep prairie soils on levees, red earths and yellow and red podzolic soils on terraces and alluvial soils and gleyed podzolic soils on the floodplains.

With reference to the 1:250,000 Wollongong Geological Series Sheet (S1 56-9, First Edition) prepared by the NSW Department of Mines (1952) the site is likely to be underlain by Quaternary alluvium, gravel, swamp deposits and sand dunes.

8.4.3 Riverbank Stability Assessment

GHD advise that the northern riverbank of the Shoalhaven is partially protected from erosion by vegetation within a fenced riparian corridor. This corridor includes many established trees.

Some of the trees have occasionally fallen when the bank has been locally steepened by erosion and the undercutting of the toe, together with high winds. GHD advise that based on both their past and recent investigations along the Shoalhaven River bank in the vicinity of the Manildra Group properties, a number of riverbank failures have occurred. GHD indicate the majority of these riverbank failures are attributed to a progressive failure mechanism caused by a combination of river scour and internal erosion during a rapid drawdown situation following flooding (or high flows) in the river in recent years.

Assumed loading

Based on their site observations and discussion with Manildra, GHD have assumed the following loading scenarios:

- Existing buildings will likely be used for storage of:
 - bags of starch, approximately 1 tonne per bag, stacked to various levels;
 - storage tanks for the storage of syrups;
 - engineering plant and equipment; and
 - materials, plant and equipment will be placed on existing concrete slabs.

- External areas will likely be used for:
 - storage of shipping containers, maximum 30.5 tonne each when fully loaded and one level only, ie. not stacked;
 - lay down area for various plant and equipment (maximum weight assumed as 50 tonnes), with many having relatively lighter materials; and
 - the shipping storage containers, machinery, plant and materials are placed in a broader area with often some space between (generally > 2 m in most instances).

Based on the above scenarios, the maximum loading to be distributed over the existing foundation/floor areas within the existing buildings and external areas is estimated by GHD to be 25 kPa.

8.4.4 Effects on the Stability of the Shoalhaven River Bank

For their assessment GHD considered the proximity of the proposed storage areas to the northern bank of the Shoalhaven River, the current profile of the bank and the surface conditions between the bank and the proposed modifications to the relevant areas of the Paper Mill Site.

GHD carried out their assessment in the following parts:

- *Section 1: closest existing building proposed for storage assumed to be 16 m away from the riverbank crest and with a bank slope of 45 degrees measured between the horizontal; and*
- *Section 2: proposed laydown external area assumed to be 11.5 m away at the closest point to the riverbank crest and with a bank slope of 70 degrees measured between the horizontal;*

The results of the completed analyses for the representative sections are presented as Figures 2 to 9 of the Riverbank Stability Assessment and the results are summarised below in **Table 13**.

Table 13
Summary of assessed cases and resulting Factors of Safety

Section	Figure Reference in Riverbank Stability Assessment	Case Description	Factor of Safety (FoS)	Remarks
1	Figure 2	Short term scenario (undrained condition)	> 1.3	
	Figure 3	Long term scenario (drained condition)	< 1.0	Failure likely to occur at the riverbank extending 2 m to 8 m back from the crest. Load has no impact on the likely failure.
	Figure 4	Rapid drawdown after major flooding (drained condition)	< 1.0	
	Figure 5	Seismic (drained condition)	< 1.0	
2	Figure 6	Short term scenario (undrained condition)	> 1.3	
	Figure 7	Long term scenario (drained condition)	< 1.0	Failure likely to occur at the riverbank extending 4 m to 8 m back from the crest. Load has no impact on the likely failure.
	Figure 8	Rapid drawdown after major flooding (drained condition)	< 1.0	
	Figure 9	Seismic (drained condition)	< 1.0	

GHD state that based on short term analysis, the FoS are shown to be above the acceptable level). In the long term, however, GHD note where the soil parameters become drained due to the potential washing out of clay particles within the soil matrix, rapid drawdown and seismic conditions will likely lead to slope failure extending between 2 m and 8 m from the crest of the bank for Section 1.

For Section 2, GHD indicate that the slope failure will likely extend between 4 m to 8 m. In both sections, however, the surcharge of 25 kPa has no impact on the likely failure mainly due to its position away from the riverbank crest.

8.4.5 Conclusion and Recommendations

GHD advise that the results of the stability analyses on the representative assessed Sections 1 and 2 indicate that the general FoS is above acceptable level considering short term cases with undrained condition.

However, for long term scenarios where drained conditions are likely to prevail, and in combination of rapid drawdown post flooding and seismic events, GHD have assessed that failure of the riverbank could occur. Considering there has been recent erosion and slumping of part of the northern riverbank in some areas along the river, GHD recommend maintaining a clear distance of 11.5 m away from the riverbank crest at all locations for

long term storage. GHD advise that short term lightly loaded storage (eg. empty crates, pipes, small plant and equipment) within the clear distance of 11.5 m and to the north of the fence line is acceptable.

GHD recommend the southern limit of the storage area is off set to the north of the existing fenceline to maintain the required setback of 11.5 m from crest of bank. This will mainly affect the south-east corner of the external storage area. GHD recommend shipping containers located in positions away from the assessed clear distance from the crest of the riverbank.

In addition, GHD also recommend that existing vegetation over the riverbank be maintained and managed, and that the rock protection of the toe of the bank be repaired if damaged by flooding.

Based on their site observations, their knowledge of the general subsurface conditions and the stability analysis conducted, GHD conclude that the proposed storage and redevelopment areas are unlikely to influence the stability of the riverbank. This assessment is based on the assumed storage loads and setbacks from the riverbank not exceeding those used in the GHD analysis.

Given WMAwater recommendations in terms of setting back works associated with the proposal by 75 m to the riverbank; the GHD recommendations in this instance are largely now irrelevant.

8.5 TRAFFIC AND PARKING

This Modification Application is supported by a Traffic Impact Assessment (TIA) prepared by ARC Traffic & Transport (ARC). In undertaking their assessment ARC have included a review of the broader Shoalhaven Starches operations, particularly as a number of additional modifications have recently been approved by the Department of Planning & Environment (DP&E) which will result in changes to the (existing) access, traffic and parking environment along Bolong Road.

The TIA references a number of past reports prepared by ARC in regard to the broader Shoalhaven Starches operations; specifically, ARC has referenced the following reports:

- Shoalhaven Starches Boilers Modification TIA May 2017 (MOD 13 TIA);
- Shoalhaven Starches Access & Parking Assessment April 2017 (APA 2017);
- Shoalhaven Starches Ethanol Upgrade & Packaging Plant TIA 2008 (Ethanol Upgrade TIA).

ARC has also referenced the key standards and guidelines relevant to the assessment of the access, traffic and parking characteristics of the Modification, including:

- Austroads Guide to Road Design Part 4A Unsignalised and Signalised Intersections (GRD4A);
- Australian Standard 2890.1: Parking Facilities – Off Street Car Parking (AS 2890.1);
- Australian Standard 2890.2: Parking Facilities – Off Street Commercial Vehicle Facilities (AS 2890.1);
- Council's Development Control Plan 2014 (DCP 2014).

Notwithstanding the above ARC also note that the subject site provides significant (existing) access and parking infrastructure that previously provided for a significant on-site workforce, and that the trip generation associated with this proposal will be very minor.

This assessment has reviewed the potential operational aspects of the proposal, and provides recommendations by which potential impacts can be minimise if not entirely ameliorated. A copy of ARC's report forms **Annexure 4** to this EA. This section of the EA is based upon the findings of this assessment.

8.5.1 Paper Mill Site

8.5.1.1 History

The Shoalhaven Paper Mill was officially opened in February 1957, and in 1961 an expansion program was approved. At the time, the Paper Mill employed approximately 600 staff, and ARC advise available information suggests that at its peak some 800 staff were employed at the Paper Mill. Demand for paper products declined over the decades, and in 2015 the owners of the Paper Mill announced that the site would close; at that time, the site was employing approximately 75 staff. The site was subsequently purchased by the Manildra Group of Companies in 2015.

8.5.1.2 Access

Access to the former Paper Mill is provided via 2 adjacent driveway access points to Bolong Road. Significant auxiliary infrastructure is provided at these Bolong Road intersections, including an Auxiliary Left (AUL) lane of approximately 110m and a Channelised Right (CHR) lane of approximately 130m; both the AUL and CHR provide for both access driveways. ARC also notes that Council recently completed shoulder widening works along Bolong Road adjacent to the Site.

ARC advised that they had previously discussed the potential use of the site with Council officers, and it was (without prejudice) generally agreed that the available infrastructure was more than appropriate for a minor trip generating reuse of the site, specifically given that that infrastructure previously provided for significant higher traffic volumes when the Paper Mill was operating.

ARC note that security gates (which restrict access to internal areas) are located at a distance of approximately 40 m from Bolong Road. With reference to the very minor forecast trip generation associated with this proposal, ARC consider this would provide more than appropriate queuing distance on-site.

8.5.1.3 *Trip Generation and Distribution*

Further to the closure of the Paper Mill ARC indicate it is not possible to definitively state the previous generation of the subject site. However, with reference to available information ARC estimate that until relatively recently (early 2000s) staff levels were still significantly higher than at the time of the Mill closure. Even if it is estimated that the Mill employed 250 staff, and that only 50% of staff generated vehicle trips in the peak hours, ARC note the Mill Site would likely have still generated upward of 100 vehicles per hour (vph) in the peak periods, with trips being primarily arrival trips in the AM peak and primarily departure trips in the PM peak.

Prior to the closure of the Mill in 2015, an estimated 75 staff worked at the Mill. Applying the same estimates, the Mill Site would have generated approximately 35 vph in the peak periods as recently as 2015.

ARC indicate this still represents a significant parking demand (when compared to that which will be generated by the Modification).

ARC advise it is not known what the exact distribution of trips would have been at the site, but state there is no information to suggest that the trip generation characteristics of the Shoalhaven Starches operations would not similarly have applied to the site. As such, ARC estimate at 25% of trips would have been distributed to/from the east, and 75% of trips would have distributed to/from the west.

8.5.1.4 *Parking*

The site currently provides 30 parking spaces at the front of the site, including a mix of 90° angled spaces and parallel spaces. ARC noted that in the past the large hardstand area across the west of the site was also used for staff car parking, but as staff numbers (and parking demand) was reduced this area appears to have utilised more for storage, the same use proposed for this area under the Modification.

8.5.2 Shoalhaven Starches Operations

8.5.2.1 *Past Approvals*

Shoalhaven Starches Expansion Project Approval MP06-0228

The Shoalhaven Starches Expansion Project (SSEP) Approval was granted by the Minister for Planning on the 28th January 2009, and encapsulated previous approvals into

one overall approval. The SSEP is a 'transitional Part 3A Project' for the purposes of Schedule 6A of the Environmental Planning & Assessment Act.

8.5.2.2 SSEP Modifications

Following the SSEP Approval, Manildra acquired the former Dairy Farmers site, and commenced investigations into relocating the Packing Plant from the approved PP Site north of Bolong Road to the former Dairy Farmers Site; as an interim measure during these investigations, approval was provided in 2012 for the Interim Packing Plant operations at their current location. Modification 3 (Dairy Site Car Park) was also approved at this time, providing for additional Starches staff parking to be provided in the Services Area (between the Ethanol Plant and Dairy Site) to be accessed via the Dairy Site (and in turn the intersection of Bolong Road & Dairy Site). In 2015, Shoalhaven Starches submitted modification proposals to the Department in regard to the demolition of an industrial building on the Moorehouse Site (Modification 6) and for the construction of the No. 5 Starch Dryer on the Moorehouse Site (Modification 7); for minor design amendments to the Packing Plant (Modification 9); and for construction and operation of a new Flour Mill (Modification 10). These Modifications have all been approved by the DP&E.

More recently (2016) Manildra submitted additional Modification proposals, including for a reduction in the number of DDG dryers on the SS Site and associated works (Modification 11); and for the construction of an Ethanol Distillation Plant to provide beverage grade alcohol (Modification 12). As discussed, these Modifications have been recently approved by the DP&E.

The only other Modification currently before the Department relates to the conversion of on-site Boilers from gas fired to coal fired (Modification 13), noting that Modification 13 would have little if any impact on the local access, traffic or parking environment, and moreover in no way alter the primary recommendations of the APA 2017, the implementation of which has now been conditioned in the Modification 12 approval

A further modification is currently being developed providing for the establishment of a CO₂ Plant on the former Dairy Farmers site. ARC is currently preparing a traffic assessment in regard to this proposed CO₂ Plant. ARC advise their work to date indicates that the CO₂ Plant would have a very minor trip generation, based on only 2 staff operating the CO₂ Plant, and a maximum of 2 trucks per day being generated once fully operational. As such, it is the opinion of ARC that the CO₂ Plant Modification would have no impact on this current Modification, nor would this current Modification have any impact on the CO₂ Plant Modification proposal.

8.5.2.3 SSEP Modification Upgrades

The Shoalhaven Starches Access & Parking Assessment April 2017 (APA 2017) provided a number of recommendations to address issues raised by the Department, Council and the RMS in regard to areas of non-compliance (from earlier Modification conditions) and in regard to the Modifications recently before the Department. Key recommendations, which have been adopted by Shoalhaven Starches and now form Conditions of Consent in regard to Modification 12, include:

- *The extension of the Bolong Road median and barrier fence across Ethanol Driveway, thereby requiring vehicle movements from the west to utilise the Dairy Site turn facility in an identical manner to movements to the Glutton Driveway (for which the Dairy Site turn facility was designed). This would also eliminate observed U-Turn concerns at the intersection of Bolong Road & Ethanol Driveway.*
- *The provision of additional car parking to be accessed via the Dairy Site, generally consistent with the Modification 3 (Dairy Site Car Park) approval.*
- *The provision of all access to the Services Area via the Dairy Site, allowing for the closure (to all but emergency vehicles) of the existing Service Driveway which provides an internal link between Ethanol Driveway and the Services Area.*
- *Further to the above, the upgrade of the Bolong Road & Dairy Site intersection to provide full compliance with the approved Modification 3 (Dairy Site Car Park) design plans, and specifically in regard to geometric design deficiencies. It is also noted that the reinstatement of car parking accessed via the Dairy Site requires the provision of a left turn auxiliary lane, Bolong Road to Dairy Driveway, as originally proposed in the approved Modification 3 (Dairy Site Car Park) design plans.*
- *The continued use of the Temporary Car Park located on the PP Site through to the end of construction of the Modification (Flour Mill B) infrastructure.*
- *Upgrades of existing staff car parks across the Starches Sites to provide compliance with Australian Standard in regard to aisle and space dimensions.*

These works have been conditioned to be completed prior to the commencement of construction of the Modification 12 infrastructure. As stated, plans for all upgrades are currently being finalised for approval by Council, and it is anticipated that all works would be completed prior to the construction of the Modification 12 infrastructure.

Dairy Farmers Site Meat Processing Plant

In 2014, a Meat Processing Plant, utilising the existing buildings on part of the former Dairy Farmers Site, was approved by Council. The traffic assessment prepared by ARC for the Meat Plant proposal estimated that the Meat Plant would have a daily staff total of 50, and generate approximately 3 – 4 trucks per day (or 6 – 8 truck trips per day). However, ARC

advise the Meat Plant is currently operating below capacity, such that while truck trips remain in line with these original estimates, up to 40 staff only are currently employed at the Meat Plant. Importantly, the operating hours of the Meat Plant mean that staff trips are primarily generated well outside of the AM and PM commuter peak periods.

ARC notes that the transport operations of the Meat Plant – and moreover access to the Dairy Site, and truck movements within the Dairy Site – would be essentially unchanged further to the implementation of the broader Starches Site access, traffic and parking recommendations detailed above. It is ARC's opinion that the Modification would similarly have no impact on, or be impacted by, the implementation of these recommendations.

8.5.3 Local Traffic Environment

8.5.3.1 Key Intersections

The subject site is provided with access to Bolong Road. In regard to this proposal, ARC has identified the intersections of Bolong Road with the subject site, former Dairy Farmers site, and the Shoalhaven Starches western driveway, as the key intersections for analysis. At all other intersections ARC advise there will be only very minor changes in traffic flows, and those additional or redistributed flows will present only as through flows (in Bolong Road) rather than as turning movements which would (potentially) impact intersection operations.

Very significantly, ARC state east of the subject site and west of western driveway, traffic flows would essentially be unchanged by the Modification, ie. unchanged from existing approved flows.

8.5.3.2 Existing Traffic Flows

Bolong Road Through Flows

The APA 2017 provides a detailed assessment of future traffic flows to Bolong Road further to the redistribution of trips arising from the detailed access recommendations, and further to the (short term) potential for the simultaneous construction of the Modification 10 (Flour Mill B) and Modification 12 (Beverage Grade Ethanol Plant) infrastructure. The resulting through flows along Bolong Road have been referenced to provide 2017 base flows in Bolong Road for this assessment, though it is noted that once these construction projects are completed the trip generation of the Starches Sites (both to the primary Starches Site and car park accessed via the Dairy Site) to/from Bolong Road would be significantly reduced, such as that for the 2027 forecast year the trip generation of the Starches Sites would be operational only.

ARC state these through flows represent '120th Highest Hour' recreational peak flows, and have been developed by ARC in consultation with Council over time and through numerous survey projects across the Starches Sites. Importantly, the through flows used in this assessment (and in the APA 2017) do not include any reduction in future through movements (in Bolong Road) further to the Princes Highway Upgrade. According to ARC it is the opinion of Shoalhaven Council that the current proportional distribution of north-south sub-regional trips between the Princes Highway and the 'Sandtrack' (Bolong Road) will not change further to the Princes Highway Upgrade (currently well advanced).

ARC note that it is the RMS' position (recently confirmed as part of the APA 2017 assessment) that there will be a very significant redistribution of trips; estimates provided in the technical appendices supporting the Princes Highway Upgrade suggest that the 2019 AADT in Bolong Road will represent less than 60% of the 2013 AADT. Even with background growth continuing after 2019, the 2029 AADT is estimated to represent only 70% of the 2013 AADT; and the 2039 AADT still only some 87% of 2013 AADT.

To this end, ARC commissioned surveys in Bolong Road immediately east of former Dairy Farmers site between the 19th September and 3rd October 2017; these survey dates include both school holiday and non-school holiday periods, and also the flows on Monday 1st October – the Queen's Birthday Public Holiday – to represent a high recreation peak flow, particularly in the PM peak as people return from holidays. The survey indicated that even the very highest surveyed hour (on the Monday) was some 30% lower than the recreational peak flows (120th highest hour) which has previously been used by ARC. In ARC's opinion, this certainly supports the contention that the Princes Highway Upgrade has led to a reduction in trips using the Sandtrack route.

However, per the previous agreement with Council, ARC has used the higher (Council forecast) through flows to provide what would be in their opinion an (absolute) worst case assessment. ARC factored these base flows by 1.5% per year (in line with modelling completed by the RMS for the Princes Highway Upgrade) to provide forecast base year flows to 2027.

Dairy Site and Western Driveway Trips

APA 2017 also provides a detailed assignment of trips to the Dairy Site, again based on a period of peak construction activity (Modification 10 and Modification 12 construction), as well as the generation of the Meat Plant. In addition to these trips, the MOD 13 TIA submitted as part of the Modification 13 application identified the generation of a small number of additional trips during the construction works for Modification 13; these trips – being exclusively construction staff trips given that all construction truck trips would be to and from the west of the Modification 13 construction site (within the SS Site) - have also

been added to the peak flows determined in APA 2017 for the 2017 base year for this assessment.

Similarly, the background assessment developed by ARC for the APA 2017 trip assignment also included consideration of traffic flows at all of the Shoalhaven Starches driveways, with a particularly focus on the western driveway as this provide access for staff car parking and, more particularly, for the majority of truck trips generated to and from the Starches Site. It is noted that these western driveway traffic flows were most recently reported in the MOD 13 TIA.

Finally, ARC has included in the base assessment flows the very minor generation of the proposed CO2 Plant, estimated at no more than 2 light vehicle trips and 2 truck trips to/from the Dairy Site during peak hours.

Base Assessment Flows

With reference to sections above, **Figure 8** provides a summary of 2017 base flows at the key intersections, while **Figure 9** provides a summary of 2027 base flows at the key intersections. ARC notes that the 2017 flows include the higher (Council forecast) through flows in Bolong Road as discussed above, and all trips associated with approved and proposed Modification construction works.

The 2027 flows include the higher (Council forecast) through flows in Bolong Road factored annually, but not the trips associated with approved and proposed Modification construction works, which would be completed many years prior to this forecast year.

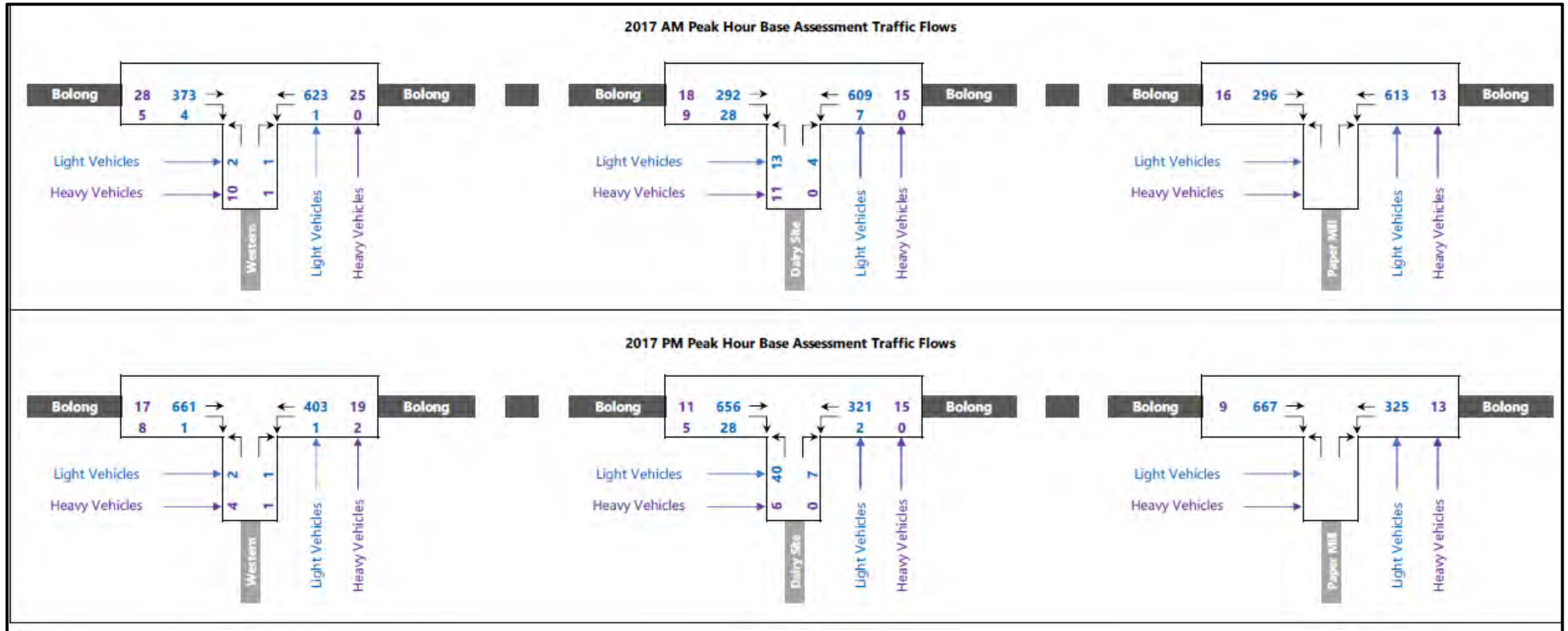


Figure 8: 2017 Peak Hour Base Assessment Traffic Flows.

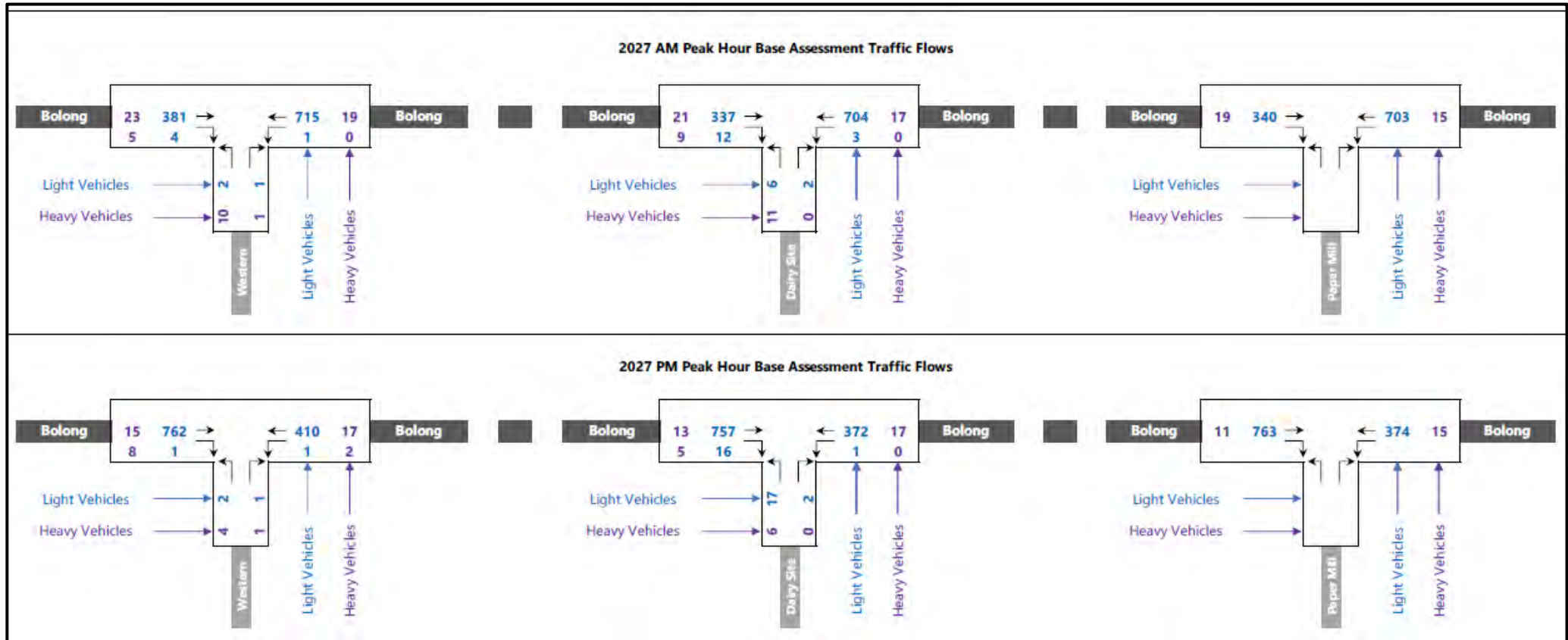


Figure 9: 2027 Peak Hour Base Assessment Traffic Flows.

8.5.4 Present Intersection Operations

SIDRA Intersection Modelling

The operations of the key access intersection discussed above have been determined by ARC using the SIDRA intersection model (Version 7.0).

Base Traffic Flows Intersection Operations

The 2017 and 2027 base operations of the key intersections are reported in **Table 14**.

Table 14
Base Traffic Flows Intersection Operations

Assessment Base Flows Intersection Operations	Level of Service		Average Delay (s)		Minor Approach Average Delay (s)		Degree of Saturation		95%ile Queue Length (m)	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Bolong Road & Dairy Site 2017	B	B	0.6	0.5	21.7	24.7	0.325	0.346	2.0	1.1
Bolong Road & Dairy Site 2027	C	C	0.4	0.3	29.6	35.0	0.379	0.403	1.8	0.8
Bolong Road & Western Driveway 2017	A	A	0.5	0.3	11.2	10.3	0.359	0.325	2.3	2.3
Bolong Road & Western Driveway 2027	B	A	0.6	0.3	14.5	12.9	0.403	0.369	3.0	2.6

With reference to the table above, all the key access intersections operate at a good level of service - with minor average delays and significant spare capacity. ARC notes that these operations are based on higher through flows in Bolong Road than are estimated by the RMS, and indeed higher than the recently surveyed recreational peak flows.

ARC advise the subject site intersection(s) to Bolong Road currently operates with no delay given that there is no consistent trip generation to/from the subject site at this time.

8.5.5 The Modification Proposal

The subject site will serve as an auxiliary site to the primary Starches Site. As such, the site is not expected to generate “additional” truck (or staff) trips to the local and sub-regional road network, but rather redistributed trips, ie. a truck trip that would have previously been generated to/from Bolong Road at the Shoalhaven Starches site (and more specifically at the western Driveway) would instead be generated to/from the subject site; similarly, a staff trip that would have previously been generated to the western Driveway or one of the other staff car parks accessed via Bolong Road would instead be generated to/from the subject site.

As such, the additional trip generation from the subject site will be primarily limited to the generation of (a small number of) trips between the subject site and the western Driveway; east of the subject site and west of the western driveway. ARC advise trip generation would essentially remain within existing approved limits.

8.5.5.1 Access

Road Network Access

All access to the subject site will be via the existing driveway intersections to Bolong Road. As previously discussed, the subject site provides two adjacent driveways to Bolong Road, both of which are accessed via (both) the AUL and CHR. With reference to this proposal, ARC advise it is anticipated that the eastern driveway will be the primary driveway as this provides access to all internal storage/servicing areas and to staff parking. The western driveway is likely to be used only rarely, primarily by trucks departing from the western storage area within the subject site.

Internal Access

According to ARC the subject site provides extensive internal access infrastructure suitable for the movement of trucks to all sections of the site in an identical manner to the previously used on-site truck paths.

8.5.5.2 Staff Trip Generation

It is proposed that up to 24 staff could be employed at the subject site at any one time, including storemen, administration and IT personnel and contractors.

With reference to the expected work hours for different staff, and the trip generation characteristics of staff as determined on their recent assessments, ARC estimate that staff could generate up to 12 vph in both the AM and PM peak periods.

8.5.5.3 Staff Trip Distribution

ARC indicate there is no information to suggest that the distribution of staff trips at the subject site would be significantly different to the distribution of staff trips at the Shoalhaven Starches operation, and as such it is estimated that approximately 25% of trips would be to/from the east, and 75% of trips would be to/from the west.

With regard to arrival and departure patterns, the fact that office staff are expected to make up the majority of trips during the peak hours suggests that approximately 90% of trips would be arrival trips in the AM peak, and 90% of trips would be departure trips in the PM peak.

8.5.5.4 Truck Trip Generation and Distribution

Truck Trip Generation

Product Storage

Under this proposal, product that would have otherwise been dispatched directly to customers from the Shoalhaven Starches factory site will now be stored on the subject

site. This will require the transport (by truck) of finished product from the factory site to the subject site (for storage) and then the transport (at a later date) of that stored product from the subject site direct to customers via the regional road network.

The only additional trips being generated would therefore be the additional truck trips carrying the finished materials from the factory site east to the subject site, and then those (empty) trucks returning to the factory site after delivering to the subject site; and the additional trips between the subject site and the western driveway as product is dispatched. East of the subject site and west of the factory site trip generation would be no different from that provided for under existing approvals.

During peak operating periods, ARC estimate that a truck carrying finished product from the factory site to the subject site could be generated every hour, and as such generate up to 10 trucks per day, or 20 truck trips per day, being exclusively trips from the western driveway to the subject site, and a trip from the subject site back to the western driveway.

In addition, a (small) proportion of the stored product may occasionally be transported from the subject site back to the factory site for packing into containers for rail dispatch. However, ARC note this would likely generate on average no more than 1 – 2 trucks, or 2 – 4 truck trips, per day, with these trips again comprising trips from the western driveway to the subject site, and from the subject site back to the western driveway.

Packing Consumables

Packing consumables currently delivered to the factory site (an average of 1 truck per day) would instead be delivered to and stored at the subject site, and brought to the factory site for use when required (estimated at up to 2 trucks per day during peak operating periods).

As such, an existing delivery truck trip currently turning to western driveway would instead continue along Bolong Road and turn to the subject site, and then depart back along Bolong road as a through trips rather than a left turn departure trip from the western driveway. In addition, ARC advise an average of 2 additional truck trips per day would again be generated as trips from the western driveway to the subject site, and from the subject site back to the western driveway.

Plant and Equipment Storage

The storage of plant and equipment at the subject site would generate truck trips with essentially identical characteristics to packing material trips, ie. instead of the plant and equipment being stored on the factory site it will be stored on the subject site. This again means that additional trips will be generated between the subject site and the western driveway and vice versa (depending on when plant and equipment is required/not required) but no additional trips east of the subject site or west of the western driveway.

During peak construction projects, it is estimated that up to 10 trucks, or 20 truck trips, could be generated each day by the movement of plant and equipment between the subject site and factory site.

Syrup Storage

According to ARC the syrup storage demands are currently very minor, and over time are expected to become negligible if not entirely redundant. ARC estimate that 1 truck per day, or 2 truck trips per day, could be generated by the syrup storage operations. These again would be trips between the subject site and the western driveway and vice versa.

Total Truck Generation

With reference to the above, ARC estimate that the proposal could generate up to 26 trucks, or 52 truck trips per day, during peak construction periods (with a significant proportion of these trips being the movement of plant and equipment). Outside of peak construction periods, ARC estimate that the proposal could generate up to 16 trucks, or 32 truck trips, per day.

In the peak hours, ARC estimate that the subject site could generate up to 6 truck trips during peak construction periods, and up to 4 truck trips outside of peak construction periods.

Truck Trip Distribution

ARC indicate all additional truck trips would be generated in Bolong Road only between the subject site and the western driveway; no additional trips would be generated east of the subject site or west of the western driveway.

Total Peak Hour Trip Generation

With reference to sections above, ARC estimate the peak generation of the subject site at 12 light vehicle trips per hour and 6 truck trips per hour, with the potential for these peak trips to be generated in both the AM and PM peak periods.

The resulting traffic flows at the key intersections in 2027 are reported in **Figure 10** below, noting that so as to provide a worst-case assessment the peak subject site generation (associated with a construction project peak requiring plant and equipment deliveries) has been assigned.

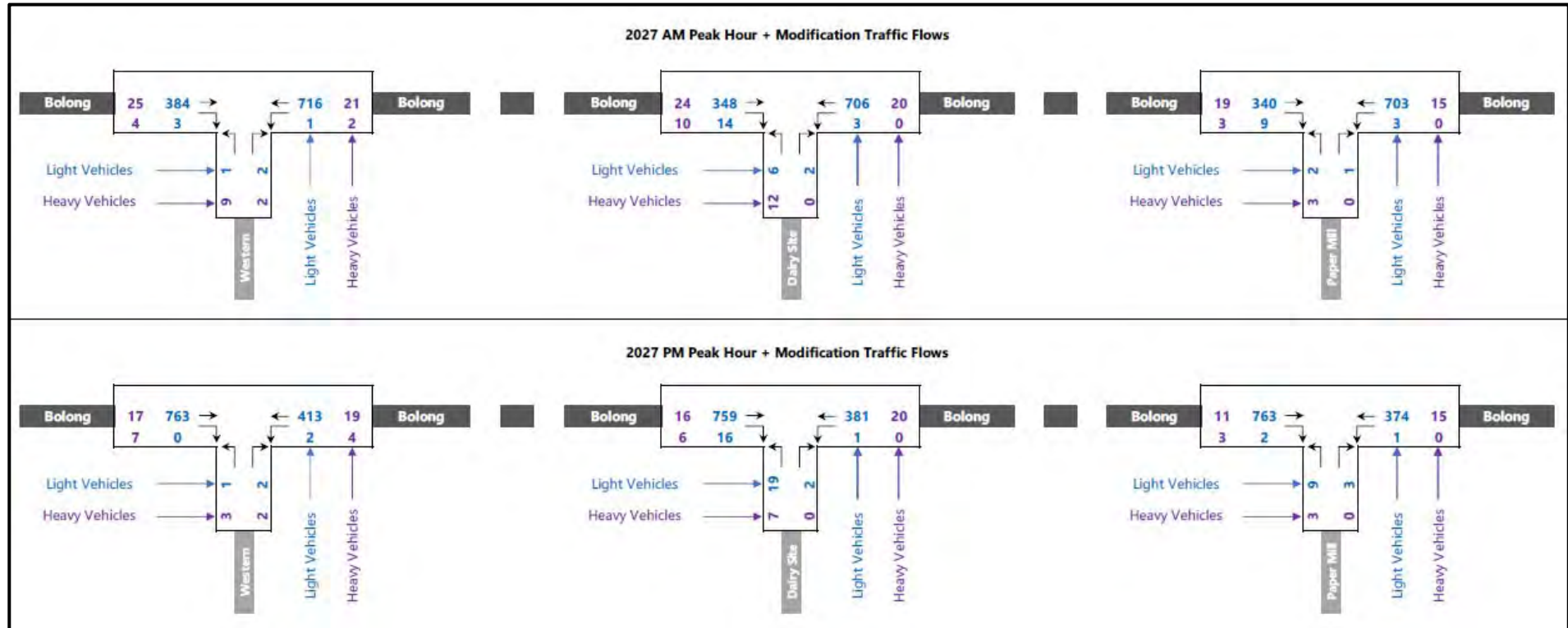


Figure 10: 2027 Peak Hour Traffic Flows + Modification.

8.5.5.5 Traffic Impacts

The proposal would have little, if any, impact on the local road network according to ARC. The trip generation of the subject site further to the proposal represents only a minor percentage of the past generation of the subject site, yet all of the key intersection infrastructure remains, augmented as noted previously by Council's recent shoulder widening adjacent to the subject site.

Secondly, SIDRA modelling of the future flows indicates that at the intersections of Bolong Road and Western Driveway; and Bolong Road and former Dairy Farmers site; there is essentially no change in the base intersection operations in 2027, while the intersection of Bolong Road and the subject site will operate at an appropriate level of service with significant spare capacity, and certainly with significantly lower delays and with more spare capacity than it would have under past subject site operations. The SIDRA results of the future operations are provided in **Table 15** below.

In summary, ARC advise the proposal would have no significant impacts on the operation of the local road network or on the key Bolong Road access intersections.

Table 15
Future Intersection Operation

2027 Intersection Operations Base Assessment Flows + Modification	Level of Service		Average Delay (s)		Minor Approach Average Delay (s)		Degree of Saturation		95%ile Queue Length (m)	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Bolong Road & Paper Mill	B	A	0.3	0.3	21.8	14.2	0.393	0.422	1.0	1.5
Bolong Road & Dairy Site	C	C	0.4	0.3	29.8	35.3	0.380	0.404	1.8	0.8
Bolong Road & Western Driveway	B	B	0.6	0.4	23.8	26.1	0.408	0.371	3.6	2.7

8.5.5.6 Parking

As previously discussed, the subject site currently provides a total of 30 staff parking spaces at the front of the site (centred around the office buildings in which the majority of staff will work). As such, the full staff parking demand (up to 24 parking spaces) can be appropriately met on-site using the existing parking spaces. ARC notes that these spaces may require remarking in some instances, necessarily to the requirements of AS 2890.1.

8.5.5.7 Response to Council Issues

ARC provides a specific response to the assessment tasks as submitted to the Department by Shoalhaven City Council in their email dated 3rd November 2017.

Consistency with Current Modification Conditions

In and of itself, ARC advise the proposal would have no impact on the key access upgrades now conditioned by the recent Modification 12 Approval, nor would those conditioned upgrades impact on the proposal. Notwithstanding, it is noted that Shoalhaven Starches has committed to the completion of all of the Modification 12 conditioned upgrades.

Parking Capacity

The subject site provides a total of 30 marked parking spaces, which would exceed the peak staff parking demand as well as providing for occasional visitor trips. It is noted that the relocation of (some) staff to the subject site will reduce parking demands across the Shoalhaven Starches sites, though parking across the Shoalhaven Starches sites will remain in excess of peak demands as determined in the APA 2017. There is no information available to suggest that the available on-site hard stand areas would not provide for the peak storage demands.

Train Operations

ARC state the proposal would have no impact on existing train operations; the frequency, length, crossing duration and crossing times of trains at the Bolong Road railway crossing would remain entirely within existing approved limits.

Adequacy of Existing Auxiliary Infrastructure, Bolong Road and Mill Site

As previously (without prejudice) agreed with Council, it is the opinion of ARC that the existing CHR and AUL treatments at the subject site are more than appropriate to accommodate what is a very minor trip generation associated with this proposal, noting that the trip generation of the subject site further to this proposal would represent only a fraction of the trips previously generated by the Paper Mill when operational.

Notwithstanding, even accounting for Council's higher traffic forecasts in Bolong Road ARC consider that the very minor left turn demand (Bolong Road to the subject site) would not trigger any warrants for an upgrade of the existing AUL to a Channelised Left (CHL) turn lane with reference to the GRD 4A, while the existing CHR treatment already essentially provides the highest treatment appropriate to the intersection.

Based on satellite images from July 2017, ARC note the marking of all auxiliary lanes appears to be in good order.

Intersection Lighting

With reference to shift times for staff at the subject site, all staff trips would be generated during 'daylight' hours, ie. between approximately 6:30 am (estimated earliest arrival time for staff commencing a 7:00 am shift) and 5:30 pm (estimated latest departure time for staff finishing work at 5:00 pm). In addition, there is no information to suggest that truck trips would be generated outside of daylight hours. As such, it is ARC's understanding that there would be no need to provide additional lighting at the intersection.

Notwithstanding, ARC advise there should there be a future demand for such movements outside of daylight hours, an additional assessment of lighting requirements may be required.

8.5.6 Conclusions and Recommendations

The Traffic Impact Assessment prepared by ARC concludes with respect to this modification proposal:

Following a detailed and independent assessment of the potential access, traffic and parking conditions associated with the Modification, ARC has concluded that the Modification is acceptable in regard to access, traffic and parking considerations. In summary: -

- *The Modification will utilise the existing auxiliary intersection infrastructure at the Bolong Road access driveways, and there is significant existing on-site access infrastructure for truck access to all parts of the Mill Site. Security gates are located well away from Bolong Road to ensure that on-site queueing would not extend to Bolong Road.*
- *The Modification would generate significantly fewer trips to the Mill Site than previous generated by the Paper Mill, and all additional trip generation will essentially be limited to the section of Bolong Road between the Mill Site and the Western Driveway; east of the Mill Site and west of Western Driveway the Modification would not generate any additional trips over those approved under the SSEP Approval.*
- *All key intersections along Bolong Road will continue to operate at good Levels of Service through 2027 even further to consideration of higher than forecast through flows in Bolong Road, and would be appropriately provided for by the significant existing auxiliary infrastructure at the Bolong Road & Mill Site intersection, infrastructure which previously provided for significantly higher trip generation at the Mill Site.*
- *Existing on-site parking is in excess of the peak staff parking demand and located in close proximity to the key staff buildings.*
- *On-site hardstand storage areas provide significant capacity, and there is no information to suggest that these areas would not provide fully for the storage demands of the Mill Site.*
- *The Modification would have no bearing on current approved Modification across the broader Starches Sites.*

- *The Modification would have no bearing on existing approved train operations.*

Further to the above, ARC makes the following recommendations:

- *All vehicle movements to or from the Mill Site are expected to occur during daylight hours; should vehicles movements outside of daylight hours be proposed in the future, a review of lighting requirements will be required.*

9.0 STATEMENT OF ADDITIONAL COMMITMENTS

Section 9.0 of the EA for the Shoalhaven Starches Expansion Project prepared by our firm provides a Statement of Commitments agreed to by Shoalhaven Starches Pty Ltd outlining environmental management, mitigation and monitoring measures to be implemented to minimise potential impacts associated with the Shoalhaven Expansion Project and having regard to the findings of the EA.

The only additional commitments arising from this modification proposal include the following:

9.1 NOISE

Table 16 outlines the recommended additional noise mitigation measures and design considerations that Shoalhaven Starches commits to implementing for the proposed use of the former Paper Mill Site in conjunction with the approved Shoalhaven Starches factory operations.

Table 16
Noise Mitigation Measures

<i>Measures and Design Considerations</i>
Shoalhaven Starches commits to implementing the recommendations of the Noise Impact Assessment prepared by Harwood Acoustics for this modification proposal as follows: <i>To replace tonal reversing alarms on all items of mobile plant with broadband alarms to ensure that noise emission does not exhibit tonal characteristics.</i>

9.2 FLOODING

Table 17 outlines the recommended additional flood mitigation measures and design considerations that Shoalhaven Starches commits to implementing for the proposed use of the former Paper Mill Site in conjunction with the approved Shoalhaven Starches factory operations.

Table 17
Flood Mitigation Measures

<i>Measures and Design Considerations</i>
Shoalhaven Starches commits to implementing the recommendations of the Flood Assessment prepared by WMA Water as follows: <i>To limit storage areas so that proposed storage areas are sited over 75m from the northern bank of the Shoalhaven River to ensure that the proposed storage areas are not in floodway areas.</i>

9.3 VISUAL IMPACT

As outlined in Section 8.3 of this EA it is our view that the proposed works will not create a significant adverse visual impact due principally to the location of the proposed works with an existing industrial site with storage areas and containers of a similar height, bulk and scale as those works which are proposed. Shoalhaven Starches however commit to the following additional measures as outlined in **Table 18** to assist in screening and further minimising visual impacts arising from the proposed works.

Table 18
Visual Impact

<i>Measures</i>
Shoalhaven Starches commits to the planting of a native vegetation screen along the frontage of the site to Bolong Road and the proposed storage area.

9.4 TRAFFIC

Shoalhaven Starches commit to the following additional measures as outlined in **Table 19** to assist in minimising traffic impacts arising from the proposed modification.

Table 19
Traffic Impacts

<i>Measures</i>
Shoalhaven Starches commits to the following recommendations of the traffic impact assessment prepared by ARC: <ul style="list-style-type: none"><i>All vehicle movements to or from the Mill Site are expected to occur during daylight hours. However should the movement of vehicle outside of daylight hours be proposed in the future, a review of lighting requirements will be undertaken</i><i>Car parking spaces to be remarked where necessary to the requirements of AS 2890.1.</i>

9.5 RIVER BANK STABILITY

Shoalhaven Starches commit to the following additional measures as outlined in **Table 20** to assist in minimising riverbank stability impacts arising from the proposed modification.

Table 20
River Bank Stability Mitigation Measures

<i>Measures and Design Considerations</i>
Shoalhaven Starches commits to implementing the recommendations of the River Bank Stability Assessment prepared by GHD as follows: <ul style="list-style-type: none"><i>existing vegetation over the riverbank be maintained and managed, and that the rock protection of the toe of the bank be repaired if damaged by flooding.</i>

10.0 CONCLUSION

In 2009 the Minister for Planning issued Project Approval for an application made by Shoalhaven Starches to increase its ethanol production capacity at its existing ethanol plant located at the Shoalhaven Starches Plant at Bomaderry. This Project Approval enables Shoalhaven Starches to increase its ethanol production in a staged manner at its Bomaderry Plant from the current approved 126 million litres per year to 300 million litres per year.

The Project Approval also consolidated all previous approvals including Project Approval MP 07_0021 (the Flour Mill) into the one Project Approval.

Following the Minister's determination Shoalhaven Starches have been implementing and commissioning works in accordance with this approval.

Shoalhaven Starches intend to use an existing facility, being the former Australian Paper Mill, in conjunction with the approved factory operations located further west at 160 Bolong Road Bomaderry. The Paper Mill Site will provide buffer storage for the approved factory operations of Shoalhaven Starches and will accommodate the storage of plant required for the various modifications away from the potentially congested construction sites within the factory complex.

This Modification Application seeks approval to use the former Paper Mill site for:

- The use of the existing buildings on the site for the storage of finished product, as well as engineering plant.
- The use of existing storage tanks for the storage of syrups.
- The use of external areas on the site to lay down plant and materials that are to be used in the construction of approved projects on the Shoalhaven Starches factory site as well as temporary and overflow shipping container storage.
- The use of existing administrative buildings for office staff.
- The use of workshop areas for maintenance purposes.

The application is made pursuant to Section 75W of the Environmental Planning & Assessment Act 1979.

The preparation of this Environmental Assessment has been undertaken following consultation with relevant Government agencies, including:

- The Department of Planning and Environment;
- Shoalhaven City Council;
- The NSW EPA; and
- NSW Office of Water.

This Environmental Assessment has been prepared to address issues detailed in requirements outlined by the above agencies.

The EA is supported by expert assessments addressing:

- Noise Impacts – the EA is supported by a Noise Impact Assessment prepared by Harwood Acoustics which includes recommendations to ensure the level of noise emission from the proposal is within the intrusiveness noise trigger levels derived from the NSW EPA's Noise Policy for Industry 2017 at all residential receptor locations.
- Flood Compliance Report prepared by WMA Water which finds the proposal does not significantly increase the 1% AEP, 0.2% AEP or Extreme event flood level on lands outside those owned by Shoalhaven Starches.
- Traffic and Car Parking Assessment prepared by ARC Traffic and Transport that identifies that there are no access, traffic or parking impacts associated with the proposal that would significantly impact on the efficiency and/or safety of the local traffic environment or existing on-site operations. ARC note the proposal would generate significantly fewer trips to the subject site than previous generated by the former Paper Mill operation, and will not generate any additional trips over those approved under the SSEP Approval.
- Riverbank Stability Assessment of the northern bank of the Shoalhaven River prepared by GHD. GHD conclude that the proposed storage and redevelopment areas are unlikely to influence the stability of the riverbank

Following an assessment of the key issues associated with this proposal, this Environmental Assessment concludes that the proposal is suitable for the site and this locality.

The Minister's approval is sought for this Modification Application.

ANNEXURE 1

Requirements for Environmental Assessment

issued by

**Secretary of the Department of Planning
And Issues raised by Shoalhaven City Council**

**Lot A DP 384559 and Lot 1 DP 130968
340 Bolong Road, Bomaderry**

ANNEXURE 2

Plan Details of Proposed Use of Former Paper Mill Site

**Lot A DP 384559 and Lot 1 DP 130968
340 Bolong Road, Bomaderry**

ANNEXURE 3

Noise Impact Assessment

**Prepared by
Harwood Acoustics Pty Ltd**

**Lot A DP 384559 and Lot 1 DP 130968
340 Bolong Road, Bomaderry**

ANNEXURE 4

Traffic Impact Assessment

**prepared by
ARC Traffic & Transport Pty Ltd**

**Lot A DP 384559 and Lot 1 DP 130968
340 Bolong Road, Bomaderry**

ANNEXURE 5

Flood Compliance Report

**prepared by
WMA Water Pty Ltd**

**Lot A DP 384559 and Lot 1 DP 130968
340 Bolong Road, Bomaderry**

ANNEXURE 6

Shoalhaven River Bank Stability Assessment

**prepared by
GHD Pty Ltd**

**Lot A DP 384559 and Lot 1 DP 130968
340 Bolong Road, Bomaderry**