ENVIRONMENTAL ASSESSMENT

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

PROPOSED DEMOLITION OF EXISTING INDUSTRIAL BUILDING

PROJECT APPROVAL MP 06_0228 SHOALHAVEN STARCHES EXPANSION PROJECT

LOT 201 DP 1062668 24 BOLONG ROAD BOMADERRY

Prepared for

Shoalhaven Starches Pty Ltd

October 2015

Prepared by:

COWMAN STODDART PTY LTD

Town Planning, Agricultural & Environmental Consultants

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Ref. 15/75

Town Planning, Agricultural & Environmental Consultants

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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

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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	Bolong Road, Bomaderry
Lot No., DP/MPS, Vol/Fol etc.	Lot 201 DP 1062668
Project Development:	Shoalhaven Starches Expansion Project (MP 06_0228)
Proposed Modification to Project:	Proposed demolition of existing industrial building to enable future construction of relocated approved Starch Dryer No. 5 under Project Approval (MP 06_0228).

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: 21st October 2015

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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 both local and international food and industrial markets.

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.

The use of ethanol as a fuel (or fuel additive) has many benefits including:

- it is a renewable fuel and lessens reliance on fossil fuels;
- it reduces greenhouse gas emissions and other air pollutants such as carbon monoxide and particulates;
- it reduces imports of oil and stimulates regional and local economies if produced locally.

Given the above benefits, the Federal and State Governments introduced a range of initiatives to encourage the increased use of ethanol as a fuel additive.

Since 2007 the NSW Government progressively increased the mandated ethanol content by volume in petrol in NSW from 2% to 6% from 1st October 2011.

In 2009 the Minister for Planning issued Project Approval pursuant to the then Part 3A of the Environmental Planning & Assessment Act for an application made by Shoalhaven Starches for the "Shoalhaven Starches Expansion Project" (SSEP) which sought to increase its ethanol production capacity to meet the expected increase in demand for ethanol arising from the abovementioned ethanol mandate by upgrading the existing ethanol plant located at the Shoalhaven Starches Plant at Bomaderry. This Project Approval enabled Shoalhaven Starches to increase its ethanol production in a staged manner from 126 million litres per year to 300 million litres per year subject to certain conditions.

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

The Project Approval included the consolidation of all previous approvals (up to that time) into the one Project Approval. This included the consolidation of the Pollution Reduction Program (PRP) No. 7 Project (DA No. 223-7-2002), which included the installation of Starch Dryer No. 5 within the factory site.

Following further detailed engineering design it has become apparent that the area originally set aside for the approved but not yet constructed Starch Dryer No. 5 under the PRP No. 7 project

provides insufficient area for the footprint of this proposed Starch Dryer. As a result an alternative location for the Starch Dryer is required to be identified. It is proposed to relocate Starch Dryer No. 5 within the existing Shoalhaven Starches factory site from the approved location to a new location on the western side of Abernethy's Creek, otherwise known as the "Moorehouse" site (in recognition of the previous landowner). This land comprises Lot 201 DP 1062668, 24 Bolong Road.

The Moorehouse site includes a number of existing industrial buildings and staff car parking area. It will be necessary to demolish one of the existing industrial buildings in order to accommodate the future relocation of Starch Dryer No. 5.

Under this Modification Application it is proposed to demolish the existing industrial building within the Moorehouse site. The relocation of Starch Dryer No. 5 will be the subject of a separate, future Modification Application. The purpose of this application is to enable the demolition of the existing industrial building to facilitate a more streamlined construction timeframe for the eventual Starch Dryer No. 5 on this site. The relocation of the Starch Dryer No. 5 however will be the subject of a separate Modification Application that is currently being prepared.

The demolition of the existing industrial building will have no effect on overall production from the site. Similarly, the proposal will not involve any change in the amount of raw products that will be utilised; nor will it involve any changes in the amount of waste waters that will need to be treated and disposed.

The Modification also provides for the construction of a temporary car park on the approved Shoalhaven Starches Packing Plant Site (PP Site) which lies on the northern side of Bolong Road. This temporary car park will accommodate relocated staff parking spaces from the Moorehouse site, as well as providing parking for demolition staff.

The SSEP is a "Transitional Part 3A Project" pursuant to the provisions of the Environmental Planning & Assessment Act. This Modification Application is therefore made pursuant to Section 75W of the Environmental Planning & Assessment Act 1979.

The preparation of this Environmental Assessment has been undertaken following consultation with:

- The Department of Planning and Environment; and
- Shoalhaven City Council

The EA is supported by expert assessments addressing:

- Waste Assessment – the EA is supported by a Waste Report prepared by P & D Envirotech and which includes an assessment of asbestos containing materials.

- Noise Impacts – the EA is supported by a Noise Impact Assessment prepared by Day Design Pty Ltd which concludes that the level of noise and vibration emission from the proposed demolition works will be well below the noise and vibration management levels derived from the Environment Protection Authority's *Interim Construction Noise Guideline* 2009 at all receptor locations, without the need for noise controls. .
- Air Quality Impacts (Dust) – the EA is supported by a Dust Management Plan prepared by Environment and Natural Resource Solutions (ENRS) which outlines measures to mitigate dust impacts associated with the proposed demolition works.
- Risk Assessment – the EA is supported by a qualitative risk assessment prepared by All Construction Engineering. The risk assessment addressed risks associated with the proposed demolition works.
- Traffic Assessment prepared by ARC Traffic and Transport 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.
- Soil Erosion and Sediment Control Plan prepared by Cowman Stoddart Pty Ltd.

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 the modification application.

1.0 INTRODUCTION

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.

The use of ethanol as a fuel (or fuel additive) has many benefits including:

- it is a renewable fuel and lessens reliance on fossil fuels;
- it reduces greenhouse gas emissions and other air pollutants such as carbon monoxide and particulates;
- it reduces imports of oil and stimulates regional and local economies if produced locally.

Given the above benefits, the Federal and State Governments have introduced a range of initiatives to encourage the increased use of ethanol as a fuel additive.

Since 2007 the NSW Government has progressively increased the mandated ethanol content by volume in petrol in NSW from 2% to 6% from 1st October 2011.

In 2009 the Minister for Planning issued Project Approval for an application made by Shoalhaven Starches to undertake works to enable an increase its ethanol production capacity to meet the expected increase in demand for ethanol arising from the abovementioned initiatives by upgrading the existing ethanol plant, located at the Shoalhaven Starches Plant at Bomaderry. Subject to certain conditions this Project Approval enabled Shoalhaven Starches to increase ethanol production in a staged manner at its Bomaderry Plant from the originally approved 126 million litres per year to 300 million litres per year.

The Project Approval included the consolidation of all previous approvals (up to that time) into the one Project Approval. This included the consolidation of the Pollution Reduction Program (PRP) No. 7 Project (DA No. 223-7-2002), which included the installation of Starch Dryer No. 5 within the factory site.

Following further detailed engineering design it has become apparent that the area originally set aside for the approved but not yet constructed Starch Dryer No. 5 under the PRP No. 7 project provided insufficient area for the footprint of this proposed dryer. As a result an alternative location for the Starch Dryer has been required to be identified.

It is proposed to relocate Starch Dryer No. 5 within the existing Shoalhaven Starches factory site from its approved location to a new location on the western side of Abernethy's Creek, otherwise known as the "Moorehouse" site (in recognition of the previous landowner). This land comprises Lot 201 DP 1062668, 24 Bolong Road.

The Moorehouse site includes a number of existing industrial buildings and a staff car parking area. It will be necessary to demolish one of the existing industrial buildings in order to accommodate the future relocation of Starch Dryer No. 5.

The industrial building that is proposed to be demolished comprises a partly brick and partly metal clad building with metal and asbestos sheet roof sheeting and has a floor area of 1656 m^2.

The building is partly used for the storage of electric motors and as a workshop. Approximately half of the building is not used due to concerns of the presence of asbestos. The Manildra Group have recently acquired the Australian Paper Mill factory site located further to the east of the Dairy Farmers factory site which the Manildra Group have also acquired. It is intended that the plant and equipment that is currently stored within the subject building will be relocated for storage at the Paper Mill site. The workshop use that occurs within this building will be amalgamated with existing workshops located elsewhere within the Shoalhaven Starches factory site.

Under this Modification Application it is proposed to demolish this industrial building. The relocation of Starch Dryer No. 5 will be the subject of a separate, future Modification Application. The purpose of this application is to seek approval only for the demolition of the existing industrial building to facilitate the construction of the relocated Starch Dryer No. 5.

The proposal involves the demolition of a building and will not affect production from the site over that which has been the subject of past approvals. Similarly, the proposal will not involve any change in the amount of raw products that will be utilised; nor will it involve any changes in the amount of waste waters that will need to be treated and disposed.

At present the area situated adjacent to the existing industrial building on the Moorehouse Site is used for staff car parking (118 spaces). During the demolition stage, approximately 30 of the 118 staff parking spaces on the Moorehouse Site will require relocation so as to provide appropriate clearance from demolition works, and for demolition works vehicles. The Modification therefore also provides for the construction of a temporary car park on the approved Shoalhaven Starches Packing Plant Site (PP Site) which lies on the northern side of Bolong Road. This temporary car park will be able to accommodate these relocated staff parking spaces as well as providing parking for demolition staff.

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

2.0 THE SITE AND SURROUNDING LOCALITY

The Shoalhaven Starches factory site is situated on various allotments of land on Bolong Road, Bomaderry within the City of Shoalhaven. The factory site, which is located on the south side of Bolong Road on the northern bank of the Shoalhaven River, has an area of approximately 12.5 hectares (refer **Figure 1**).

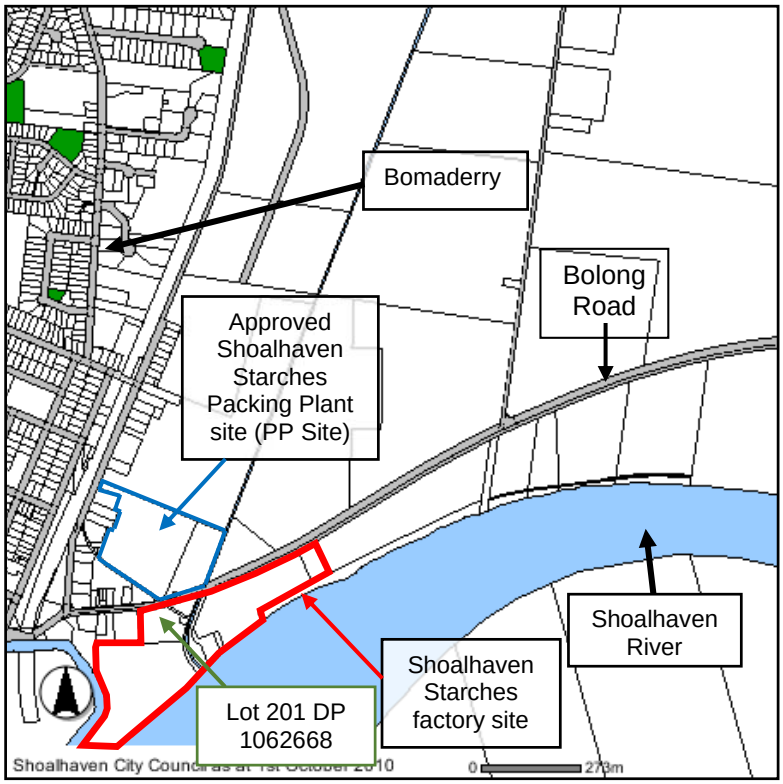

Figure 1: Site locality plan.

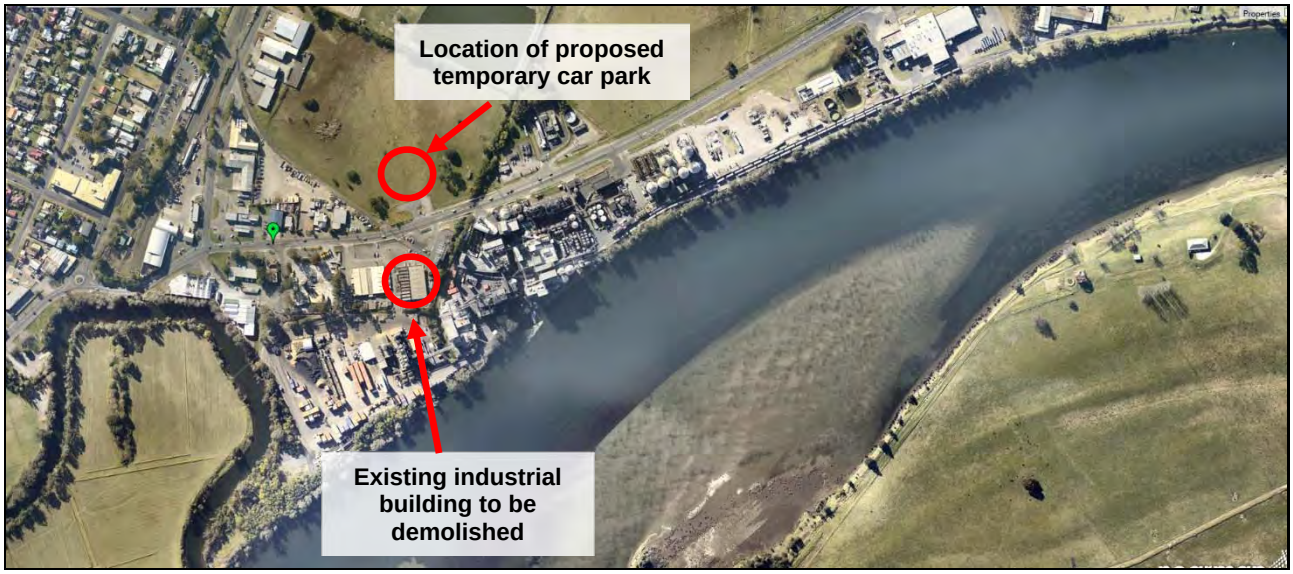

Figure 2: Aerial photograph of Shoalhaven Starches factory site.

The Project Approval issued by the Minister related to the following parcels of land (**Table 1**):

Table 1
Shoalhaven Starches Property

Lot	***Deposited Plan (DP) / FP***	***Lot***	***Deposited Plan (DP) / FP***
Factory		**Wastewater Treatment Plant & Environmental Farm** (continued)	
1	838753	22	811233
A	334511	164	4469
B	334511	2	854764
B	376494	210	6131
62	1078788	211	6131
201	1062668	Part 212	6131
1	385145	213	6131
241	1130535	214	6131
Packing Plant		248	6131
16	1121337	2	955009
2	538289	42	751268
Wastewater Treatment Plant & Environmental Farm		63	751268
		Part 2	854837
4	610696	3	1109510
	131008	2	1109510
1	842231	1	1109510
2	842231	2	833181
3	235705	**Overhead Bridge – Bolong Road Reserve**	
1	235705		
2	235705	2	538289
Part 2	854837	**Fire Services**	
4	1109510	241	1130535

The existing industrial building which is proposed to be demolished is sited on Lot 201 DP 1062668, within the western part of the factory site (refer **Figures 1** and **2**). **Plate 1** is a view of this industrial building,

The proposed temporary car park will be located on the approved Shoalhaven Starches Packing Plant Site (PP Site) which lies on the northern side of Bolong Road (see **Figures 1** and **2** and **Plate 2**) and affects the following lots:

- Lot 16 DP 1121337; and
- Lot 2 DP 538289

Plate 1: View of building to be demolished.

Plate 2: View of site of proposed temporary car park.

The town of Bomaderry is located 0.5 km (approx.) to the west of the factory site, and the Nowra urban area is situated 2.0 km to the south west of the site. The "Riverview Road" area of the Nowra Township is situated approximately 600 metres immediately opposite the factory site across the Shoalhaven River.

The village of Terara is situated approximately 1.5 kilometres to the south east of the site, across the Shoalhaven River. Pig Island is situated between the factory site and the village of Terara and is currently used for dairy cattle grazing.

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; the Shoalhaven Starches site; Shoalhaven Dairy Co-op (formerly Australian Co-operative Foods Ltd – now owned by the Manildra Group); and the former Shoalhaven Paper Mill (Australian Papers). The industrial area is serviced by a privately owned railway spur line that runs from just north of the Nowra-Bomaderry station via the starch plant and the former Dairy Co-op site to the Paper Mill.

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

The Company also has an Environmental Farm located over 1000 hectares on the northern side of Bolong Road. This area is cleared grazing land and contains spray irrigation lines and wet weather storage ponds (total capacity 925 Mega litres). There are at present 6 wet weather storage ponds on the farm that form part of the waste water management system for the factory. A seventh pond approved in 2002 was converted into the biological section of the new wastewater treatment plant that has now been commissioned.

The Environmental Farm covers a broad area of the northern floodplain of the Shoalhaven River, stretching from Bolong Road in the south towards Jaspers Brush in the north. Apart from its use as the Environmental Farm, this broad floodplain area is mainly used for grazing (cattle). The area comprises mainly large rural properties with isolated dwellings, although there is a clustering of rural residential development along Jennings Lane (approximately 1 kilometre away) and Back Forest Road (approximately between 500 metres to 1.2 kilometres away) to the west of the Environmental Farm; and Jaspers Brush Road, approximately 1.2 kilometres to the north of the Environmental Farm.

Figure 3 is a site locality plan depicting the location of the factory site and Environmental Farm as well as the surrounding locality.

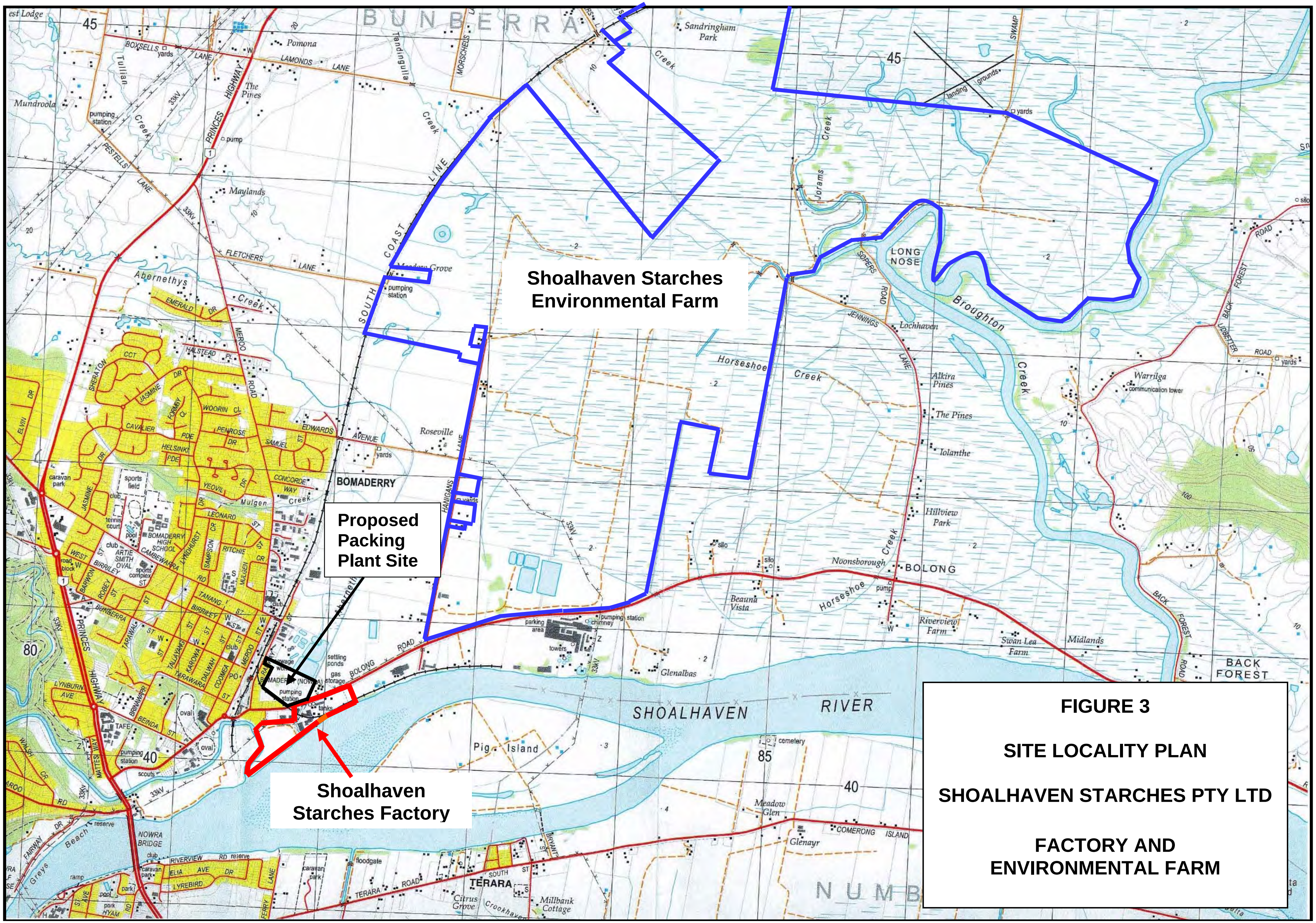

FIGURE 3

SITE LOCALITY PLAN

SHOALHAVEN STARCHES PTY LTD

FACTORY AND ENVIRONMENTAL FARM

3.0 BACKGROUND

3.1 PRODUCTION PROCESSES

The production process at the Shoalhaven Starches plant has developed over a number of decades. 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 which has now been constructed and which enables the milling of part of the Company's flour requirements to be processed directly on the site. 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 Starch Dryer that is intended to be located within the site of the demolished factory building the subject of this application will dry starch.

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. The wastage from the starch process is used for fermentation and distillation to produce ethanol.

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. The wastage from the liquid starch process is also 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 also has some wastage that is also used in the ethanol process.

The wastage from the starch, gluten and syrup production processes are combined to feed the fermentation and distillation stage of ethanol production. The outputs are fuel and industrial and food grade ethanol. Industrial grade ethanol is used in producing pharmaceuticals, printer's ink and methylated spirits.

Ethanol production results in some waste solids and water, which are processed through the Stillage Recovery Process Plant (which was approved as part of PRP No. 7 in 2005). The residue solids 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 further treated before being re-circulated into the factory processes and/or 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

The plant employs a total of 280 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 280 employees	Management, Technical & Administration	60
	Day Workers	75
	Shift Production (spread over 4 shifts)	145

Hours of Shifts

Plant:	6:00 am to 6:00 pm	-	36 employees
	6:00 pm to 6:00 am	-	36 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	-	2 employees
	5:00 pm to 5:00 am	-	1 employee
	7:00 am to 3:00 pm	-	3 employees

Shift work at both the factory and farm is undertaken on a 2 day, 2 night and 4 day off basis.

3.3 RAW MATERIALS

There are six major raw material components used in the Shoalhaven Starches process. These are flour, grain; coal; natural gas; fresh water and salt water.

Flour is delivered to the site from the Company's mills at Manildra, Gunnedah and Narrandera each day of the week and is also produced by the Flour Mill that operates within the site. The flour arrives into the plant by Company owned stainless steel rail wagons. The wagons have bottom dumping doors and are unloaded in a building. From the silos, the flour is moved into the plant by air as required. The current approved flour consumption of the plant is 20,000 tonnes per week.

Grain is delivered to the site by rail. At present up to approximately 552 tonnes of grain is delivered to the site per day. The grain is milled to produce flour for further processing in the starch and gluten plants. The grain is "dumped" from the train into an underground hopper and conveyed by screw conveyors and bucket elevator into a silo.

Coal is delivered by road from Wallerawang near Lithgow. At present 10 trucks of 30 tonnes per truck are delivered daily. The coal storage area is located between the Shoalhaven River and the existing boilers. The transfer of coal from the storage bins to the boilers is undertaken by front-end loader pushing the coal through a grate and into a pneumatic conveying system up to the boilers.

Natural Gas – The Shoalhaven Starches plant operates partly on natural gas. The site is connected to a natural gas reticulation main.

Fresh water and recycled water is utilised in the starch production process. At present on average a total of 6900 kilolitres of water is used on a daily basis. This comprises 2600 Kl from the town water supply, and 4300 Kl from a raw water supply provided by Shoalhaven City Council via a pipeline from the former Shoalhaven Paper Mill.

Salt water from the Shoalhaven River is used to cool items of plant before the water is returned to the river.

In addition the factory operations utilise a range of enzymes, additives, fuels and other products in the overall operations. At present the plant utilises approximately 30 tonnes each of acid and caustic products per week.

3.4 HISTORY OF DEVELOPMENT ON THE SITE

The Shoalhaven Starches wheat starch and gluten plant at Nowra was originally constructed in 1970. The Manildra flour mills, at Manildra, Narrandera and Gunnedah, supply the Shoalhaven Starches factory, which currently produces wheat starch, gluten,

syrups and ethanol (industrial and fuel grades). The Shoalhaven Starches operation provides direct on-site employment for 250 employees. Through the use of contractors it also indirectly creates employment for many more people in the local and regional economies.

In order to address the issue of waste water disposal, in 1984 Shoalhaven Starches installed a spray irrigation system, using farmland it owned on the northern side of Bolong Road at Bomaderry.

In June 1991, two storage ponds were built (Ponds No. 1 and 2) resulting in the cessation of waste water discharge to the Shoalhaven River.

To further reduce product wastage, Shoalhaven Starches sought to use excess starch for the production of ethanol. Ethanol production began at the Shoalhaven site in June 1992.

In 1994, the NSW Government approved the installation of a larger ethanol distillery within the existing site. The new distillery and its associated facilities enabled production of ethanol to increase from 20 million litres per annum to a production capacity of 100 million litres per year.

Subsequent to this approval Shoalhaven City Council issued development consent for:

- a protein isolate plant and DDGS Dryer; and
- a sorghum grinding plant.

Shoalhaven City Council issued development approval for the construction of a wet weather storage pond (Pond No. 6) on the 27th April 2001. At present, with the completion of Pond No. 6, Shoalhaven Starches has a combined waste water storage capacity within the existing ponds of 925 ML. A further wet weather storage pond (Pond No. 7) was approved by the Minister for Planning on the 23 December 2002 and construction of the Pond has been completed.

On the 1st June, 2001 the Minister for Urban Affairs & Planning, Dr Andrew Refshauge MP, declared both the Shoalhaven Starches factory and Environmental Farm as being State Significant Development for the purposes of the then Section 76A(7) of the Environmental Planning & Assessment Act.

In 2003 the Minister for Planning issued development consent (D223) for Shoalhaven Starches Pollution Reduction Program (PRP) No. 7. This approval approved the Starch Dryer No. 5 which is proposed to be located on the site of the demolished building associated with this approval, subject to a separate Modification Application. This approval also enabled the implementation of the Company's Waste Water Management

Strategy, and essentially sought to remove solids (suspended and soluble) from the Company's waste water, prior to its irrigation on the Environmental Farm.

This process, known as Stillage Recovery, essentially involved the introduction of additional decanters, the installation of an evaporation plant and additional dryers, to remove solids from the waste water. It was these "solids" in the waste water that when sprayed onto the Environmental Farm, or stored in the wet weather storage ponds, had the potential to result in the generation of odours.

The recovery of the suspended and soluble solids from the waste water could not be undertaken by the dryers in this process, without firstly providing additional coarse solids. Additional coarse solids (grain) were required to be imported to the site.

As a consequence of the additional grain, the starch contained in the grain resulted in a need to increase ethanol production to 126 million litres per year. This increase in ethanol production required the installation of additional fermenters, associated cooling towers and molecular sieves.

The increase in ethanol production also resulted in an increase in waste water, which was required to be disposed on the environmental farm. In this regard this previous proposal also included an increase in waste water disposal area on the Environmental Farm.

The plant associated with this previous approval has now been substantially installed and commissioned.

Shoalhaven Starches subsequently received further development approvals:

- The establishment of a flour mill on the factory site. This proposal provides for the transportation of wheat grain directly to the site by train for processing into industrial grade flour for the use in the production of starch and gluten at the factory site.
- An application pursuant to Section 96 of the Environmental Planning & Assessment Act seeking to modify the development approval for the PRP No. 7 project to enable a DDGS Dryer to be installed in a slightly different location in the same building as previously approved; and the installation of an additional evaporator (a redundant piece of equipment located at the Company's Altona Plant in Victoria) to provide standby capacity for the existing evaporator plant when sections of the existing plant are out of service or cleaning.
- A Section 96 modification application for a standby fermenter tank to be installed on the site, to enable the existing fermenter tanks to be taken out of service for maintenance one at a time.

A full list of historic approvals that applied to the Shoalhaven Starches site were detailed within Section 2.4 of the EA prepared by our firm, in relation to the Shoalhaven Starches Expansion Project (MP 06_0228).

3.5 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 is to increase the Company's ethanol production capacity to meet the expected increase in demand for ethanol arising from Federal and State Government initiatives by upgrading the existing ethanol plant.

The approval is subject to certain conditions enabling 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 enables Shoalhaven Starches to upgrade plant and increase throughput of raw materials, principally flour and grain.

The following additions and alterations were approved 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. This included the installation of a DDGS Pelletising Plant as part of these processes; 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 are undertaking 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 (October 2007). The audit report included 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. This staged implementation has now largely been implemented and the factory is now permitted to produce the maximum approved 300 million litres of ethanol per year.

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.

Importantly with respect to this project, this Project Approval also consolidated all previous approvals (up to that point in time) into the one Project Approval for the overall site. This included the approval for the PRP No. 7 project approved by the NSW Government in 2003, and which included the Starch Dryer No. 5 that is proposed to be relocated on the site of the demolished building the subject of this application.

3.6 APPROVAL HISTORY FOLLOWING MP 06_0228

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

On the 30th September, 2010 Shoalhaven City Council approved Development Application DA 10/1843 permitting the upgrade of the existing vehicle entrance at 220 Bolong Road, otherwise known as the "former Dairy Farmers" factory site. The need for these upgrading works arose following the Project Approval requirements for the "SSEP", and which included requirements to undertake upgrading works along Bolong Road along the frontage of the site. These upgrading works prevent vehicles travelling east along Bolong Road to turn right into the central vehicle access to the Shoalhaven Starches site; as well as vehicles turning right out from this access point and travelling east along Bolong Road. These approved works also prevent vehicles turning right out of the BOC Carbon Dioxide Plant.

The works associated with this approval will allow vehicles wishing to travel west from the BOC CO_2 plant to leave this site to travel first 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.

RA11/1002 Interim Packing Plant

Following the issue of 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 (RA11/1002 dated 26th October 2011). This Interim Packing Plant operates in conjunction with the Companies existing Packing Plant which is located within the existing factory site.

As outlined in Section 3.5 above, Project Approval MO 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 have 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.

During the interim period however the now existing Flour Mill and a new starch 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 was 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 approval to modify the siting and footprint of the approved Packing Plant. Once this other modification application has been approved, the new Packing Plant constructed and commissioned, the need for the Interim Packing Plant located at 22 Bolong Road will be reviewed.

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.

The purpose of these two additional grain silos will be to provide security of raw material storage and supply when there are closures of the Illawarra rail line serving the Shoalhaven Starches site enabling the factory operations to continue during rail line closures. Over recent years there have been occasions when there have been closures of the Illawarra rail line due to track construction work as well as a result of floods, storms and traffic accidents. During these closures the supply of grain and flour to the Shoalhaven Starches site has been interrupted. The additional grain silos associated with this application will provide a buffer for on-site storage and additional security of storage and supply should closures to the rail line occur in the future.

Other Approvals

There have been other approvals that have been issued by Shoalhaven City Council on lands 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).

3.7 LOCAL PLANNING PROVISIONS

Shoalhaven Local Environmental Plan (SLEP) 2014

The subject land 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.*

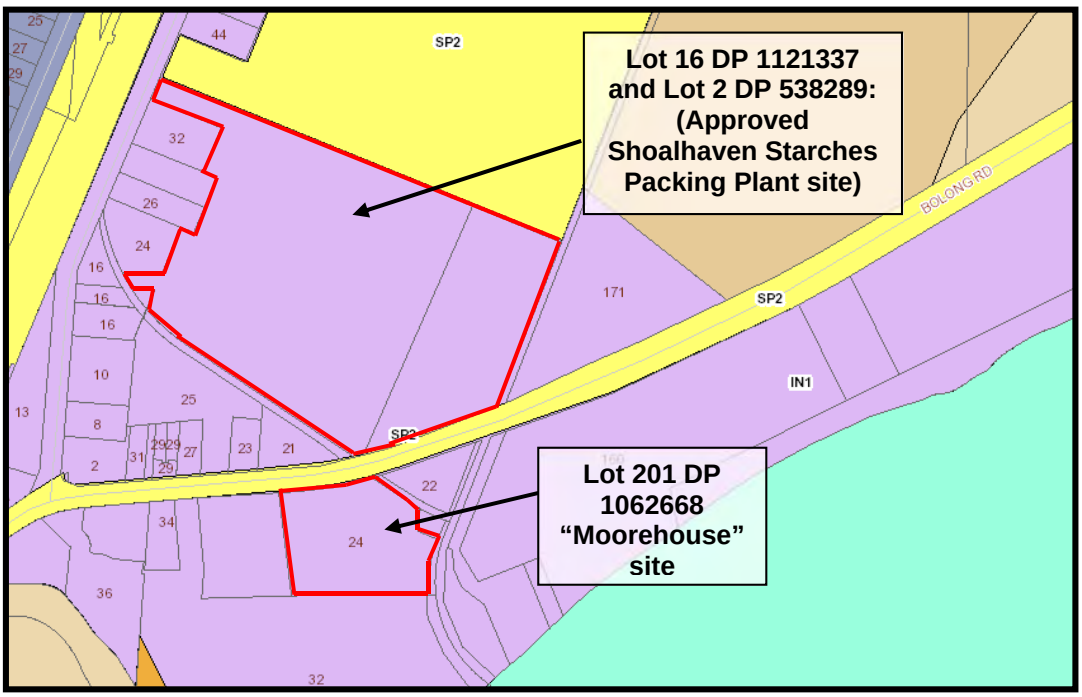

Figure 4: Zoning provisions applying under Shoalhaven LEP 2014.

It is our view that the proposal is consistent with these objectives as the proposal involves demolition works that are required to enable construction of future facilities for an existing industrial activity.

Industry is a permissible use within this zone. The intended future use of the site for industrial activity is permissible subject to consent (see **Table 2** below).

Table 2

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

Table 2 (continued)

Prohibited continued	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 3** below:

Table 3

Shoalhaven LEP 2014 Provisions

SLEP 2014 Clause	***Provisions***	***Comments***
4.3 Height of Buildings	*(1) The objectives of this clause are as follows:* *(a) to ensure that buildings are compatible with the height, bulk and scale of the existing and desired future character of a locality,* *(b) to minimise visual impact, disruption of views, loss of privacy and loss of solar access to existing development,* *(c) to ensure that the height of buildings on or in the vicinity of a heritage item or within a heritage conservation area respect heritage significance.* *(2) The height of a building on any land is not to exceed the maximum height shown for the land on the Height of Buildings Map.* *(2A) If the Height of Buildings Map does not show a maximum height for any land, the height of a building on the land is not to exceed 11 metres.*	The proposal involves demolition of an existing industrial building in order to accommodate the future relocation of Starch Dryer No. 5. The relocation of Starch Dryer No. 5 will be the subject of a separate, future Modification Application. There are no buildings proposed to be constructed as part of this Modification Application. The provisions of this clause therefore do not apply to the proposal.
5.5 Development within the coastal zone	*(1) The objectives of this clause are as follows:* *(a) 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,* *(b) to implement the principles in the NSW Coastal Policy, and in particular to:* *(i) protect, enhance, maintain and restore the coastal environment, its associated ecosystems, ecological processes and biological diversity and its water quality, and*	The subject land is located within the coastal zone. The proposal is not considered to adversely affect the coastal zone based on the following: • The proposal does not affect or impinge on public access to or along the coastal foreshore. • The proposal involves demolition of an existing factory building only.

Table 3 (continued)

SLEP 2014 Clause	*Provisions*	*Comments*
5.5 continued	*(ii) protect and preserve the natural, cultural, recreational and economic attributes of the NSW coast, and* *(iii) provide opportunities for pedestrian public access to and along the coastal foreshore, and* *(iv) recognise and accommodate coastal processes and climate change, and* *(v) protect amenity and scenic quality, and* *(vi) protect and preserve rock platforms, beach environments and beach amenity, and* *(vii) protect and preserve native coastal vegetation, and* *(viii) protect and preserve the marine environment, and* *(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* *(x) ensure that decisions in relation to new development consider the broader and cumulative impacts on the catchment, and* *(xi) protect Aboriginal cultural places, values and customs, and* *(xii) protect and preserve items of heritage, archaeological or historical significance* *(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:* *(a) existing public access to and along the coastal foreshore for pedestrians (including persons with a disability) with a view to:* *(i) maintaining existing public access and, where possible, improving that access, and* *(ii) identifying opportunities for new public access, and* *(b) the suitability of the proposed development, its relationship with the surrounding area and its impact on the natural scenic quality, taking into account:*	• The proposal will not lead to overshadowing of foreshore areas. • The scenic qualities of the area will not diminish. • The proposal will not lead to adverse impacts on threatened fauna and flora. • This EA is supported by a Soil Erosion and Sediment Control Plan prepared by Cowman Stoddart Pty Ltd (**Annexure 7**), which includes recommendations for erosion and sediment control measures that should be implemented during construction and demolition works.

Table 3 (continued)

SLEP 2014 Clause	*Provisions*	*Comments*
5.5 continued	*(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* *(ii) the location, and* *(iii) the bulk, scale, size and overall built form design of any building or work involved, and* *(c) the impact of the proposed development on the amenity of the coastal foreshore including:* *(i) any significant overshadowing of the coastal foreshore, and* *(ii) any loss of views from a public place to the coastal foreshore, and* *(d) how the visual amenity and scenic qualities of the coast, including coastal headlands, can be protected, and* *(e) how biodiversity and ecosystems, including:* *(i) native coastal vegetation and existing wildlife corridors, and* *(ii) rock platforms, and* *(iii) water quality of coastal waterbodies, and* *(iv) native fauna and native flora, and their habitats, can be conserved, and* *(f) the cumulative impacts of the proposed development and other development on the coastal catchment.* *(3) 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:* *(a) 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* *(b) 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*	

Table 3 (continued)

SLEP 2014 Clause	*Provisions*	*Comments*
5.5 continued	*(c) 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* *(d) the proposed development will not:* *(i) be significantly affected by coastal hazards, or* *(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	*(1) The objectives of this clause are:* *(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.* *(2) Development consent is required for any of the following:* *(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):* *(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:*	There are no heritage items within the subject land. And the subject site is not located within a heritage conservation area. An aboriginal archaeological assessment previously undertaken on the site indicated that: *the potential for any Aboriginal heritage evidence to survive is virtually negligible.* In view of the minimal extent of the proposed development, and the register searches, field survey and consultation with the Aboriginal community conducted to date, along with the extensive impacts from current infrastructure further heritage assessment is not considered to be warranted.

Table 3 (continued)

<table>
<tr><th>SLEP 2014 Clause</th><th>Provisions</th><th>Comments</th></tr>
<tr><td>5.10 continued</td><td>(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,
(f) subdividing land:
(i) on which a heritage item is located or that is within a heritage conservation area, or
(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.</td><td></td></tr>
<tr><td>7.1 Acid sulfate soils</td><td>(1) The objective of this clause is to ensure that development does not disturb, expose or drain acid sulfate soils and cause environmental damage.
(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.
<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></td><td>Mapping supporting the SLEP 2013 identifies the subject land as being affected by Class 2, 3 and 4 land.
The proposal involves demolition of an existing industrial building and construction of a temporary car parking area. The demolition works will extend to slab only and will not involve removal of the slab. No disturbance will occur below ground level on this site. The only earthworks are those associated with construction of the temporary car parking area and these involve removal of topsoil only.
The proposal is not located within that part of the site identified as Class 2 land (which is located within the northern part of the PP site).
Under these circumstances the proposal is considered highly unlikely to result in the disturbance or exposure of acid sulfate soils.</td></tr>
</table>

Table 3 (continued)

SLEP 2014 Clause	*Provisions*	*Comments*
7.1 continued	*(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.* *(4) Despite subclause (2), development consent is not required under this clause for the carrying out of works if:* *(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* *(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.* *(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):* *(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,* *(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).* *(c) minor work, being work that costs less than $20,000 (other than drainage work).* *(6) Despite subclause (2), development consent is not required under this clause to carry out any works if:* *(a) the works involve the disturbance of less than 1 tonne of soil, and* *(b) the works are not likely to lower the watertable.*	

Table 3 (continued)

SLEP 2014 Clause	*Provisions*	*Comments*
7.3 Flood Planning	*(1) The objectives of this clause are as follows:* *(a) to minimise the flood risk to life and property associated with the use of land,* *(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,* *(c) to avoid significant adverse impacts on flood behaviour and the environment.* *(2) This clause applies to:* *(a) land identified as "Flood Planning Area" on the Flood Planning Area Map, and* *(b) other land at or below the flood planning level.* *(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:* *(a) is compatible with the flood hazard of the land, and* *(b) will not significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and* *(c) incorporates appropriate measures to manage risk to life from flood, and* *(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* *(e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding, and* *(f) will not affect the safe occupation or evacuation of the land.* *(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.* *(5) In this clause:* ***flood planning level** means the level of a 1:100 ARI (average recurrent interval) flood event plus 0.5 metre freeboard.*	The *Flood Planning Area Map* that accompanies the SLEP 2014 identifies the subject land as being flood prone land. The proposal involves demolition of an existing industrial building and construction of a temporary car parking area. Construction of the temporary car parking area involves provision of a hardstand area with a bitumen surface. The existing site where the temporary car park is proposed is within the approved Packing Plant site, which has approval for various development including a road and packing plant buildings. The proposed temporary car park will not involve any substantial earthworks on this site and is not expected to have any additional flooding impact. Under these circumstances, and given the scale of the proposed car park it is considered unlikely that the proposal will significantly affect flood behaviour.

Table 3 (continued)

SLEP 2014 Clause	*Provisions*	*Comments*
7.4 Coastal Risk Planning	*(1) The objectives of this clause are as follows:* *(a) to avoid significant adverse impacts from coastal hazards,* *(b) to ensure uses of land identified as coastal risk are compatible with the risks presented by coastal hazards,* *(c) to enable the evacuation of land identified as coastal risk in an emergency,* *(d) to avoid development that increases the severity of coastal hazards.* *(2) This clause applies to the land identified as "Coastal Risk Planning Area" on the Coastal Risk Planning Map.* *(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:* *(a) will avoid, minimise or mitigate exposure to coastal processes, and* *(b) is not likely to cause detrimental increases in coastal risks to other development or properties, and* *(c) is not likely to alter coastal processes and the impacts of coastal hazards to the detriment of the environment, and* *(d) incorporates appropriate measures to manage risk to life from coastal risks, and* *(e) is likely to avoid or minimise adverse effects from the impact of coastal processes and the exposure to coastal hazards, and* *(f) provides for the relocation, modification or removal of the development to adapt to the impact of coastal processes and coastal hazards, and* *(g) has regard to the impacts of sea level rise.* *(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.* *(5) In this clause:* ***coastal hazard** has the same meaning as in the Coastal Protection Act 1979.*	The *Coastal Risk Planning Map* that accompanies the SLEP 2014 does <u>not</u> identify the subject land as a "*Coastal Risk Planning Area*". The provisions of this clause therefore do not apply to the subject site.

Table 3 (continued)

SLEP 2014 Clause	*Provisions*	*Comments*
7.5 Terrestrial Biodiversity	*(1) The objective of this clause is to maintain terrestrial biodiversity, by:* *(a) protecting native flora and fauna,* *(b) protecting the ecological processes necessary for their continued existence, and* *(c) encouraging the recovery of native flora and fauna, and their habitats.* *(2) This clause applies to land:* *(a) identified as "Biodiversity—habitat corridor" or "Biodiversity—significant vegetation" on the Terrestrial Biodiversity Map, and* *(b) situated within 40m of the bank (measured horizontally from the top of the bank) of a natural waterbody.* *(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider:* *(a) whether the development is likely to have:* *(i) any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and* *(ii) any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and* *(iii) any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and* *(iv) any adverse impact on the habitat elements providing connectivity on the land, and* *(b) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.* *(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:* *(a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or* *(b) 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*	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*. The Moorehouse site comprises developed, industrialised land. The location of the temporary car park comprises cleared, vacant land. Under these circumstances the proposal is highly unlikely to have any adverse impacts on biodiversity values.

Table 3 (continued)

SLEP 2014 Clause	*Provisions*	*Comments*
7.5 continued	*(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.* *(5) For the purpose of this clause:* ***bank** means the limit of the bed of a natural waterbody.* ***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.*	
7.6 Riparian land and watercourses	*(1) The objective of this clause is to protect and maintain the following:* *(a) water quality within watercourses,* *(b) the stability of the bed and banks of watercourses,* *(c) aquatic and riparian habitats,* *(d) ecological processes within watercourses and riparian areas.* *(2) This clause applies to all of the following:* *(a) land identified as "Riparian Land" on the Riparian Lands and Watercourses Map,* *(b) land identified as "Watercourse Category 1", "Watercourse Category 2" or "Watercourse Category 3" on that map,* *(c) 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.* *(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider:* *(a) whether or not the development is likely to have any adverse impact on the following:* *(i) the water quality and flows within the watercourse,* *(ii) aquatic and riparian species, habitats and ecosystems of the watercourse,* *(iii) the stability of the bed and banks of the watercourse,*	The *Riparian Lands and Watercourses Map* that accompanies the SLEP 2014 identify a category 2 watercourse (Abernethy's Creek) located within the eastern part of the Moorehouse site and a category 1 watercourse (Shoalhaven River) located to the south of the Moorehouse site. The proposal involves demolition of an existing industrial building within the Moorehouse site and construction of a temporary car park on land to the north of Bolong Road (within the PP site). This EA is supported by an Soil Erosion and Sediment Control Plan carried out by Cowman Stoddart Pty Ltd (**Annexure 7**), which includes recommendations for erosion and sediment control measures that should be implemented during demolition and construction (see Section 7.6 of this EA). It is envisaged that subject to the implementation of the erosion and control measures outlined by this plan that the

Table 3 (continued)

SLEP 2014 Clause	*Provisions*	*Comments*
7.6 continued	*(iv) the free passage of fish and other aquatic organisms within or along the watercourse,* *(v) any future rehabilitation of the watercourse and its riparian areas, and* *(b) whether or not the development is likely to increase water extraction from the watercourse, and* *(c) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.* *(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:* *(a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or* *(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or* *(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.* *(5) For the purpose of this clause:* ***bank** means the limit of the bed of a watercourse.* ***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.*	proposed demolition and construction works will not have any adverse impacts on aquatic species or habitats within the adjacent Abernethy's Creek and will not impeded the free passage of fish and other aquatic organisms. It is not envisaged that the proposed demolition works will have any impact on the stability of the bed and banks of Abernethy's Creek. An assessment of the impact that the future Starch Dryer No. 5 will have on the bed and banks of this adjacent watercourse will be undertaken as part of the separate modification application for the future use of the subject land. No rehabilitation works of this adjoining watercourse or its riparian areas are considered necessary as part of this application. This was an issue that was addressed as part of the original SSEP Project Approval. Given the above circumstances: • The demolition works will be confined to an existing development footprint of the site and will therefore avoid significant adverse environmental impact. • The development will also include measures to control erosion and sedimentation of Abernethy's Creek. The EA includes a Soil Erosion and Sediment Control Plan. This will ensure that measures will be implemented to minimise impacts upon this watercourse.

Table 3 (continued)

SLEP 2014 Clause	*Provisions*	*Comments*
7.6 continued		An assessment will be undertaken of the proposed Starch Dryer on the stability of Abernethy's Creek bank and banks of the Shoalhaven River as part of the separate Modification Application for the relocation of Starch Dryer No. 5.
7.7 Landslide risk and other land degradation	*(1) The objective of this clause is to maintain soil resources and the diversity and stability of landscapes, including protecting land:* *(a) comprising steep slopes, and* *(b) susceptible to other forms of land degradation.* *(2) This clause applies to the following land:* *(a) land with a slope in excess of 20% (1:5), as measured from the contours of a 1:25,000 topographical map, and* *(b) land identified as "Sensitive Area" on the Natural Resource Sensitivity—Land Map.* *(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:* *(a) the geotechnical stability of the site, and* *(b) the probability of increased erosion or other land degradation processes.* *(4) Before granting consent to development on land to which this clause applies, the consent authority must be satisfied that:* *(a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or* *(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or* *(c) if that impact cannot be minimised – the development will be managed to mitigate that impact.* *(5) In this clause, topographical map means the most current edition of a topographical map, produced by Land and Property Information, a division of the Department of Finance and Services, that identifies the Council's local government area and boundary.*	*Natural Resource Sensitivity - Land Map*ping supporting the SLEP 2014 identifies the subject site as a *Sensitive Area*. The subject site is flat and does not comprise steep slopes. The proposal involves demolition of an existing industrial building and construction of a temporary car parking area. This EA is supported by a Soil Erosion and Sediment Control Plan carried out by Cowman Stoddart Pty Ltd (**Annexure 7**), which includes recommendations for erosion and sediment control measures that should be implemented during demolition and construction works (see Section 7.6 of this EA). A separate application for the relocation of the Starch Dryer No. 5 to the Moorehouse site will be subject to a separate geotechnical assessment that will address stream bank stability issues.

Table 3 (continued)

SLEP 2014 Clause	*Provisions*	*Comments*
7.8 Scenic protection	*(1) The objective of this clause is to protect the natural environmental and scenic amenity of land that is of high scenic value.* *(2) This clause applies to land identified as "Scenic Protection" on the Scenic Protection Area Map.* *(3) In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must:* *(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* *(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* *(c) consider the siting of the proposed buildings.*	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. The provisions of this clause therefore do not apply to the subject site.
7.15 Development in the vicinity of extractive industries and sewerage treatment plants	*(1) The objective of this clause is to protect the operational environment of certain industries operating on the land to which this clause applies.* *(2) This clause applies to land identified as "Extractive Industry" and "Sewage Treatment Plant" on the Buffers Map.* *(3) Development consent must not be granted to the carrying out of development on land to which this clause applies unless the consent authority has:* *(a) made an assessment of the impact of noise, odour and other emissions from any industry carried out on that land, and* *(b) considered the potential impact of noise, odour and other emissions associated with that industry on any activities that will be associated with the development, and* *(c) considered any opportunities to relocate the development outside that land, and* *(d) has considered whether the development would adversely affect the operational environment of that industry.*	The Buffers M*ap* that accompanies the SLEP 2014 identifies that the subject land is located within the vicinity of a sewerage treatment plant. The EA is supported by an Air Quality (Dust) Assessment undertaken by ENRS (**Annexure 3**) and a Noise Assessment undertaken by Day Design Pty Ltd (**Annexure 4**). Air quality and noise issues are further discussed in Sections 7.1 and 7.3 of this EA respectively.

3.8 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.

Following consultation with the Department of Planning and Environment in relation to this modification proposal, the Environmental Assessment is required to include detailed air quality (dust) and noise assessments in accordance with relevant EPA guidelines. Air quality (dust) and Noise are discussed in Section 7.1 of this EA and noise is discussed in Section 7.3.

No additional environmental monitoring beyond that required for the Project Approval is understood to be required by the EPA in association with this modification proposal.

The EPL for the site may require to be modified to reflect the works associated with this Modification Application.

4.0 THE MODIFICATION PROPOSAL

4.1 INTRODUCTION

The modification proposal will seek approval to demolish an existing industrial building to enable the relocation of Starch Dryer No.5. The relocation of Starch Dryer No. 5 will be the subject of a separate, future Modification Application.

The Modification also provides for the construction of a temporary car park on the approved Shoalhaven Starches Packing Plant Site (PP Site) which lies on the northern side of Bolong Road. This temporary car park will accommodate relocated staff parking spaces from the Moorehouse site, as well as providing parking for demolition staff.

4.2 PROJECT DESCRIPTION

The Starch Plant

Flour is pneumatically conveyed from storage bins to the starch plant, where the flour is mixed with water and separated into two components:

(i) Gluten, which has a high protein content (about 75%) is sold to local and export markets.

(ii) Starch, which is processed and then directed to:

  (a) dry starch markets, both local and export;

  (b) domestic liquid starch markets;

  (c) the glucose plant which processes the starch further to produce glucose and other products;

  (d) the ethanol plant, where the starch is converted to sugars, which are fermented and distilled to produce ethanol.

The SSEP Project Approval enabled an increase in the amount of flour transferred to the site for processing to 15,000 tonnes per week, in addition to the 5000 tonnes per week of flour to be produced on-site.

As a result of the increased amount of flour arriving at the site an additional dryer and grinder have been approved (as part of the project Approval) and installed. This dryer and grinder have similar throughput and operating parameters as the existing dryers. In addition, proposed Starch Dryer No. 5 (approved under the previous PRP No. 7 approval) is also required to be constructed.

Following further detailed engineering design it has become apparent that the area originally set aside for Starch Dryer No. 5 under the PRP No. 7 approval provided

insufficient area for the footprint of this proposed dryer. As a result an alternative location for this Starch Dryer is required to be identified. It is proposed to relocate Starch Dryer No. 5 from within the existing Shoalhaven Starches factory site to land on the western side of Abernethy's Creek, otherwise known as the "Moorehouse" site.

The Moorehouse site includes a number of existing industrial buildings and a staff car parking area. It will be necessary to demolish one of the existing industrial buildings in order to accommodate the future relocation of Starch Dryer No. 5.

4.3 SECTION 75W OF THE EP&A ACT

Section 75W of the EP&A Act relates to modifications to Project Approvals issued by the Minister for Planning under the previous Part 3A of the EP&A Act ("Major Projects" provisions) 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 modification application is made pursuant to Section 75W of the EPA Act.

In this regard the Department of Planning & Environment issued formal requirements for the preparation of this Environmental Assessment for this Modification Application. This Environmental Assessment has been prepared in accordance with those requirements.

4.4 PROPOSED MODIFICATION

4.4.1 The Proposal

The Moorehouse site includes a number of existing industrial buildings and a staff car parking area. It will be necessary to demolish one of the existing industrial buildings in order to accommodate the future relocation of Starch Dryer No. 5. Under this Modification Application it is proposed to demolish an existing industrial building within the Moorehouse site. The purpose of this application is to seek the demolition of the existing industrial building to facilitate the future construction of Starch Dryer No. 5.

The industrial building that is proposed to be demolished comprises a partly brick and partly metal clad building with metal and asbestos roof sheeting. The building has a floor area of 1656 m^2.

The floor area of the original approved Starch Dryer No. 5 comprised an area of 255 m^2.

The building that is to be demolished is partly used for the storage of electronic motors and as a workshop. Approximately half of the building is not used due to concerns due to the presence of asbestos. The Manildra Group have recently acquired the Australian Paper Mill factory site located further to the east of the former “Dairy Farmers” factory site which the Manildra Group have also acquired. It is intended that the plant and equipment that is currently stored within the subject building will be relocated for storage to the Australian Paper Mill site. The workshop use that occurs within this building will be amalgamated with existing workshops located within the Shoalhaven Starches factory site.

There is an oil sump located within the workshop section of the existing industrial building. Waste oil has been drained from this sump. It is proposed that a site contamination assessment will examine this sump as part of the future Starch Dryer No. 5 Modification Application.

Under this Modification Application it is only proposed to demolish the existing industrial building. The relocation of Starch Dryer No. 5 will be the subject of a separate, future Modification Application.

The proposal involves the demolition of a building and will not affect production from the site over that which has been the subject of past approvals. Similarly, the proposal will not involve any change in the amount of raw products that will be utilised; nor will it involve any changes in the amount of waste waters that will need to be treated and disposed.

At present the area situated adjacent to the existing industrial building on the Moorehouse Site is used for staff car parking (118 spaces). During the demolition stage, approximately 30 of the 118 staff parking spaces on the Moorehouse Site will require relocation so as to provide appropriate clearance from demolition works, and for demolition works vehicles. The Modification therefore also provides for the construction of a temporary car park on the approved Shoalhaven Starches Packing Plant Site (PP Site) which lies on the northern side of Bolong Road. This temporary car park will be able to accommodate these relocated staff parking spaces as well as providing parking for demolition staff.

Two stages of works are proposed as part of this Modification proposal:

- An initial two (2) week stage would provide for the construction of the temporary car park (including the widening and extension of the existing access road) on the PP Site.
- Following the completion of the above works, a four (4) week demolition stage would commence, involving the demolition of the existing industrial building and with some 30 staff parking spaces relocated from the Moorehouse Site to the temporary car park.

Temporary Car Park Construction Works

The construction works will take place over a period of approximately two (2) weeks and will require a range of vehicles, including tip-trucks, a heavy roller and grader/digger. Both the heavy roller and grader would remain on-site for the duration of the construction works.

The construction works will provide 60 parking spaces on hardstand comprising steel mill slag with a bitumen surface and will be delineated with reference to *Australian Standard 2890.1* so as to provide appropriate aisle width and parking space dimensions.

The car parking spaces will be located within the southern part of the PP site, immediately north of the existing PP Site access point (PP1). Plans of the proposed car park are provided in **Annexure 1.**

The Modification Application provides for the construction of 60 temporary parking spaces. This is in excess of the staff parking relocation demands associated with the demolition stage, but would specifically provide for the demolition staff demands associated with this modification; and also for the demands associated with the future Starch Dryer construction (which will require temporary relocation of staff car parking from the Moorehouse site and provision of parking for construction staff).

Once works at the Moorehouse Site are completed (ie. works associated with this Modification proposal and also those associated with the future Starch Dryer construction), the full complement (118 spaces) of staff parking will be reinstated at the Moorehouse site.

The temporary car park construction stage is estimated to employ up to six (6) construction staff per day, including an on-site foreman. These construction staff would utilise informal parking adjacent to the temporary car park for the short period of the temporary car park construction.

The proposed hours for construction works are as follows:

- 7:00 am to 5:00 pm Monday to Friday; and
- 8:00 am to 1:00 pm on Saturdays`

Demolition Works

The demolition works will take place over a period of approximately four (4) weeks and will require a range of vehicles, including an excavator, mobile crane, concrete saw, skid steer truck and tip truck. Both the excavator and mobile crane are expected to remain on-site for the duration of the demolition period.

The demolition works will involve the following activities:

- The majority of the demolition works will involve dismantling of the roof and framework by hand with the assistance of a mobile crane.
- The masonry walls will be 'pushed over' using a 7 tonne excavator and may require cuts using a concrete saw to facilitate this.
- Building waste and rubble will be loaded into trucks for removal from site, using the excavator.

All demolition works will be undertaken in accordance with *Australian Standard AS 2601:2001: The Demolition of Structures*.

The demolition stage is estimated to employ up to nine (9) demolition staff per day, including an on-site foreman. As with previous projects, most demolition staff are expected to travel in group transport (ie. shuttle bus) from Wollongong.

The proposed hours for demolition works are as follows:

- 7:00 am to 5:00 pm Monday to Friday; and
- 8:00 am to 1:00 pm on Saturdays.

Plans of the proposed demolition works are provided in **Annexure 1.**

5.0 CONSULTATION

During the preparation of this EA consultation has been undertaken with the following:

- Department of Planning and Environment; and
- Shoalhaven City Council

The Department of Planning & Environment have provided requirements for the preparation of this EA in emails dated 17th September 2015. A copy of these requirements forms **Annexure 2** to this EA. **Table 4** provides an outline of these requirements and where they have been addressed in the EA.

Table 4

DoPE Consultation

Issues Raised by DoPE	**Section Addressed in EA**
Description of works, demolition methodology, timeframe and duration of works and number of employees.	Section 4.3
Consideration of relevant demolition guidelines including Australian Standard AS 2601:2001: The Demolition of Structures.	Section 4.3
Waste, including quantities generated, waste classification (refer to EPA Guidelines) and proposed storage, transport and disposal.	Section 7.5
Asbestos, identification and appropriate management of asbestos in accordance with relevant legislation including: o *Work Health and Safety Regulation 2011* o *Model Code of Practice – How to Manage and Control Asbestos in the Workplace, 2011* o *Model Code of Practice – How to Safely Remove Asbestos, 2011; and* o *Protection of the Environment Operations (Waste) Regulation 2005.*	Section 7.5
Noise, assessment in accordance with EPA Interim Construction Noise Guideline and proposed mitigation measures;	Section 7.2
Dust, assessment in accordance with EPA Approved Methods and proposed mitigation measures;	Section 7.1
Traffic, access and parking, including type of equipment, number of vehicles, temporary access and/or parking requirements;	Section 7.3
Management of hazards and risks associated with adjacent infrastructure;	Section 7.4
Erosion and sediment controls;	Section 7.6
Consultation – I encourage you to consult early with Shoalhaven City Council to obtain any feedback early in the assessment process.	Section 5.0

In accordance with the DoPE requirements details of the proposed demolition works were supplied to Council in an email dated 17th September 2015. At the time of preparation of this report Council had not responded to this email. A copy of the email to Council is also included in **Annexure 2**.

6.0 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 this modification proposal compared to the proposal as originally approved. This section (**Table 5**) considers the potential impacts from the proposed modification and compares them against the approved project in order to determine if further assessment is required. The risk assessment uses the key environmental impacts assessed in the EA and summarises the potential issues associated with the proposed modification application and the relative change in environmental impacts associated with the proposed modification compared to the proposal as originally approved.

Table 5

Risk Assessment

Issue	*Relative Change in Environmental Impact*	*Additional Management or Mitigation Measures Required*	*Significance of Issue with this Modification Proposal*
Air Quality (including Odour) Assessment	***Air Quality Impacts*** The Project Approval imposes a raft of measures that seek to prevent (or where this is not possible mitigate) the emission of offensive odours from the Company's activities. The Project Approval imposed requirements stipulating that the ethanol upgrade could not proceed without the recommendations of an air quality and odour audit being implemented. At this point in time the measures outlined to control odours have been implemented and approval has been issued to enable full ethanol production from the site. In addition to odour control management the existing plant has several other air emission sources. The existing operation has the following emission control equipment to minimise emissions to the atmosphere: • Approximately 60 baghouses that capture particulate matter. • Wet scrubbers and condensers form part of the equipment to control the gas stream prior to the DDGS dryers bleed air passing through to the boiler for destruction. • In addition other DDG air streams are collected and treated in biofilters. • A carbon dioxide (CO_2) collection plant. This plant takes part of the CO_2 generated from fermenters and compresses the gas for sale, (eg. aerated "soft drinks"). This reduces the greenhouse gas emissions to the atmosphere. The plant is owned and operated by BOC Gases. The Modification Application involves demolition of an existing industrial building and construction of a temporary car park (60 spaces). Air emissions may potentially involve the generation of dust during demolition works. Environment and Natural Resource Solutions (ENRS) have been engaged by Shoalhaven Starches to undertaken a Dust Management Plan with respect to this Modification Proposal. A copy of ENRS's assessment is included as **Annexure 3** to this EA.	The EA is supported by a Dust Management Plan (DMP) prepared by ENRS. The DMP outlines a range of dust controls to be employed to minimise dust impacts, and in summary including: • Fencing and wind barrier; • Weather monitoring; • General 'housekeeping'; • Water suppression; • Systematic demolition; • Stockpiling and storage; • Covering loads. These matters are further addressed in Section 7.1 of this EA.	Key issue – addressed further in Section 7.1 of this EA.

Table 5 (continued)

Issue	*Relative Change in Environmental Impact*	*Additional Management or Mitigation Measures Required*	*Significance of Issue with this Modification Proposal*
Greenhouse Gas Emissions	***Greenhouse Gas Emissions*** The proposed modification involves demolition of an existing industrial building and construction of a temporary car park (60 spaces). Greenhouse gas emissions associated with the proposal would be predominantly associated with the electrical energy required for the operation of the plant, equipment and lighting. The proposal would not affect the operational aspects of the Shoalhaven Starches facility. Consequently the potential changes in greenhouse gas emissions are considered to be negligible. No change in environmental impacts from that originally identified in EA.	No additional management or mitigation measures proposed.	Not a key issue.
Wastewater Treatment Effluent Irrigation and Storage	***Wastewater / Effluent Irrigation and Storage*** The proposed construction and demolition works will not result in any change to the amount of wastewater generated from the site nor that will require treatment or irrigation onto the Company's Environmental Farm. No change in environmental impacts from that originally identified in EA.	No additional management or mitigation measures proposed.	Not a key issue.
Water & Soils	***Acid Sulphate Soils and Site Contamination*** The proposed demolition works will not involve any earth works or excavations. The proposed construction works involve minimal earthworks (removal of topsoil only) within an existing area of cleared, vacant land. Therefore an assessment of acid sulphate soils and site contamination are not required. Abernethy's Creek is located to the east of the proposed construction and demolition works and as such erosion and sediment control issues should be addressed. Cowman Stoddart Pty Ltd have been engaged by Shoalhaven Starches to prepare a Soil Erosion and Sediment Control Plan with respect to this Modification Proposal. A copy of this Plan is included as **Annexure 7** to this EA.	The Erosion and Sedimentation Control Plan proposes measures to minimise sediments entering Abernethy's Creek associated with both the demolition works as well as the construction of the temporary car park.	Erosion & Sedimentation - Key issue – addressed further in Section 7.6 and 7.7 of this EA.

Table 5 (continued)

Issue	*Relative Change in Environmental Impact*	*Additional Management or Mitigation Measures Required*	*Significance of Issue with this Modification Proposal*
Noise	***Noise Impacts*** Shoalhaven Starches operates under Environment Protection Licence 883 issued by the NSW Environment Protection Authority (EPA). Section L5 'Noise Limits' of the licence states:- *"L5.1 the LA10 (15min) sound pressure level contribution generated from the premises must not exceed the following levels when measured at or near the boundary of any residential premises:* *a) 38 dBA at locations in Terara on the south side of the Shoalhaven River;* *b) 38 dBA at locations in Nowra on the south side of the Shoalhaven River;* *c) 42 dBA at locations in Meroo Street, Bomaderry;* *d) 40 dBA at other locations in Bomaderry."* These noise limits apply to the overall operation of the Shoalhaven Starches complex. The Project Approval required the preparation of a Noise Management Plan for addressing and managing noise emission from the expansion project. The Shoalhaven Starches Noise Management originally prepared 31 October 2009 and revised 7 September 2010 addresses, among other things, acoustic criteria relating to the Shoalhaven Starches complex and any new developments. Section 3 of the plan lists noise limits from the Environmental Protection Licence as shown above and states:- *"Compliance testing conducted on a regular basis on behalf of the Mill [Shoalhaven Starches complex] has found noise emission from the premises satisfies the EPA criteria as a*	The Noise Impact Assessment prepared by Day Design Pty Ltd concludes that the level of noise and vibration emission from the proposed demolition works will be well below the noise and vibration management levels derived from the Environment Protection Authority's *Interim Construction Noise Guideline* 2009 at all receptor locations, without the need for noise controls.	Key Issue – addressed further in Section 7.2 of this EA.

Table 5 (continued)

Issue	*Relative Change in Environmental Impact*	*Additional Management or Mitigation Measures Required*	*Significance of Issue with this Modification Proposal*
Noise *continued*	*result of works on the Shoalhaven Starches site. In order to ensure that there is no increase in noise emission from the subject premises, with respect to the noise criteria nominated by the EPA in License Condition 6.3 [now 5.1], the design goal for such additional plant should be at least 10 dB below the criteria nominated by the EPA."* The modification proposal involves demolition of an existing industrial building and construction of a temporary car park only and will not affect the operational aspects of the Shoalhaven Starches facility. It will be necessary to demonstrate that the level of noise emission from the demolition works will be within noise management levels set by the NSW EPA's Interim Construction Noise Guideline at all receptor locations for the majority of the demolition phase. The EA is supported by a Noise Impact Assessment prepared by Day Design Pty Ltd. A copy of this assessment is included in **Annexure 4** to this EA. Noise Impacts are further addressed in Section 8.2 of this EA.		
Transport & Traffic	***Traffic Impacts*** Shoalhaven Starches have and are undertaking a comprehensive upgrade to existing vehicle entrances to the Shoalhaven Starches factory site as well as the recently acquired former Dairy Farmers site to Bolong Road in accordance with the Project Approval as well as other approvals granted by Shoalhaven City Council. An assessment will be required a traffic, access and parking including the type of equipment, number of vehicles, temporary access and or parking arrangements. The EA is supported by a Traffic Impact Assessment prepared by Anton Reisch Consulting (ARC) (**Annexure 5**). Traffic impacts are further discussed in Section 7.3 of this EA.	The Traffic Impact Assessment prepared by ARC concludes 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.	Key issue – addressed further in Section 7.3 of this EA.

Table 5 (continued)

Issue	*Relative Change in Environmental Impact*	*Additional Management or Mitigation Measures Required*	*Significance of Issue with this Modification Proposal*
Hazards	***Hazards*** The Shoalhaven Starches factory site and its operations comprise a "*potentially hazardous industry*" and "*potentially offensive industry*" under the provisions of *State Environmental Planning Policy No. 33. – Hazardous and Offensive Development*. Under the provisions of clause 12 of this SEPP any proposal involving a potential hazardous industry must be supported by Preliminary Hazard Analysis (PHA) prepared in accordance with relevant Circulars and Guidelines published by the Department. As this proposal involves the demolition of an existing building only the SEARs for this project have required a qualitative assessment only in relation to the management of hazards and risks associated with adjacent structures. This is addressed further in Section …….. of this EA.	The EA includes an assessment of risks and hazards associated with the proposed demolition works and details measures to manage these risks and hazards.	Key issue – addressed further in Section 7.4 of this EA.
River bank stability and Riparian Management	***Water Quality Impacts*** Abernethy's Creek is located within the eastern part of the subject land. As such, the EA for the modification proposal should consider potential impacts upon this watercourse. Cowman Stoddart Pty Ltd have been engaged by Shoalhaven Starches to prepare a Soil Erosion and Sediment Control Plan with respect to this Modification Proposal. A copy of this Plan is included as **Annexure 7** to this EA.	No additional management or mitigation measures proposed.	Key issue – addressed further in Section 7.2 of this EA.
Flooding	***Flooding*** The land associated with this Modification Proposal is identified by Shoalhaven City Council's Floodplain Management Study and Plan to be partly *High Hazard Floodway and Flood Storage*. The works associated with this Modification Proposal involve demolition of an existing building and construction of a temporary car park (60 spaces) only. A detailed Flood Assessment is therefore not considered necessary.		Not a key issue.

Table 5 (continued)

Issue	*Relative Change in Environmental Impact*	*Additional Management or Mitigation Measures Required*	*Significance of Issue with this Modification Proposal*
Waste Management	***Waste Management*** The proposed modification involves demolition of an existing industrial building. The proposal will therefore generate additional waste products compared to the Project Approval. Waste Management is addressed in Section 7.5 of this EA, and further details are included in **Annexure 6** to this EA.		Key issue – addressed further in Section 7.5 of this EA.
Visual Impact	***Visual Impact*** The proposal involves demolition of an existing industrial building located within the Shoalhaven Starches site and construction of a temporary car parking area on land located to the north of Bolong Road. As such, no significant visual impacts are anticipated.	No additional management or mitigation measures proposed	Not a key issue.
Flora and Fauna	***Ecological Impacts*** The location of the existing industrial building that is proposed to be demolished is devoid of vegetation. The original Flora and Fauna Assessment carried out by Kevin Mills & Associates for the SSEP did not identify any specific ecological constraints with this part of the site. The location of the proposed temporary car park comprises cleared, vacant land. No change in environmental impacts from that originally identified in EA.	No additional management or mitigation measures proposed	Not a key issue.
Heritage and Archaeological Issues	***Indigenous and Non-indigenous Cultural Heritage*** The location of the existing industrial building within the factory site was not previously identified by the EA for the SSEP as an area subject to either Aboriginal or European cultural heritage significance. The original Aboriginal Cultural Heritage Assessment that supported the EA prepared by South East Archaeology did not identify any constraints with respect to this part of the site. The proposed demolition of the existing industrial building will have no additional impact in terms of indigenous or non-indigenous heritage. Similarly, the location of the proposed temporary car park has not been previously identified as having significant heritage value. No change in environmental impacts from that originally identified in EA.	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 are:

- Air quality (dust) impacts;
- Noise impacts;
- Traffic;
- Management of hazards and risks associated with adjacent infrastructure (qualitative assessment only);
- Waste management ; and
- Erosion and sediment Controls.

7.0 KEY ISSUES

7.1 AIR QUALITY (DUST)

The requirements issued by the DoPE for this project required that the EA address:

> *"Dust, assessment in accordance with EPA Approved Methods and proposed mitigation measures"*

Following further consultation between Shoalhaven Starches and the Department, the Department has agreed that a *Dust Control Plan* will be sufficient for the purposes of addressing this issue (see **Annexure 2** for consultation).

This Modification Application is supported by a Dust Management Plan (DMP) prepared by Environment & Natural Resource Solutions (ENRS). A copy of ENRS's DMP forms **Annexure 3** to this EA. This section of the EA is based upon the findings of this assessment.

7.1.1 Objective of DMP

The objective of the DMP is to document the procedures and controls to be adopted during the demolition works, including but not limited to:

- Identify potential sources of dust at the demolition site;
- Assess any risks associated with potential dust generation and sensitive receptors; and
- Describe the necessary management procedures and dust control measures to be adopted before, during and after demolition works.

7.1.2 Definition of Dust

Assessment criteria are available for various substances in dust form. According to ENRS "dust" is generally inferred to comprise solid particles larger than colloidal size capable of temporary suspension in air. Dust may be classed based on a range of particle sizes where respirable dust is defined as less than 5 µm and particles smaller than 2.5 µm may reach enter deep within the respiratory system.

- PM_{10} - refers to particulate matter with an equivalent aerodynamic diameter less than or equal to 10 micrometres;
- $PM_{2.5}$ - refers to particulate matter with an equivalent aerodynamic diameter less than or equal to 2.5 micrometres

7.1.3 Exposure Standards

Details of the health exposure standards for airborne particulates including inhalable and respirable dust are provided in the Safe Work Australia (2012) *Guidance on the Interpretation of Workplace Exposure Standards for Airborne Contaminants.* Exposure standards are provided for the following substances (**Table 6**) based upon the percent of respirable dust:

Table 6

Exposure Standards

Analyte	***Exposure Standard***
Dust (not otherwise classified)	10 mg/m^3
Asbestos	0.1 fibres per mL of air
Quartz, Cristobalite, & Tridymite	0.1 mg/m^3
Silica (Amorphous & precipitated)	10 mg/m^3
Synthetic Mineral Fibre (SMF)	0.5 respirable fibres per mL of air; or 2 mg/m^3 (inhalable dust over 8 hours)

7.1.4 Particulate Guidelines

The National Environment Protection (Ambient Air Quality) Measure (NEPM; 2003) outlines the relevant standards and goals for particulate monitoring. Definitive guidelines are only provided for PM_{10} as the primary indicator for particulates pending a revision of the NEPM as there is insufficient data at this time to support the development of standards for ultrafine particles, $PM_{2.5-10}$, or individual components of particles. A summary of the NEPM (2003) assessment criteria is provided in **Table 7**:

Table 7

Dust Standards

Analyte	***Maximum Concentration***	***Monitoring Period***
Particulate as PM_{10}	50 µg/m^3	Per 24 hours (5 days /yr)
Particulate as PM_{25}	25 µg/m^3	N/A

The primary assessment criteria for the project requires that the demolition works do not result in any degradation of the local amenity. All necessary control measures shall be implemented to ensure that levels of dust do not exceed the exposure standards and particulate guidelines outlined in **Table 6** and **Table 7**.

Based on the limited scale of the demolition works situated within an industrial area with no significant sensitive receptors, according to ENRS, the project presents a relatively low

risk of dust exposure. Given the project is not a scheduled activity requiring an Environmental Protection Licence (EPL) and the low risk of dust it is proposed that the project will adopt a tiered level of monitoring as summarised in **Table 8**:

Table 8

Summary of Monitoring Requirements

Analyte	*Monitoring*
Qualitative - Visual	Daily monitoring by the Project Manager (PM) and Demolition Manager (DM) – visual inspection for excessive dust mobilising beyond the site boundary.
Quantitative – Depositional & PM_{10}	To be conducted in the event that excessive dust is identified outside the site boundary or a significant complaint is received. Establish minimum three (3) gauging stations adjacent the Bolong Road footpath, site office entry, and at points downwind. Monitoring to be conducted in accordance with AS/NZS 3580.10.1:2003 (R22014).

7.1.5 Asbestos Register

The Moorehouse building was previously subject to an asbestos materials building survey by SWE in 2012. The resulting asbestos register (**Table 9**) documents the following areas of asbestos which shall require removal prior to demolition works.

In addition ENRS note there may be areas of concealed asbestos uncovered during the demolition works including Electrical Mounted Boards (EMB).

Table 9

Moorehouse Asbestos Register

Workplace Address: **Shoalhaven Starches Pty Ltd – 160 Bolong Rd Bomaderry NSW 2541**			**Inspectors:** **Tony Barton – Safety and Fire Services Co-ordinator Tim Smith – Safe Work & Environments (SWE)**		
Date of Identification	***Type of Asbestos***	***Is it Friable or Non-Friable***	***Condition of asbestos***	***Specific Location of asbestos***	***Is this an inaccessible area***
17-08-2012	Roof and wall cladding	Friable if damaged	Roof sheets good – North and South Walls	Moorehouse mechanical spare parts building	Only accessed by Maintenance Staff
20-08-2012 Roof and wall	Roof and wall cladding	Friable if damaged	Roof sheets in good condition	Moorehouse mechanical Oil Store building 120	Only accessed by Maintenance Staff
20-08-2012	Roof gutter system	Friable if damaged	Roof gutter in good condition	Moorehouse Electrical Motor Store – 800mm x	Only accessed by Maintenance Staff

7.1.6 Pre-demolition Removal

P&D Envirotech Pty Ltd have been commissioned under separate contract to remove the above asbestos materials prior to commencement of demolition works. Works shall be required to comply with the site specific Asbestos Removal Control Plan (ARCP) (**Table 10**) as prepared by P & D Envirotech (**Annexure 6**):

Table 10

Summary of Asbestos Removal Plan

Type of asbestos:	Redundant Asbestos Rooves & Box Gutters
Location:	*Oil Store, Screen Room, Electrical Store, Workshop & Motor Room*
Amount:	Approximately 40m3
Condition:	Non Friable
Approx. duration of work:	10 days weather permitting
Workcover Notification:	Valid Non-Friable

7.1.7 Control Air Monitoring

The pre-demolition works have the potential to disturb asbestos containing material which presents a risk of releasing asbestos fibres in dust and to the atmosphere. Hence, ENRS propose a program of air monitoring to be implemented upon commencement of removal works and maintained until such time that sufficient evidence from the monitoring results demonstrates that the site controls are effective and the works do not present an unacceptable risk to site users. The air monitoring results will also provide a measurable trigger for upgrading site controls or identifying cease work conditions.

The collection and analysis of air monitoring samples should be conducted under supervision of a licensed asbestos assessor and in accordance with the National Occupational Health and Safety Commission (NOHSC) "Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Dust [NOHSC: 3003 (2005)]. Calibrated air monitoring pumps shall be installed at the boundary fences of the exclusion zone for the designated asbestos works area and within the closed cabin of any plant supported by a daily field blank for QAQC purposes. Upon completion filter samples shall be submitted to a NATA accredited laboratory for fibre count analysis. The results of air monitoring shall be applied to:

- Compare results of air monitoring against the trigger levels outlined in **Table 11**;

- Continue to revise and update the air monitoring program based on progressive results, including the frequency and location of sample points; and
- Air monitoring results shall be made available to employees. Reports shall be printed and appended to the notice board.

Table 11

Air Monitoring Trigger Levels

Trigger Level	*Fibre Concentration*	*Asbestos Management Action*
(I)	< 0.01 fibres/mL	Continue works and maintain effective site controls.
(II)	Between 0.01 – 0.02 fibres/mL	Review site control measures and introduce more stringent controls. Notify Asbestos Assessor to advise on improved site controls.
(III)	≥ 0.02 fibres/mL	Stop work. Notify Safe Work NSW. Identify the cause of the elevated concentrations and update site protocols for approval by Asbestos Assessor prior to recommencing works.

7.1.8 Clearance Protocol

Access to the asbestos removal site will be determined by the Removal contractor until a final clearance certificate has been issued by the licensed Asbestos Assessor. Access to the asbestos removal area for inspections or similar by other work parties will only be allowed during 'tools down' periods under the direct supervision and control of the Asbestos Removal Contractor Supervisor.

A ***clearance inspection and clearance certificate will be required upon completion of the removal*** works and prior to commencement of demolition works in accordance with the NSW WHS Regulations.

7.1.9 Risk Assessment

Potential Sources

The following points summarise the potential sources of demolition dust based on the building structure and material types documented in the demolition plan:

- ***Asbestos*** roof and gutters (to be removed under separate contract prior to demolition works);

- ***Existing*** accumulated ***dust*** on and within the building structure. The potential for existing dust is expected to be moderate to high due to the age of the building where dust may have accumulated within the building space over many years;
- ***Steel*** and ***timber*** dust may be generated by minor cutting and abrasive works during demolition;
- ***Sarking*** and insulation materials;
- ***Brick***, mortar and ***concrete*** walls present the highest potential for dust generation at the site. It should be noted that the concrete slab shall not be disturbed and will remain in place; and
- ***Vehicle*** movements present a minor risk of dust mobilisation as the site is covered by hard stand.

Pathways

Given the site location with an industrial area covered by hardstand the primary factors that contribute to dust generation according to ENRS, include:

- Disturbance and remobilisation of dust during handling and movement of demolition materials;
- Creation of dust during demolition of brick and concrete walls;
- Loose, dry and uncovered stockpiled material;
- Airborne particulates in proximity to active works site;
- Potential for high winds to re-mobilise particulates and transport dust outside the site boundary; and
- The movement of trucks and machinery over the working site.

Receptors

The nearest receptors include human health where dust may be ingested or inhaled. No significant environmental or sensitive receptors, such as sites with children, have been identified by ENRS in the immediate proximity of the site:

- Demolition contractors;
- Site users and personnel within the greater site area; and
- Persons within adjoining industrial sites or pedestrians on Bolong Road.

7.1.10 Dust Controls

Dust Control

Site personnel, the public, adjacent neighbours and the environment shall be protected from the effects of dust created during the works. The following dust suppression techniques (**Table 12**) are proposed by ENRS to be employed, such that there shall be minimal visible generation of dust outside the designated site boundary:

Table 12

Summary of Dust Mitigation Measures

Control	***Mitigation Measures***
Fencing & Wind Barrier	Temporary site fencing to be established around the site perimeter and fitted with mesh to provide a barrier against wind.
Weather Monitoring	Check forecast daily for wind potential and continue to monitor site conditions during works. Stop work to be triggered by moderate winds which may limit the effectiveness of dust controls. In general, moderate winds may be classed as greater than 5 m/sec (~20 km/hr). Based on the site layout winds from the north are likely to present the highest risk of dust generation.
House Keeping	Maintain ordered and clean site to reduce available loose material for dust generation in the event of winds. The works areas shall be kept in a tidy manner with regular sweeping.
Water Suppression	Work areas to be wet down as required (prior, during & after demolition). The frequency of watering for dust suppression shall be increased as required to manage dust potential during periods of wind, heat and drying to ensure no visible dust leaves the site boundary. Fixed spray points may be established supported by manual spraying with care not to over wet the site which may create excess site runoff.
Systematic Demolition	Demolition material to be removed progressively to minimise potential disturbance of dust and provide for immediate storage in designated and controlled areas. Progressive demolition shall reduce requirements for multiple handling and potential re-mobilisation of any particulates.
Stockpiling & Storage	Demolished materials and rubble shall be stored in designated bins and stockpile areas. Materials shall be covered and wet down as required to prevent dust generation.
Cover Loads	Loading of trucks and storage bins shall be supported by dust suppression. Loads are to be covered before leaving the site boundary.

Plant Controls

Movement of plant, trucks and other vehicles involved in the works, to and from the site according to ENRS, will be required to be strictly controlled and restricted to a minimum and only take place during appropriate working hours. All trucks carting demolition material are to have their loads covered. No trucks will be allowed to leave the site without covers on. Trucks without load covers are not to be admitted to the site during the removal of materials from the site. All vehicles will be visually free of dust before permission to leave the site is granted.

Site Reinstatement

Following demolition and removal of rubble the site should be reinstated by sweeping and hosing down to provide a 'clean' hardstand area prior to removing site controls.

Decontamination

Clean potable water for personal and equipment decontamination is to be available on site. All visible dust is to be scraped, brushed and/or scrubbed off boots and outer gloves. All equipment and tools will be cleaned and rinsed with potable water prior to leaving the site.

Contingency Plan

According to ENRS, the unexpected conditions that could feasibly occur at the site include:

- The discovery of presently unknown types of hazardous materials such as asbestos;
- The generation of unacceptable levels of dust;
- High winds increasing potential for dust generation;

Procedures that will be used to address these contingencies are provided in the following sections of this DMP.

Unknown Types of Materials

The presence of unknown materials would be highlighted during demolition works by the observation of any unusual physical/sensory characteristics of the demolition materials. In the event that any unknown type of material is identified at the site, an assessment of the influence of the material on the demolition works would be undertaken. If required, a variation to the DMP will be made. If asbestos is identified the area shall be isolated and an Asbestos Assessor contacted to investigate its extent. Once it is identified, the impacted material shall be remediated.

Unacceptable Levels of Dust

Should the project receive a significant complaint or daily inspections identify excessive dust leaving the site the works shall cease and the demolition and dust control methodology reviewed to improve the effectiveness of site controls. Further quantitative monitoring should be considered for Depositional Dust and PM_{10}.

7.1.11 Record Keeping

Asbestos Clearance

A standalone clearance certificate should be documented for the asbestos removal works in accordance with the NSW WHS Regulations.

Waste Records

Tracking records will need to be maintained for all waste disposal including truck movements and maintained with site records.

Monitoring Records

A photographic log of the daily site conditions will also be maintained by the Project Manager and maintained with site records.

In the event that further monitoring is triggered a formal report should be prepared by a suitably qualified environmental professional.

7.2 NOISE

The requirements issued by the DoPE for this project required that the EA address:

> *"Noise, assessment in accordance with EPA Interim Construction Noise Guidelines and proposed mitigation measures."*

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

The nearest residential locations to the complex are as follows:

- Location 1 – Nobblers Lane, Terara approximately 1400 metres to the south east;
- Location 2 – Riverview Road, Nowra approximately 975 metres to the south west;
- Location 3 – Meroo Street, Bomaderry approximately 620 metres to the north west;
- Location 4 – Coomea Street, Bomaderry approximately 750metres to the north west.

The Shoalhaven Starches site, surrounding area and receptor locations are shown in **Figure 5.**

This Modification Application is supported by a Noise Impact Assessment prepared by Day Design Pty Ltd. A copy of the Noise Impact Assessment prepared by Day Design forms **Annexure 4** to this EA. This section of the EA is based upon the findings of this assessment.

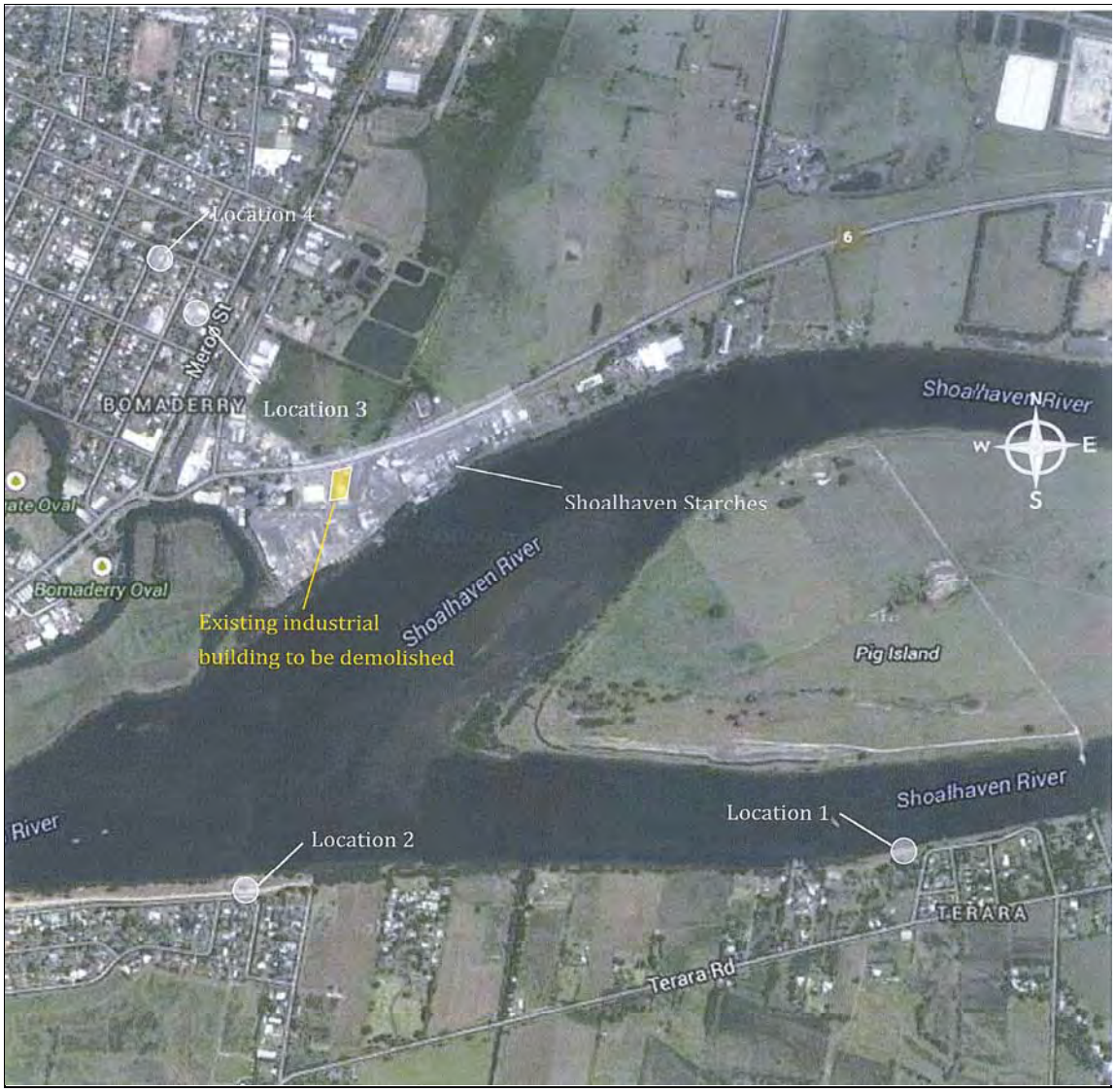

Figure 5: Location plan and closest receptors (Day Design Pty Ltd).

7.2.1 Acoustic and Vibration Criteria

Australian Standard AS2436

The Australian Standard AS2436–2010 "*Guide to noise and vibration control on construction, demolition and maintenance sites*" provides guidance on noise control in respect to construction, demolition and maintenance sites. The Standard also provides guidance for the preparation of noise and vibration management plans.

Section 1.5 'Regulatory Requirements' of the Standard states:

> *"Legislation associated with the control of noise and vibration on and from construction, demolition and maintenance sites in Australia is generally the responsibility of the relevant State or Territory government, local council or a designated statutory authority."*

Consequently the Standard does not provide specific noise criterion rather sets out practical methods for determining the potential for noise and vibration impact on the community from construction, demolition and maintenance sites.

A qualitative method is described in Section 3.3 of the standard, which is designed to avoid the need for complex noise predictions by following a series of questions relating to, for example, whether the noise is likely to be loud, have annoying characteristics or affect sleep.

In the event that any of these outcomes are likely, a more detailed and quantitative approach should be adopted.

In relation to carrying out detailed noise impact assessments, Section 4 'General' of the standard states:

> *"Regulatory authorities may have relevant polices and/or guidelines for the control of noise and vibration on construction sites. These should also be referred to when developing noise and vibration management plans for such projects."*

In NSW this is the NSW Environment Protection Authority's Interim Construction Noise Guideline 2009 as outlined below.

The Standard further states, in Section 4.6.1, that if noisy processes cannot be avoided, then the amount of noise reaching the receiver should be minimised and goes on to provide advice and recommendations to reduce noise and vibration impacts as far as reasonably practicable.

The noise assessment has been undertaken in accordance with the guidance provided in AS2436-2010.

EPA Construction Noise Guideline

The NSW EPA published the *Interim Construction Noise Guideline* in July 2009. While some noise from construction sites is inevitable, the aim of the Guideline is to protect the majority of residences and other sensitive land uses from noise pollution most of the time.

The Guideline presents two ways of assessing construction noise impacts; the quantitative method and the qualitative method.

The quantitative method is generally suited to longer term construction projects and involves predicting noise levels from the construction phase and comparing them with noise management levels given in the guideline.

The qualitative method for assessing construction noise is a simplified way to identify the cause of potential noise impacts and may be used for short-term works, such as repair and maintenance projects of short duration.

In this instance, the quantitative method has been used in this assessment. Details of the quantitative method are given in Section 4 of the Guideline.

Normal construction hours are defined by the EPA as follows:

- 7:00 am to 6:00 pm Monday to Friday;
- 8:00 am to 1:00 pm Saturday; and
- No work on Sunday or Public Holiday.

Table 2 in Section 4 of the Guideline sets out noise management levels at affected residences and how they are to be applied during normal construction hours. The noise management level is derived from the rating background level (RBL) plus 10 dB in accordance with the Guideline. This level is considered to be the 'noise affected level' which represents the point above which there may be some community reaction to noise.

The 'highly noise affected' level of 75 dBA represents the point above which there may be strong community reaction to noise. This level is provided in the Guideline and is not based on the RBL. Restrictions to the hours of construction may apply to activities that generate noise at residences above the 'highly noise affected' noise management level.

Day Design has carried out numerous noise impact assessments and undertaken long-term background noise surveys in and around Nowra, including in Bomaderry and Terara. Daytime background noise levels range between 33 and 40 dBA depending on the location, as shown in **Table 13** below.

Table 13

Rating Background Levels

Noise Measurement Location	***Time Period***	***Rating Background Level***
135 Terara Road, Terara March 2012	Day (7:00 am to 6:00 pm)	**33 dBA**
55 Terara Road, Nowra February 2015	Day (7:00 am to 6:00 pm)	**36 dBA**
Cambewarra Road, Bomaderry July 2010	Day (7:00 am to 6:00 pm)	**40 dBA**
Shoalhaven Village Caravan Park, Nowra - March 2012	Day (7:00 am to 6:00 pm)	**40 dBA**

For the purpose of determining the potential for community reaction to noise emission from demolition activities, previously measured background noise levels in the vicinity of each receptor location have been used to determine the noise management levels as shown in **Table 14** below.

Table 14

L_{eq} Noise Management Levels from Construction Activities

Receptor Location	***Noise Management Level***	***How to Apply***
Location 1 (Terara)	**43 dBA** (33 + 10)	The noise affected level represents the point above which there may be some community reaction to noise. ▪ Where the predicted or measured $L_{Aeq\ (15\ min)}$ noise level is greater than the noise affected level, the proponent should apply all feasible and reasonable* work practices to meet the noise affected level. ▪ The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
Location 2 (Nowra)	**50 dBA** (40 + 10)	
Locations 3 & 4 (Bomaderry)	**50 dBA** (40 + 10)	
	Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. ▪ Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 1. times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences) 2. if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

EPA Vibration Guideline

The NSW EPA published the *Assessing Vibration: a technical guideline* in February 2006. This guideline is based on the British Standard BS 6472:1992 *"Evaluation of human exposure to vibration in buildings (1 Hz to 80 Hz)."*

The guideline presents preferred and maximum vibration values for use in assessing human responses to vibration and provides recommendations for measurement and evaluation techniques.

The guideline considers vibration from construction activities as Intermittent Vibration. Table 2.4 of the guideline sets out limits for Vibration Dose Values to assess intermittent vibration and is replicated below in **Table 15** for residential receptor locations.

Table 15

Vibration Dose Values (VDV) from Construction Activities

Receptor Location	***Daytime***	
	Preferred value (m/s1.75)	***Maximum value (m/s1.75)***
All residences	**0.20**	**0.40**

The British Standard BS 7385-2:1993 *"Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground borne vibration"* provides guide values for transient vibration relating to cosmetic damage, replicated below in **Table 16** for residential buildings.

Table 16

Transient Vibration Guide Values for Cosmetic Damage

Type of Building	***Peak component particle velocity in frequency range of predominant pulse***	
	4 Hz to 15 Hz	***15 Hz and above***
Residential	**15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz**	**20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above**

According to Day Design, an overall peak particle velocity of 15 mm/s at the boundaries will comply with the recommended values in **Table 16** and is an acceptable criterion for intermittent vibration to prevent cosmetic damage to adjacent residential buildings.

Specific Noise Criteria

Day Design indicate the most stringent noise criteria for the proposed demolition works are as follows:

- *Construction noise management level of 43 dBA ($L_{eq,\ 15\ minute}$) during normal construction hours at Location 1;*
- *Construction noise management level of 50 dBA ($L_{eq,\ 15\ minute}$) during normal construction hours at Locations 2, 3 and 4;*
- *A Vibration Dose Value (VDV) between 0.2 – 0.4 $m/s^{1.75}$ for human annoyance ; and*
- *A Peak Particle Velocity no greater than 15 mm/s for cosmetic damage.*

7.2.2 Demolition Works Noise Emission

Plant and Equipment Sound Power Levels

Plant and equipment to be used during the demolition phase is shown in **Table 17** below along with the corresponding sound power levels.

Table 17

Typical Plant and Equipment – Internal Works - Sound Power Levels

Description	***Sound power level, dBA***
Mobile Crane	110
Excavator	108
Concrete Saw	116
Truck	107

Predicted Noise Levels

Knowing the sound power level of a noise source, the sound pressure level (as measured with a sound level meter) can be calculated at a remote location using suitable formulae to account for building envelope transmission, distance losses, sound barriers, etc.

Predicted noise levels at each receptor are presented below in **Table 18** below.

Table 18

Calculated Receptor Sound Pressure Levels from Internal Works

Plant and Equipment Description	***Calculated Sound Pressure Levels at Receptor Locations $L_{eq,\ 15\ minute}$ (dBA)***			
	Location 1	***Location 2***	***Location 3***	***Location 4***
Mobile Crane	26	39	37	35
Excavator	24	37	35	33
Concrete Saw	26	38	36	35
Truck	20	31	30	29
Combined	30	43	41	40
Noise Management Level	**43**	**50**	**50**	**50**
Complies	✓	✓	✓	✓

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

- *Acoustical shielding from adjacent and intervening buildings up to a maximum:*
  - *9 dB at Location 1; and*
  - *5 dB at Locations 3 and 4*
- *Adjustment for duration of the use of the concrete saw for 3 minutes in 15;*
- *Adjustment for duration of the use of the truck manoeuvring on site at the sound power level shown in Table 5 for 5 minutes in 15; and*
- *Combined level assumes all items of plant are operating simultaneously.*

According to Day Design, in practice this is unlikely and noise levels will typically be no higher at each receptor than the predicted level for individual plant shown in **Table 17** at any given time.

7.2.3 Vibration Emission

According to Day Design, given the significant distances to each receptor and the type of works being carried out, ground borne vibration levels will be imperceptible.

7.2.4 Conclusion

Day Design conclude in their assessment that:

> *"Calculations show that the level of noise and vibration emission from the demolition works will be well below the noise and vibration management levels derived from the Environment Protection Authority's Interim Construction Noise Guideline 2009 at all receptor locations, without the need for noise controls."*

7.3 TRAFFIC

The requirements issued by the DoPE for this project required that the EA address:

> *"Traffic, access and parking, including type of equipment, number of vehicles, temporary access and / or parking requirements."*

This Modification Application is supported by a traffic assessment prepared by ARC Traffic & Transport (ARC). In undertaking their assessment ARC has referenced their previous assessments that have been undertaken in relation to the Shoalhaven Starches site. This assessment has reviewed the potential demolition aspects of the proposal (including construction of a temporary car park), and provides recommendations by which potential impacts can be minimised if not entirely ameliorated. A copy of ARC's report forms **Annexure 5** to this EA. This section of the EA is based upon the findings of this assessment.

7.3.1 Existing Situation

Shoalhaven Starches site

Manildra's Shoalhaven Starches operations occupy a number of distinct 'sites' in Bomaderry. While operations are integrated across all sites, ARC has differentiated these sites in this assessment for ease of reference.

The primary Shoalhaven Starches (SS) Site and immediately adjacent Dairy Farmers Site (DF Site) to the east are located south of Bolong Road, Bomaderry, while the approved Packing Plant (PP) Site is located directly opposite the SS Site on the northern side of Bolong Road. Within the broader SS Site, the Moorehouse Site lies south of Bolong Road,

immediately west of the railway line, while the Interim Packing Plant Site (IPP Site) lies south of Bolong Road immediately east of the railway line.

A final site warranting discussion is the small Shoalhaven Water Site (SW Site) which fronts Bolong Road directly opposite the IPP Site.

These sites are shown in their local context in **Figure 6.**

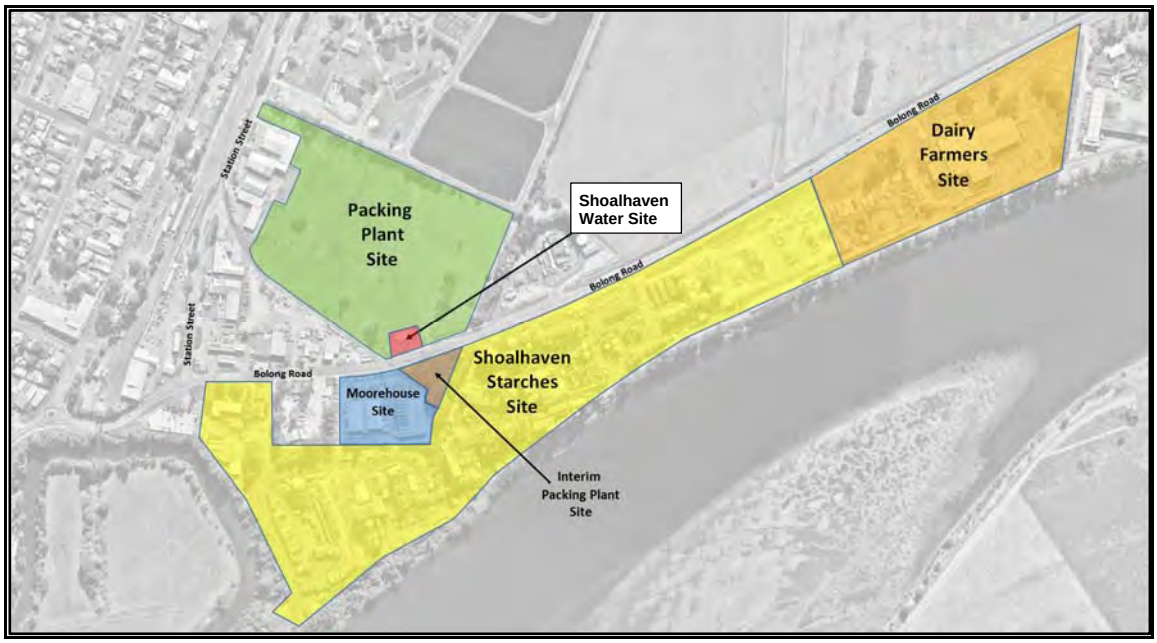

Figure 6: Location plan.
(ARC Traffic & Transport).

Access

Bolong Road and SS Site Western Access Point (AP 3)

The intersection of Bolong Road and AP 3 currently provides two-way access for light and heavy vehicle traffic generated in the western and southern parts of the SS Site. This intersection will provide access for all demolition heavy vehicles, which would then use the internal SS Site access road network to enter and depart the Moorehouse Site from the south.

Bolong Road and Moorehouse Site Access Point (AP 4)

The intersection of Bolong Road & AP 4 currently provides two-way access to a designated staff car park for some 118 vehicles. Some 30 spaces would be relocated during the demolition period, but this intersection would retain access for the remaining staff parking.

Bolong Road and Interim Packing Plant Access Point (IPP 1)

The intersection of Bolong Road & IPP 1 provides separate entry and departure driveways (joined by a small internal access road). This intersection is located directly opposite the approved PP Site access point (PP 1), such that the use of PP 1 effectively creates a four-way intersection.

PP Site Access Points

The SSEP provides for two access points to the PP Site.

At Bolong Road an approval has been provided for a left in only access point (PP 1) accessed via a short deceleration lane immediately adjacent to (and east of) the SW Site; the driveway crossing for this intersection has been constructed, but currently provides access via a short driveway (perpendicular to Bolong Road) to an informal parking area which ARC understand is utilised occasionally by Shoalhaven Starches contractors. The Modification would retain this driveway crossing, and extend this existing internal driveway to the north, providing access to the temporary car park on the PP site.

It is noted by ARC that the SSEP provides for an angled (PP Site) driveway (at an approximate 450 angle) from Bolong Road, which then turns north within the PP Site; this design was proposed (and approved) to appropriately accommodate heavy vehicles entering PP 1 from Bolong Road. Following construction and use of the existing internal driveway and temporary car park for the demolition works associated with this Modification, and further also to construction works associated with the future Starch Dryer at the Moorehouse site, construction of the internal driveway as per the SSEP would be undertaken as part of the Packing Plant construction (a separate Modification Application for which is currently being finalised for the DP&E).

In Railway Street, an approval has been provided for an all movement access point (PP 2). This access point would also be constructed as part of the future Packing Plant construction.

Other SS Site Access Points

Three other SS Site access points are provided to Bolong Road, including the Central Access Point (AP 2); Eastern Access Point (AP 1); and the Dairy Farmers Access Point (DF 1). However, this Modification proposal would not generate any additional movements to these intersections.

Traffic Flows

Further to the commission of traffic surveys over many years, and in consultation with Council, ARC has over time developed base peak period traffic flows for the key intersections along Bolong Road that reflect 120th Highest Hour (or 'recreational peak') conditions. 2014 recreational peak flows were most recently reported in the Meat Plant TIA, and have been adapted for this assessment, and include:

- 2016 recreational peak through flows in Bolong Road;
- All approved/proposed access and intersection infrastructure to September 2015;
- All approved/proposed flows to the SS Site and DF Site to September 2015 (ie. including the DF Car Park and Meat Plan); and
- A minor trip assignment to reflect the occasional parking accessed via PP 1.

Base 2016 peak hour traffic flows for the assessment are provided in **Figures 7** and **8**. These flows take into account future flow estimates associated with the Princes Highway Upgrade.

Intersection Performance

SIDRA analysis undertaken by ARC identifies that all site access intersections (as described above) and the intersection of Bolong Road and Railway Street are currently operating at a good Level of Service (**LoS**), with minimal average delays and significant spare capacity.

ARC notes that further to the opening of upgraded sections of the Princes Highway, a large percentage of the arrival and departure trips from/to the east reported at the SS Site access points are expected to be redistributed to the Princes Highway (ie. to/from the west) in the same way as general sub-regional trips are redistributed. However, according to ARC, this would have little if any impact on the performance of the intersections.

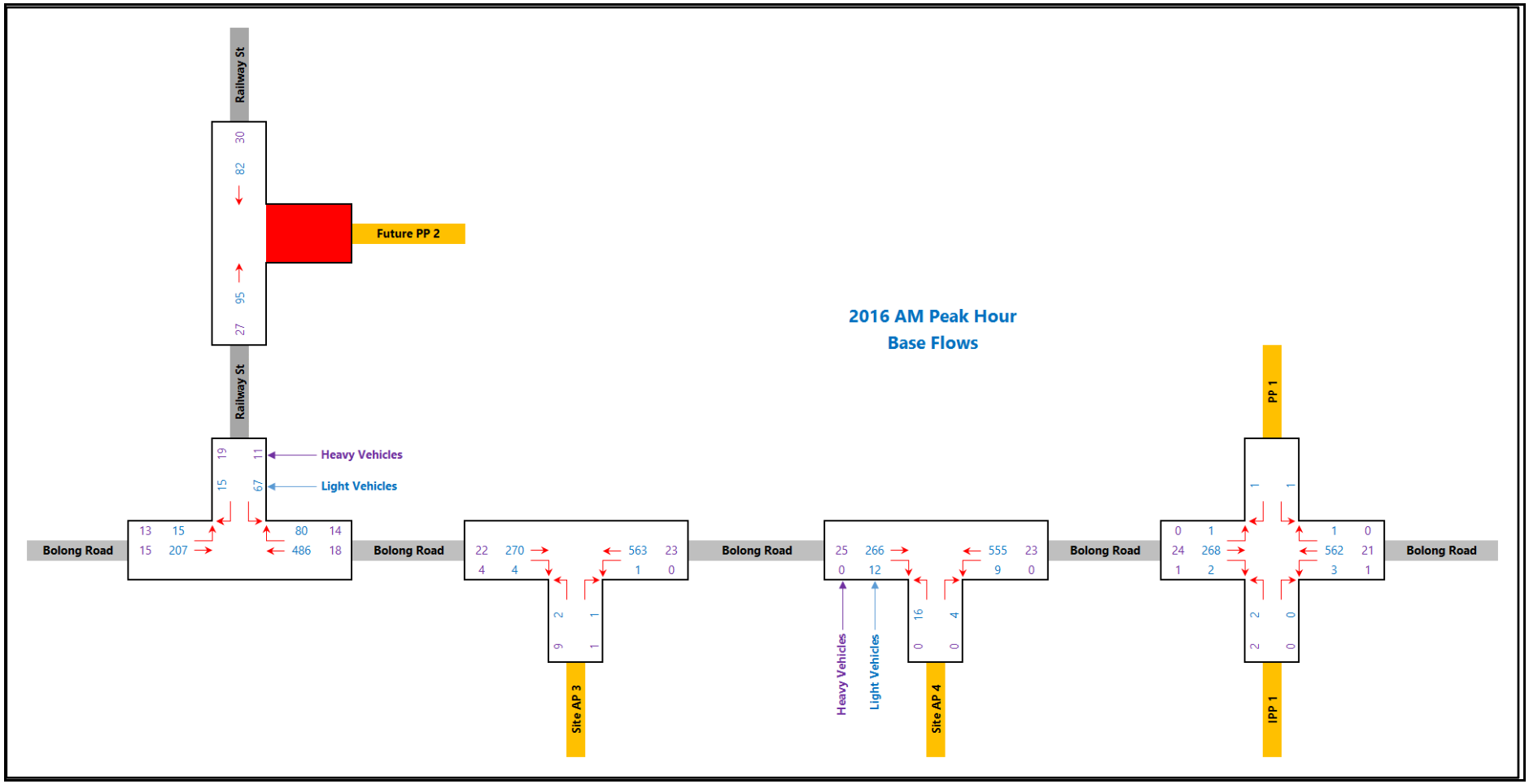

Figure 7: 2016 AM peak hour base traffic flows
(ARC Traffic and Transport)

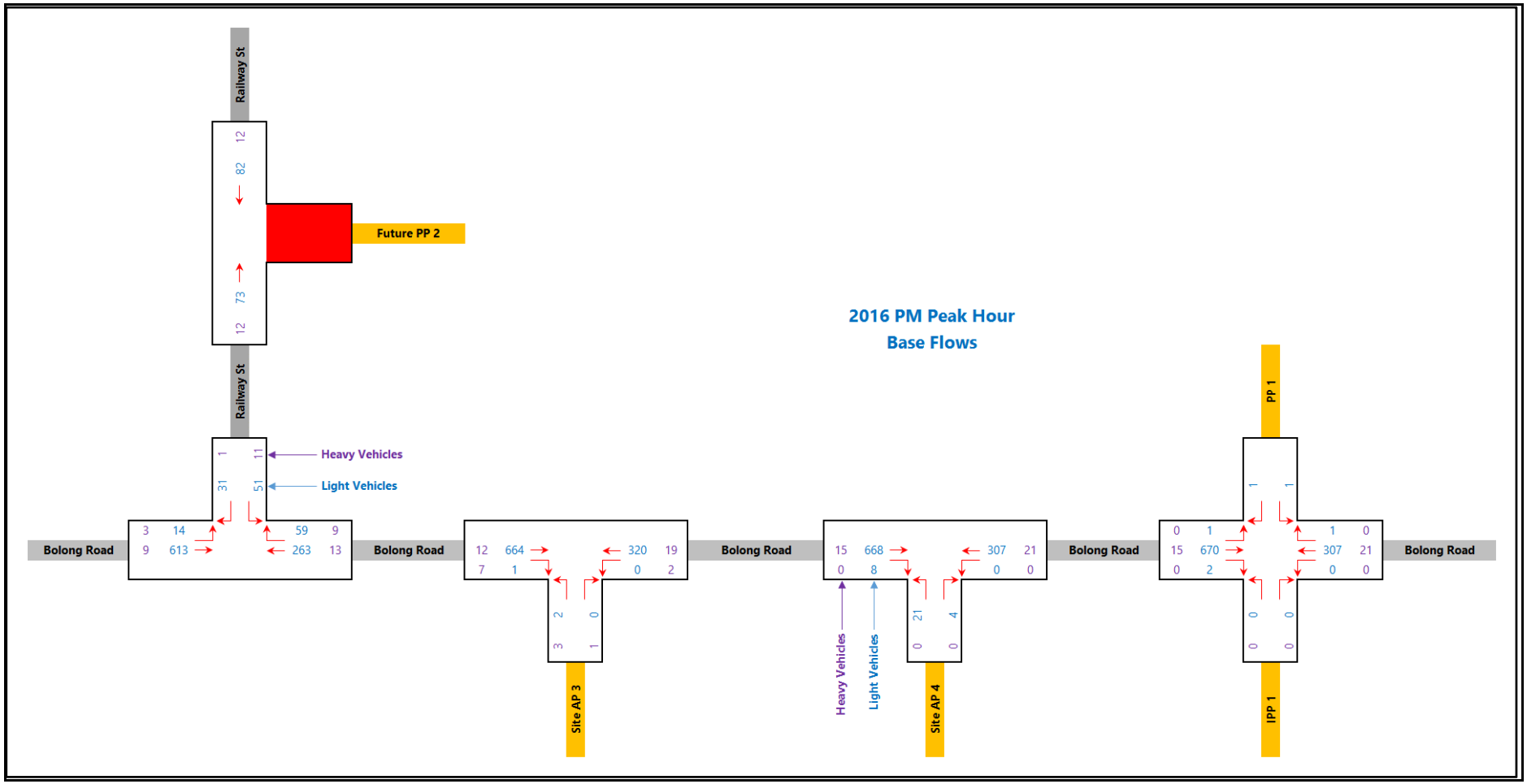

Figure 8: 2016 PM peak hour base traffic flows.
(ARC Traffic and Transport)

7.3.2 Traffic and Access Associated with the Proposal

This Modification Application involves the demolition of an existing industrial building on the Moorehouse Site.

Two stages of works are proposed as part of this Modification proposal:

- An initial two (2) week stage would provide for the construction of the temporary car park (including the widening and extension of the existing access road) on the PP Site.
- Following the completion of the above works, a four (4) week demolition stage would commence, with some 30 staff parking spaces relocated from the Moorehouse Site to the temporary car park.

The Modification proposal has the potential to generate short term impacts associated with the following:

- additional vehicle trips generated by the construction of the temporary car park;
- redistribution of existing trips associated with the relocation of staff parking from the Moorehouse Site to the temporary car park at the PP site; and
- the generation of additional vehicle trips associated with demolition staff and heavy vehicles to the Moorehouse Site during the demolition period.

The demolition proposal will not affect the operational traffic aspects of the Shoalhaven Starches facility.

Construction Traffic and Access Characteristics

Construction Access

All access for the construction of the temporary car park on the PP Site will be via the intersection of Bolong Road & PP 1. To facilitate this access, the existing access road will be widened and extended between Bolong Road and the temporary car park with reference to AS 2890.2.

Heavy Vehicle Trips

According to ARC, the construction works will require a range of vehicles, including tip-trucks, a heavy roller and grader/digger. Both the heavy roller and grader would remain on-site for the duration of the construction works, while an average of 1 – 2 tip-truck loads of construction material would be required per day. It is therefore estimated by ARC that the construction stage would generate no more than six (6) heavy vehicle trips on a peak transport day, and certainly no more than 1 – 2 heavy vehicle trips to a (commuter) peak hour.

Construction Staff - Vehicle Trips

The construction stage is estimated to employ up to six (6) construction staff per day, including an on-site foreman. These construction staff would utilise informal parking adjacent to the temporary car park for the short period of the temporary car park construction.

Given that construction work hours are expected to fall outside of (commuter) peak periods, it is estimated that the construction stage would generate no more than 1 – 2 staff vehicle trips to a (commuter) peak hour.

Construction Stage – Traffic Flows

Total traffic flows during the construction stage are shown in **Figure 9** (AM Peak Hour) and **Figure 10** (PM Peak Hour)

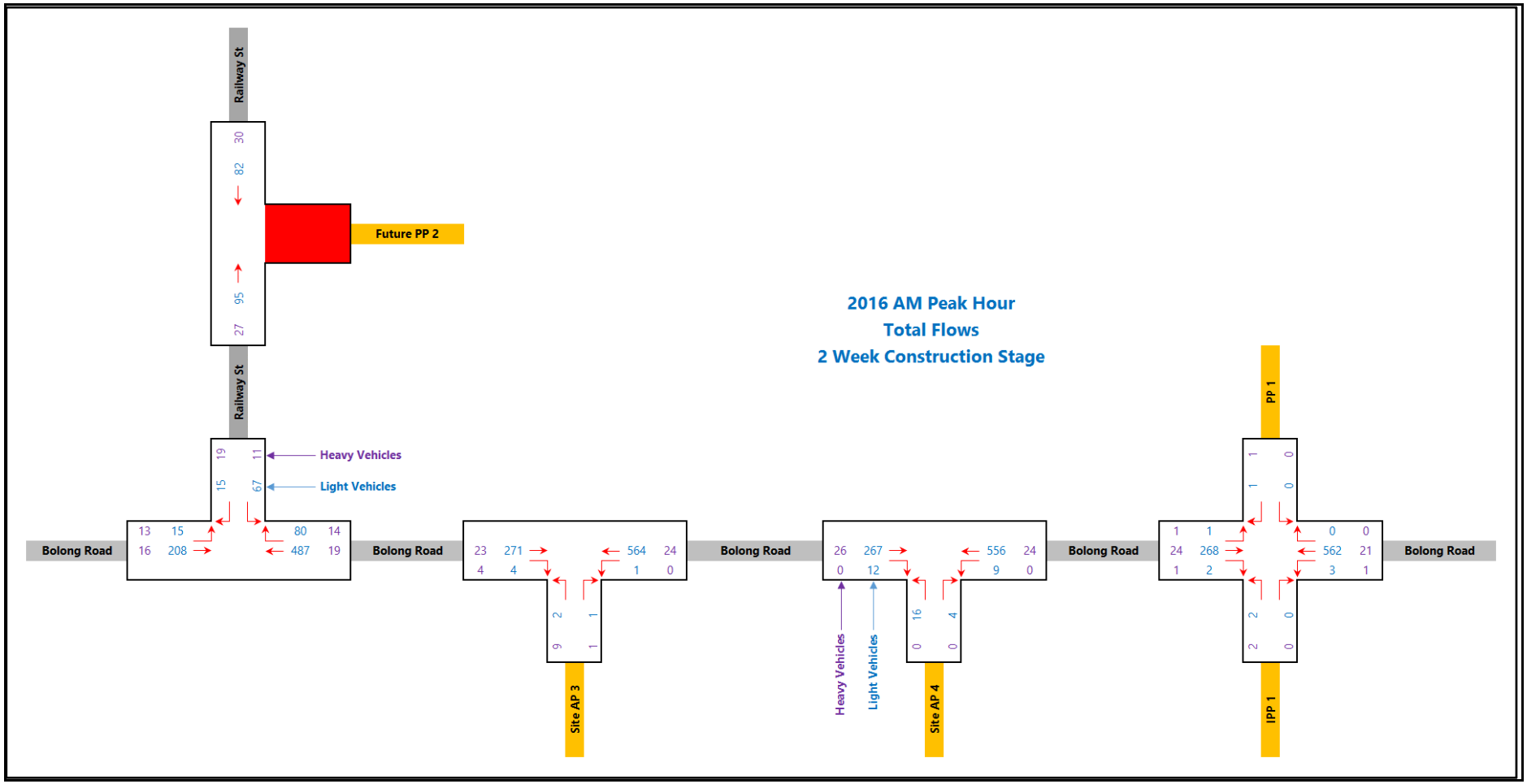

Figure 9: Construction Stage AM Peak Hour Total Flows
(ARC Traffic and Transport)

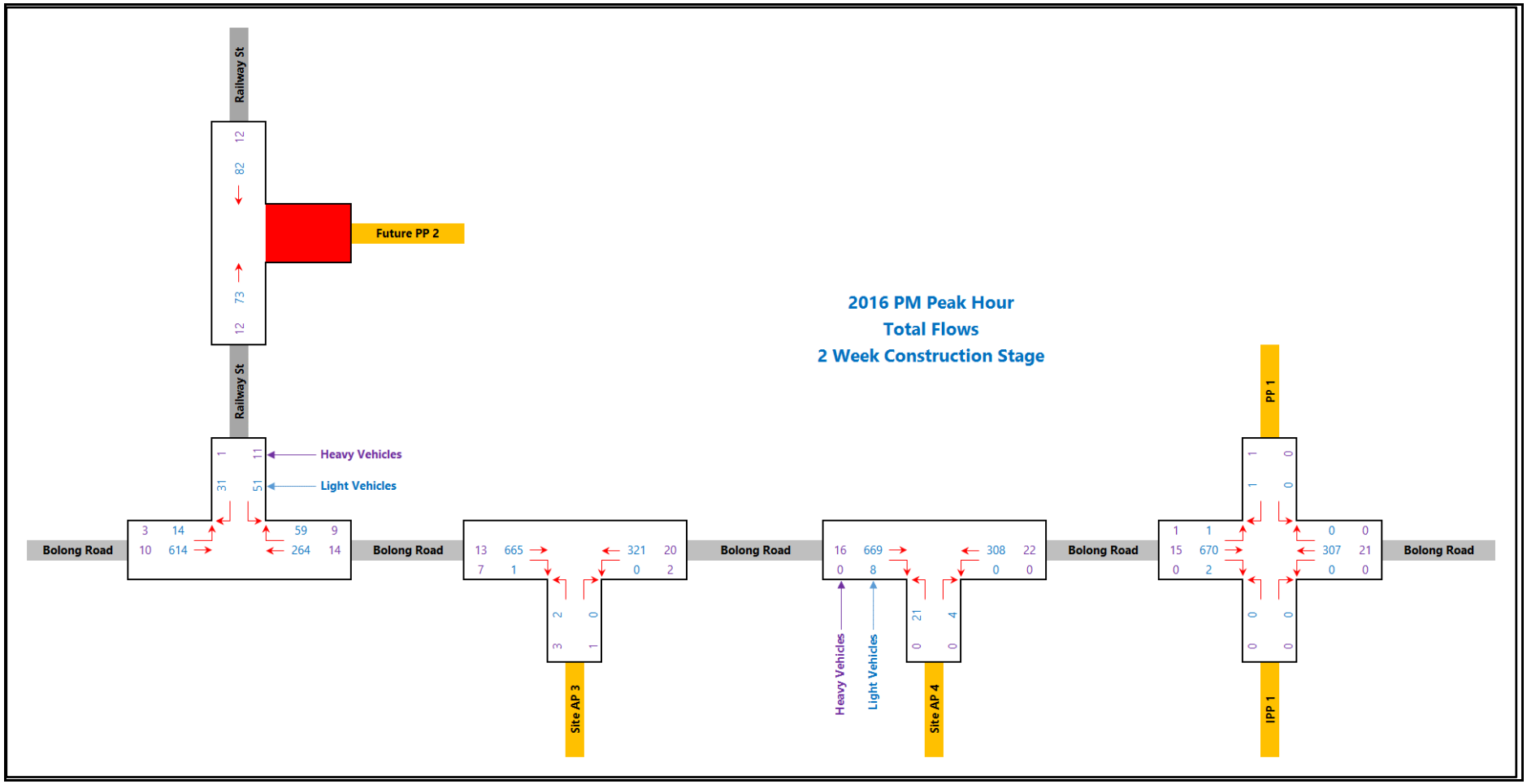

Figure 10: Construction Stage PM Peak Hour Total Flows
(ARC Traffic and Transport)

Demolition Traffic and Access Characteristics

Demolition Access

According to ARC, the demolition stage will result in a redistribution of SS Site staff vehicle trips, and the introduction of demolition staff vehicle trips, as described above.

In summary:

- AP 3 will generate minor additional demolition heavy vehicle arrival and departure trips, which would be exclusively to/from the west.
- AP 4 will generate a reduced number of SS Site staff vehicle trips commensurate with the reduction in staff parking spaces (relocated to the temporary car park).
- PP 1 will generate the SS Site staff vehicle arrival and departure trips relocated from the Moorehouse Site, as well as demolition staff arrival and departure trips.

Heavy Vehicle Trips

According to ARC, the demolition works will require a range of vehicles, including an excavator, mobile crane, skid steer truck and tip truck. Both the excavator and mobile crane are expected to remain on-site for the duration of the demolition period.

With regard to movement numbers for heavy vehicles, according to ARC the estimated amount of materials to be removed from the demolition site are:

- 180 tons of bricks, which would be transported to local recyclers by tip truck (capacity per truck estimated at 12 to 16 tonnes)
- 40 tons of scrap steel, which would be transport to local scrap dealer in skip bins (capacity per skip bin estimated at 4 to 8 tonnes)
- 22 tons of timber, which would be transported to local builders/recyclers by tip truck (capacity per truck estimated at 3 to 5 tonnes)

Given provisions for minor stockpiling on-site of demolished materials, and the capacity of the tip truck and skip bins, it is estimated that the demolition period would generate no more than 8 heavy vehicle trips on a peak transport day, and certainly no more than 1 - 2 (commuter) peak hour movements.

Demolition Staff - Vehicle Trips and Distribution

The demolition stage is estimated to employ up to nine (9) demolition staff per day, including an on-site foreman. As with previous construction projects, most demolition staff are expected to travel in group transport (ie. shuttle bus) from Wollongong, with only a very minor private vehicle trip demand. According to ARC, given that demolition work hours are expected to fall outside of (commuter) peak periods, it is estimated that the

demolition stage would generate no more than 1 - 2 staff vehicle trips to a (commuter) peak hour.

Temporary Relocation of Staff Parking

According to ARC, the temporary relocation of 30 parking spaces from the Moorehouse Site is expected to result in a commensurate redistribution of staff vehicle trips during the demolition stage.

According to ARC, AP 4 currently generates the following peak period staff trips (see **Figures 7** and **8**):

- In the AM peak hour, 21 arrival trips and 20 departure trips; and
- In the PM peak hour, 8 arrival trips and 25 departure trips.

The relocation of 30 parking spaces to the PP Site is expected to result in approximately 25% of trips being redistributed to PP 1, or the redistribution of the following trips:

- In the AM peak hour, 6 arrival trips and 5 departure trips; and
- In the PM peak hour, 2 arrival trips and 6 departure trips.

The trip generation associated with the remaining 88 spaces on the Moorehouse Site would continue to be generated at AP 4 during the demolition stage.

Demolition Traffic Flows

Total traffic flows during the demolition period are shown in **Figure 11** (AM Peak Hour) and **Figure 12** (PM Peak Hour).

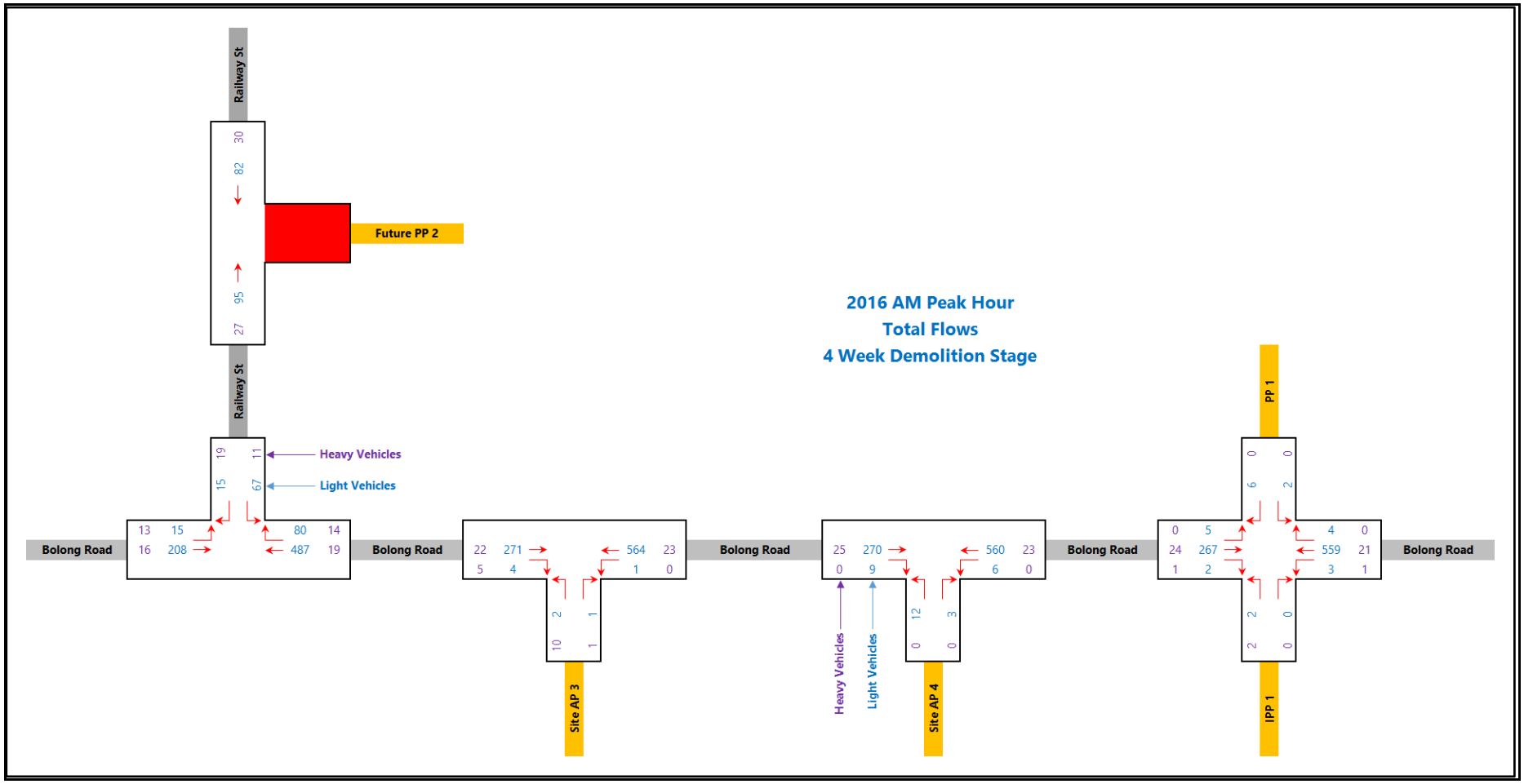

Figure 11: Demolition Stage AM Peak Hour Total Flows
(ARC Traffic and Transport)

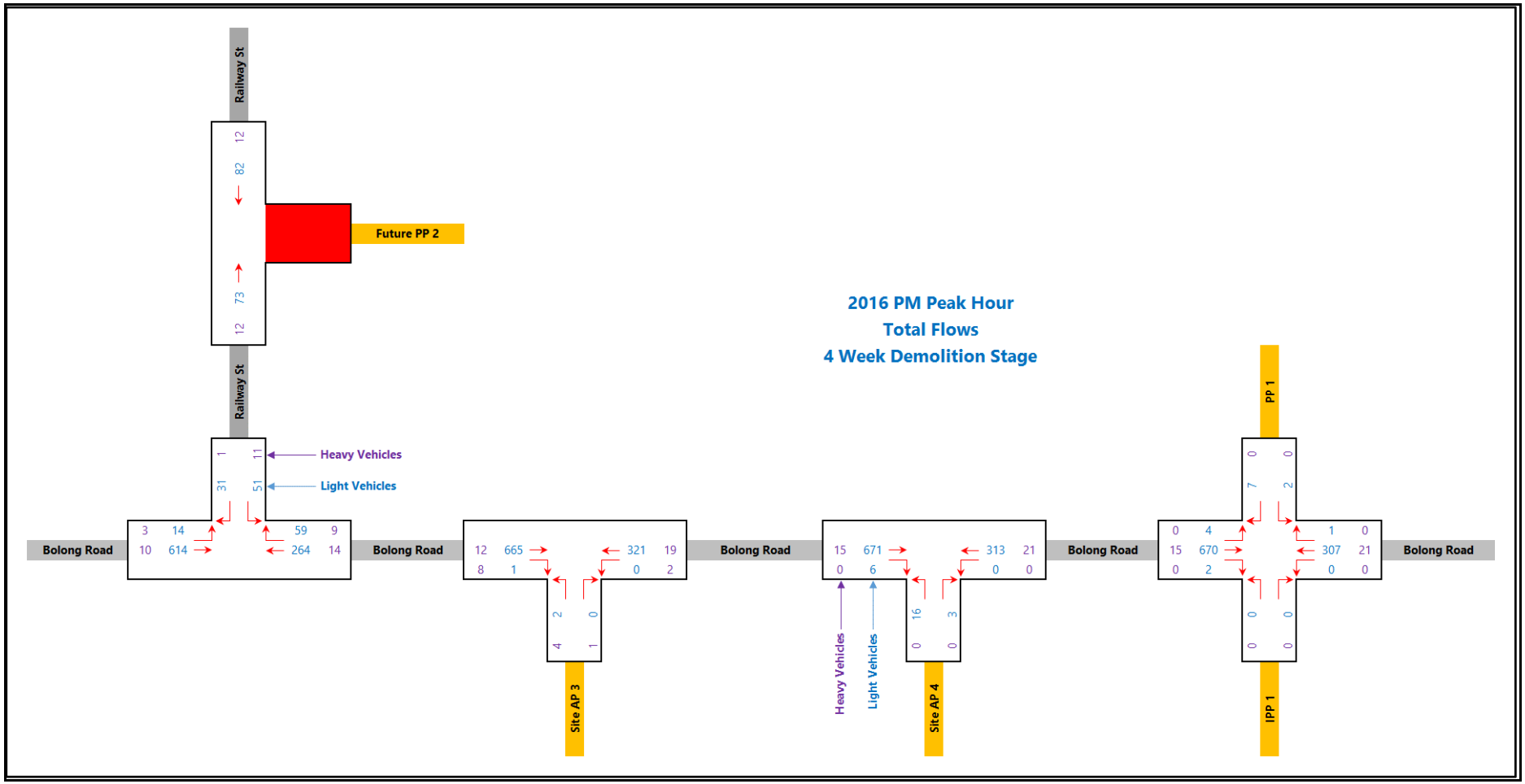

Figure 12: Demolition Stage PM Peak Hour Total Flows
(ARC Traffic and Transport)

7.3.3 Impact Assessment

Intersection Performance

ARC have undertaken an assessment of intersection performance using SIDRA and based on the calculated total traffic flows during the construction and demolition stages. The results of ARC's analysis (see **Annexure 5**) clearly indicate that the new and redistributed traffic conditions during the construction and demolition stages would have no significant impact on the operation of the local traffic network, with no significant changes in average delay, reductions in capacity, or increases in queue lengths at any of the key intersections.

ARC note that the only change in Level of Service (LoS) reported relates to the right turn movement from PP 1 to Bolong Road during the construction stage. This minor additional delay specifically relates to the additional delay of the single heavy vehicle assigned to this movement. Given such operations would be very temporary – and the likelihood of any heavy vehicle movements in the commuter peak hour minor - it is ARC's opinion that this increased delay could not be considered as significant.

Parking

As described, during the demolition period some 30 staff parking spaces will be relocated from the Moorehouse Site to the PP Site.

The Modification provides for the construction of 60 temporary spaces; this is in excess of the staff parking relocation demands associated with the demolition stage, but would specifically provide for the demolition staff demands as required by this Modification; and for the future SS Site staff relocation and construction staff parking demands associated with the future Starch Dryer construction.

Parking spaces will be provided on hardstand comprising steel mill slag with a bitumen surface, and be delineated with reference to Australian Standard 2890.1 so as to provide appropriate aisle width and parking space dimensions.

As noted above, these same temporary parking spaces will be utilised to facilitate the construction works proposed under the future Starch Dryer Modification. Regardless, once (all) works at the Moorehouse Site are completed, the full complement of SS Site staff parking will be reinstated at the Moorehouse Site.

Finally, it is acknowledged that the proposed temporary PP Site car park location does not correspond with the location of formal parking area identified under the SSEP Approval for the (future) Packing Plant itself, and as such providing more formal (hardstand and fully

marked) car parking is not in ARC's opinion warranted or sustainable as part of temporary demolition and construction works.

Pedestrian Access

During the demolition stage, SS Site and demolition staff utilising the temporary PP Site car park would be able to cross Bolong Road via the existing pedestrian refuge immediately east of the PP1 access point. This links to the formal pedestrian path on the southern side of Bolong Road, and from there provides access to the broader Site's internal pedestrian path network. It is noted by ARC that the formal pedestrian footbridge crossing of Bolong Road per the SSEP (between the PP Site and southern side of Bolong Road) is expected to be constructed as part of a future Packing Plant construction project.

7.3.4 Conclusion

The Traffic and Parking Assessment carried out by ARC makes the following conclusions:

> *During the Modification construction stage, a small amount of additional vehicles would be generated to and from the intersection of Bolong Road & PP 1. These additional construction stage trips would have no impact on the operation of the local road network.*
>
> *During the Modification demolition stage, a small amount of additional demolition vehicle trips would be generated to and from the intersection of Bolong Road & AP 3 and Bolong Road & PP 1, and there would be a redistribution of trips between AP 4 and PP 1 as a result of the relocation of SS Site staff parking from the Moorehouse Site to the temporary car park on the PP Site. These additional and redistributed demolition stage trips would have no impact on the operation of the local road network.*
>
> *The temporary car park to be provided on the PP Site would be designed with reference to AS 2890.1 with regard to aisle width and space dimensions.*
>
> *Pedestrian access between the PP Site and the broader SS Site south of Bolong Road would be via the existing pedestrian refuge crossing immediate adjacent to the intersection of Bolong Road & PP 1.*

7.4 MANAGEMENT OF HAZARDS AND RISKS ASSOCIATED WITH ADJACENT INFRASTRUCTURE

The requirements issued by the DoPE for this project required that the EA address:

> *"Management of hazards and risks associated with adjacent infrastructure."*

Figure 13 below is an aerial photograph that depicts the location of the building that is proposed to be demolished in relation to hazardous areas of the Shoalhaven Starches factory site, and including:

- Boiler House (70.05 m)

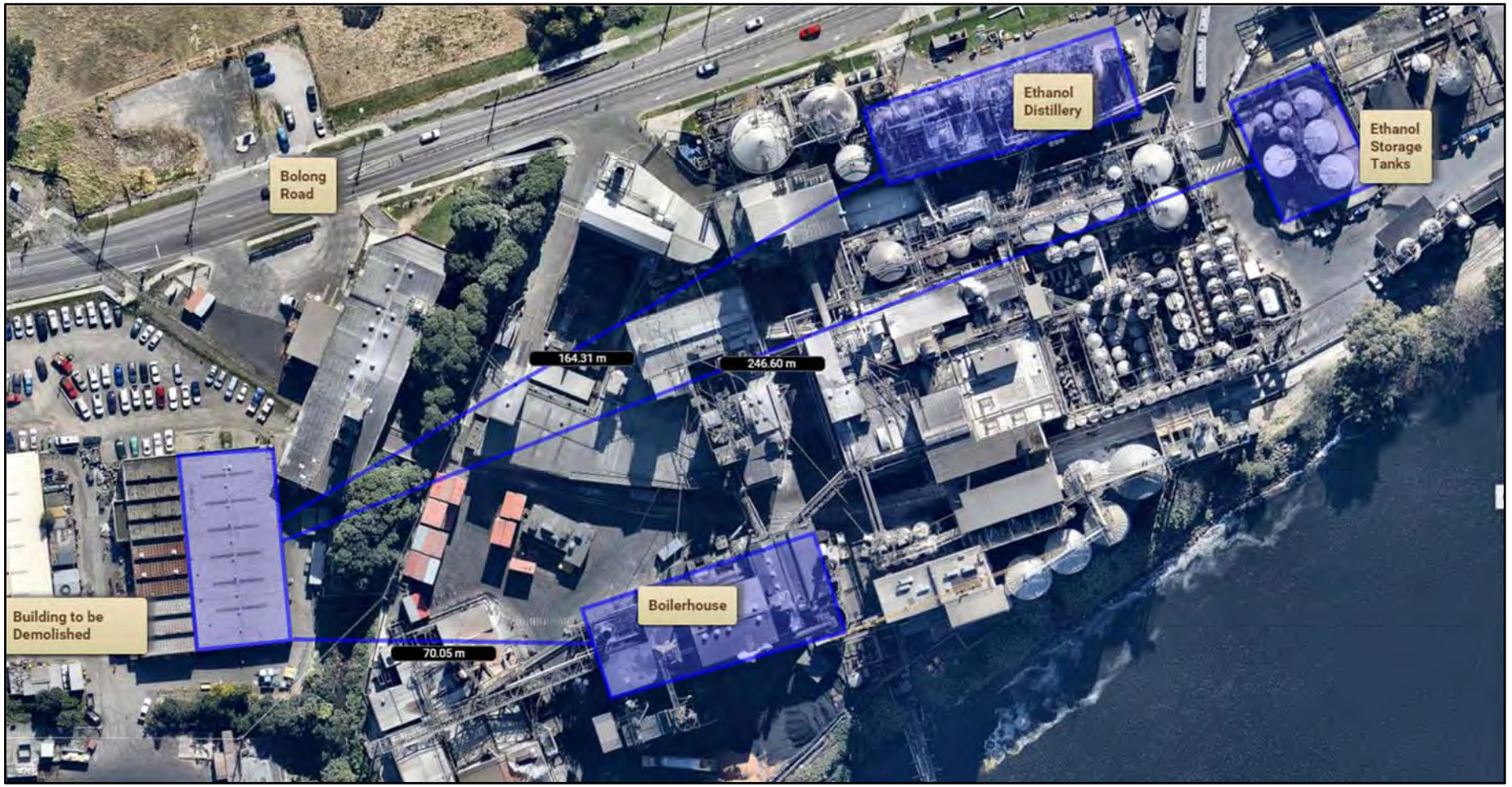

Figure 13: Proximity of building to be demolished in relation to hazardous locations within Shoalhaven Starches factory site.

- Ethanol distillery (164.31 m)
- Ethanol storage (246.60 m)

As is evident from this figure the building is not located within close proximity of hazardous areas of the Shoalhaven Starches factory site.

A qualitative risk assessment of hazards and risks associated with the proposed demolition works has been undertaken by All Construction Engineering (ACE) and is provided in **Annexure 8.** **Table 19** summarises the hazards and recommended safety measures that have been identified by the risk assessment. With the implementation of the recommended safety measures all risks have been identified by ACE as either low or medium.

Table 19

Summary of Risk Assessment

Activity / Hazard Identified	***Recommended Safety Measures***
Site Set Up **Unloading trucks** **Using fork lift / crane**	• Under no circumstances *are* persons permitted to access back of trucks unless fitted with recognized access points and hand rails. • Check to ensure loads are stable prior to releasing restraints • Keep body out of firing line when releasing restraints. • Only qualified and authorised person to operate forklift. • Place loads in suitable areas away from walk ways. • If using crane all rigging of loads to be done from ground level. • Visually inspect lifting gear tools and equipment for apparent damage before use. • Ensure good communications with crane driver. • Be aware where crane hook is at all times.
Manual Handling – lifting – installing temporary fencing	• Identify potential pinch points. • Avoid lifting in difficult positions. • Use mechanical lifting aids. • Ask for assistance from another member of work crew. • Keep fingers limbs clear of suspended load. • Visually inspect lifting gear tools & equipment for apparent damage before use. • Select suitable gloves for the task. • Keep fingers clear when moving, adjusting or lifting components. • Keep fingers out of firing line of crush zones. • Keep people clear of loads. • Keep body parts out of line of fire. • Don't stand between load and solid structures.
Stored Energy (electric shock exposure)	• Ensure isolation is complete and verified on all services.

Table 19 (continued)

Activity / Hazard Identified	*Recommended Safety Measures*
Removal of Wall Sheeting	• Demarcated no go zones around tower while removing sheeting. • Tool lanyards to be used. • Correct PPE to be worn when removing sheeting (gloves are a must). • Sheeting to be removed only in calm weather conditions.
Working at Heights	• Ensure persons involved *are* adequately trained in working at heights. • Select most suitable method of access. • Working from a ladder is prohibited. • Use of an EWP by qualified person only. • Inspect unit daily. • Ensure unit is set up on a flat stable area. • When using an EWP persons working in basket must be harnessed and attached at all times. • Static lines to be set up in areas not accessible from EWPs. • Ensure the crew has a rescue plan in place. • Place all material directly into designated scrap bin. • Keep bolts and nuts in suitable container. • Use tool lanyards. • Barricade area below. • Appoint ground watcher when required.
Remove Sarking / Mush and Timber Purlins	• Demarcated no go zones around tower while removing. • Only qualified and authorised persons to operate equipment. • Inspect equipment daily in accordance with manufactures guidelines. • Set machine on level ground of suitable compaction. • Only tools and equipment to be taken in basket. • Safety harness must be worn with 100% connection. • Be aware of power lines in area. • Be aware and keep body clear of crush zones. • Place tools and fasteners in suitable container. • Barricade area around boom lift and below work area. • Use watcher / walker when moving machine around site. • Ensure equipment complies with site requirements. • Select suitable gloves for the task. • Keep fingers clear when moving, adjusting or lifting components. • Hard hat to be worn at all times. • Suitable breathing apparatus may be required. • Place all material directly into designated scrap / waste bin. • Stack and strap timber in allotted area.

Table 19 (continued)

Activity / Hazard Identified	*Recommended Safety Measures*
Remove Steel Roof Trusses / Roller Doors etc.	• Only qualified and authorised person to operate crane. • Identify suitable area to store roof. • Visually inspect lifting gear tools and equipment for apparent damage before use. • Ensure good communications with crane driver. • Be aware where crane hook is at all times. • Ensure equipment complies with site requirements. • Check to ensure loads are stable prior to releasing restraints. • Keep body out of firing line when releasing restraints. • Ensure no-go zone in place when lifting roof and exclusion zones to be demarcated. • Spotter to be used on the ground. • SWMS to be developed and followed when removing the roof. • Crane lifts are only to be carried out in calm weather conditions. • Lift study to be completed before lifts are carried out.
Hot work – Oxy Cutting	• Inspect gas cutting equipment daily (refer ACE-F-OHS-043). • Ensure bottles are in an upright position and suitably secured. • Check flash back arrestors are fitted at bot torch and regulator end. • Route hoses away from walkways / work area. • Ensure area is clear of combustible material / gases. • Have fire fighting equipment available on site. • Wear correct PPE for task. • Use screening / blankets to shield sparks. • Be aware of other workers / groups in general area.
Hot work – Grinding	• Inspect prior to use (refer ACE-F-OHS-038). • Ensure current inspection tag is fixes. • Use earth leakage box. • Suspend leads on suitable insulated hooks away from walk ways. • Don't use in damp areas. • Use double eye protection. • Shield sparks. • Communicate with other work groups.
Using Pneumatic Tools	• Conduct daily inspections of air compressor in accordance with manufactures guide lines. • Ensure air hoses are in good condition and have safety pins / lanyards attached. • Use locking pins on impact sockets. • Hearing protection must be worn. • Route hoses away from walkways / work area. • Wear correct PPE for task. • Be aware of other workers / groups in general area.

Table 19 (continued)

Activity / Hazard Identified	*Recommended Safety Measures*
Electrical Leads/Equipment **Construction Leads**	• Ensure all power is provide with earth leakage protection (ELP). • Ensure leads are run no more than 30 m and are kept off the ground outside the immediate work area. Provide insulated lead hooks. • Ensure all electrical equipment has been tested and tagged for the current month.
Slips Trips and Falls – Scrap material lying around	• Keep leads and hoses away from walkways. • Endeavour to clean up and place scrap in scrap bins daily.
Noise – Construction Equipment	• Provide ear muff or plugs to personnel operating noisy machinery. Also provide hearing protection to the personnel working around this equipment. • In any event excessively noisy equipment will be removed from site.
Dust and Flying Particles	• Wear safety glasses as a minimum. • Consider using full face shields. • Water down yard on windy days.
Demolish Brick / Concrete walls – Using excavator	• Inspect equipment prior to use. • Exclusion area to be cleared prior to commencement. • Watchers to be in suitable locations. • Operator to stay within cabin of excavator. • Ensure boundary fence is suitably placed to protect people / equipment in the area. (Note it will be required to move materials and relocate temporary fencing adjacent to the Western Packaging building when working in this area.) • Hose down area if required. • Wear appropriate breathing apparatus if / when required.
Load out Rubble	• Ensure loads are covered and with-in load limits of vehicles and roads to be travelled. • Trucks to stay on designated route to disposal area. • Watcher to be assigned when moving through high pedestrian areas. • If noise is excessive, hearing protection must be used. • Be aware of what other work groups are doing. • Exclusion zone to be established around loading area.
Environment – Spills to ground / storm water – Waste – Noise – Fumes / Smoke – Dust	• All plant and equipment inspected prior to entering site. • Spill kit to be kept on hand during dismantling. • All open drains to be suitably bunded. • All waste to be place in correct bin with all recyclable material separated. • Noise to be kept to a minimum with work proceeding during prescribed hours. • An adequate number of fire extinguishers / hose reels to be kept in the area to extinguish fires during hot work. • Hose down area during brick wall demolition.

7.5 WASTE MANAGEMENT

The requirements issued by the DoPE for this project required that the EA address:

- *Waste, including quantities generated, waste classification (refer to EPA Guidelines) and proposed storage, transport and disposal*
- *Asbestos, identification and appropriate management of asbestos in accordance with relevant legislation including:*
    - *Work Health and Safety Regulation 2011*
    - *Model Code of Practice – How to Manage and Control Asbestos in the Workplace, 2011*
    - *Model Code of Practice – How to Safely Remove Asbestos, 2011; and*
    - *Protection of the Environment Operations (Waste) Regulation 2005.*

7.5.1 Asbestos Management

P & D Envirotech have been engaged by Shoalhaven Starches to undertake the demolition and removal of asbestos waste containing materials on the site. Asbestos containing materials have been identified in the rooves and box gutters of the building. The asbestos has been categorised as Non Friable. Approximately 40 m^3 of asbestos containing (AC) materials have been identified on the site.

Annexure 6 to this EA is an Asbestos Removal Control Plan (ARCP) and Waste Management Strategy (WMS), and including details of relevant insurance cover for this firm. This section of the EA is based upon this documentation.

According to the ARCP, the ARCP has been prepared having regard to and in accordance with the following legislative requirements:

- *Work Health & Safety (WHS) Act 2011*
- *WHS Regulations 2011*
- *Safework Australia's Code of Practice (COP) - How to Safely Remove Asbestos Code of Practice 2011.*
- *Safework Australia's COP - How to Manage and Control Asbestos in the Workplace 2011.*
- *WorkCover Authority of NSW requirements*
- *Protection of the Environment Operations Act 1997*
- *Environmentally Hazardous Chemicals Act 1985*
- *AS/NZS 1716:2003 – Respiratory Protective Devices*

- *AS/NZS 1715:1994 – Selection, Use and Maintenance of Respiratory Protective Devices*
- *National Code of Practice for the Control of Workplace Hazardous Substances(National Occupational Health and Safety Commission:(2007(1994))*
- *Waste Avoidance and Resource Recovery Act 2001*
- *Hazardous Manual Tasks Code of Practice 2011*
- *National Code of Practice for Induction for Construction Work*
- *How to Manage Work Health & Safety Risks Code of Practice 2011*
- *Managing the Work Environment and Facilities Code of Practice 2011*
- *Excavation work Code of Practice 2012*
- *Preparation of Safety Data Sheets for Hazardous Chemical Code of Practice 2011*
- *Managing Noise & Preventing Hearing Loss at Work Code of Practice 2011*
- *Work Health & Safety Consultation Cooperation and Coordination Code of Practice 2011*

Under the ARCP the following methodology will be undertaken with the removal of Asbestos from the site.

All windows and doors to nearby buildings will be closed. In factory type buildings where there is no ceiling, the area below or adjacent to the work will be roped off.

Prior to the start of the project, the correct signage and/or flags, barricades will be posted/positioned as per the code of practice. This also includes change area and decontamination facilities.

Prior to the commencement confirmation will be required that all services that may affect the removal of the asbestos sheets have been removed or isolated

Prior to commencement confirmation is to be made that scaffolding is in place and access to the work area is made available and that scaffolding to be used has been signed off by licensed and ticketed personnel

Also a check will be undertaken as to whether drainage systems that have been contaminated, if no contamination is evident isolate as required.

Persons will not be permitted to eat, drink or smoke in the asbestos removal area.

A Hygienist will set up and conduct asbestos air monitoring during and after the period when work is occurring.

While working with asbestos contaminated material, all personnel inside the work area shall wear the following as a minimum requirement:

- Disposable coveralls rated type 5, category 3 (prEN ISO 13982–1);
- Nitrile or Latex;
- Steel-capped work boots or gumboots;
- P2 Sundstrom face masks.

No power tools, other than drills for the removal of roof screws, will be used on the asbestos cement sheeting.

Drop sheets are to be place directly below the removal area and positioned where the sheeting is to be stacked.

The walls are to be vacuumed with HEPA rated vacuums and where required wet wiped.

All waste incurred is to be bagged and disposed of contaminated waste.

A water mist shall will be sprayed at the points of where all screws or nails are to be extracted to minimise any fibre release.

The A/C sheets sprayed prior to commencement with a PVA emulsion ensuring that any loose fibres are bound to the sheets.

The A/C sheets are to be unscrewed by cordless drill or hand driver whilst a water mist is engaged to minimize and fibre release.

All A/C sheets will be removed with a minimal amount of breakage and lowered to the ground by hand in a team lift or by way of mechanical means (no sheets shall be lowered with a force, that impact will cause breakage).

All A/C residue and dust shall be cleaned from supporting substructure and horizontal surfaces by way of hand tools and approved “HEPA” rated vacuum cleaners.

All dust within the roof space area nominated for removal is to be vacuumed with a HEPA rated vacuum and any subsequent horizontal surfaces requiring wet wiping shall have the process completed.

Sheets are then to be double wrapped in 200 micron plastic and sealed with duct tape

All asbestos waste packages are to be decontaminated with a wet rag and re-wrapped outside the work area.

For any unforeseen circumstances, such as inaccessible areas or on the hygienist's recommendations removal or encapsulation changes are to be discussed with the supervisor on site before subsequent actions are taken.

Clothes and gloves will be disposed of as contaminated waste material with other contaminates. Overalls, socks, T-shirts and underwear will be laundered in the approved manner.

All contaminated objects removed shall be loaded with the use of team lifts where required, Materials shall be washed or wet wiped as per the code of practice.

All bagged material shall be stored in sealed and identified as asbestos and shall be transported to an approved disposal facility.

All waste will be disposed of at an approved landfill with traceability documentation.

The removal of asbestos box gutters will follow a similar methodology as the roof sheeting except:

- Drop sheets are to be place directly below the removal area where gutters have been lowered down;
- A PVA Emulsion shall be sprayed at the extraction points minimise any fibre release;
- With the use of hand tools uncouple and remove gutter from building;
- Lower gutter via team lift to ground;

Finally all voids, once cleared by the hygienist, are to be re-filled with non-contaminated putty.

Decontamination

Prior to leaving the work area, in a created dry decontamination area, personnel will use the buddy system to decontaminate via spraying one another with water via a pump sprayer ensuring no run off occurs.

Once wet down coveralls are to be removed outside the work area within the control decontamination area.

Waste is bagged, decontaminated and disposed as contaminated waste.

Where deemed a requirement on a particular site before any works commence, the following wet decontamination procedures will be engaged:

- *Personnel will then transit from the wet decontamination unit.*
- *Wet decontamination shall then be in force and Wet Decontamination protocols are to be followed by all personnel.*

- *All personnel shall enter the first cubical and saturate all clothing, headpieces and respirators (making sure not to wet respirator filters).*
- *Once personnel are satisfied that all areas of personal protective equipment have been saturated and any excess fibres or contaminates have been washed off, proceed to the next cubical where all clothing and equipment shall be removed (except the respirator) and placed into the asbestos bags provided.*
- *Once all items of clothing have been removed, personnel can proceed to enter the third cubical. This area is deemed to be clean area, a person's respirator can now be removed and final personal cleaning can begin, paying particular attention to the face and hair.*
- *After personal washing is complete, entry can be made into the final stage, cubical four. Dry towels can be found in this stage. It is important that personnel dry themselves inside the cubical and not in the change area as cotton fibres will be detected by the monitoring system and be misinterpreted as asbestos fibres. This will cause a false alarm and unnecessary concern by other personnel and all those concerned with the project.*

Once personnel have changed back into normal work clothes, the pump box filter is to be checked and the towel replaced with a fresh towel for the next person to use. Dirty towels are to be placed in the bin provided for laundering.

Respirators will be dried and cleaned before storage.

After decontamination is complete, socks, T-shirts, overalls, underwear and towels will be laundered in the approved manner. Filters, gloves and disposable items shall be disposed of as contaminated waste.

Waste Disposal

The contaminated waste & any asbestos fragments are to be placed in the Transport trucks or bin provided by P&D Envirotech or Remondis which are to be fully tarped after truck is filled, this vehicle or bin will be placed in a predefined location on site within the works site. All waste is then to be transported to the SUEZ waste disposal site Spring Farm. All waste will be disposed of at the approved landfill with full traceability documentation including P&D Envirotech Truck Docket and Suez Disposal Docket.

Asbestos waste that is to be bagged will be using only 200 micron thick polythene bags that are clearly labelled:

"Caution Asbestos: Do not inhale dust. Do not open or damage bag."

To minimise the risk of the bags splitting any sharp waste is required to be wrapped before being put into the bag. To minimise the risk further of the bags splitting and to assist in manual handling, the bags should not be filled more than half full. The bag will then be twisted slightly, folded over and the neck secured in the folded position with adhesive tape

or any other effective method. These bags are to be stored in a pre -designated areas and removed from the work area on a pre-determined amount timeline.

The external surface is then to be cleaned and immediately following the decontamination process the bag is to be double bagged outside the work area.

All consumables used during the removal works are to be considered as contaminated waste and thus are to be part of the waste disposal and bagged in the same method as stated above.

Duration of Work

P & D Envirotech anticipate that the asbestos removal process will require 10 days to undertake, weather permitting.

Number of Employees

It is anticipated that 5 staff will be involved with the asbestos removal.

7.5.2 General Waste Management

Following the removal of the Asbestos containing waste as described in Section 7.5.1 above, the remainder of the building structure will be able to be demolished and removed from the site.

Table 20 below provides a classification of the remaining wastes from the demolition of the building, their quantities and how this material will be stores and removed from the site.

Table 20

General Waste Management

Waste Description	EPA Waste Classification	Quantities (tonnes)	Waste Storage	Transport	Disposal Method
Bricks	General Solid Waste (non-putrescible)	180	Brick Skip Bin	Collected in designated bins and transported in covered truck.	Recycled. Local brick & concrete crushing recycler (SCCR Quarries)
Scrap Metal	General Solid Waste (non-putrescible)	40	Scrap Metal Bin	Collected in designated bins and transported in covered truck.	Recycled. Local scrap metal recycler (Nowra Scrap Pty Ltd)
Timber	General Solid Waste (non-putrescible)	22	Timber Skip Bin	Collected in designated bins and transported in covered truck.	Recycled. Gifted to local builders or local timber recycler (Soilco Pty Ltd)
General rubbish (glass, plastic, cables, etc)	General Solid Waste (non-putrescible)			Collected in designated bins and transported in covered truck.	Approved Landfill (SCC West Nowra)

Following the removal of the asbestos containing materials from the roof and gutters, the remainder of the building will be demolished. Demolition work will be undertaken in accordance with *Australian Standard AS 2601:2001: The Demolition of Structures.*

Demolition work will involve the sequential dismantling of the building as follows:

- Removal of internal partitions and linings by hand.
- Dismantling of concrete brickwork walls to ground level by hand and excavator.
- Stockpiling of brickwork for loading into trucks for disposal in accordance with **Table 20**.
- Removal of remaining framework.

Equipment to be used during this process will include:

- 1 twin cab;
- 1 excavator;
- 1 mobile crane;
- 1 skid steer;
- 1 tip truck.

It is anticipated that the demolition and removal of waste generated from this process will take between 3 to 4 weeks and will employ between 5 to 9 staff.

7.6 WATER QUALITY IMPACTS

The requirements issued by the DoPE for this project required that the EA address:

"Erosion and sediment controls"

This Modification Application is supported by a Soil Erosion and Sediment Control Plan (ESCP) by Cowman Stoddart Pty Ltd. A copy of this Plan forms **Annexure 7** to this EA. This section of the EA is based upon the findings of this assessment.

7.6.1 Temporary Car Parking Area

The temporary car parking area will be constructed in an open paddock on the northern side of Bolong Road with capacity for 60 vehicles.

Site Characteristics

Vegetation

The site has a dense pasture sward of kikuyu/white clover with other natural species such as Yorkshire Fog and weeds such as Fireweed.

Geology and Soils

The geology of the site is alluvium which has resulted in layers of soil material with a well-structured loam topsoil at least 20 cm deep.

Drainage

The site drains to the east into a broad swale which drains to the north-east into a deep open drain at the boundary with the settling ponds at the Bomaderry Sewage Works. This open drain flows to the south-east into Abernethy's Creek, a tributary of the Shoalhaven River.

Soil Erosion

There is no existing soil erosion at the site. Stormwater runoff from the development site will flow 150 metres to the north-east parallel to Abernethy's Creek into an open drain adjacent to the sewage works.

This broad flowline has a grade of approximately 1% and the dense pasture will serve as an effective filter strip for any dirty water flowing off the site.

Erosion and Sediment Control Assessment

Control of sediment from the construction of the proposed temporary car park is straightforward due to the favourable terrain features, dense pasture and low soil erodibility.

Preservation of Topsoil

The topsoil to a depth of 20 cm is of excellent quality and should be preserved for future use in landscaping/revegetation projects on other parts of the property. The topsoil (with attached pasture) should be removed with a road grader (or similar machine), and stockpiled for future use. The pasture will ensure that the stockpile revegetates quickly. It was noted during the soil assessment undertaken by Cowman Stoddart that subsoil had been spread over parts of the site in the distant past and has now revegetated. There is no value in preserving this poorer quality soil material.

Sediment control

The stockpile(s) should be surrounded by sediment fencing but it is acknowledged by Cowman Stoddart that the erodibility of the topsoil is low.

After topsoil removal, sediment fencing should be erected on the northern and eastern boundaries of the car park site.

Plans showing the recommended erosion and sediment control measures are provided in **Annexure 7.**

7.6.2 Demolition of Existing Industrial Building

The demolition stage of the proposed works involves demolition of an existing single storey industrial building located on the western side of Abernethy's Creek, on the "Moorehouse" site.

Site Characteristics

The Moorehouse site comprises developed, industrial land. Abernethy's Creek is located within the eastern part of the site.

The existing building that is proposed to be demolished has been constructed on a concrete slab.

Erosion and sediment control assessment

The proposed demolition works relate to the removal of roofing, gutters, brick walls and general rubbish; the existing concrete slab will be retained. The retention of the concrete slab will ensure that soils will not be disturbed on-site as a result of the demolition works. As such, the potential sediment to be controlled is most likely to be generated from building debris and waste. To that end, the different waste materials should be placed into the appropriate Skip Bins as soon as possible during the demolition process and emptied on a regular basis.

Cowman Stoddart also recommend implementation of the following housekeeping measures:

- The concrete slab should be swept with brooms as necessary to remove potential sediment.
- Instruct site workers on the need to prevent materials from washing into the stormwater system.
- Provide approved bins for concrete and mortar slurries, paints, acid washes, lightweight waste and litter, and ensuring their regular clearance.
- Ensure that any poisons are applied according to their registration and instructions on the label (eg. for termite control).
- Ensure safeguards are in place to prevent residue paint and other chemicals from entering the stormwater system. Spray painting, high pressure washing and other

activities that may permit particles to dissipate to waterways should be carefully controlled.

- Straw bales should be used with some caution as they will restrict flows and may cause stormwater to back up on the flat site and cause temporary flooding within the site. Likewise sediment fences should not be placed across concentrated flows. However, the ESCP identifies that there is one site where straw bales should be used (on an earthen bank on the south eastern side of the site above Abernethy's Creek). It is recommended that straw bales should be fixed in position (with steel stakes) as an extension of the bank and that there would also be some benefit in placing kikuyu turf on the bare soil.
- The ESCP also identifies a drain in the north east part of the site adjacent to the western packaging building, where a coarse screen (or steel grate) could be used to advantage. The ESCP proposes that the existing straw bale barrier at this location serves no purpose and should be removed and replaced with a steel grate to prevent building debris or rubbish being washed into the Creek.

Plans showing the recommended erosion and sediment control measures are provided in **Annexure 7**.

8.0 STATEMENT OF ADDITIONAL COMMITMENTS

Section 8.0 of the EA for the Modification Proposal 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 proposed modification and having regard to the findings of the EA.

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

8.1 DUST

Table 21 outlines recommended additional management procedures and design considerations that Shoalhaven Starches commits to implementing and incorporating into practices that would prevent and / or minimise risk scenarios from occurring.

Table 21

Dust

Management Procedures
Shoalhaven Starches commits to implementing then Dust Management Plan as prepared by ENRS and which forms **Annexure 3** to this EA.

8.2 NOISE

As outlined in Section 7.2, the Noise Impact Assessment prepared by Day Design concludes that noise and vibration emission from the proposed demolition works will be below management levels and therefore does not propose any specific measures for this proposal.

8.3 TRAFFIC

As outlined in Section 7.3 of this EA it is the view of ARC that the proposed modification would have no significant impacts on the local or on-site road network.

Shoalhaven Starches however commit to the following additional measures as outlined in **Table 22** to assist in screening and further minimising traffic impacts arising from the proposed works.

Table 22

Traffic Impacts

Management Procedures
Shoalhaven Starches commits to the recommendations of the traffic impact statement prepared by ARC and which concludes: • *During the Modification construction stage, a small amount of additional vehicles would be generated to and from the intersection of Bolong Road & PP 1. These additional construction stage trips would have no impact on the operation of the local road network.* • *During the Modification demolition stage, a small amount of additional demolition vehicle trips would be generated to and from the intersection of Bolong Road & AP 3 and Bolong Road & PP 1, and there would be a redistribution of trips between AP 4 and PP 1 as a result of the relocation of SS Site staff parking from the Moorehouse Site to the temporary car park on the PP Site. These additional and redistributed demolition stage trips would have no impact on the operation of the local road network.* • *The temporary car park to be provided on the PP Site would be designed with reference to AS 2890.1 with regard to aisle width and space dimensions.* • *Pedestrian access between the PP Site and the broader SS Site south of Bolong Road would be via the existing pedestrian refuge crossing immediate adjacent to the intersection of Bolong Road & PP 1.*

8.4 MANAGEMENT OF HAZARDS

Table 23 outlines recommended additional management procedures and design considerations that Shoalhaven Starches commits to implementing and incorporating the following management measures to mitigate risks.

Table 23

Hazard and Risk Management

Management Procedures
Shoalhaven Starches commits to the management measures outlined in Table 18 of the EA which details the main hazards associated with the proposed demolition and associated management measures.

8.5 WASTE MANAGEMENT

Table 24 outlines recommended additional management procedures and design considerations that Shoalhaven Starches commits to implementing and incorporating into practices that would prevent and / or minimise risk scenarios from occurring.

Table 24

Waste Management

Management Procedures
Asbestos Management Shoalhaven Starches commits to asbestos management on the site being undertaken in accordance with the Asbestos Removal Control Plan prepared by P & D Envirotech and which forms **Annexure 6** to the EA. **Waste Management** Shoalhaven Starches commits to general waste management being undertaken in accordance with the following:

Waste Description	EPA Waste Classification	Quantities (tonnes)	Waste Storage	Transport	Disposal Method
Bricks	General Solid Waste (non-putrescible)	180	Brick Skip Bin	Collected in designated bins and transported in covered truck.	Recycled. Local brick & concrete crushing recycler (SCCR Quarries)
Scrap Metal	General Solid Waste (non-putrescible)	40	Scrap Metal Bin	Collected in designated bins and transported in covered truck.	Recycled. Local scrap metal recycler (Nowra Scrap Pty Ltd)
Timber	General Solid Waste (non-putrescible)	22	Timber Skip Bin	Collected in designated bins and transported in covered truck.	Recycled. Gifted to local builders or local timber recycler (Soilco Pty Ltd)
General rubbish (glass, plastic, cables, etc)	General Solid Waste (non-putrescible)			Collected in designated bins and transported in covered truck.	Approved Landfill (SCC West Nowra)

8.6 SOILS AND WATER

Table 25 outlines recommended additional management procedures that Shoalhaven Starches commits to implementing and incorporating into practices to address erosion and sediment control.

Table 25

Erosion and Sediment Control

Management Procedures
Shoalhaven Starches commits to implementing the erosion and sediment control measures during the construction of the temporary car park and the demolition stage in accordance with the Soil Erosion and Sediment Control Plan prepared by Cowman Stoddart Pty Ltd and which forms **Annexure 7** to this EA.

9.0 CONCLUSION

The SSEP was approved in January 2009 by the then Minister for Planning under Part 3A of the Environmental Planning & Assessment Act.

The Project Approval included the consolidation of all previous approvals (up to that time) into the one Project Approval. This included the consolidation of the Pollution Reduction Program (PRP) No. 7 Project (DA No. 223-7-2002), which included the installation of Starch Dryer No. 5 within the factory site.

Following further detailed engineering design it has become apparent that the area originally set aside for Starch Dryer No. 5 under the PRP No. 7 project provided insufficient area for the footprint of this proposed Starch Dryer. As a result an alternative location for the Starch Dryer is required to be identified.

It is proposed to relocate the approved but not yet constructed Starch Dryer No. 5 within the existing Shoalhaven Starches factory site from its approved location to a new location on the western side of Abernethy's Creek, otherwise known as the "Moorehouse" site.

The Moorehouse site includes a number of existing industrial buildings and a staff car parking area. It will be necessary to demolish one of the existing industrial buildings in order to accommodate the future relocation of Starch Dryer No. 5.

The relocation of Starch Dryer No. 5 will be the subject of a separate, future Modification Application. The purpose of this application is to seek the demolition of the existing industrial building to facilitate the future construction of the relocated Starch Dryer No. 5. The modified proposal will not affect production from the site over that which has been the subject of past approvals. Similarly, the proposal will not involve any change in the amount of raw products that will be utilised; nor will it involve any changes in the amount of waste waters that will need to be treated and disposed.

This application is made pursuant to Section 75W of the Environmental Planning & Assessment Act 1979 and seeks to modify the location of the approved Starch Dryer.

The preparation of this Environmental Assessment has been undertaken following consultation with staff from:

- The Department of Planning and Infrastructure;
- Shoalhaven City Council.

Following an assessment of this modification proposal having regard to the key issues originally identified with this Project, this Environmental Assessment concludes that the proposal is

suitable for the site and this locality and consistent with the objects of the Environmental Planning & Assessment Act.

The Minister's approval of this proposed modification to Project Approval MP 06_0228 is sought.

ANNEXURE 1

Plans of Proposed
Demolition Works
and Temporary Car Park

ANNEXURE 1

To Nowra/
Sydney.

VEHICULAR SITE ENTRY/EXIT VIA GATE 13 ACCESS.

BOLONG ROAD

INDUCTION /TRAINING.

EXIT

ENTRY

ROAD ACCESS

EXISTING BRICK OFFICES MANILDRA OFFICE COMPLEX

BRICK OFFICE

CARPARK

CLEARY BRO'S CONCRETE

GATE 13.

ENTRY

EXIT

EXIT

EXIT

ENTRY

ENTRY

ENTRY

COAL STORAGE

Carpark

Existing Maintenance Building retained as current use.

Existing Building To be demolished

SITE FENCING.

EXISTING BARRIER WALKWAY

WASTE SKIPS.

MACHINERY PARKING.

PROPOSED 60 CAR PARKING AREA

WESTERN ELEVATION

SOUTHERN ELEVATION

ELEVATIONS OF BUILDING TO BE DEMOLISHED.
Scale 1:500

BOLONG ROAD

To Shoalhaven Heads.

WESTERN PACKAGING BUILDING

DRYER #6

No.1 FERMENTER

WET END

ELECTRICAL SUB-STATION

6K SUB/STN

No.3 AND No.4 DRYER BUILDING

PACKAGING BUILDING

DRYER #5

PED BRIDGE

EXISTING GANTRY.

SUB/STN

EXISTING GANTRY

DDG DRYER BUILDING

DRYER #7

DDG OUTLOAD

EVAPORATOR

SUB/STN

EVAPORATORS

COOLING TOWERS

PLAN VIEW

REFERENCE	DRG.No.	REV	REFERENCE DRAWING
REFERENCE	DRG.No.	REV	REFERENCE DRAWING

REVISIONS	REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
REVISIONS	REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD

MANILDRA GROUP
Commitment to Excellence

DRAWN	P.C.	DATE 14/08/15
DESIGNED.		DATE
CHKD		DATE
APPD		DATE
SCALE	1 : 1250 (UNO)	

SITE: MANILDRA - SHOALHAVEN STARCHES PTY LTD
JOB TITLE: PROPOSED DRYER LOCATION
DWG TITLE: BOMADERRY PLANT DRYER DEMOLISHION SITE DETAIL
PROJECT No. 5750
DWG No. MN260-004
SHT SIZE A3
SHEET
OF
REV.

94M

88M.(2.75M x 32 SPACES).

18M

5.5M

7M

5.5M

PROPOSED 60 CAR PARKING AREA

FUTURE CAR PARK ENTRY VIA APPROVED BOLONG ROAD ENTRY.

PPOLE

14

13

17

8

1

4

1

2

10

PROPOSED RELOCATED APPROVED DRYER #5.

WESTERN PACKAGING BUILDING

Drain

Abernethys

REFERENCE	DRG.No.	REV	REFERENCE DRAWING
REFERENCE	DRG.No.	REV	REFERENCE DRAWING

REVISIONS	REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
REVISIONS	REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD

MANILDRA GROUP
Commitment to Excellence

DRAWN	D.A. CAPON	14/08/15
DESIGNED.		
CHKD		
APPD		
SCALE	1 : 500	

SITE: MANILDRA - SHOALHAVEN STARCHES PTY LTD
JOB TITLE: PROPOSED DRYER LOCATION
DWG TITLE: BOMADERRY PLANT DRYER CONSTRUCTION CARPARK
PROJECT No. 5750
DWG No. MN260-006
SHT SIZE A3
SHEET
OF
REV. P02

566 x 881

CLEARY BRO'S
CONCRETE

BOLONG ROAD

Carpark

14
13
22
3
17
13
10

Existing Maintenance
Building retained
as current use.

WASTE
SKIPS.

MACHINERY
PARKING.

WESTERN
PACKAGING BUILDING

Existing Building
To be demolished

SITE FENCING.

EXISTING BARRIER WALKWAY

PED BRIDGE

EXIT

ENTRY

APPROX
BUND

DOG
COOLING

EXISTING
SWITCH ROOM
(ELEVATED)

SUB/STN

EXISTING
SWITCH ROOM
(ELEVATED)

DOG
COOLING

N

REFERENCE	DRG.No.	REV	REFERENCE DRAWING
REFERENCE	DRG.No.	REV	REFERENCE DRAWING

REVISIONS	REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
REVISIONS	REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD

MANILDRA GROUP
Commitment to Excellence

DRAWN	D.A. CAPON	DATE 14/08/15
DESIGNED.		DATE
CHKD		DATE
APPD		DATE
SCALE	1 : 500	

SITE: MANILDRA - SHOALHAVEN STARCHES PTY LTD
JOB TITLE: PROPOSED DRYER LOCATION
DWG TITLE: BOMADERRY PLANT DRYER PLAN VIEW
DEMOLITION OF EXISTING BUILDING
PROJECT No. 5750
DWG No. MN260-008
SHT SIZE A3
SHEET
OF
REV.

ANNEXURE 2

Consultation and Requirements
of the
Department of Planning & Environment
and
Shoalhaven City Council

ANNEXURE 2

Chris Avis

From: Deana Burn <Deana.Burn@planning.nsw.gov.au>
Sent: Thursday, 17 September 2015 1:42 PM
To: Brian Hanley; Stephen Richardson
Cc: Christopher Ritchie
Subject: Assessment Requirements for Demolition MOD

Hi Brian, Stephen

Please find below some assessment requirements for the submission of a modification for demolition works at the Shoalhaven Starches factory. I understand from your meeting with Chris that the demolition works relate to an existing building adjacent to the interim packing plant, west of Abernethys drain.

- Description of works, demolition methodology, timeframe and duration of works and number of employees.
- Consideration of relevant demolition guidelines including Australian Standard AS 2601:2001: The Demolition of Structures
- Waste, including quantities generated, waste classification (refer to EPA Guidelines) and proposed storage, transport and disposal
- Asbestos, identification and appropriate management of asbestos in accordance with relevant legislation including:
    - Work Health and Safety Regulation 2011
    - Model Code of Practice – How to Manage and Control Asbestos in the Workplace, 2011
    - Model Code of Practice – How to Safely Remove Asbestos, 2011; and
    - Protection of the Environment Operations (Waste) Regulation 2005.
- Noise, assessment in accordance with EPA Interim Construction Noise Guideline and proposed mitigation measures;
- Dust, assessment in accordance with EPA Approved Methods and proposed mitigation measures;
- Traffic, access and parking, including type of equipment, number of vehicles, temporary access and/or parking requirements;
- Management of hazards and risks associated with adjacent infrastructure;
- Erosion and sediment controls;
- Consultation – I encourage you to consult early with Shoalhaven City Council to obtain any feedback early in the assessment process.

If you have any questions, please contact me on 9228 6453.

Regards,
Deana.

Deana Burn | Planner
Industry Projects | Development Assessment Systems & Approvals
NSW Department of Planning & Environment
deana.burn@planning.nsw.gov.au | p: 02 9228 6453 | GPO Box 39, Sydney NSW 2001

NSW GOVERNMENT | Planning & Environment

Chris Avis

From: Brian Hanley <brian.hanley@manildra.com.au>
Sent: Thursday, 17 September 2015 4:54 PM
To: council@shoalhaven.nsw.gov.au
Cc: Stephen Richardson; John Studdert; Tom Geczy; Deana Burn
Subject: FW: Starch Dryer Site
Attachments: Photo of site - showing building to be demolished.png; FW: Assessment Requirements for Demolition MOD

Andrew, Please find attached the building photograph and the Assessment Requirements as discussed today.Please advise if you require any additional information.

Regards

Brian Hanley
Manager
Energy & Sustainability
Manildra Group
36 Bolong Rd, Bomaderry, NSW, 2541
P - (02) 4423 8388 |M - (0412) 672 783| E – brian.hanley@manildra.com.au

From: Aaron Ticehurst
Sent: Thursday, 17 September 2015 4:25 PM
To: Brian Hanley <brian.hanley@manildra.com.au>
Subject: Starch Dryer Site

Please see attached

Regards

Aaron Ticehurst
Mechatronic Engineer (B. Eng) || Projects & Engineering Department
36 Bolong Rd, Bomaderry, NSW, 2541 || p - (02) 4423 8405 || m - 0488 238 405
e - aaron.ticehurst@manildra.com.au || Find Us On Facebook!


Building to be demolished

Chris Avis

From: Brian Hanley <brian.hanley@manildra.com.au>
Sent: Thursday, 17 September 2015 1:46 PM
To: Ming Leung; Greg Murphy; Tony Barton; Tom Geczy; John Studdert; Aaron Ticehurst
Subject: FW: Assessment Requirements for Demolition MOD

Regards

Brian Hanley
Manager
Energy & Sustainability
Manildra Group
36 Bolong Rd, Bomaderry, NSW, 2541
P - (02) 4423 8388 |M - (0412) 672 783| E – brian.hanley@manildra.com.au

From: Deana Burn [mailto:Deana.Burn@planning.nsw.gov.au]
Sent: Thursday, 17 September 2015 1:42 PM
To: Brian Hanley <brian.hanley@manildra.com.au>; Stephen Richardson <Steve@cowmanstoddart.com.au>
Cc: Christopher Ritchie <Chris.Ritchie@planning.nsw.gov.au>
Subject: Assessment Requirements for Demolition MOD

Hi Brian, Stephen

Please find below some assessment requirements for the submission of a modification for demolition works at the Shoalhaven Starches factory. I understand from your meeting with Chris that the demolition works relate to an existing building adjacent to the interim packing plant, west of Abernethys drain.

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Deana.

Deana Burn | Planner
Industry Projects | Development Assessment Systems & Approvals
NSW Department of Planning & Environment
deana.burn@planning.nsw.gov.au | p: 02 9228 6453 | GPO Box 39, Sydney NSW 2001

Chris Avis

From: Deana Burn <Deana.Burn@planning.nsw.gov.au>
Sent: Wednesday, 14 October 2015 9:12 AM
To: John Studdert; Christopher Ritchie
Cc: Brian Hanley; Tom Geczy; Stephen Richardson
Subject: Re: Assessment Requirements for Demolition MOD

Hi John

Yes, I agree that a dust control plan is an appropriate level of assessment for the demolition modification. I will get back to you shortly regarding the Phase 2 contamination assessment for the packing plant modification.

I have written up the points from our meeting yesterday and Doris will add her comments re: FSS then I will send to you today.

Regards,
Deana.

From: John Studdert <John.Studdert@manildra.com.au>
Sent: Tuesday, 13 October 2015 18:06
To: Deana Burn; Christopher Ritchie
Cc: Brian Hanley; Tom Geczy; Stephen Richardson
Subject: FW: Assessment Requirements for Demolition MOD

Hi Deana,

Thanks for your time today to meet and discuss the various project modifications proposed at the Shoalhaven Starches site.

As discussed, one of the assessment requirements for the Demolition MOD is for a dust assessment *in accordance with EPA Approved Methods*. The EPA's Approved Methods guidelines outline requirements for air quality sampling, modelling impacts at nearby receptors, etc. For a project that will take about one month to complete and being relatively small in scale, we are proposing to develop a dust control plan to outline the proposed measures to minimise dust emissions during the demolition works.

Please advise if this approach is acceptable.

If you have any questions, please do not hesitate to contact me.

Regards,

John Studdert
Quality Assurance & Environmental Coordinator
Manildra Group
Phone: +61 2 4423 8200
Direct: +61 2 4423 8254
Mobile: 0417 209 851
Fax: +61 2 4423 8331
mailto:john.studdert@manildra.com.au

From: Brian Hanley
Sent: Thursday, 17 September 2015 1:46 PM
To: Ming Leung <ming.leung@manildra.com.au>; Greg Murphy <greg.murphy@manildra.com.au>; Tony Barton <tony.barton@manildra.com.au>; Tom Geczy <tom.geczy@bigpond.com>; John Studdert <John.Studdert@manildra.com.au>; Aaron Ticehurst <aaron.ticehurst@manildra.com.au>
Subject: FW: Assessment Requirements for Demolition MOD

Regards

Brian Hanley
Manager
Energy & Sustainability
Manildra Group
36 Bolong Rd, Bomaderry, NSW, 2541
P - (02) 4423 8388 |M - (0412) 672 783| E – brian.hanley@manildra.com.au

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- Protection of the Environment Operations (Waste) Regulation 2005.

- Noise, assessment in accordance with EPA Interim Construction Noise Guideline and proposed mitigation measures;
- Dust, assessment in accordance with EPA Approved Methods and proposed mitigation measures;
- Traffic, access and parking, including type of equipment, number of vehicles, temporary access and/or parking requirements;
- Management of hazards and risks associated with adjacent infrastructure;
- Erosion and sediment controls;
- Consultation – I encourage you to consult early with Shoalhaven City Council to obtain any feedback early in the assessment process.

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Regards,
Deana.

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Please consider the environment before printing this email.

ANNEXURE 3

Dust Management Plan

prepared by

Environment and Natural Resource Solutions

ANNEXURE 3

DEMOLITION DUST MANAGEMENT PLAN (DMP)

MOOREHOUSE REDUNDANT WORKSHOP & WAREHOUSE
24 BOLONG ROAD
LOT 201 DP 1062668
BOMADERRY, NSW, 2541

PREPARED FOR: **Shoalhaven Starches Pty Ltd**

PROJECT NUMBER: **ENRS0483**

DATE: **19TH OCTOBER 2015**

ENRS PTY LTD
ABN 68 600 154 596
25 River Road, Shoalhaven Heads, NSW, 2535
T/F 02 9037 4708 M: 0401 518 443
E: projects@enrs.com.au www.enrs.com.au

COMMERCIAL IN CONFIDENCE

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Author and Document Control

Written/Submitted by:	Reviewed / Approved by:
Taite Beeston *Geologist & Environmental Consultant*	
Rohan Last *Hydrogeologist & Environmental Scientist*	

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Copies	Report No. & File Name	Status	Date	Prepared for:
1 x PDF	ENRS0483_Shoalhaven Starches_MooreHouse Demoltion Dust Mgt Plan	Rev.1	19th Oct. 2015	Shoalhaven Starches Pty Ltd

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LIST OF TABLES, FIGURES & APPENDICES

TABLES

FIGURES

1.0 BACKGROUND

1.1 INTRODUCTION

Environment & Natural Resource Solutions (ENRS Pty Ltd) were commissioned as independent environmental consultants in October 2015 by *Shoalhaven Starches Pty Ltd* to prepare a Dust Management Plan (DMP) for the proposed demolition of the Moorehouse redundant workshop and warehouse building at 24 Bolong Road, Bomaderry, NSW, 2541 (*herein referred to as the Site*).

ENRS understand the demolition works are required to make ready available land in anticipation of the construction of a new product dryer at the Site. This management plan documents the relevant EPA approved methods for mitigating and controlling potential dust associated with the demolition works in accordance with the project conditions of approval outlined by the NSW Department of Planning & Environment; the Demolition Work Code of Practice (Safe Work Australia;2015).

1.2 OBJECTIVES

The objective of this Dust Management Plan is to document the procedures and controls to be adopted during the demolition works, including but not limited to:

- Identify potential sources of dust at the demolition site;
- Assess any risks associated with potential dust generation and sensitive receptors; and
- Describe the necessary management procedures and dust control measures to be adopted before, during and after demolition works.

2.0 PROJECT DESCRIPTION

2.1 LOCATION

The Moorehouse Site is located approximately 50 metres south of Bolong Road adjacent the Manildra Group Railway Crossing and approximately 120 metres north of the Shoalhaven River as shown in **Figure 1**. The key features required to identify the site are summarised in **Table 1**.

Table 1: Site Identification

SITE	DESCRIPTION
Street Address	24 Bolong Road, Bomaderry, NSW, 2541
Zoning	IN1 - General Industrial
Building Area	~1,700 m^2
Local Government Area	Shoalhaven

Figure 1 Site Location Map

2.2 BUILDING DESCIPTION

The building subject of these demolition works is identified as the Moorehouse Building comprising single storey redundant factory and workshop space. The eastern portion and majority of the structure costs of steel and timber frame with steel cladding with a low potential for dust generation. Whilst, the north and western portions of the site comprise brick and mortar walls with corrugated asbestos roofing and box gutters. The underlying concrete hard stand is outside the scope of this work and shall not be disturbed during the demolition works.

Photograph 1 Moorehouse (White Brick Building)

Photograph 2 Bricked Wall Interior

2.3 SURROUNDING LANDUSE

The proposed demolition building is located in the Manildra Group compound surrounded by industrial facilities including factories, warehouses, offices, carpark and hardstand areas. The site is approximately 50 metres south of Bolong Road which presents the nearest publicly accessible land. The surrounding landuse creates a form of wind shelter to the south, east and west whilst the area is relatively open to the north where site fencing will be established.

3.0 LEGISTLATIVE REQUIREMENTS

In NSW, the legislative requirements for the management of demolition dust are outlined in the following Acts and Regulations;

- NSW Work Health and Safety Act 2011 (WHS Act 2011);
- Environment Operation Act 1997 (POEO Act) and Regulations;
- Protection of the Environment Operations (Clean Air) Regulation 2002; and
- Environmental Planning & Assessment Act 1979.

Specific requirements on how to manage dust and comply with environment and WHS laws are provided in the following Codes of Practise and must be adhered to during the scope of work:

- Code of Practice: *Demolition Work* (Safe Work Australia;2015);
- Code of Practice: *Excavation Work* (Safe Work australia;2012);
- Code of Practice: *How to Manage Work Health and Safety Risks* (WorkCover, NSW;2011);
- Code of Practice: *How to Manage and Control Asbestos in the Workplace* (WorkCover NSW;2011);

- Code of Practice: *How to Safely Remove Asbestos* (Safe Work Australia;2011);
- Code of Practice: *Safe Removal of Asbestos 2nd Edition (National Occupational Health and Safety Commission* [NOHSC: 2002 (2005)]); and
- Code of Practice: *Safe Work on Roofs, Part 1, Commercial and Industrial Buildings* (WorkCover NSW;2009).

4.0 ASSESSMENT CRITERIA

4.1 DEFINITION OF DUST

Assessment criteria are available for various substances in dust form. Dust is generally inferred to comprise ***solid particles larger than colloidal size capable of temporary suspension in air***. Dust may be classed based on a range of particle sizes where respirable dust is defined as less than 5 µm and particles smaller than 2.5 µm may reach enter deep within the respiratory system.

- PM_{10} - refers to particulate matter with an equivalent aerodynamic diameter less than or equal to 10 micrometres;
- $PM_{2.5}$ - refers to particulate matter with an equivalent aerodynamic diameter less than or equal to 2.5 micrometres

4.2 EXPOSURE STANDARDS

Details of the health exposure standards for airborne particulates including inhalable and respirable dust are provided in the Safe Work Australia (2012) *Guidance on the Interpretation of Workplace Exposure Standards for Airborne Contaminants.* Exposure standards are provided for the following substances based upon the percent of respirable dust:

Table 2: Exposure Standards

Analyte	Exposure Standard
Dust (not otherwise classified)	10 mg/m^3
Asbestos	0.1 fibres per mL of air
Quartz, Cristobalite, & Tridymite	0.1 mg/m^3
Silica (Amorphous & precipitated)	10 mg/m^3
Synthetic Mineral Fibre (SMF)	0.5 respirable fibres per mL of air; or 2 mg/m^3 (inhalable dust over 8 hours)

4.3 PARTICULATE GUIDELINES

The National Environment Protection (Ambient Air Quality) Measure (NEPM;2003) outlines the relevant standards and goals for particulate monitoring. Definitive guidelines are only provided for PM_{10} as the primary indicator for particulates pending a revision of the NEPM as there is insufficient data at this time to support the development of standards for ultrafine particles, $PM_{2.5-10}$, or individual components of particles. A summary of the NEPM (2003) assessment criteria is provided in **Table 3**:

Table 3: Dust Standards

Analyte	Maximum Concentration	Monitoring Period
Particulate as PM_{10}	50 µg/m^3	Per 24 hours (5 days /yr)
Particulate as PM_{25}	25 µg/m^3	N/A

Further guidance on assessment criteria is provided in; the DECC (2005) *Approved Methods for the Modelling of Air Pollutants in New South Wales*; and the DECC (2004) *Environmental Best Practice Management Guideline for Concreting Contractors.*

4.4 DUST MONITORING PLAN

The primary assessment criteria for the project requires that the demolition works do not result in any degradation of the local amenity. All necessary control measures shall be implemented to ensure that levels of dust do not exceed the exposure standards and particulate guidelines outlined in Table 2 and **Table 3**.

Based on the limited scale of the demolition works situated within an industrial area with no significant sensitive receptors the project presents a relatively low risk of dust exposure. Given the project is not a scheduled activity requiring an Environmental Protection Licence (EPL) and the low risk of dust the project shall adopt a tiered level of monitoring as summarised in **Table 4**:

Table 4: Summary of Monitoring Requirements

Analyte	Monitoring
Qualitative - Visual	Daily monitoring by the Project Manager (PM) and Demolition Manager (DM) – visual inspection for excessive dust mobilising beyond the site boundary.
Quantitative – Depositional & PM_{10}	To be conducted in the event that excessive dust is identified outside the site boundary or a significant complaint is received. Establish minimum three (3) gauging stations adjacent the Bolong Road footpath, site office entry, and at points downwind. Monitoring to be conducted in accordance with AS/NZS 3580.10.1:2003 (R22014).

5.0 ASBESTOS REMOVAL PLAN

5.1 ASBESTOS REGISTER

The Moorehouse building was previously subject to an asbestos materials building survey by SWE in 2012. The resulting asbestos register documents the following areas of asbestos which shall require removal prior to demolition works.

In addition ENRS note there may be areas of concealed asbestos uncovered during the demolition works including Electrical mounted boards (EMB).

Table 5: Moorehouse Asbestos Register

Workplace Address: Shoalhaven Starches Pty Ltd – 160 Bolong Rd Bomaderry NSW 2541			**Inspectors:** Tony Barton – Safety and Fire Services Coordinator Tim Smith – Safe Work & Environments (SWE)		
Date of Identification	**Type of Asbestos**	**Is it Friable or Non-Friable**	**Condition of asbestos**	**Specific Location of asbestos**	**Is this an inaccessible area**
17-08-2012	Roof and wall Cladding	Friable if damaged	Roof sheets good – North and South Walls	Moorehouse mechanical spare parts building	Only accessed By Maintenance Staff
20-08-2012 Roof and wall	Roof and wall Cladding	Friable if damaged	Roof Sheets in good condition	Moorehouse mechanical Oil Store building 120	Only accessed by Maintenance Staff
20-08-2012	Roof Gutter system	Friable if damaged	Roof Gutter in good condition	Moorehouse Electrical motor store – 800mm x	Only accessed by Maintenance Staff

5.2 PRE-DEMOLITION REMOVAL

ENRS understand P&D Envirotech Pty Ltd have been commissioned under separate contract to remove the above asbestos materials prior to commencement of demolition works. Works shall be required to comply with the site specific Asbestos Removal Control Plan (RCP):

Table 6: Summary of Asbestos Removal Plan

Type of asbestos:	Redundant Asbestos Rooves & Box Gutters
Location:	*Oil Store, Screen Room, Electrical Store, Workshop & Motor Room*
Amount:	Approximately 40m^3
Condition:	Non Friable
Approx duration of work:	10 days weather permitting
Safe Work Notification:	Valid Non-Friable

5.3 CONTROL AIR MONITORING

The pre-demolition works have the potential to disturb asbestos containing material which presents a risk of releasing asbestos fibres in dust and to the atmosphere. Hence, a program of air monitoring shall be implemented upon commencement of removal works and maintained until such time that sufficient evidence from the monitoring results demonstrates that the site controls are effective and the works do not present an unacceptable risk to site users. The air monitoring results will also provide a measurable trigger for upgrading site controls or identifying cease work conditions.

The collection and analysis of air monitoring samples should be conducted under supervision of a licensed asbestos assessor and in accordance with the National Occupational Health and Safety Commission (NOHSC) "Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Dust [NOHSC: 3003 (2005)]. Calibrated air monitoring pumps shall be installed at the boundary fences of the exclusion zone for the designated asbestos works area and within the closed cabin of any plant supported by a daily field blank for QAQC purposes. Upon completion filter samples shall be submitted to a NATA accredited laboratory for fibre count analysis. The results of air monitoring shall be applied to:

- Compare results of air monitoring against the trigger levels outlined in **Table 7**;
- Continue to revise and update the air monitoring program based on progressive results, including the frequency and location of sample points; and
- Air monitoring results shall be made available to employees. Reports shall be printed and appended to the notice board.

Table 7: Air Monitoring Trigger Levels

Trigger Level	Fibre Concentration	Asbestos Management Action
(I)	<0.01 fibres/mL.	Continue works and maintain effective site controls.
(II)	Between 0.01 -0.02 fibres/mL	Review site control measures and introduce more stringent controls. Notify Asbestos Assessor to advise on improved site controls.
(III)	≥ 0.02 fibres/mL.	Stop work. Notify Safe Work NSW. Identify the cause of the elevated concentrations and update site protocols for approval by Asbestos Assessor prior to recommencing works.

5.4 CLEARANCE PROTOCOL

Access to the asbestos removal site will be determined by the Removal contractor until a final clearance certificate has been issued by the licensed Asbestos Assessor. Access to the asbestos removal area for inspections or similar by other work parties will only be allowed during 'tools down' periods under the direct supervision and control of the Asbestos Removal Contractor Supervisor.

A ***clearance inspection and clearance certificate will be required upon completion of the removal*** works and prior to commencement of demolition works in accordance with the NSW WHS Regulations.

6.0 DEMOLITION PLAN

6.1 SCOPE OF WORK

The following overview is provided for key tasks within the demolition scope of work based on the project specific risk assessment provided by the demolition contractor, **All Construction Engineering** (**ACE**):

- Complete all ***asbestos removal*** works under separate contract prior to commencement. Demolition works are not to proceed until receipt of clearance certification for all asbestos removal works supported by control air monitoring;
- ***Establishment*** – inductions, setup site controls, fencing, signage, water lines for dust suppression, mobilise equipment, silt/dust fencing, designated storage areas;
- ***Service Isolation*** – completed and verified by certified technicians;
- ***Remove*** Wall & Roof ***Sheeting*** – manually unfasten and remove wall cladding;
- ***Remove Sarking*** & Timber Purlins - manually unfasten and remove
- ***Remove Steel*** structures – Crane steel trusses and rollers doors from the building;
- ***Demolish Brick*** & Concrete ***Walls*** – Excavator to systematically and progressively collapse wall structures supported by dust suppression with water sprays;
- ***Waste Sorting and Storage*** – Demolition materials to be progressively sorted during removal works to minimise handling and dust disturbance. Waste streams to be stored separately in designated bins with covers and dust suppression; and
- ***Load Out Rubble*** – load rubble and storage bins on covered trucks supported by dust suppression.

6.2 HOURS OF OPERATION

The timing of various stages of the works needs to be agreed in advance with ***Site Manager*** so that appropriate traffic operating plans can be put in place for the duration of the works. All Works, including the arrival and departure of heavy vehicles, shall be restricted to the following working hours:

- **Monday to Saturday, 7:00 am to 6.00 pm**
- **Sunday and Public Holidays, no works pending prior approval.**

Should the contractor wish to work outside the above working hours, the contractor shall obtain written approval from the ***Site Manager*** prior to the work occurring.

6.3 RESPONSIBILITIES

This DMP does not preclude or alter in any way the implementation of all necessary environmental or WH&S management measures typically associated with works at the site. The responsibility for implementing any environmental and WH&S requirements rests with the ***Site Management*** and contractors undertaking such works. The management measures described herein must be undertaken in addition to all other reasonable standards of occupational health and safety (for example working with asbestos or at heights has specific health and safety requirements).

Site Project Manager	Demolition Contractor Manager
Name.....	**Name.....**
Position.....	Position.....
Mob.....	Mob.....
Tel.....	Tel.....
Email.....	Email.....

6.4 COMMUNITY RELATIONS

Any and all community or media enquiries are to be directed to the **Site Manager** in the first instance. No contact or communication on the project is to be made with the media without the written permission of the Site Manager.

6.5 PERSONAL HYGIENE

The following personal hygiene and work practice guidelines are intended to prevent injuries and adverse health effects. These guidelines represent the minimum standard procedures for reducing potential risks associated with dust and are to be followed by general personnel and subcontractors on site during excavation works, as follows:

- A complete field first aid kit will be maintained on site;
- Eating, drinking, smoking, taking of medicine, chewing gum or tobacco is prohibited in the immediate vicinity of the works area;
- Hands and if necessary, face will be thoroughly washed before eating or putting anything in your mouth;
- Always be alert to potential changes in exposure conditions such as strong winds, drying, friable materials or areas with significant dust deposits; and
- The site induction should include decontamination procedures and OH&S procedures for all staff involved with demolition works.

6.6 PERSONAL PROTECTIVE EQUIPMENT

The level of personal protective clothing required at the site during demolition will consist of the following:

- Steel toed boots;

- Hard hat;
- P2 dust mask if required;
- Hearing protection if required;
- Safety glasses;
- Safety vest / high vis clothing;
- Long sleeved shirts, trousers; and
- Gloves.

Site personnel and subcontractors are expected to provide their own personal protective clothing and equipment equivalent to those recommended above.

7.0 RISK ASSESSMENT

7.1 POTENTIAL SOURCES

The following points summarise the potential sources of demolition dust based on the building structure and material types documented in the demolition plan:

- ***Asbestos*** roof and gutters (to be removed under separate contract prior to demolition works);
- ***Existing*** accumulated ***dust*** on and within the building structure. The potential for existing dust is expected to be moderate to high due to the age of the building where dust may have accumulated within the building space over many years;
- ***Steel*** and ***timber*** dust may be generated by minor cutting and abrasive works during demolition;
- ***Sarking*** and insulation materials;
- ***Brick***, mortar and ***concrete*** walls present the highest potential for dust generation at the site. It should be noted that the concrete slab shall not be disturbed and will remain in place; and
- ***Vehicle*** movements present a minor risk of dust mobilisation as the site is covered by hard stand.

7.2 PATHWAYS

Given the site location with an industrial area covered by hardstand the primary factors that contribute to dust generation include:

- Disturbance and remobilisation of dust during handling and movement of demolition materials;
- Creation of dust during demolition of brick and concrete walls;
- Loose, dry and uncovered stockpiled material;
- Airborne particulates in proximity to active works site;
- Potential for high winds to re-mobilise particulates and transport dust outside the site boundary; and
- The movement of trucks and machinery over the working site.

7.3 RECEPTORS

The nearest receptors include human health where dust may be ingested or inhaled. No significant environmental or sensitive receptors, such as sites with children, are identified in the immediate proximity of the site:

- Demolition contractors;
- Site users and personnel within the greater site area; and
- Persons within adjoining industrial sites or pedestrians on Bolong Road.

8.0 DUST CONTROLS

8.1 DUST CONTROL

Site personnel, the public, adjacent neighbours and the environment shall be protected from the effects of dust created during the works. The following dust suppression techniques shall be employed, such that there shall be minimal visible generation of dust outside the designated Site boundary:

Table 8: Summary of Dust Mitigation Measures

Control	Mitigation Measures
Fencing & Wind Barrier	Temporary Site fencing to be established around the site perimeter and fitted with mesh to provide a barrier against wind.
Weather Monitoring	Check forecast daily for wind potential and continue to monitor site conditions during works. Stop work to be triggered by moderate winds which may limit the effectiveness of dust controls. In general, moderate winds may be classed as greater than 5 m/sec (~20 Km/hr). Based on the site layout winds from the north are likely to present the highest risk of dust generation.
House Keeping	Maintain ordered and clean site to reduce available loose material for dust generation in the event of winds. The works areas shall be kept in a tidy manner with regular sweeping.
Water Suppression	Work areas to be wet down as required (prior, during & after demolition). The frequency of watering for dust suppression shall be increased as required to manage dust potential during periods of wind, heat and drying to ensure no visible dust leaves the site boundary. Fixed spray points may be established supported by manual spraying with care not to over wet the site which may create excess site runoff.
Systematic Demolition	Demolition material to be removed progressively to minimise potential disturbance of dust and provide for immediate storage in designated and controlled areas. Progressive demolition shall reduce requirements for multiple handling and potential re-mobilisation of any particulates.

Control	Mitigation Measures
Stockpiling & Storage	Demolished materials and rubble shall be stored in designated bins and stockpile areas. Materials shall be covered and wet down as required to prevent dust generation.
Cover Loads	Loading of trucks and storage bins shall be supported by dust suppression. Loads are to be covered before leaving the site boundary.

8.2 PLANT CONTROLS

Movement of plant, trucks and other vehicles involved in the works, to and from the site will be strictly controlled and restricted to a minimum and only take place during appropriate working hours. All trucks carting demolition material are to have their loads covered. No trucks will be allowed to leave the site without covers on. Trucks without load covers are not to be admitted to the site during the removal of materials from the site. All vehicles will be visually free of dust before permission to leave the site is granted.

8.3 SITE REINSTATEMENT

Following demolition and removal of rubble the site should be reinstated by sweeping and hosing down to provide a 'clean' hardstand area prior to removing site controls.

8.4 DECONTAMINATION

Clean potable water for personal and equipment decontamination is to be available on site. All visible dust is to be scraped, brushed and/or scrubbed off boots and outer gloves. All equipment and tools will be cleaned and rinsed with potable water prior to leaving the site.

8.5 CONTINGENCY PLAN

The unexpected conditions that could feasibly occur at the site include:

- The discovery of presently unknown types of hazardous materials such as asbestos;
- The generation of unacceptable levels of dust;
- High winds increasing potential for dust generation;

Procedures that will be used to address these contingencies are provided in the following sections of this DMP.

8.5.1 Unknown Types of Materials

The presence of unknown materials would be highlighted during demolition works by the observation of any unusual physical/sensory characteristics of the demolition materials. In the event that any unknown type of material is identified at the site, an assessment of the influence of the material on the demolition works would be undertaken. If required, a variation to the DMP will be made. If asbestos is identified the area shall be isolated and an Asbestos Assessor contacted to investigate its extent. Once it is identified, the impacted material shall be remediated.

8.5.2 Unacceptable Levels of Dust

Should the project receive a significant complaint or daily inspections identify excessive dust leaving the site the works shall cease and the demolition and dust control methodology reviewed to improve the effectiveness of site controls. Further quantitative monitoring should be considered for Depositional Dust and PM_{10}.

9.0 RECORD KEEPING

9.1 ASBESTOS CLEARANCE

A standalone clearance certificate should be documented for the asbestos removal works in accordance with the NSW WHS Regulations.

9.2 WASTE RECORDS

Tracking records shall be maintained for all waste disposal including truck movements and maintained with site records.

9.3 MONITORING RECORDS

A photographic log of the daily site conditions shall be maintained by the Project Manager and maintained with site records.

In the event that further monitoring is triggered a formal report should be prepared by a suitably qualified environmental professional.

10.0 LIMITATIONS

This report and the associated services performed by ENRS are in accordance with the scope of services set out in the contract between ENRS and the Client. The scope of services was defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to the site.

ENRS derived the data in this report primarily from visual inspections, and, limited sample collection and analysis made on the dates indicated. In preparing this report, ENRS has relied upon, and presumed accurate, certain information provided by government authorities, the Client and others identified herein. The report has been prepared on the basis that while ENRS believes all the information in it is deemed reliable and accurate at the time of preparing the report, it does not warrant its accuracy or completeness and to the full extent allowed by law excludes liability in contract, tort or otherwise, for any loss or damage sustained by the Client arising from or in connection with the supply or use of the whole or any part of the information in the report through any cause whatsoever.

Limitations also apply to analytical methods used in the identification of substances (or parameters). These limitations may be due to non-homogenous material being sampled (i.e. the sample to be analysed may not be representative), low concentrations, the presence of 'masking' agents and the restrictions of the approved analytical technique. As such, non-statistically significant sampling results can only be interpreted as 'indicative' and not used for quantitative assessments.

The data, findings, observations, conclusions and recommendations in the report are based solely upon the state of the site at the time of the investigation. The passage of time, manifestation of latent conditions or impacts of future events (e.g. changes in legislation, scientific knowledge, land uses, etc) may render the report inaccurate. In those circumstances, ENRS shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of the report.

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the provisions of the agreement between ENRS and the Client. ENRS accepts no liability or responsibility whatsoever and expressly disclaims any responsibility for or in respect of any use of or reliance upon this report by any third party or parties.

It is the responsibility of the Client to accept if the Client so chooses any recommendations contained within and implement them in an appropriate, suitable and timely manner.

FIGURES

Figure 2 Demolition Site Plan

To Nowra/
Sydney.

VEHICULAR SITE ENTRY/EXIT VIA GATE 13 ACCESS.

BOLONG ROAD

INDUCTION /TRAINING.

EXIT

ENTRY

ROAD ACCESS

EXISTING BRICK OFFICES MANILDRA OFFICE COMPLEX

BRICK OFFICE

CARPARK

CLEARY BRO'S CONCRETE

GATE 13.

ENTRY

EXIT

EXIT

EXIT

ENTRY

ENTRY

ENTRY

COAL STORAGE

Carpark

Existing Maintenance Building retained as current use.

Existing Building To be demolished

SITE FENCING.

EXISTING BARRIER WALKWAY

PROPOSED GO CAR PARKING AREA

WESTERN ELEVATION

SOUTHERN ELEVATION

ELEVATIONS OF BUILDING TO BE DEMOLISHED. Scale 1:500

WASTE SKIPS.

MACHINERY PARKING.

WESTERN PACKAGING BUILDING

BOLONG ROAD

To Shoalhaven Heads.

No.1 FERMENTER

DRYER #6

WET END

ELECTRICAL SUB-STATION

6K SUB/STN

No.3 AND No.4 DRYER BUILDING

PACKAGING BUILDING

DRYER #5

PED BRIDGE

EXISTING GANTRY.

SUB/STN

EXISTING GANTRY

DDG DRYER BUILDING

DRYER #7

DDG OUTLOAD

EVAPORATOR

SUB/STN

EVAPORATORS

COOLING TOWERS

PLAN VIEW

REFERENCE	DRG.No.	REV	REFERENCE DRAWING
REFERENCE	DRG.No.	REV	REFERENCE DRAWING

REVISIONS	REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
REVISIONS	REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD

MANILDRA GROUP
Commitment to Excellence

DRAWN	P.C.	DATE 14/08/15
DESIGNED.		DATE
CHKD		DATE
APPD		DATE
SCALE	1 : 1250 (UNO)	

SITE: MANILDRA - SHOALHAVEN STARCHES PTY LTD
JOB TITLE: PROPOSED DRYER LOCATION
DWG TITLE: BOMADERRY PLANT DRYER DEMOLISHION SITE DETAIL
PROJECT No. 5750
DWG No. MN260-004
SHT SIZE A3
SHEET
OF
REV.

566 x 891

ANNEXURE 4

Construction Noise Assessment

prepared by

Day Design Pty Ltd

ANNEXURE 4

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CONSULTING ACOUSTICAL ENGINEERS

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Construction Noise Assessment

Proposed Demolition of Existing Industrial Building Shoalhaven Starches, Bolong Road, Bomaderry, NSW

REPORT NUMBER
5807-1.1R

DATE ISSUED
14 October 2015

Prepared For:
Shoalhaven Starches Pty Ltd
C/- Cowman Stoddart Pty Ltd
31 Kinghorn Street
Nowra NSW 2541

Attention: Mr Stephen Richardson

Revision History

Status	Date	Prepared	Checked	Comment
Draft	02/10/15	Matthew Harwood	William Wang	
Final	14/10/15	Matthew Harwood	William Wang	

Document 5807-1.1R, 16 pages plus attachments

Disclaimer

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1.0 EXECUTIVE SUMMARY

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

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

It is proposed demolish an existing industrial building on the western side of the site within Lot 102, DP 1062668, which is otherwise known as the Moorehouse site. The proposed demolition will facilitate the future construction of a product dryer at this location. A spate modification application is currently being prepared for the proposed product dryer.

It is a requirement of the NSW Department of Planning and Environment that a Construction Noise Assessment accompany the application for the demolition process.

The demolition process will last up to approximately four (4) weeks and involve the use of a mobile crane, excavator, concrete saw and truck.

This Construction Noise Assessment has been prepared in accordance with the Environment Protection Authority's Interim Construction Noise Guideline 2009. Construction noise management levels are derived from previously measured background noise levels in the vicinity of each receptor location.

The construction noise and vibration levels will be well below the acceptable noise management levels at each receptor location without the need for noise controls.

2.0 CONSULTING BRIEF

Day Design Pty Ltd was engaged by Shoalhaven Starches Pty Ltd to assess the potential construction noise impact of the demolition of an existing industrial building at their existing complex on Bolong Road, Bomaderry, NSW.

This commission involves the following:

Scope of Work:

- Inspect the site and environs
- Determine background noise levels at critical locations and times
- Establish acceptable noise and vibration level criteria
- Quantify noise emissions from the demolition works
- Calculate the level of noise emission at potentially affected receiver locations
- Prepare a site plan identifying the demolition site and nearby noise sensitive locations
- Provide recommendations for noise control, if necessary
- Prepare a Construction Noise Assessment report.

3.0 PROJECT DESCRIPTION

3.1 Site Description

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

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

The nearest residential locations to the Moorehouse Building are as follows:-

- Location 1 – Nobblers Lane, Terara approximately 1400 metres to the south east
- Location 2 – Riverview Road, Nowra approximately 975 metres to the south west;
- Location 3 – Meroo Street, Bomaderry approximately 620 metres to the north west;
- Location 4 – Coomea Street, Bomaderry approximately 750 metres to the north west;

Locations are listed in keeping with the order shown in the Environment Protection Licence 883.

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

3.1 Development Description

It is proposed to demolish an existing industrial building on the western part of the factory site, otherwise known as the 'Moorehouse' site. The building will be demolished to make way for the construction of a product dryer, for which a separate modification application is currently being prepared. Noise emission from the construction and ongoing operation of the product dryer will also be the subject of a separate Environmental Noise Impact Assessment.

This assessment assesses noise emission from the proposed demolition of the existing industrial building.

The location of the industrial building is shown in the attached Appendix A.

The author has held discussions with Shoalhaven Starches and All Construction Engineering (Principal contractor for the site demolition), to establish the following:-

- majority of the demolition will involve dismantling of the roof and framework by hand with the assistance of a mobile crane;
- the masonry walls will be 'pushed over' using a 7 tonne excavator and may require cuts using a concrete saw to facilitate this;
- building waste and rubble will be loaded into trucks for removal from site, using the excavator.

The demolition works will take up to approximately 4 weeks and the proposed hours of construction are as follows:-

- 7 am to 5 pm Monday to Friday; and
- 8 am to 1 pm on Saturdays.

Figure 1. Location Plan – Shoalhaven Starches, Bomaderry *(source: Google Maps Imagery © 2014).*

4.0 NOISE AND VIBRATION CRITERIA

4.1 Department of Planning and Environment

The NSW Department of Environment and Planning requires a noise assessment be carried out in accordance with EPA Interim Construction Noise Guideline and proposed mitigation measures provided, where necessary.

4.2 Australian Standard AS2436

The Australian Standard AS2436–2010 *"Guide to noise and vibration control on construction, demolition and maintenance sites"* provides guidance on noise control in respect to construction, demolition and maintenance sites. The Standard also provides guidance for the preparation of noise and vibration management plans.

Section 1.5 'Regulatory Requirements' of the Standard states:-

"Legislation associated with the control of noise and vibration on and from construction, demolition and maintenance sites in Australia is generally the responsibility of the relevant State or Territory government, local council or a designated statutory authority."

Consequently the Standard does not provide specific noise criterion rather sets out practical methods for determining the potential for noise and vibration impact on the community from construction, demolition and maintenance sites.

A qualitative method is described in Section 3.3 of the standard, which is designed to avoid the need for complex noise predictions by following a series of questions relating to, for example, whether the noise is likely to be loud, have annoying characteristics or affect sleep.

In the event that any of these outcomes are likely, a more detailed and quantitative approach should be adopted.

In relation to carrying out detailed noise impact assessments, Section 4 'General' of the standard states:-

"Regulatory authorities may have relevant polices and/or guidelines for the control of noise and vibration on construction sites. These should also be referred to when developing noise and vibration management plans for such projects."

In NSW this is the NSW Environment Protection Authority's *Interim Construction Noise Guideline 2009* as outlined in Section 5.3 below.

The Standard further states, in Section 4.6.1, that if noisy processes cannot be avoided, then the amount of noise reaching the receiver should be minimised and goes on to provide advice and recommendations to reduce noise and vibration impacts as far as reasonably practicable.

This report has been prepared in accordance with the guidance provided in AS2436-2010.

4.3 EPA Construction Noise Guideline

The NSW Environment Protection Authority published the *Interim Construction Noise Guideline* in July 2009. While some noise from construction sites is inevitable, the aim of the Guideline is to protect the majority of residences and other sensitive land uses from noise pollution most of the time.

The Guideline presents two ways of assessing construction noise impacts; the quantitative method and the qualitative method.

The quantitative method is generally suited to longer term construction projects and involves predicting noise levels from the construction phase and comparing them with noise management levels given in the guideline.

The qualitative method for assessing construction noise is a simplified way to identify the cause of potential noise impacts and may be used for short-term works, such as repair and maintenance projects of short duration.

In this instance, the quantitative method has been used in this assessment. Details of the quantitative method are given in Section 4 of the Guideline.

Normal construction hours are defined by the EPA as follows:

- 7.00 am to 6.00 pm Monday to Friday;
- 8.00 am to 1.00 pm Saturday; and
- No work on Sunday or Public Holiday.

Table 2 in Section 4 of the Guideline sets out noise management levels at affected residences and how they are to be applied during normal construction hours. The noise management level is derived from the rating background level (RBL) plus 10 dB in accordance with the Guideline. This level is considered to be the 'noise affected level' which represents the point above which there may be some community reaction to noise.

The 'highly noise affected' level of 75 dBA represents the point above which there may be strong community reaction to noise. This level is provided in the Guideline and is not based on the RBL. Restrictions to the hours of construction may apply to activities that generate noise at residences above the 'highly noise affected' noise management level.

4.3.1 Rating Background Noise Levels

Day Design Pty Ltd has carried out numerous noise impact assessments and undertaken long-term background noise surveys in and around Nowra, including in Bomaderry and Terara. Daytime background noise levels range between 33 and 40 dBA depending on the location, as shown in Table 1 below.

Table 1 Rating Background Levels – Various Locations, Day Time

Noise Measurement Location	Time Period	Rating Background Level
135 Terara Road, Terara March 2012	Day (7 am to 6 pm)	**33 dBA**
55 Terara Road, Nowra February 2015	Day (7 am to 6 pm)	**36 dBA**
Cambewarra Rd, Bomaderry July 2010	Day (7 am to 6 pm)	**40 dBA**
Shoalhaven Village Caravan Park, Nowra March 2012	Day (7 am to 6 pm)	**40 dBA**

4.3.2 Construction Noise Management Levels

Based on the rating background noise levels in the vicinity of each receptor location, the recommended noise management levels during the demolition process are summarised below in Table 2 below.

Table 2 L_{eq} Noise Management Levels from Construction Activities

Receptor Location	Noise Management Level	How to Apply
Location 1 (Terara) Location 2 (Nowra) Locations 3 & 4 (Bomaderry)	**43 dBA** (33 + 10) **50 dBA** (40 + 10) **50 dBA** (40 + 10)	The noise affected level represents the point above which there may be some community reaction to noise. ▪ Where the predicted or measured $L_{Aeq\ (15\ min)}$ noise level is greater than the noise affected level, the proponent should apply all feasible and reasonable* work practices to meet the noise affected level. ▪ The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. ▪ Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 1. times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences) 2. if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

* Section 6, "work practices" of The Interim Construction Noise Guideline, states:- "there are no prescribed noise controls for construction works. Instead, all feasible and reasonable work practices should be implemented to minimise noise impacts.

This approach gives construction site managers and construction workers the greatest flexibility to manage noise".

4.4 EPA Vibration Guideline

The NSW EPA published the *Assessing Vibration: a technical guideline* in February 2006. This guideline is based on the British Standard BS 6472:1992 *"Evaluation of human exposure to vibration in buildings (1 Hz to 80 Hz)."*

The guideline presents preferred and maximum vibration values for use in assessing human responses to vibration and provides recommendations for measurement and evaluation techniques.

The guideline considers vibration from construction activities as Intermittent Vibration. Table 2.4 of the guideline sets out limits for Vibration Dose Values to assess intermittent vibration and is replicated below in Table 3 for residential receptor locations.

Table 3 Vibration Dose Values (VDV) from Construction Activities

Receptor Location	Daytime	
	Preferred value ($m/s^{1.75}$)	Maximum value ($m/s^{1.75}$)
All Residences	0.20	0.40

The British Standard BS 7385-2:1993 *"Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground borne vibration"* provides guide values for transient vibration relating to cosmetic damage, replicated below in Table 4 for residential buildings.

Table 4 Transient Vibration Guide Values for Cosmetic Damage

Type of building	Peak component particle velocity in frequency range of predominant pulse	
	4 Hz to 15 Hz	15 Hz and above
Residential	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

In our opinion, an overall peak particle velocity of **15 mm/s** at the boundaries will comply with the recommended values in Table 4 and is an acceptable criterion for intermittent vibration to prevent cosmetic damage to the adjacent residential buildings.

4.5 Project Specific Noise Criteria

The most relevant noise and vibration management levels for this development are those outlined in Sections 4.3 and 4.4 of this report and summarised as follows:-

- Construction noise management level of **43 dBA** ($L_{eq,\ 15\ minute}$) during normal construction hours at Location 1;
- Construction noise management level of **50 dBA** ($L_{eq,\ 15\ minute}$) during normal construction hours at Locations 2, 3 and 4;
- A Vibration Dose Value (VDV) between **0.2 – 0.4 m/s$^{1.75}$** for human annoyance ; and
- A Peak Particle Velocity no greater than **15 mm/s** for cosmetic damage.

5.0 DEMOLITION PHASE NOISE EMISSION

5.1 Plant and Equipment Sound Power Levels

Plant and equipment to be used during the demolition phase is shown in Table 5 below along with the corresponding sound power levels.

Table 5 Typical Plant and Equipment – Internal Works - Sound Power Levels

Description	Sound Power Level, dBA
Mobile Crane	110
Excavator	108
Concrete Saw	116
Truck	107

5.2 Predicted Noise Levels

Knowing the sound power level of a noise source, the sound pressure level (as measured with a sound level meter) can be calculated at a remote location using suitable formulae to account for distance losses, barrier effects, etc.

Predicted noise levels at each receptor are presented below in Table 6 below.

Table 6 Calculated Receptor Sound Pressure Levels from Internal Works

Plant and Equipment Description	Calculated Sound Pressure Levels $L_{eq,\ 15\ minute}$ (dBA) at Receptor Locations			
	L1	**L2**	**L3**	**L4**
Mobile Crane	26	39	37	35
Excavator	24	37	35	33
Concrete Saw	26	38	36	35
Truck	20	31	30	29
Combined	30	43	41	40
Noise Management Level	**43**	**50**	**50**	**50**
Complies	Yes	Yes	Yes	Yes

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

- Acoustical shielding from adjacent and intervening buildings up to a maximum:
  - 9 dB at Location 1; and
  - 5 dB at Locations 3 and 4
- Adjustment for duration of the use of the concrete saw for 3 minutes in 15;
- Adjustment for duration of the use of the truck manoeuvring on site at the sound power level shown in Table 5 for 5 minutes in 15; and
- Combined level assumes all items of plant are operating simultaneously.

In practice this is unlikely and noise levels will typically be no higher at each receptor than the predicted level for individual plant shown in Table 6 at any given time.

5.3 Vibration Emission

Given the significant distances to each receptor and the type of works being carried out, ground borne vibration levels will be imperceptible.

6.0 CONCLUSION

An assessment of the potential noise impact from the proposed demolition of an existing industrial building at the 'Moorehouse' site at Shoalhaven Starches on Bolong Road, Bomaderry, NSW has been undertaken.

Calculations show that the level of noise and vibration emission from the demolition works will be well below the noise and vibration management levels derived from the Environment Protection Authority's *Interim Construction Noise Guideline* 2009 at all receptor locations, without the need for noise controls.

Matthew Harwood, MAAS

Senior Acoustical Consultant

for and on behalf of Day Design Pty Ltd

AAAC MEMBERSHIP

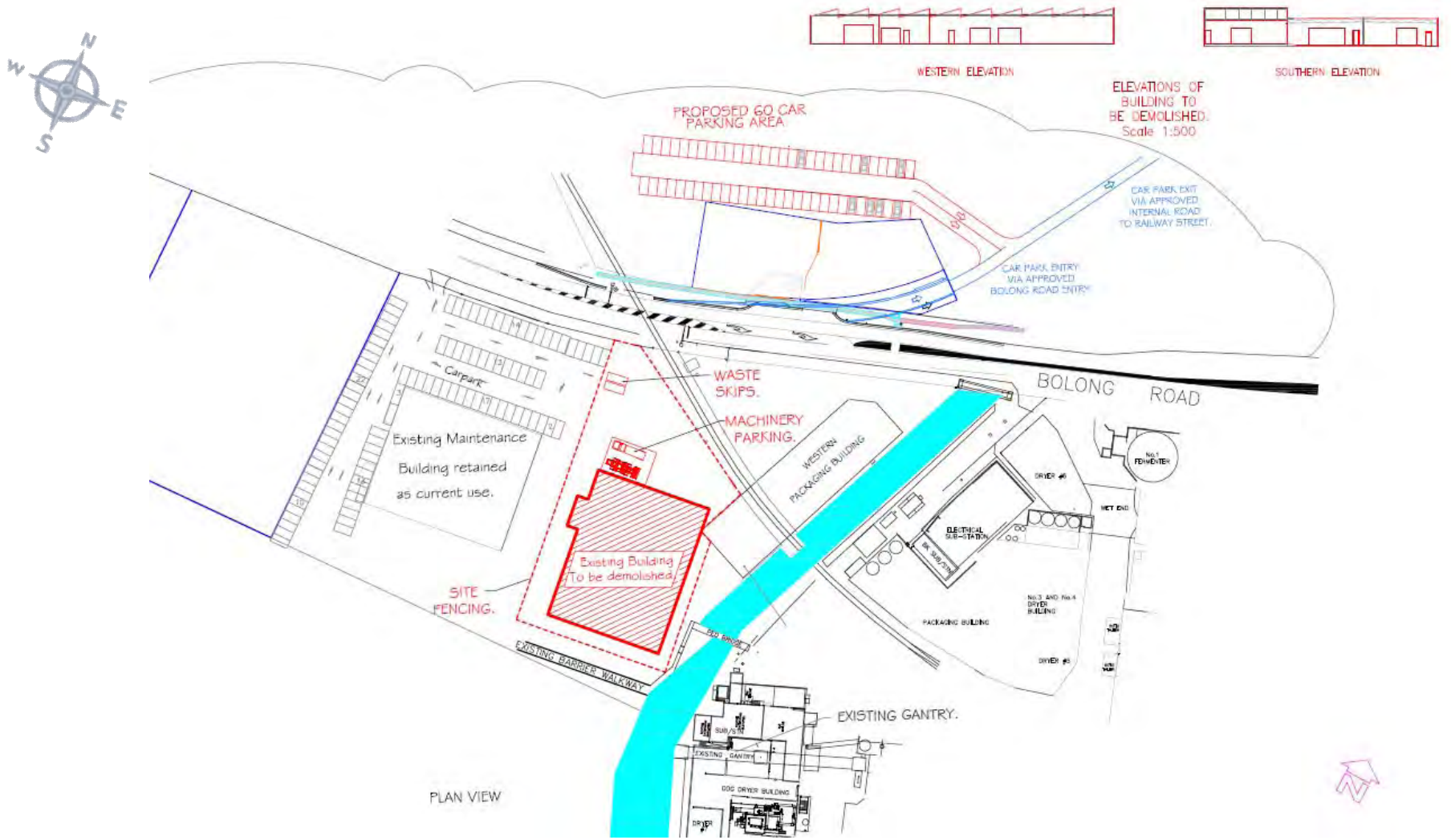
Day Design Pty Ltd is a member company of the Association of Australian Acoustical Consultants, and the work herein reported has been performed in accordance with the terms of membership.

Attachments:

Appendix A – Moorehouse Building Location

Moorehouse Building Location – Shoalhaven Starches, Bomaderry

5807-1
Appendix A



ANNEXURE 5

ANNEXURE 5

Traffic Impact Assessment

prepared by

ARC Traffic and Transport

Shoalhaven Starches, Bomaderry

Proposed Demolition Works – Existing Industrial Building

Traffic Impact Assessment

October 2015

prepared for

Manildra Shoalhaven Starches

prepared by

ARC Traffic + Transport

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Introduction

Manildra Shoalhaven Starches (Manildra) proposes a Modification to Project Approval MP06_0228 (the Shoalhaven Starches Expansion Project – SSEP Approval) to allow for the demolition of an existing industrial building on Lot 201 DP 1062668, 24 Bolong Road, (known as the 'Moorehouse Site'), which lies within the broader Shoalhaven Starches Site (SS Site), Bolong Road Bomaderry. The demolition would facilitate the proposed construction of a Product Dryer on the Moorehouse Site, a separate (Dryer) Modification application for which is currently being prepared for the Department of Planning & Environment (DP&E).

At present the area situated adjacent to this building on the Moorehouse Site is used for SS Site staff parking. During the demolition stage, approximately 30 of the 118 staff parking spaces on the Moorehouse Site will require relocation so as to provide appropriate clearance from demolition works, and for demolition works vehicles. The Modification therefore also provides for the construction of a temporary car park on the approved Shoalhaven Starches Packing Plant Site (PP Site) which lies on the northern side of Bolong Road, specifically to accommodate these relocated staff parking spaces, as well as demolition staff parking.

From an access, traffic and parking perspective, the Modification has the potential to generate short term impacts associated with additional vehicle trips generated by the construction of the temporary car park; a redistribution of existing trips associated with the relocation of staff parking from the Moorehouse Site to the temporary car park; and the generation of additional vehicle trips generated by the demolition of the industrial building.

ARC Traffic + Transport (ARC) has been commissioned to examine the access, traffic and parking issues associated with the Modification. This Traffic Impact Assessment references recent reports prepared by ARC in regard to recent Shoalhaven Starches approvals; specifically, ARC has referenced the following past reports: -

- Dairy Farmers Site Reuse Proposal - Meat Processing Plant Traffic Impact Assessment March 2014 (DF Meat TIA)
- Shoalhaven Starches Access Review March 2014 (Access Review)
- Shoalhaven Starches Ethanol Upgrade & Packaging Plant Traffic Impact Assessment May 2008 (SS Upgrade TIA)

ARC has also specifically referenced the DP&E assessment requirements (17th September 2015) relating to the Modification, which include: -

> *Traffic, access and parking, including type of equipment, number of vehicles, temporary access and/or parking requirements*

Details relating to the Modification proposal – including construction and demolition staff and heavy vehicle requirements - have been provided to ARC by Manildra.

1 Background

1.1 Manildra Shoalhaven Starches

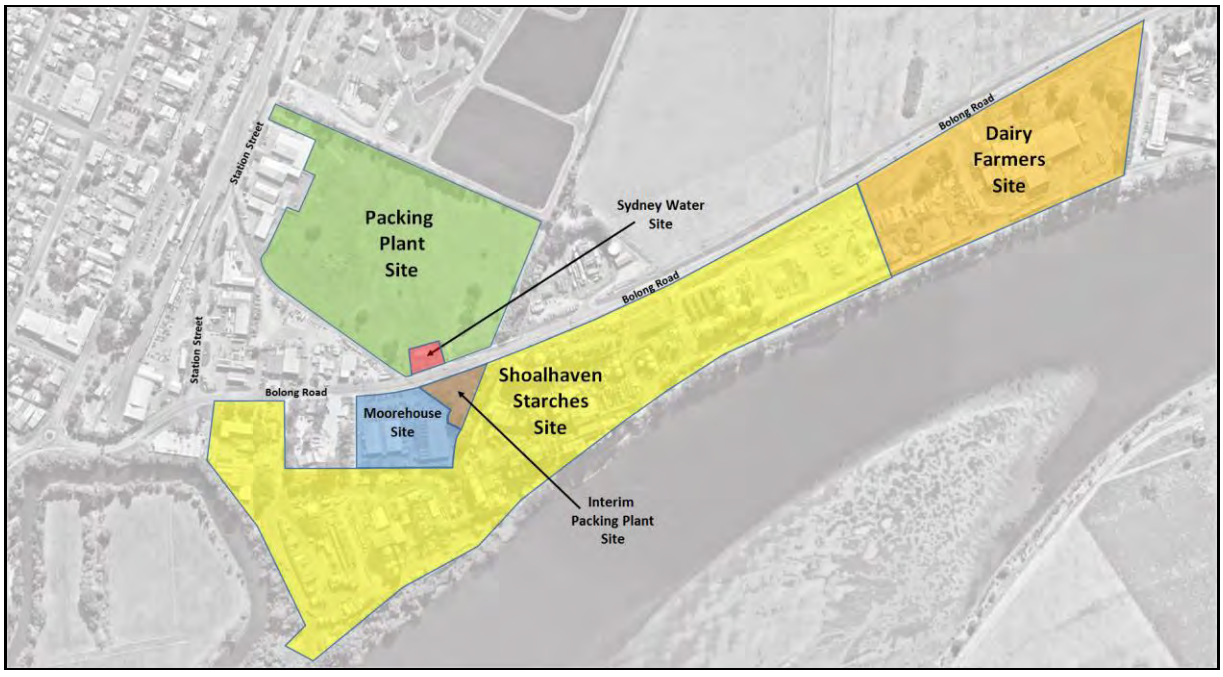
Manildra's Shoalhaven Starches operations occupy a number of distinct 'sites' in Bomaderry; while operations are integrated across all sites, they are differentiated in this assessment for ease of reference.

The primary SS Site and immediately adjacent Dairy Farmers Site (DF Site) are located south of Bolong Road, Bomaderry, while the approved PP Site is located directly opposite the SS Site on the northern side of Bolong Road. Within the broader SS Site, the Moorehouse Site lies south of Bolong Road, immediately west of the railway line, while the Interim Packing Plant Site (IPP Site) lies south of Bolong Road immediately east of the railway line.

A final site warranting identification is the small Shoalhaven Water Site (SW Site) which fronts Bolong Road directly opposite the IPP Site.

These sites are shown in their local context in Figure 1.1.

Figure 1.1 Manildra Shoalhaven Starches, Bolong Road Bomaderry



1.2 Previous Site Approvals

1.2.1 Shoalhaven Starches Expansion Project Approval MP06-0228

The SSEP Approval was granted by the Minister for Planning on the 28th January 2009. This approval also 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.

The SSEP provides for an increase in ethanol production at Shoalhaven Starches in a staged manner from 126 million litres per year to 300 million litres per year. To accomplish the increase in ethanol production, the SSEP required a series of plant upgrades and increases in throughput of raw materials, principally flour and grain. The SSEP 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.

As stated, the SSEP Approval also consolidated all previous approvals (up to that time) into a single approval; this included the consolidation of the PRP 7 Project (DA No. 223-7-2002), which itself included the installation of the No. 5 Starch Dryer. It is this Dryer that is the subject of the Dryer Modification application currently being prepared for the DP&E, which would be facilitated by the demolition works proposed in this Modification.

Following the SSEP Approval, Manildra acquired the DF Site, and commenced investigations into relocating the Packing Plant from the approved PP Site north of Bolong Road to the DF Site; as an interim measure during these investigations, approval was provided in 2012 for interim Packing Plant operations at the IPP Site. At this time (October 2015) the PP Site remains broadly unused, though a Bolong Road driveway crossover per the SSEP Approval has been constructed (adjacent to and east of the SW Site) connecting to a short access road servicing a small number of informal parking spaces immediately north of Bolong Road (see also Section 1.3.4).

In addition, a condition of the SSEP Approval required the provision of additional staff parking (across the broader SS Site). The DF Site was identified as an appropriate location for this parking, and subsequently a new staff car park on the DF Site – accompanied by significant additional infrastructure at the intersection of Bolong Road and the DF Site access road (DF 1) – was approved. It is noted that while much of this intersection and internal infrastructure is now in place at the DF Site, the car park itself has not been constructed.

With regard to key access, traffic and parking issues, this generally summarises all Shoalhaven Starches proposals/approvals relating to the SS Site, DF Site, PP Site and IPP Site to date.

1.2.2 DF Site Meat Processing Plant & SS Site Access Review

In 2014, a Meat Processing Plant (the Meat Plant) at the DF Site, which utilises the existing on-site buildings generally occupying the eastern portion of the DF Site, was approved by Council. It is noted that the background traffic analysis of the Meat Plant identified a number of access issues relating to the broader SSEP Approval at the DF Site, and specifically the fact that a number of the required infrastructure upgrades (under the SSEP Approval) had not been completed.

This was largely as a result of the fact that the approved staff car park had not be built, and as such the infrastructure required to support the additional movements to/from the staff car park at the intersection of Bolong Road & DF 1 were not [at that time] warranted.

Notwithstanding – and further also to a review of general access at the adjacent SS Site Eastern Access Point (AP 1) in consultation with Council – ARC prepared an Access Review as a general supplement to the DF Meat TIA, detailing the infrastructure and management measures required to provide compliance with the SSEP Approval, and subsequently to appropriately accommodate the traffic demands of the Meat Plant proposal at the intersection of Bolong Road & DF1, and DF Site internal movements. As stated above, the infrastructure works recommended in the Access Review and the DF Meat TIA – and moreover conditioned upgrades required under the earlier DF Site approvals - have either been completed, or have been approved by Council [based on final engineering/design plans] for construction.

ARC notes that the Meat Plant has been approved, and is currently operational.

1.3 Access

The Modification will provide for additional trips, and the redistribution of existing trips, at a number of Shoalhaven Starches access points. ARC notes that the 'Access Point' reference numbers provided below are based on past assessments, and have been retained for ease of reference.

1.3.1 Bolong Road & SS Site Western Access Point (AP 3)

The intersection of Bolong Road & AP 3 currently provides two-way access for light and heavy vehicle traffic generated in the western and southern parts of the SS Site. Further to the Modification, this intersection will provide access for all demolition heavy vehicles, which would then use the internal SS Site access road network to enter and depart the Moorehouse Site from the south.

1.3.2 Bolong Road & Moorehouse Site Access Point (AP 4)

The intersection of Bolong Road & AP 4 currently provides two-way access to a designated SS Site staff car park for some 118 vehicles. As discussed, further to the Modification some 30 staff parking spaces would be relocated during the demolition stage, but this intersection would retain access for the remaining staff parking.

1.3.3 Bolong Road & Interim Packing Plant Access Point (IPP 1)

The intersection of Bolong Road & IPP 1 provides separate entry and departure driveways (joined by a small internal access road). This intersection is located directly opposite the PP Site, such that the proposed use of the existing PP Site access point (PP 1 - see also below) further to the Modification would effectively create an off-set four-way intersection during the construction and demolition stages associated with the Modification.

1.3.4 PP Site Access Points

The SSEP Approval provides for two access points to the PP Site.

At Bolong Road, an approval has been provided for a left in only access point (PP 1) accessed via a short deceleration lane; as discussed, this deceleration lane and a driveway crossing for this intersection of Bolong Road & PP 1 have been constructed, but currently provide to a short access road (perpendicular to Bolong Road) servicing a small informal parking area which we understand is utilised very occasionally by Shoalhaven Starches contractors. The Modification would retain this driveway crossing location and this existing access road which would - further to a widening and minor extension (to the north) – provide access to the temporary car park on the PP Site.

It is also acknowledged that the SSEP Approval provides for an angled access road from Bolong Road at PP 1 facilitating only heavy vehicle arrival trips; this design was proposed (and approved) to appropriately accommodate heavy vehicles entering PP 1 from Bolong Road. Following the construction and use of the existing access road and temporary car park for the demolition works associated with the Modification, and further also to the proposed Dryer Modification construction period (which would also require the relocation of staff parking from the Moorehouse Site), the construction of the PP 1 access road as per the SSEP Approval would be undertaken as part of the Packing Plant construction (a separate Modification application for which is currently being finalised for the DP&E).

In Railway Street, an approval has been provided for an all movement priority access point (PP 2). This access point would also be constructed as part of the future Packing Plant construction.

1.3.5 Other SS Site Access Points

Three other SS Site access points are provided to Bolong Road, including the Central Access Point (AP 2); Eastern Access Point (AP 1); and the Dairy Farmers Access Point (DF 1). However, the Modification proposal would not generate any additional movements to these intersections.

1.4 Assessment Traffic Flows

1.4.1 Existing Traffic Flows

Further to the commission of traffic surveys over many years, and in consultation with Council, ARC has over time developed base peak period traffic flows for the key intersections along Bolong Road that reflect 120th Highest Hour (or 'recreational peak') conditions. 2014 recreational peak flows were most recently reported in the Meat Plant TIA, and have been adapted for this assessment, and include: -

- 2016 recreational peak through flows in Bolong Road
- All approved/proposed access and intersection infrastructure to September 2015
- All approved/proposed flows to the SS Site and DF Site to September 2015
- A minor trip assignment to reflect the occasional parking accessed via PP 1

1.4.2 Princes Highway Upgrade

The upgrade of the Princes Highway between Gerringong and Bomaderry has developed as three consecutive RMS projects – the Gerringong Bypass Project; the Foxground & Berry Bypass Project; and the Berry to Bomaderry Upgrade Project. As these projects have developed, the RMS estimate of the number of trips that will transfer from the "Sandtrack" (currently approximately 45% of through trips between Bomaderry and Gerringong and vice versa) to the Princes Highway (currently approximately 55% of through trips between Bomaderry and Gerringong and vice versa) has also developed.

The most recent RMS modelling concludes that the transfer from the Sandtrack to the upgraded Princes Highway will be very significant. Further to our discussions with the RMS (Mr Nick Boyd, Senior Project Manager), ARC has confirmed that further to the completion of the (currently under construction) Foxground & Berry Bypass, that with or without the construction of the Berry to Bomaderry Upgrade (in planning by the RMS) the RMS estimates the Princes Highway attracting some 80% of through trips, and the Sandtrack only 20% of through trips.

Taking into account other factors (such as general background traffic growth) the future traffic flows to the Princes Highway and to the Sandtrack (and indeed specifically to Bolong Road at Meroo Road, i.e. immediately west of the SS Site) are provided in Table 1.4.2 below.

Table 1.4.2 Princes Highway Upgrade Future Flow Estimates

Ref.	Route | Direction	Location	AADT											
			2013			2019			2029			2039		
			Base Year			Construction | Opening			Opening +10			Design - Do Something		
			Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
Princes Highway														
A	south of Berry	southbound	5,139	1,019	6,158	8,187	1,212	9,399	11,386	1,614	13,000	14,254	2,020	16,274
B		northbound	5,449	950	6,399	9,039	1,130	10,168	12,571	1,504	14,075	15,737	1,883	17,620
-		two-way	10,588	1,970	12,557	17,225	2,342	19,568	23,958	3,118	27,076	29,990	3,903	33,893
C	north of Meroo Rd	southbound	5,378	1,052	6,430	8,904	1,248	10,152	12,629	1,649	14,278	15,778	2,054	17,832
D		northbound	5,686	961	6,647	9,772	1,140	10,912	13,871	1,506	15,377	17,334	1,876	19,210
-		two-way	11,065	2,013	13,077	18,676	2,388	21,064	26,501	3,155	29,655	33,112	3,930	37,042
E	south of Abernethys Lane	southbound	4,897	926	5,823	8,345	1,102	9,447	11,941	1,469	13,410	14,960	1,841	16,801
F		northbound	5,207	840	6,047	9,215	1,000	10,215	13,185	1,333	14,518	16,519	1,669	18,189
-		two-way	10,104	1,766	11,870	17,560	2,102	19,662	25,126	2,802	27,928	31,479	3,510	34,990
S10	Meroo Road Interchange	southbound off ramp	599	155	754	695	180	876	857	222	1,079	1,018	264	1,282
N10		northbound on ramp	598	151	749	694	176	870	855	216	1,072	1,016	257	1,273
S11		southbound on ramp	117	30	147	136	34	171	168	42	210	199	50	250
N11		northbound off ramp	119	30	148	138	35	172	170	43	212	201	51	252
Local Roads														
G	Meroo Road - south of Princes Highway	southbound	718	186	903	834	216	1,049	1,027	266	1,293	1,220	316	1,536
H		northbound	715	181	896	831	210	1,041	1,023	259	1,282	1,216	307	1,523
-		two-way	1,433	367	1,799	1,664	426	2,090	2,050	525	2,575	2,436	623	3,059
I	Sandtrack - north of Meroo Road	southbound	4,544	467	5,011	2,304	551	2,855	2,688	724	3,412	3,339	899	4,238
J		northbound	4,404	386	4,790	2,432	455	2,887	2,837	599	3,435	3,524	744	4,267
-		two-way	8,948	853	9,801	4,736	1,006	5,742	5,525	1,323	6,848	6,862	1,643	8,505

Source: Princes Highway Upgrade – Berry to Bomaderry Technical paper: Traffic and Transport 2013 AECOM Australia

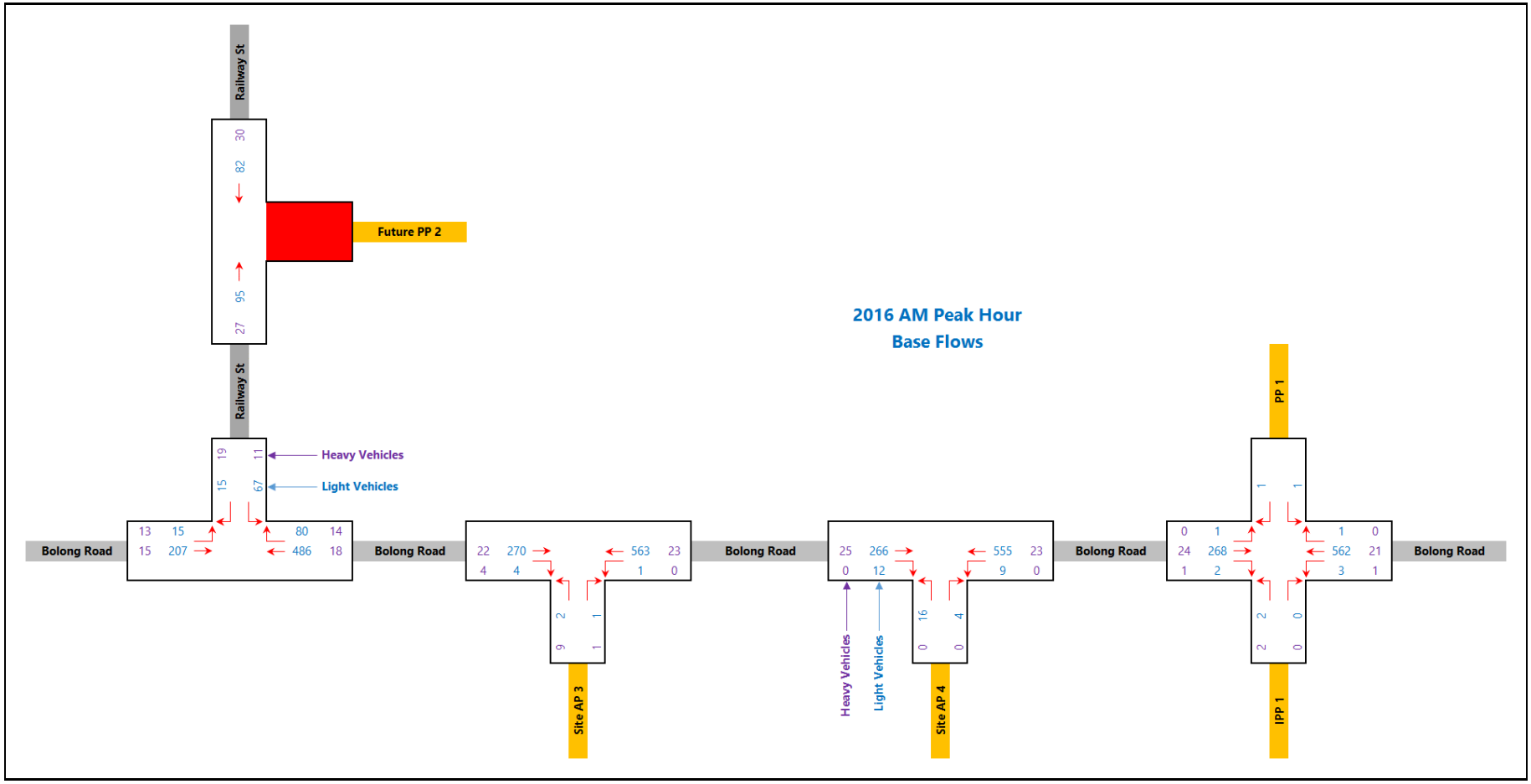
In real terms, these figures indicate that following the completion of the Princes Highway bypass projects, the 2019 AADT in Bolong Road (immediately west of the SS Site) will represent less than 60% of the 2013 AADT, reducing from a 2013 AADT of some 9,800 vehicle trips per day (vtpd) to a 2019 AADT of only 5,742 vtpd. Even with background growth continuing after 2019, the 2029 AADT is estimated to represent only 70% of the 2013 AADT; and the 2039 AADT some 87% of 2013 AADT.

The opening of the Gerringong Bypass in August 2015 will see this transfer from the Sandtrack to Princes Highway commence, but with construction of the additional stages still ongoing or in planning, the Sandtrack is still expected to attract moderate flows in the short term (to 2018), i.e. the significant reduction would not be achieved until the opening of the Foxground and Berry Bypass. It is estimated that in this period (2015 – 2018) Bolong Road flows would be reduced by approximately 15% - 20% (from pre-opening levels).

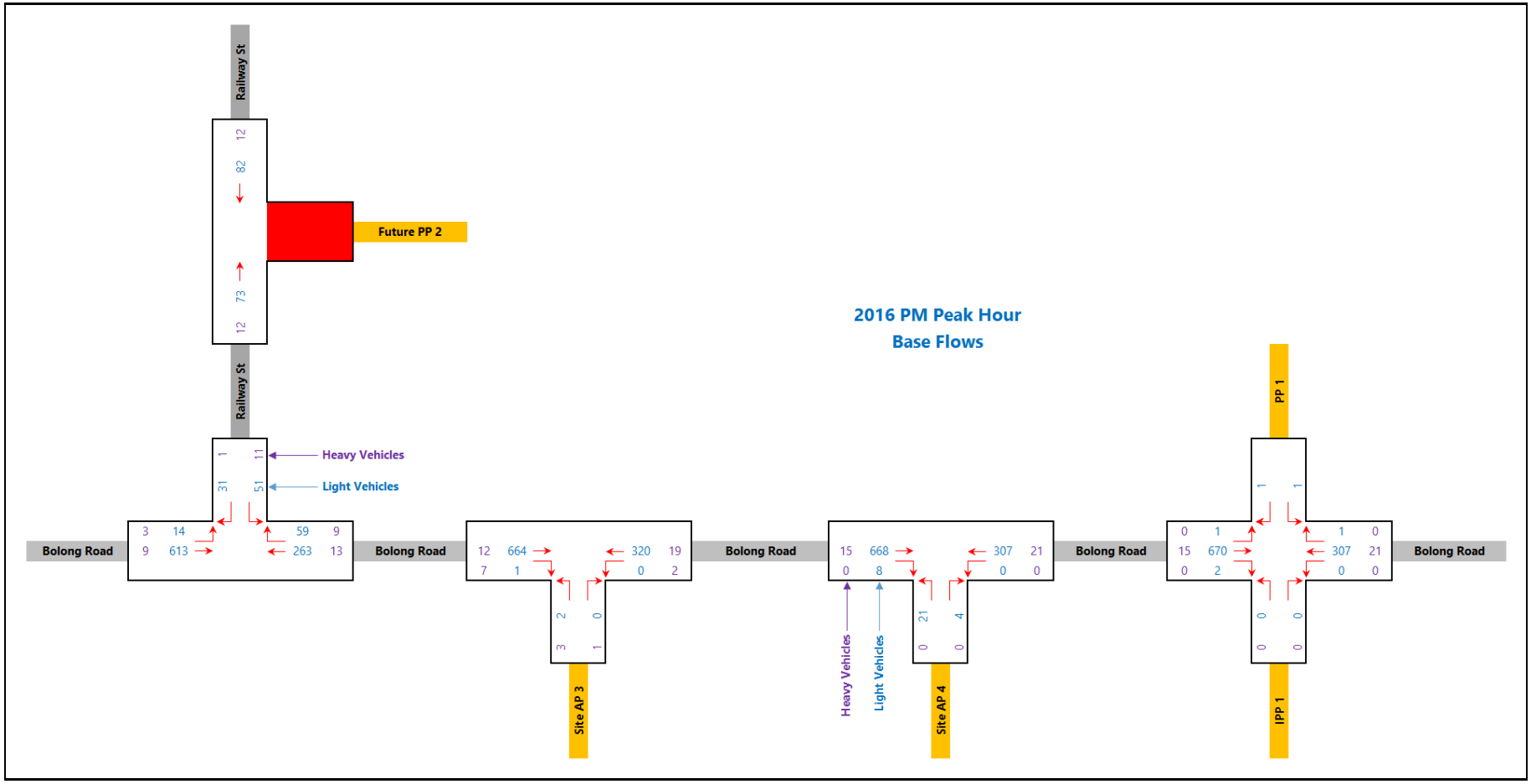
1.4.3 Assessment Base 2016 Traffic Flows

With reference to sections above, base 2016 peak hour traffic flows for the assessment are provided in the figures below.

1.4.3.1 2016 AM Peak Hour Base Traffic Flows



1.4.3.2 2016 PM Peak Hour Base Traffic Flows



1.4.4 Intersection Performance Assessment

In order to determine the performance of the key intersections as detailed in Section 1.3, as well as the local intersection Bolong Road & Railway Street, the RMS approved SIDRA (Version 6.1) intersection model been utilised to determine current intersection operations. The SIDRA inputs includes peak hour traffic flows and speed profiles, intersection geometry and operational controls, and in turn SIDRA reports the following key performance measures: -

- Level of Service

  Level of Service (LoS) is a basic performance indicator assigned to an intersection based on average delay. For signalised and roundabout intersections, LoS is based on the average delay to all vehicles, while at priority controlled intersections LoS is based on the worst approach delay. The RMS LoS criteria, which have been used in the assessment, are provided below: -

Level of Service (RMS)	Control delay per vehicle in seconds (d) (including geometric delay)		
	Signals and Roundabouts	Rating	Stop and Give Way / Yield Signs
A	d < 14.5	Good	d < 14.5
B	14.5 < d < 28.5	Good with acceptable delay	14.5 < d < 28.5
C	28.5 < d < 42.5	Satisfactory	28.5 < d < 42.5
D	42.5 < d < 56.5	Near capacity	42.5 < d < 56.5
E	56.5 < d < 70.5	At capacity	56.5 < d < 70.5
F	70.5 < d	Over capacity	70.5 < d

- Delay

  Delay represents the difference between interrupted and uninterrupted travel times through an intersection, and is measured in seconds per vehicle in this assessment. Delays include queued vehicles accelerating and decelerating from/to the intersection stop, as well as general delays to all vehicles travelling through the intersection. With reference to the LoS criteria above, the average intersection delay for signals and roundabouts represents an average of delays to all vehicles on all approaches, while for priority intersections the average delay for the worst approach is used.

- Degree of Saturation

  Degree of Saturation (DoS) is defined as the ratio of demand (arrival) flow to capacity. DoS above 1.0 represent over-saturated conditions (demand flows exceed capacity) and degrees of saturation below 1.0 represent under-saturated conditions (demand flows are below capacity). The capacity of the movement with the highest DoS is reported.

The performance of key intersections in the forecast year 2016 is reported in Table 1.4.4 below.

Table 1.4.4 Existing Intersection Performance

2016 Base Traffic Flows Intersection Performance	Level of Service		Average Delay (s)		Degree of Saturation		Queue Length (m)	
	AM	PM	AM	PM	AM	PM	AM	PM
Bolong Road & Railway Street	B	A	1.9	1.9	0.343	0.332	7.4	7.7
Bolong Road & Access Point 3	A	A	0.4	0.3	0.309	0.303	1.5	1.4
Bolong Road & Access Point 4	A	A	0.4	0.2	0.309	0.301	1.1	0.8
Bolong Road & IPP 1 & PP 1	A	A	0.1	0.1	0.308	0.357	0.3	0.1

With reference to Table 1.4.4, all site access intersections, and the intersection of Bolong Road & Railway Street, currently operate at a good LoS, with minimal average delays and significant spare capacity.

Finally, it is noted that further to the opening of upgraded sections of the Princes Highway, a percentage of the arrival and departure trips from/to the east reported at the SS Site access points are expected to be redistributed to the Princes Highway (i.e. to/from the west) in the same way as general sub-regional trips are redistributed. However, this would have little if any impact on the performance of the intersections as reported in Table 1.4.4.

2 The Modification Proposal

2.1 The Proposal

As described in the Introduction, Manildra proposes the demolition of an existing industrial building on the Moorehouse Site, thereby facilitating the proposed construction of a Product Dryer on the Moorehouse Site.

Two stages of works are proposed as part of the Modification. An initial 2 week stage would provide for the construction of the temporary car park (including the widening and extension of the existing access road) on the PP Site. Following the completion of these works, a 4 week demolition stage would commence, with some 30 staff parking spaces relocated from the Moorehouse Site to the temporary car park.

The Modification has the potential to generate short term impacts associated with additional vehicle trips generated by the construction of the temporary car park; a redistribution of existing trips associated with the relocation of staff parking from the Moorehouse Site to the temporary car park; and the generation of additional vehicle trips generated by the demolition of the industrial building

Detailed plans of the Modification proposal are provided elsewhere within the submission which this assessment accompanies.

2.2 Construction Stage Traffic Characteristics

2.2.1 Access

All access for the construction of the temporary car park on the PP Site will be via the intersection of Bolong Road & PP 1. To facilitate this access, the existing access road will be widened and extended between Bolong Road and the temporary car park with reference to AS 2890.2.

2.2.2 Trip Generation

2.2.2.1 Heavy Vehicle Trips

The construction works will require a range of vehicles, including tip-trucks, a heavy roller and grader/digger. Both the heavy roller and grader would remain on-site for the duration of the construction works, while an average of 1 – 2 tip-truck loads of construction material would be required per day. It is therefore estimated that the construction stage would generate no more than 6 heavy vehicle trips on a peak transport day, and certainly no more than 1 – 2 heavy vehicle trips to a (commuter) peak hour.

2.2.2.2 Construction Staff Vehicle Trips

The construction stage is estimated to employ up to 6 construction staff per day, including an on-site foreman. These construction staff would utilise informal parking adjacent to the temporary car park for the short period of the temporary car park construction.

Given that construction work hours are expected to fall outside of (commuter) peak periods, it is estimated that the construction stage would generate no more than 1 - 2 staff vehicle trips to a (commuter) peak hour.

2.2.3 Construction Stage Traffic Flows

With reference to sections above, total traffic flows through the construction stage are shown in Figure 2.2.3.1 (AM Peak Hour) and Figure 2.2.3.2 (PM Peak Hour).

Figure 2.2.3.1 Construction Stage AM Peak Hour Total Flows

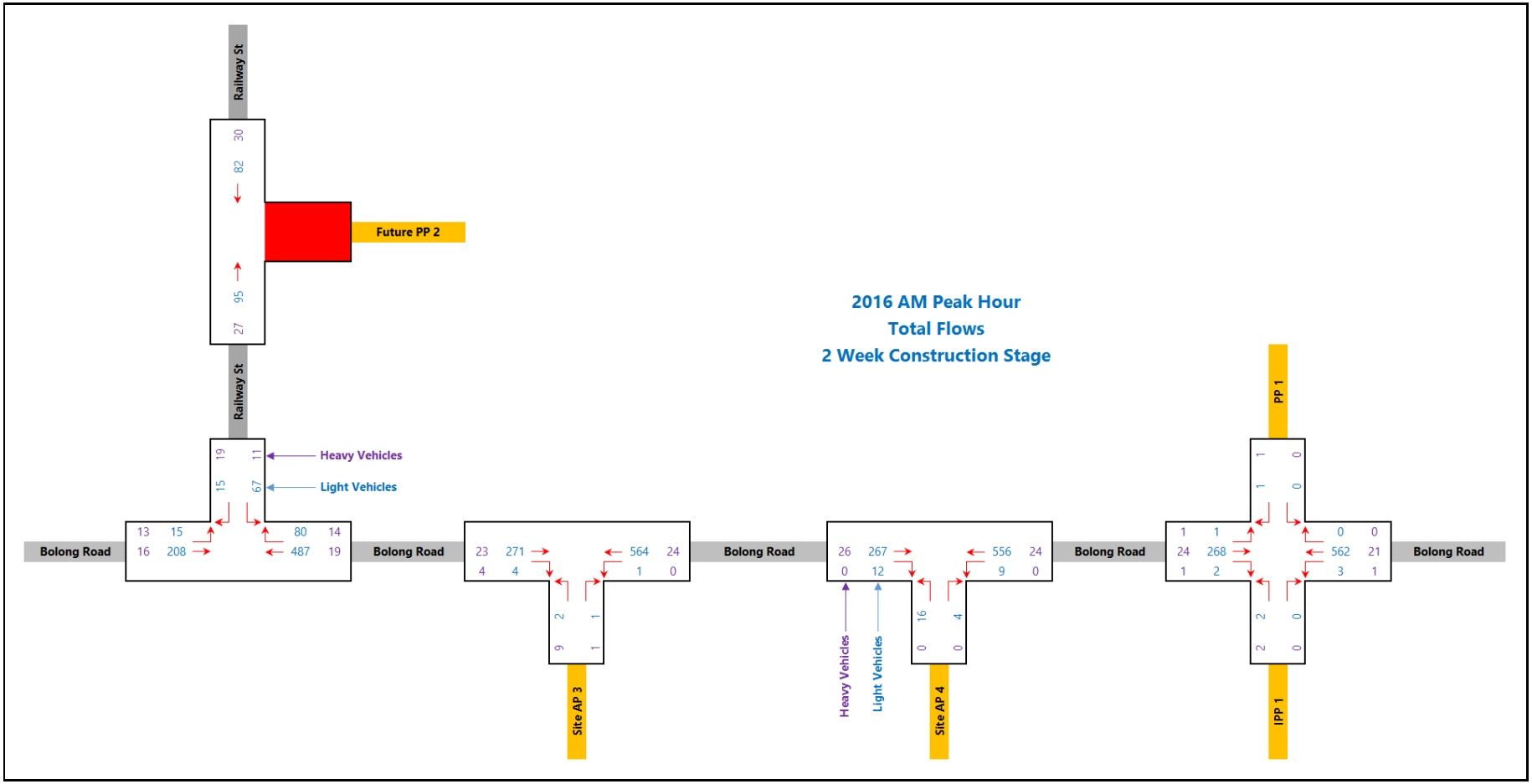
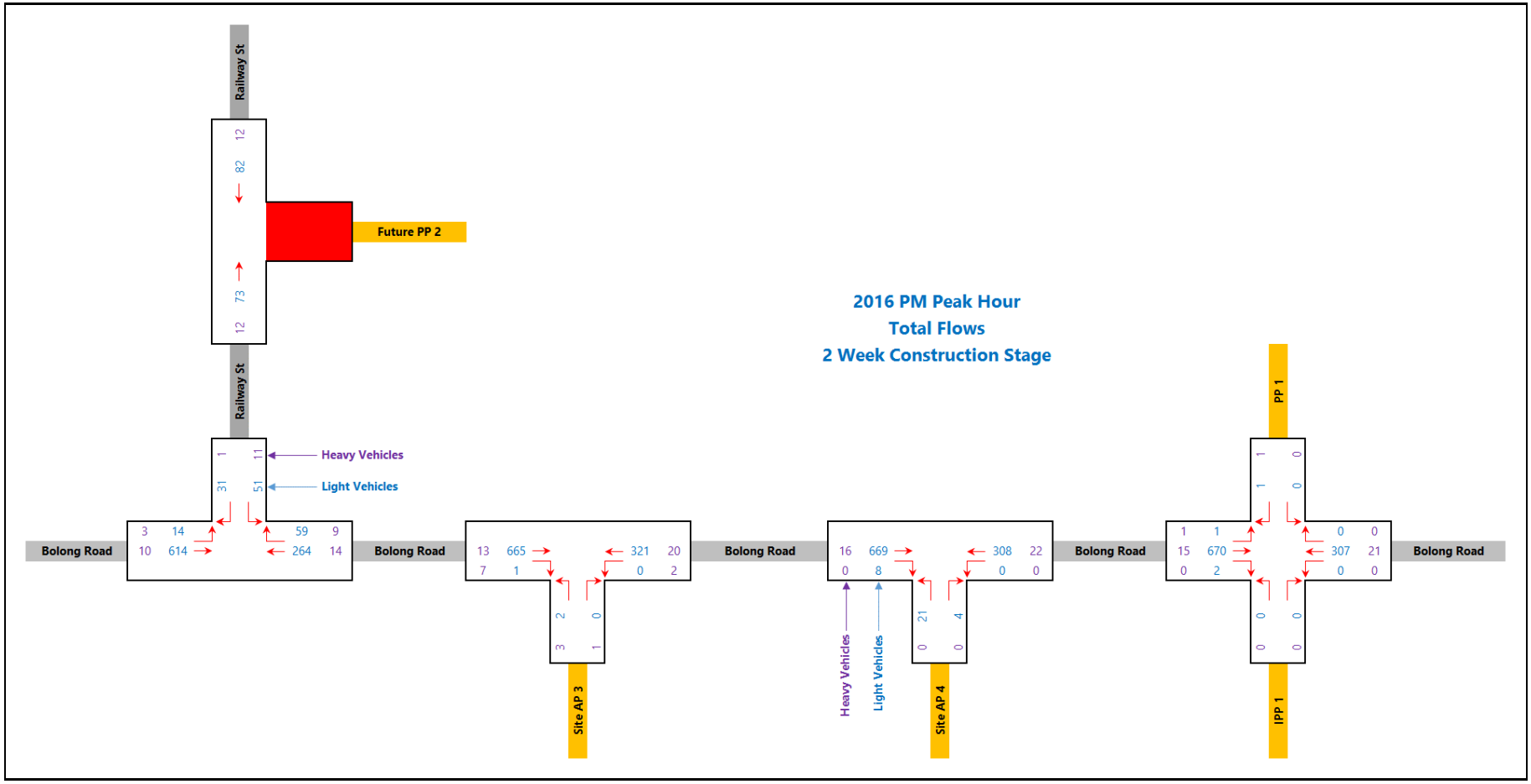


Figure 2.2.3.2 Construction Stage PM Peak Hour Total Flows



2.3 Demolition Stage Traffic Characteristics

2.3.1 Access

The demolition stage will result in a redistribution of SS Site staff vehicle trips, and the introduction of demolition staff vehicle trips, as detailed in Section 1.3 above. In summary: -

- AP 3 will generate minor additional demolition heavy vehicle arrival and departure trips, which would be exclusively to/from the west.

- AP 4 will generate a reduced number of SS Site staff vehicle trips commensurate with the reduction in staff parking spaces (relocated to the temporary car park).

- PP 1 will generate the SS Site staff vehicle arrival and departure trips relocated from the Moorehouse Site, as well as demolition staff arrival and departure trips.

2.3.2 Demolition Trip Generation

2.3.2.1 Heavy Vehicle Trips

The demolition works will require a range of vehicles, including an excavator, mobile crane, skid steer truck and tip-trucks. Both the excavator and mobile crane are expected to remain on-site for the duration of the demolition period.

The estimated amount of materials to be removed from the Moorehouse Site are: -

- 180 tons of bricks, which would be transported to local recyclers by tip-truck (capacity per tip-truck estimated at 12 to 16 tonnes)
- 40 tons of scrap steel, which would be transport to local scrap dealer in skip bins (capacity per skip bin estimated at 4 to 8 tonnes)
- 22 tons of timber, which would be transported to local builders/recyclers by tip-truck (capacity per tip-truck estimated at 3 to 5 tonnes)

Given provisions for minor stockpiling on-site of demolished materials, and the capacity of the tip-trucks and skip bins, it is estimated that the demolition stage would generate no more than 8 heavy vehicle trips on a peak transport day, and certainly no more than 1 – 2 heavy vehicle trips to a (commuter) peak hour.

2.3.2.2 Demolition Staff Vehicle Trips & Distribution

The demolition stage is estimated to employ up to 9 demolition staff per day, including an on-site foreman. As with previous projects, most demolition staff are expected to travel in group transport (i.e. shuttle bus) from Wollongong, with only a very minor private vehicle trip demand.

Given that demolition work hours are expected to fall outside of (commuter) peak periods, it is estimated that the demolition stage would generate no more than 1 - 2 staff vehicle trips to a (commuter) peak hour.

2.3.2.3 SS Staff Trip Redistribution

The temporary relocation of 30 SS Site staff parking spaces from the Moorehouse Site is expected to result in a commensurate redistribution of staff vehicle trips during the demolition stage. With reference to Figure 1.4.3.1 and Figure 1.4.3.2, AP 4 currently generates the following peak period staff vehicle trips: -

- In the AM peak hour, 21 arrival trips and 20 departure trips
- In the PM peak hour, 8 arrival trips and 25 departure trips

As such, the relocation of 30 parking spaces from the Moorehouse Site to the PP Site is expected to result in approximately 25% of staff trips being redistributed to PP 1, or the redistribution of the following trips:-

- In the AM peak hour, 6 arrival trips and 5 departure trips
- In the PM peak hour, 2 arrival trips and 6 departure trips

The trip generation associated with the remaining 88 spaces on the Moorehouse Site would continue to be generated at AP 4 during the demolition stage.

2.3.3 Demolition Stage Traffic Flows

With reference to sections above, total traffic flows through the demolition stage are shown in Figure 2.3.3.1 (AM Peak Hour) and Figure 2.3.3.2 (PM Peak Hour).

Figure 2.3.3.1 Demolition Stage AM Peak Hour Total Flows

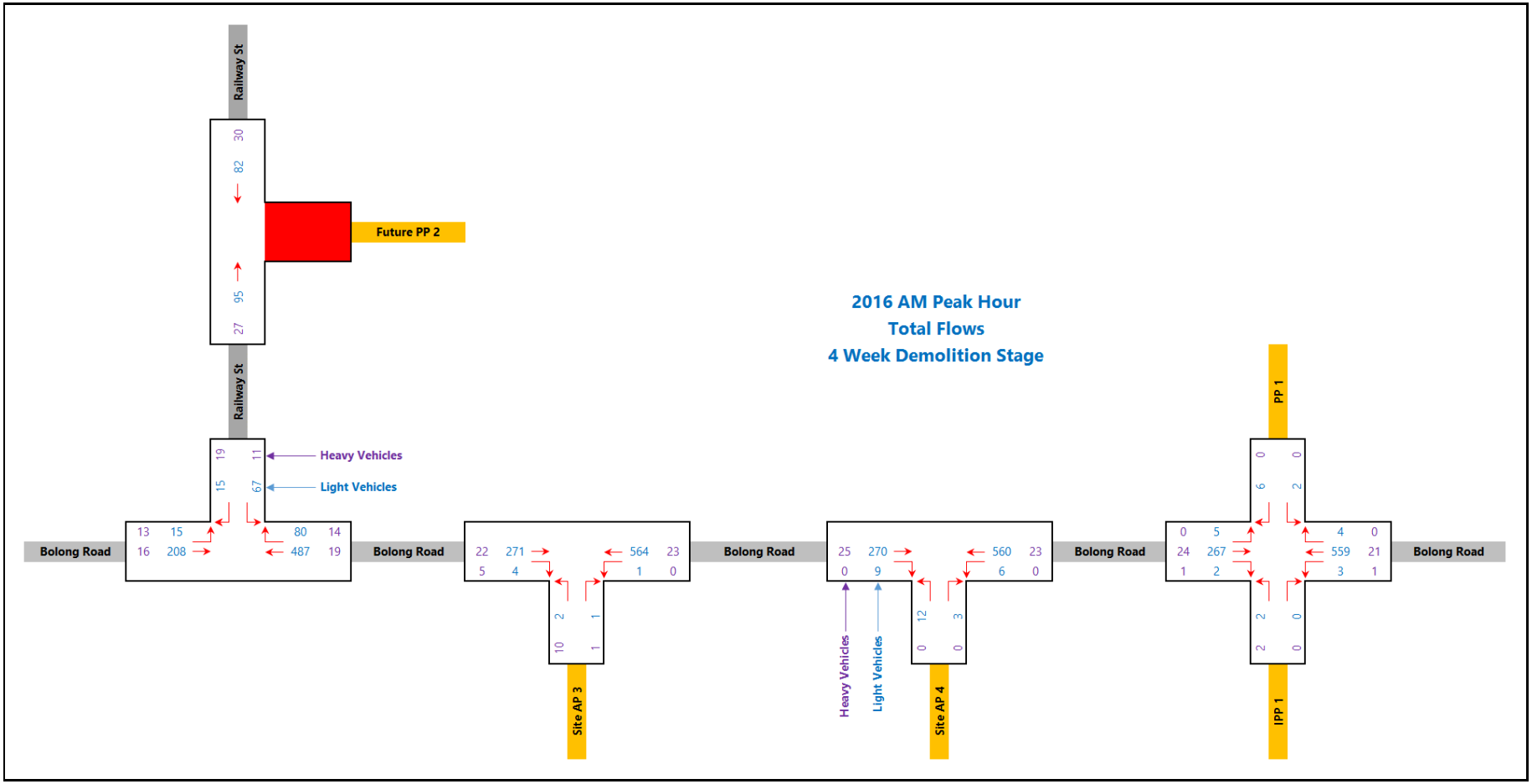
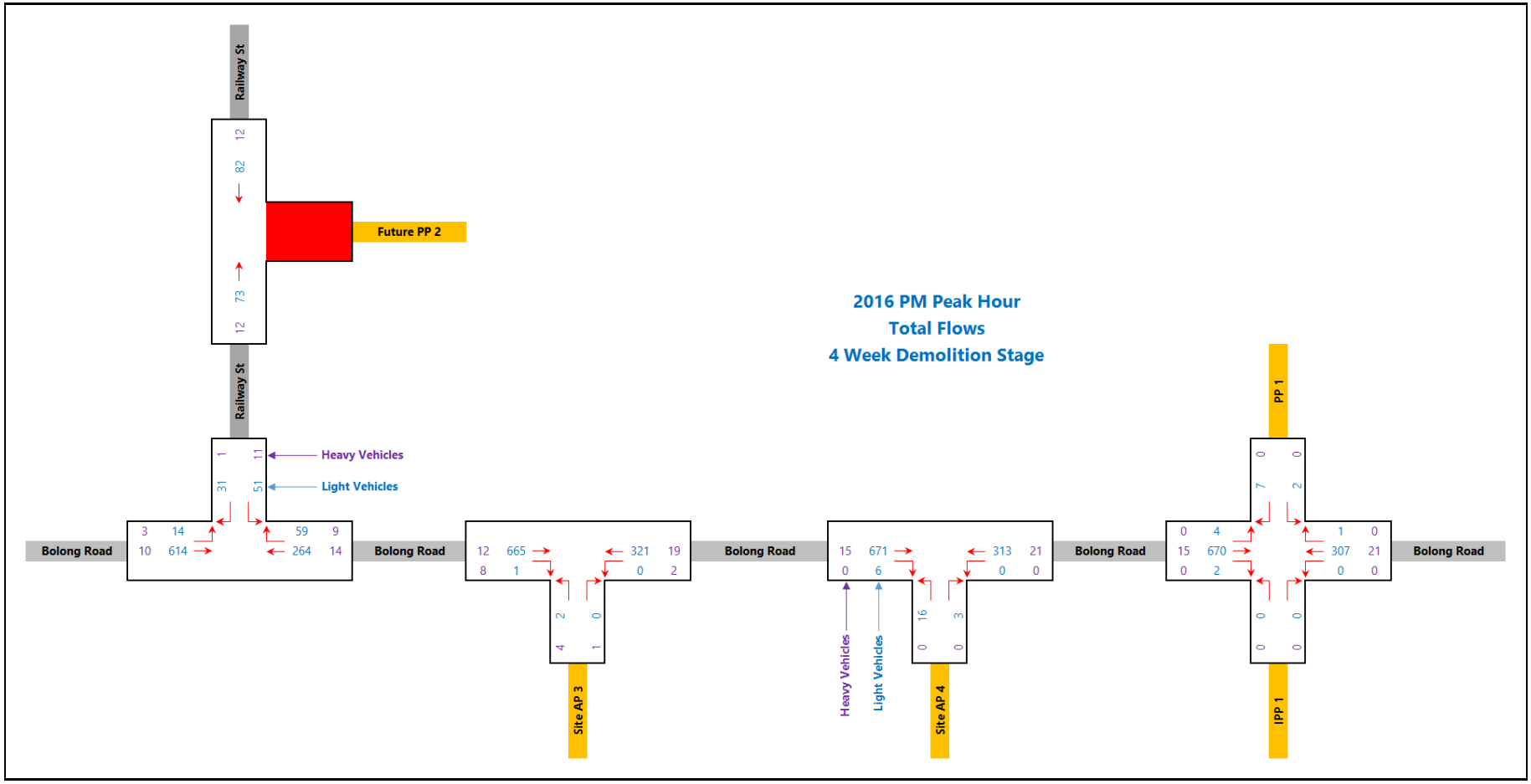


Figure 2.3.3.2 Demolition Stage PM Peak Hour Total Flows



2.4 Traffic Impacts

The performance of the key intersections identified in Section 1.4 have been assessed using SIDRA based on the total traffic flows through both the construction and demolition stages. The results of the assessment are provided below.

Table 2.4.1 Construction Stage Intersection Performance

Construction Stage Intersection Performance	Level of Service		Average Delay (s)		Degree of Saturation		Queue Length (m)	
	AM	PM	AM	PM	AM	PM	AM	PM
Bolong Road & Railway Street	B	A	1.9	1.9	0.345	0.334	7.5	7.8
Bolong Road & Access Point 3	A	A	0.4	0.3	0.310	0.304	1.6	1.4
Bolong Road & Access Point 4	A	A	0.4	0.2	0.310	0.302	1.1	0.8
Bolong Road & IPP 1 & PP 1	B	B	0.2	0.1	0.308	0.358	0.6	0.6

Table 2.4.2 Demolition Stage Intersection Performance

Demolition Stage Intersection Performance	Level of Service		Average Delay (s)		Degree of Saturation		Queue Length (m)	
	AM	PM	AM	PM	AM	PM	AM	PM
Bolong Road & Railway Street	B	A	1.9	1.9	0.345	0.334	7.5	7.8
Bolong Road & Access Point 3	A	A	0.4	0.3	0.309	0.304	1.6	1.4
Bolong Road & Access Point 4	A	A	0.3	0.2	0.309	0.302	1.0	0.6
Bolong Road & IPP 1 & PP 1	A	A	0.2	0.2	0.310	0.358	0.5	0.8

Reference to the tables above clearly indicates that the new and redistributed traffic conditions during the construction and demolition stages would have no significant impact on the operation of the local traffic network, with no significant changes in average delay, reductions in capacity, or increases in queue lengths at any of the key intersections.

It is noted that the only change in LoS reported relates to the right turn movement from PP 1 to Bolong Road during the construction stage; this minor additional delay specifically relates to the additional delay of the single heavy vehicle assigned to this movement. Given such operations would be very temporary – and the likelihood of any heavy vehicle movements in the commuter peak hour minor - it is our opinion that this increased delay could not be considered as significant.

Finally, it is important to note that while the traffic generation to/from PP 1 will increase further to the Modification, the turn paths to/from Bolong Road at PP 1 would be no different to those currently available, i.e. all movements to and from PP 1. Moreover, the driveway would operate in an almost identical manner to other industrial and commercial driveways in this section of Bolong Road.

2.5 Parking

As described, during the demolition stage some 30 staff parking spaces will be relocated from the Moorehouse Site to the PP Site.

The Modification provides for the construction of 60 temporary spaces; this is in excess of the staff parking relocation demands associated with the demolition stage, but would specifically provide for the demolition staff demands per this Modification; and for the future SS Site staff relocation and construction staff parking demands associated with the Dryer construction.

Parking spaces will be provided on hardstand comprising steel mill slag with a bitumen surface, and be delineated with reference to Australian Standard 2890.1 so as to provide appropriate aisle width and parking space dimensions.

As noted above, these same temporary parking spaces will be utilised to facilitate the construction works proposed under the Dryer Modification. Regardless, once (all) works at the Moorehouse Site are completed, the full complement of SS Site staff parking will be reinstated at the Moorehouse Site.

Finally, it is acknowledged that the proposed temporary PP Site car park location does not correspond with the location of formal parking area identified under the SSEP Approval for the (future) Packing Plant itself, and as such providing more formal (hardstand and fully marked) car parking is not in our opinion warranted or sustainable as part of temporary demolition and construction works.

2.6 Pedestrian Access

During the demolition stage, SS Site and demolition staff utilising the temporary PP Site car park would be able to cross Bolong Road via the existing pedestrian refuge immediately east of the PP1 access point. This links to the formal pedestrian path on the southern side of Bolong Road, and from there provides access to the broader SS Site internal pedestrian path network.

It is noted that a formal pedestrian footbridge crossing of Bolong Road per the SSEP Approval (between the PP Site and southern side of Bolong Road) is expected to be constructed as part of the future Packing Plant construction project.

3 Conclusions

Following a detailed and independent assessment of the access, traffic and parking conditions associated with the Modification, ARC has concluded that the Modification would have no significant impacts on the local or on-site traffic environments. In summary: -

- During the Modification construction stage, a small amount of additional vehicles would be generated to and from the intersection of Bolong Road & PP 1. These additional construction stage trips would have no impact on the operation of the local road network.

- During the Modification demolition stage, a small amount of additional demolition vehicle trips would be generated to and from the intersection of Bolong Road & AP 3 and Bolong Road & PP 1, and there would be a redistribution of trips between AP 4 and PP 1 as a result of the relocation of SS Site staff parking from the Moorehouse Site to the temporary car park on the PP Site. These additional and redistributed demolition stage trips would have no impact on the operation of the local road network.

- The temporary car park to be provided on the PP Site would be designed with reference to AS 2890.1 with regard to aisle width and space dimensions.

- Pedestrian access between the PP Site and the broader SS Site south of Bolong Road would be via the existing pedestrian refuge crossing immediate adjacent to the intersection of Bolong Road & PP 1.

ANNEXURE 6

ANNEXURE 6

Asbestos Removal Control Plan
and Waste Management Strategy

prepared by

P & D Envirotech

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ASBESTOS REMOVAL & CONTROL PLAN FOR

Manildra Site
160 Bolong Road Bomaderry

Authorised By: Paul Dickinson

Client: Manildra group

Date: 22 September 2015

Asbestos Control Plan Table of Contents

Attachments

- Emergency Plan & Contacts
- Licence
- Insurance Certificate of Currency
- WHS and Environmental System Accreditations
- Documentation to be used on site – JSEA & WMS (Separate Files)

1. Introduction

The purpose of this Asbestos Removal Control Plan is to ensure that the removal of asbestos is well planned and carried out in a safe manner. All asbestos contamination is to be removed the to *Safework Australia's, How to Safely Remove Asbestos Code of Practice 2011.* This Asbestos Control Plan is being developed for the removal of a redundant Non-Friable Asbestos Rooves and Box Gutters at ***160 Bolong Raad Bomaderry***
Workcover to be notified of all works prior to commencement.

2. Asbestos Containing Material (ACM)

Type of asbestos:	**Redundant Asbestos Rooves & Box Gutters**
Location:	***160 Bolong Road Bomaderry*** ***Oil Store, Screen Room, Electrical Store, Workshop & Motor Room***
Amount:	**Approximately 40m^3**
Condition:	**Non Friable**
Date of commencement:	**TBC**
Approx duration of work:	**10 days weather permitting**
Workcover Notification	**Valid Non-Friable**

3. Responsibilities

The following personnel shall be responsible for the following aspects of the project;

Management aspect	Personnel
Project Officer (Supervisor)	P Dickinson
Overall compliance on-site to WHS Quality and Environmental requirements & legislation	P Dickinson / D Riches
Reviewing sub contractors' project Safety Plans.	P Dickinson
Monitoring sub contractors' project Safety Plans.	T Lam
Monitoring purchasing and materials delivery	D Riches
Receiving, safely storing and using materials and hazardous substances	T Lam
Communicating WHS Information & Site Safety Rules	T Lam / P Dickinson
Providing WHS training and Site induction	T Lam / P Dickinson
Maintaining accident and emergency procedures and first aid equipment	P Dickinson
Conducting site inspections	T Lam / P Dickinson
Identifying, assessing and controlling hazards.	P Dickinson / T Lam
Workplace injury and rehabilitation	D Riches
Managing communication between WHS Workplace Committees	P Dickinson
Ensuring interaction with procedures and operating systems.	D Moreira

4. Consultation, Cooperation and Coordination

Asbestos awareness will be provided at the site induction to be held prior to commencement of works. A record of attendance will be kept on site in the JSEA Site Pack. Persons in adjoining properties that might be affected by the asbestos removal activities are also to be consulted prior to any works commencing, be it before the date of works commencing or on the day of the removal is to occur. Principal contractor inductions must also be attended to adhere to site requirements

5. Emergency Plan

The site officer (supervisor) is responsible for training all workers on site of evacuation procedures at the site induction, for emergency situations that poses a major threat to health and safety such as fire, explosion or bomb threat. This will include location of the emergency evacuation area and location of fire extinguishers and fire blankets. The location and identification of the First Aid Kits and the senior First Aid Officer will also be discussed at the site induction.

The site officer (supervisor) shall act as the controller and assume the responsibility until the appropriate emergency services officer takes charge. The site officer (supervisor) is to ensure that all workers under their control (including sub-contractors) are accounted for before they leave the area.

In the event of an emergency situation all decontamination procedures should he temporarily waived.

Following this Asbestos Removal Control Plan are emergency plan & phone numbers.

6. Personal Protective Equipment (PPE)

The PPE to be used on site will consist of disposable overalls and gloves, safety boots, safety glasses and hardhats if required. Also in use will be twilled cotton shirts (long sleeved cotton with reflective tape strips).

Specific for the asbestos element are:

- Disposable coveralls rated type 5, category 3 (prEN ISO 13982–1)
- Nitrile or Latex
- Steel-capped work boots or gumboots
- P2 Sundstrom face masks

All disposable items including but not limited to overalls, gloves and pre filters will be disposed of as asbestos waste.
Day to day PPE outside asbestos works are as follows:
Hard hat, Safety Glasses, Hi Visibility Clothing, Safety Boots and gloves suitable for the task at hand

7. Air Monitoring and Clearances

Air monitoring and Clearances will be performed by Greencap who is a third party accredited Occupational Hygienist and all air monitoring will be performed in accordance with the NOHSC *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres* [NOHSC:3003 (2005)].
The air monitoring results and clearances will be provided by Greencap to the client and all relevant stakeholders the following day after each previous day's work has been completed.
The 10 metre boundary will be required as an exclusion zone with any building physical barriers forming a part of this boundary to allow safe removal to continue.
Air monitoring reports are to be distributed by Greencap to the client and affected parties.

8. Waste Disposal

The contaminated waste & any asbestos fragments are to be placed in the Transport trucks or bin provided by P&D Envirotech or Remondis which are to be fully tarped after truck is filled, this vehicle or bin will be placed in a predefined location on site within the works site. All waste is then to be transported to the SUEZ waste disposal site Spring Farm. All waste will be disposed of at the approved landfill with full traceability documentation including P&D Envirotech Truck Docket and Suez Disposal Docket.

Asbestos waste that is to be bagged will be using only 200 micron thick polythene bags that are clearly labeled
"Caution Asbestos: Do not inhale dust. Do not open or damage bag ".

To minimise the risk of the bags splitting any sharp waste is required to be wrapped before being put into the bag. To minimise the risk further of the bags splitting and to assist in manual handling, the bags should not be filled more than half full. The bag will then be twisted slightly, folded over and the neck secured in the folded position with adhesive tape or any other effective method. These bags are to be stored in a pre designated areas and removed from the work area on a pre-determined amount timeline.
The external surface is then to be cleaned and immediately following the decontamination process the bag is to be double bagged outside the work area.

All consumables used during the removal works are to be considered as contaminated waste and thus are to be part of the waste disposal and bagged in the same method as stated above.

9. Documentation

The following documentation is to be used on site and can be found following this Asbestos Removal Control Plan.

- Job Safety Environment Analysis (JSEA) – (Risk Assessment)
- Work Method Statement (WMS)
- Tool Box Meetings
- Truck Dockets

10. Insurances, Licence and Training

P&D Envirotech hold a Work Cover ASA Friable Asbestos License. This is required for the removal of Friable Asbestos. All of our workers are also required to hold a Friable Asbestos Removal Ticket and WHS General Induction for Construction card (Green Card). These qualifications are to be with the worker at all times whilst also being presented during an induction, if requested, though copies of all competent persons working on the job shall be sent to the client electronically and thus forwarded on to the principal contractor to be kept on file. A Work Cover approved Competent Person is required to supervise asbestos removal. There will be at least one Competent Person per site, this person will be the site supervisor and shall also hold the site Senior First Aid Ticket.
P&D Envirotech hold current Workers Compensation, Public Liability and Asbestos Liability Insurances. Please see following current certificates of currency.

11. Procedure: Removal of Asbestos Roof Sheeting & Nominated Dust

The following procedure will be followed:

All windows and doors to nearby buildings will be closed. In factory type buildings where there is no ceiling, the area below or adjacent to the work will be roped off.

Prior to the start of the project, the correct signage and/or flags, barricades will be posted/positioned as per the code of practice. This also includes change area and decontamination facilities.

Prior to the commencement confirmation is required by the client that all services that may affect the removal of the asbestos sheets have been removed or isolated

Prior to commencement confirmation is to be made with the client that scaffolding is in place and access to the work area is made available and that scaffolding to be used has been signed off by licensed and ticketed personnel

Also, check for drainage systems that have been contaminated, if no contamination is evident isolate as required.

Persons shall not eat, drink or smoke in the asbestos removal area.

Hygienist will set up and conduct asbestos air monitoring during and after the period when work is occurring.

Hygiene: While working with asbestos contaminated material, all personnel inside the work area shall wear the following as a minimum requirement:

- Disposable coveralls rated type 5, category 3 (prEN ISO 13982–1)
- Nitrile or Latex
- Steel-capped work boots or gumboots
- P2 Sundstrom face masks

No power tools, other than drills for the removal of roof screws, will be used on the asbestos cement sheeting.

Drop sheets are to be place directly below the removal area and positioned where the sheeting is to be stacked

The walls are to be vacuumed with HEPA rated vacuums and where required wet wiped

All waste incurred from the above step is to be bagged and disposed of contaminated waste.

A water mist shall be sprayed at the points of where all screws or nails are to be extracted to minimise any fibre release

The A/C sheets sprayed prior to commencement with a PVA emulsion ensuring that any loose fibres are binded to the sheets

The A/C sheets are to be unscrewed by cordless drill or hand driver whilst a water mist is engaged to minimize and fibre release

All A/C sheets will be removed with a minimal amount of breakage and lowered to the ground by hand in a team lift or by way of mechanical means (no sheets shall be lowered with a force, that impact will cause breakage).

All A/C residue & dust shall be cleaned from supporting substructure and horizontal surfaces by way of hand tools and approved "HEPA" rated vacuum cleaners.

All dust within the roof space area nominated for removal is to be vacuumed with a HEPA rated vacuum and any subsequent horizontal surfaces requiring wet wiping shall have the process completed

Sheets are then to be double wrapped in 200 micron plastic and sealed with duct tape

All asbestos waste packages are to be decontaminated with a wet rag and re-wrapped outside the work area.

For any unforeseen circumstances, such as inaccessible areas or on the hygienist's recommendations removal or encapsulation changes are to be discussed with the supervisor on site before subsequent actions are taken.

Cloths and gloves will be disposed of as contaminated waste material with other contaminates. Overalls, socks, T-shirts and underwear will be laundered in the Approved manner.

All contaminated objects removed shall be loaded with the use of team lifts where required, Materials shall be washed or wet wiped as per the code of practice.

All bagged material shall be stored in sealed and identified as asbestos and shall be transported to an approved disposal facility.

All waste will be disposed of at an approved landfill with traceability documentation.

12. Procedure: Removal of Asbestos Box gutters

All windows and doors to nearby buildings will be closed. In factory type buildings where there is no ceiling, the area below or adjacent to the work will be roped off.

Prior to the start of the project, the correct signage and/or flags, barricades will be posted/positioned as per the code of practice. This also includes change area and decontamination facilities.

Prior to the commencement confirmation is required by the client that all services that may affect the removal of the asbestos sheets have been removed or isolated

Prior to commencement where required confirmation is to be made with the client that scaffolding is in place and access to the work area is made available and that scaffolding to be used has been signed off by licensed and ticketed personnel

Also, check for drainage systems that have been contaminated, if no contamination is evident isolate as required.

Persons shall not eat, drink or smoke in the asbestos removal area.

Hygienist will set up and conduct asbestos air monitoring during and after the period when work is occurring.

Hygiene: While working with asbestos contaminated material, all personnel inside the work area shall wear the following as a minimum requirement:

- Disposable coveralls rated type 5, category 3 (prEN ISO 13982–1)
- Nitrile or Latex

- Steel-capped work boots or gumboots
- P2 Sundstrom face masks

Drop sheets are to be place directly below the removal area where gutters have been lowered down

A PVA Emulsion shall be sprayed at the extraction points minimise any fibre release

With the use of hand tools uncouple and remove gutter from building

Lower gutter via team lift to ground

All asbestos waste is to be bagged in 200 micron asbestos bags

All asbestos packages are to be decontaminated with a wet rag and re-wrapped outside the work area.

For any unforeseen circumstances, such as inaccessible areas or on the hygienist's recommendations removal or encapsulation changes are to be discussed with the supervisor on site before subsequent actions are taken.

Cloths and gloves will be disposed of as contaminated waste material with other contaminates. Overalls, socks, T-shirts and underwear will be laundered in the Approved manner.

All contaminated objects removed shall be loaded with the use of team lifts where required, Materials shall be washed or wet wiped as per the code of practice.

All bagged material shall be stored in sealed and identified as asbestos and shall be transported to an approved disposal facility.

All waste will be disposed of at an approved landfill with traceability documentation.

Finally all voids, once cleared by the hygienist, are to be re-filled with non-contaminated putty.

13. Decontamination

Prior to leaving the work area, in a created dry decontamination area, personnel will use the buddy system to decontaminate via spraying one another with water via a pump sprayer ensuring no run off occurs.
Once wet down coveralls are to be removed outside the work area within the control decontamination area.
Waste is bagged, decontaminated and disposed as contaminated waste.

Where deemed a requirement on a particular site before any works commence, the following wet decontamination procedures will be engaged:

Personnel will then transit from the wet decontamination unit.
Wet decontamination shall then be in force and Wet Decontamination protocols are to be followed by all personnel.

All personnel shall enter the first cubical and saturate all clothing, headpieces and respirators (making sure not to wet respirator filters).

Note: Do not remove your respirator until you enter the third cubical.

Once personnel are satisfied that all areas of personal protective equipment have been saturated and any excess fibres or contaminates have been washed off, proceed to the next cubical where all clothing and equipment shall be removed (except the respirator) and placed into the asbestos bags provided.

Note: No contaminated material is to go beyond this point unless it has been double bagged or suitably decontaminated.
Once all items of clothing have been removed, personnel can proceed to enter the third cubical. This area is deemed to be clean area, a person's respirator can now be removed and final personal cleaning can begin, paying particular attention to the face and hair.

After personal washing is complete, entry can be made into the final stage, cubical four. Dry towels can be found in this stage. It is important that personnel dry themselves inside the cubical and not in the change area as cotton fibres will be detected by the monitoring system and be misinterpreted as asbestos fibres. This will cause a false alarm and unnecessary concern by other personnel and all those concerned with the project.

Not following the correct decontamination procedures, puts everyone's health is at risk. Once personnel have changed back into normal work clothes, the pump box filter is to be checked and the towel replaced with a fresh towel for the next person to use. Dirty towels are to be placed in the bin provided for laundering.
Dry and clean the respirator before storing it. This is an individual's personal protective equipment, make sure it is fully operable before next entry.

Complete the exit section of the logbook making a note of any problems inside the work area.

After decontamination is complete, socks, T-shirts, overalls, underwear and towels will be laundered in the approved manner. Filters, gloves and disposable items shall be disposed of as contaminated waste.

14. References and Legislative Requirements

All legislation will be available on request.

- *WHS Act 2011*
- *WHS Regulations 2011*
- *Safework Australia's COP - How to Safely Remove Asbestos Code of Practice 2011.*
- *Safework Australia's COP - How to Manage and Control Asbestos in the Workplace 2011.*
- *WorkCover Authority of NSW requirements*
- *Protection of the Environment Operations Act 1997*
- *Environmentally Hazardous Chemicals Act 1985*
- *AS/NZS 1716:2003 – Respiratory Protective Devices*
- *AS/NZS 1715:1994 – Selection, Use and Maintenance of Respiratory Protective Devices*
- *National Code of Practice for the Control of Workplace Hazardous Substances(National Occupational Health and Safety Commission:(2007(1994))*
- *Protection of the Environment Operations Act 1997*
- *Waste Avoidance and Resource Recovery Act 2001*
- *Hazardous Manual Tasks Code of Practice 2011*
- *National Code of Practice for Induction for Construction Work*
- *How to Manage Work Health & Safety Risks Code of Practice 2011*
- *Managing the Work Environment and Facilities Code of Practice 2011*
- *Excavation work Code of Practice 2012*
- *Preparation of Safety Data Sheets for Hazardous Chemical Code of Practice 2011*
- *Managing Noise & Preventing Hearing Loss at Work Code of Practice 2011*
- *Work Health & Safety Consultation Cooperation and Coordination Code of Practice 2011*

Plan for emergency situation within the Asbestos Removal Area

Doc ID	**PD-arcp-emer0813**
Vers #	1:01
SOP Prep By:	*D Moreiro P Dickinson*
Authorised By: position:	D Riches GM
Page	1 of 2
Date of Issue:	01/08/2014

Applicable:

All P&D Envirotech Staff and client involved with works

Task Description & Scope:

This procedure applies when an emergancy situation occurs within the friable asbestos removal area.
It may also be applied in the event that storm or hail has damaged non friable asbestos material, gutters or downpipes.

PPE :

The minimum respiratory protective equipment should be warn when conducting follow up inspections or assessments. A risk assessment will determine additional PPE for each situation.

- Half face Sundstrom face masks with a P2 air filter approved to AS 1715/1716. Sundstrom face masks
- Disposable coveralls rated type 5, category 3 (prEN ISO 13982–1)
- Steel Capped Washable safety boots or gumboots
- Nitrile or Latex Gloves – or where required cut proof gloves
- Safety Glasses or goggles

Training and Certification

All P&D Envirotech Staff are to be directed by the Project Manager or Site Supervisor who is in charge of the asbestos removal area. All client shall be informed by the site supervisor what actions are required in the event of an emergency within the works area

Only those from P&D Envirotech who have completed Asbestos training and/or specific asbestos work procedure training, should engage in clear up or containment work, under the direction of the Site Supervisor and/or the Project Manager

Health

Exposure to airborne asbestos fibres from an emegency situation may cause dose related asbestos diseases such as lung cancer; mesothelioma; or pleural plaques if inhaled in sufficent quantities.

Care should be taken by all persons to avoid disturbing surrounding materials suspected of containing asbestos , except for the purpose of sampling.

Storm and hail can damage bonded asbestos material and cause asbestos fibres to become loose, which may wash down and collect in the gutters and downpipes.

Sofety

The Site Supervisor will assume asbestos fibres have been released and may direct an evacuation in the event one is required e.g. the event of a fire.
Fire extinguisher shall be placed at the outside of the entrance to the works area if the job is deemed to be of potential risk.
Use of fire extinguishers will come under the directive of the site supervisor
Should an emergency require an evacuation decontamination procedures can be bypassed and evacuation processes taking precedence
All emergencies are to follows the clients evacuation plan once an evacuation from the asbestos removal area has taken place

Evacuation from the work area will take place from the near exit point or if required cutting through the closest point of the enclosure

All subsequent inspections or work on asbestos products must be done in accordance with the P&D Envirotech ARCP; Safe Work Australia (SWA) *Code of Practice of How to Safely Remove Asbestos 2011*

Environment

Prevent disturbance and spread of asbestos fibres (dust) from newly emergency situations on site, or from storm debris to surrounding work areas.

Ensure all asbestos contaminated waste is disposed of correctly once access is granted.

Quality:

The responsible supervisor **MUST** ensure that all relevant personnel are aware of these emergency procedures and their communication.

Equipment required in addition to normal tools or materials

- 200 micron polythene plastic & duct tape;
- Warning tape , barricades and safety signage
- PVA glue
- Paint conforming to the job specification. *E.g. Fire resistant if required*
- Industrial HEPA rated Vacuum Cleaner
- Low pressure paint spray bottle
- Bucket of water, rags and wet wipes
- Labelled 200 micron asbestos waste bag
- Bucket of water, rags and wet wipes
- Appropriate task lighting

Communication

The P&D Envirotech Project Manager is to be informed immediately in the case of an emergency or accidental damage, or the discovery of new asbestos-containing materials:

Listed within the ARCP is a list of Manager contacts an emergency services for the locality of the works

Referenced Documents

- *P&D Envirotech Asbestos Removal Control Plan;*
- WHS Act
- *WHS Regulations;*
- *Code of Practice for How to Safely Remove Asbestos*
- *Code Of Practice for How to Manage and Control Asbestos in the Workplace*

Emergency procedure within an Asbestos Removal Area		
Step	**Who**	**Action**
1.Stop work	P&D Envirotech employees	– Cease all work activities
2. Restrict access to affected area & shut-off air handling system	P&D Staff/ Client	– Restrict access to the area or site by closing doors, taping off access points and installing temporary signage to prevent site or building occupants or members of the public from entering the immediate area, and to prevent any further disturbance of asbestos materials in the area. – Air handling systems should be shut-off (where relevant).
3. Notify : • **Project Manager** • **Client/Contractor** • **Workcover where fibre release**	P&D Staff/ Client Workcover via phone then notification form	– Call P&D Envirotech Project Manager if not on site – Inform immediate client site representative
4. P&D Envirotech Incident Process	P&D Project Manager	– Proejct Manager to inform P&D stakeholders, – Notify other key stakeholders as required e.g.: o Client o Contractor
5. Notify Hygienist	Engaged Hygienist Client	– P&D manager to arrange risk assessment and advise appropriate control strategies to client.
6. Risk Assess Damage & Sample Material (if required)	Asbestos Hygienist	– Asbestos hygienist to attend site to risk assess material and if necessary, take sample of suspected asbestos materials or conduct air monitoring:

Emergency procedure within an Asbestos Removal Area		
Step	**Who**	**Action**
7. Engage communication with client and Workcover (if requested) on hygienist recommendations	P&D Envirotech Client Workcover Hygienist	– P&D Envirotech in consultation with Asbestos hygienist are to engage communication with the client and Workcover (if requried) on the recommendation for cleanup and or removal.
8. Conduct asbestos fibre air monitoring & independent visual clearance inspection	Asbestos Hygienist	– Conduct asbestos fibre air monitoring adjacent to the contaminated work area to ensure that dust levels do not exceed acceptable exposure levels. – After clean-up works have been completed, an independent visual clearance inspection shall be conducted to ensure that the asbestos removal has been completed to a satisfactory standard. – Airborne asbestos fibre clearance monitoring shall also be conducted as required within any removal work areas, to ensure areas are safe for re-occupation by unprotected personnel. – Asbestos Consultant to issue clearance documentation.
9. Review AMP procedures & Controls	P&D Envirotech Management Workcover (if requried)	– Debrief staff – P&D Envirotech Managment to review the Asbestos Management Plan procedures and controls to ensure they were being followed properly.
10. Update Asbestos Register & archive documents	P&D Envirotech Client	– Client to update site Asbestos Register via hygienst where required. – P&D Envirotech to record /archive incident documents as per P&D management system. – P&D Envirotech to archive all documentation associated with Project

Emergency Contact Numbers

Paul: **0417 584 896**

Dave: **0419 225 223**

Brett: **0458 225 252**

P & D Envirotech Office:

(02) 4256 8801 or

1300 884 113

Emergency Service	National	Local
Bomaderry Police	000	(02) 4422 5083
Nowra Fire Station	000	(02) 4421 4754
Ambulance	000	
State Emergency Service	13 25 00	
Shoalhaven District Hospital		(02) 4421 3111
Power and Water Corporation - Emergency	1800 245 090	
Dial Before you Dig	1100	
National Security Hotline	1800 123 400	
EPA- Pollution Incidents	131 555	
Workcover	13 10 50	

Epsilon Underwriting Agencies

ABN 68 097 402 134 FSL # 245612

Certificate of Currency

This Certificate confirms that the undermentioned Policy is effective in accordance with the details shown:

Insurer:	Certain Underwriters At Lloyd's
Class of Business:	Contractors Pollution Liability
Insured:	P & D Environmental Pty Ltd
Policy Number:	LS0002CPL
Period of Insurance:	From: 31st October, 2012 at 4pm local standard time To: 31st October, 2013 at 4pm local standard time
Limit of Indemnity:	$10,000,000 in the aggregate any one Period of Insurance (inclusive of Defence costs).

EPSILON UNDERWRITING AGENCIES

Authorised Representative of the Insurer. 17.10.2012 Date

This Certificate:
-Is issued as a matter of information only and confers no rights upon the holder.
-Does not amend, extend or alter the coverage afforded by the Policy listed.
-Reference must be made to the current Policy wording for full details of the cover provided.

This Certificate of Currency is issued by Epsilon Insurance Broking Services Pty Ltd t/as Epsilon Underwriting Agencies as Agent for and on behalf of the Insurer.

Epsilon Insurance Broking Services Pty Ltd t/as Epsilon Underwriting Agencies
Suite 401 Level 4, 68 York Street Sydney NSW 2000 . Ph 02 9299 3466 Fax 02 9299 3488

Epsilon
Underwriting Agencies

ABN 68 097 402 134 FSL # 245612

Certificate of Currency

This Certificate confirms that the undermentioned Policy is effective in accordance with the details shown:

Insured:	P & D Envirotech Pty Ltd
Class of Business:	Public & Products Liability
Limit of Indemnity:	$20,000,000 any one Occurrence in respect of public liability and in the aggregate during the Period of Insurance in respect of products liability. Primary Liability $10,000,000 any one claim or series of claims arising from one occurrence but in all in respect to Products Liability. Excess Liability $10,000,000 any one claim or series of claims arising from one occurrence but in all in respect to Products Liability in excess of $10,000,000 any one claim or series of claims arising from one occurrence but in all in respect to Products Liability
Insurer:	Primary Liability: Co-Insurers: Certain Underwriters at Lloyds – 75% Berkley Insurance Company T/as Berkley Re Australia – 25% Excess Liability: Berkley Re Australia
Policy Number:	CV0303CGL BER0382XL
Period of Insurance:	From: 31st October, 2012 at 4pm local standard time To: 31st October, 2013 at 4pm local standard time
Business Description:	Principally removal of hazardous goods (primarily asbestos abatement and removal), paint removal (including lead paint), painting, site remediation including clean up and demolition up to 15 meters in height.

Authorised Representative of the Insurer.

17th October, 2012
Date

This Certificate:
- Is issued as a matter of information only and confers no rights upon the holder.
- Does not amend, extend or alter the coverage afforded by the Policy listed.
- Reference must be made to the current Policy wording for full details of the cover provided.

This Certificate of Currency is issued by Epsilon Underwriting Agencies Pty Ltd as Agent for and on behalf of the Insurer.

Suite 401 Level 4, 68 York Street Sydney NSW 2000.

Ph 02 9299 3466 Fax 02 9299 3488

CERTIFICATE OF CURRENCY

P & D ENVIROTECH PTY LTD
PO Box 233
OAK FLATS NSW 2529

Dear Sir/Madam,

1. STATEMENT OF COVERAGE

The following policy of insurance covers the full amount of the employer's liability under the Workers Compensation Act 1987.

This Certificate is valid from 18/3/2015 to 18/3/2016.

The information provided in this Certificate of Currency is correct at: 19/03/2015 .

2. EMPLOYERS INFORMATION

POLICY NUMBER	20WOR0206031122
LEGAL NAME	P & D ENVIROTECH PTY LTD
TRADING NAME	
ABN	63099258723
TRUST NAME	
TRUST ABN	

WorkCover Industry Classification Number (WIC)	Industry	Numbers of Workers*	Wages**
421010	Demolition	25	$1,317,640.00

*Number of workers includes contractors/deemed workers
**Total wages estimated for the current period

3. IMPORTANT INFORMATION

Principals relying on this certificate should ensure it is accompanied by a statement under section 175B of the Workers Compensation Act 1987. Principals should also check and satisfy themselves that the information is correct and ensure that the proper workers compensation insurance is in place, ie. compare the number of employees on site to the average number of employees estimated; ensure that the wages are reasonable to cover the labour component of the work being performed; and confirm that the description of the industry/industries noted is appropriate.

A principal contractor may become liable for an outstanding premium of the sub contractor if the principal has failed to obtain a statement or has accepted a statement where there was reason to believe it was false.

Yours Faithfully

NICOLE BELL

CGU Workers Compensation (NSW) Ltd – Agent for the NSW WorkCover Scheme
ABN 83 564 379 108/007
Phone: 1300 666 506 Fax: 02 9088 9709

FRIABLE ASBESTOS REMOVAL LICENCE

Issued under the *Work Health and Safety Regulation 2011* (NSW). This licence is not transferable.

Licence: AD210930

Licence class: Class A

Licence period: From: 30/03/2012 To: 29/03/2017

Licence holder name: P & D Envirotech Pty Ltd

ABN:

Trading name:

Address: 13 Rivulet Cres ALBION PARK RAIL NSW 2527

Description of the work that can be undertaken under this licence

- All friable asbestos removal work.
- All non friable asbestos removal work.

Licence holder obligations

A nominated supervisor must be present at the site whenever licensed friable asbestos removal work is being carried out and is readily available to attend the site when licensed non friable asbestos removal work is being carried out.

This licence document must be available for inspection.

All licensed asbestos removal work is to be notified to WorkCover NSW at least 5 days prior to the work commencing.

The licence holder must notify WorkCover NSW in writing of any changes in licence or supervisor details within 14 days.

Making a difference

WC00951 0310

10th March, 2014

Danny Moreira
P & D Envirotech Pty Ltd

Dear Mr Moreira,

Statement of Compliance

Somerset Risk Management has conducted an independent review of P&D Envirotech's Safety Management Systems (SMS) by their Senior Lead Auditor Olga Lihou. Outcomes from this review have determined your Organization's SMS satisfactorily meet the requirements of the AS/NZS 4801:2001 Safety Standard.

Yours Sincerely,

Senior Lead OHS/EMS/QMS Auditor Exemplar Global (nee RABQSA)
Certification No: 15061

BSc. Chem, Grad Cert OHS, MSc OHS, MRACI

NSW GOVERNMENT | Construction Consultative Committee

P&D Envirotech Pty Ltd

ABN: 63 099 258 723

Having met the requirements of the NSW Government Occupational Health and Safety Management Systems Guidelines (4th Edition), June 2004, is hereby awarded

OHSMS ACCREDITATION

From: 7/12/2012 To: 6/12/2015

Accreditation No: DFS 12-00647

Anthony Lee
A/Director Contracts
NSW Procurement
NSW Department of Finance and Services

Construction Consultative Committee

P&D Envirotech Pty Ltd

ABN: 63 099 258 723

Having met the requirements of the NSW Government Environmental Management System Guidelines Edition 2 (September 2009), is hereby awarded

EMS ACCREDITATION

From: 8/01/2013 **To:** 7/01/2016

Accreditation No: DFS 13-00647E

Anthony Lee
A/Director Contracts
NSW Procurement
NSW Department of Finance and Services

This WMS has been developed by and authorised by:		P&D Envirotech Pty Ltd PO Box 233 OAK FLATS NSW 2529 ABN: 63 099 258 723 WMS No: **9344**
Name: Paul Dickinson	**Date:** 22 September 2015	
Position: Project Manager	**Phone:** 0417 584 896	
Signature:	**Email:** Paul@pdenvirotech.com.au	
Description of work activity: Removal of asbestos roof sheeting		
Trades involved with undertaking this work activity: Asbestos Removalists, Hygienist		
Notification or Permit Required: Non- Friable Notification with Workcover		

This WMS is to be submitted to PCBU (principal contractor):	
Company: Manildra Group	**Contact Name:** Tony Barton
Site Address: Various Sites – 160 Bolong Rd Bomaderry	**Phone:** 0407 494 663

This WMS was reviewed by PCBU (principal contractor):	
Name:	**Position:**
Signature:	**Date:**
Phone:	**Comment:**

Person responsible for supervising and implementing, on the contractor's behalf, the WHS controls associated with each step of this work activity.	
Name: Thong Lam	**Phone:** 0405 239 921
Signature:	**Date:**

List plant, equipment and tools to be used and pre checked before commencement	List hazardous substances to be used or handled	SDS available? (Tick)	List PPE to be used	(Tick)	List hazards to consider	(Tick)
Motor Vehicles	Petrol - Unleaded		Hard hat	✓	Fall from ladder/trestle/scaffold	✓✓
Pump sprayer	PVA Emulsion	✓	Steel Toe Safety boots	✓	Fall from heights	✓✓
Asbestos Bags	Diesel		High-visibility clothing	✓	Fall from scaffold	✓✓
Hand tools (hammer, chisel etc)	Asbestos		Working gloves	✓	Contact with electricity	✓
Portable power tools 240v			Hearing protection	✓	Falling objects	✓
Battery powered tools			Safety glasses		Collapse	✓
Black Plastic			Face Shield		Slip, trips and falls	✓
Bunting			Dust masks	✓	Manual handing	✓✓
Signs			30+ sunscreen	✓	Exposure to noise	
Scaffold			Other (specify):		Struck by moving vehicle	
HEPA Rated vacuum					Inhalation of dust or fumes	✓✓✓
RCD Unit					Cuts	✓

RISK TABLE

How likely is it to be serious?
NOTE: If a hazard is rated 1or 2, take action immediately.

What damage could it cause?	Very likely (could happen anytime)	Likely (could happen sometimes)	Unlikely (could happen, but only rarely)	Very unlikely (could happen, but probably never will)
Death or permanent disability			2	3
Long term illness or serious injury		2	3	4
Medical attention and several days off work	2	3	4	5
First aid needed	3	4	5	

How to complete the following form

- List the step-by-step sequence of tasks required to carry out a work activity from start to finish.
- List the potential hazards associated with each step, and the related WHS risks.
- Using the risk table, rate the identified risks.
- List what controls you will implement to reduce the risks to the lowest possible level.
- Rate the level of risk once those controls have been implemented (must be 3-6 before you can start work).
- List the names or positions of the workers responsible for ensuring that the controls are implemented.

A separate WMS is required for each work activity.

STEP	Activity step ***Break the activity down into steps. List the steps in this column.***	Hazards Identification *Identify any potential hazards associated with each step – ond ony related risks. Detail the hazards ond risks in this column, and enter the risk rating in the next column.*	Initial risk rating (1-6)	Controls Implemented *Decide what controls to use to eliminate or minimise the risks. Detail the controls in this column, and enter the revised risk rating in the next column. Note: If the risk rating is still 1-2, do not begin work.*	Revised risk rating (1-6)	Person responsible
1	Travel and transport	Fatigue, possible collision Motor Vehicle Accident – Fatality	1	Comply with speed limit and take caution of pedestrians when entering and exiting site. Driver to obey road rules and rest break protocol – observe traffic management plan. Vehicle checks and maintenance. Spotter to assist vehicle operator where visibility is limited.	3	Thong Lam
2	Review of removal plan with Hygienist	Not understanding what is required Misinterpreting instructions	3	Training attended by all involved No interruptions Re-affirming understanding what is required Running through P&D Envirotech WMS Understanding by all indicated by signing of WMS	5	Thong Lam
3	Site set up	Poor house-keeping Back, other lifting injuries	4	Identify asbestos work area. Site induction. Correct PPE to be worn	6	Thong Lam

STEP	Activity step ***Break the activity down into steps. List the steps in this column.***	Hazards Identification *Identify any potential hazards associoted with each step – and any related risks. Detail the hazards and risks in this column, and enter the risk rating in the next column.*	Initial risk rating (1-6)	Controls Implemented *Decide whot controls to use to eliminote or minimise the risks. Detail the controls in this column, and enter the revised risk rating in the next column. Note: If the risk rating is still 1-2, do not begin work.*	Revised risk rating (1-6)	Person responsible
4	Install and plastic line waste bin/vehicle	Access by Public Cross Contamination Crush injury Lifting, injury trip injury	4	Correct PPE to be worn Correct manual handling procedure Observation by all	6	Thong Lam
5	Install signs	Access by Public Cross Contamination Lifting, injury trip injury	4	Erect 10m barricade around perimeter. Correct manual handling procedure Observation by all	6	Thong Lam
6	Ensure scaffolding, ladders, safety barriers are in correct position	Equipment Failure Fall injury Trip Slip Injury	2	Correct PPE to be worn by all Only trained competent persons to have access authority Competent 3rd party scaffolder to install scaffold or arranged by client	4	Thong Lam/ Scaffolder

STEP	Activity step ***Break the octivity down into steps. List the steps in this column.***	Hazards Identification *Identify any potential hazards assaciated with each step – and any related risks. Detail the hazards and risks in this column, and enter the risk rating in the next column.*	Initial risk rating (1-6)	Controls Implemented *Decide what contrals to use to eliminate or minimise the risks. Detail the controls in this column, and enter the revised risk rating in the next column. Note: If the risk rating is still 1-2, do not begin work.*	Revised risk rating (1-6)	Person responsible
7	Ensure power isolations are in place and construction fence in place by client	Equipment Failure Electrocution Trip Slip Injury	3	Verification by client that isolations and fencing is in place Vigilance by all	5	Thong Lam
8	Install and position safety fall arrestors	Equipment Failure Fall injury Trip Slip Injury	1	Correct PPE to be worn by all Only trained competent persons to have access authority Peer observation & Vigilance to be taken	3	Hygienist
9	Spray asbestos sheet to be removed with PVA emulsion to bond fibres	Equipment Failure Lifting, trip hazards Ingestion of hazardous dust Fall Injury	2	Correct PPE to be worn by all Access to only trained competent persons who have been inducted Safety arrestor to be in use Correct procedures to be followed at all times	4	Thong Lam

STEP	Activity step ***Break the activity down into steps. List the steps in this column.***	Hazards Identification *Identify any potential hazards associated with each step – and any related risks. Detail the hazards and risks in this column, and enter the risk rating in the next column.*	Initial risk rating (1-6)	Controls Implemented *Decide what controls to use to eliminate or minimise the risks. Detail the controls in this column, and enter the revised risk rating in the next column. Note: If the risk rating is still 1-2, do not begin work.*	Revised risk rating (1-6)	Person responsible
10	Remove asbestos sheeting and residue fragments from roof first with the use of hand tools	Equipment Failure Dust ingestion, Contaminated material Crushing Heat fatigue, lifting injury and trip injury Manual Handling	**1**	Correct PPE to be worn by all Access restricted to only trained qualified persons Correct procedures to be followed at all times Peer observation Periodic breaks	**3**	Thong Lam
11	Lower asbestos sheets to ground using via team lift movement	Equipment Failure Dust ingestion, Contaminated material Cross contamination Ingestion of hazardous dust, heat fatigue, lifting injury and trip injury Manual Handling	**1**	Correct PPE to be worn by all Access restricted to only trained qualified persons All PPE to be removed prior to leaving the work area Correct procedures to be followed at all times Correct Manual Handling Procedures to be followed Peer Observation	**3**	Thong Lam

STEP	Activity step ***Break the activity down into steps. List the steps in this column.***	Hazards Identification *Identify any potential hazards associated with each step – and any related risks. Detail the hazards and risks in this column, and enter the risk roting in the next column.*	Initial risk rating (1-6)	Controls Implemented *Decide what controls to use to eliminate or minimise the risks. Detail the controls in this column, and enter the revised risk rating in the next column. Note: If the risk rating is still 1-2, do not begin work.*	Revised risk rating (1-6)	Person responsible
12	Load sheets into plastic covered bin or transport vehicle	Dust ingestion, Contaminated material Cross contamination Moving equipment Heat fatigue, lifting injury and trip injury, cross contamination	1	Correct PPE to be worn by all Access restricted to only trained qualified persons All PPE to be removed prior to leaving the work area All personnel to be vigilant around moving equipment Peer observation by all Periodic breaks	3	Thong Lam
13	Spray identified gutters and remove via hand tools	Dust ingestion, Contaminated material Crushing Heat fatigue, lifting injury and trip injury Manual Handling	1	Correct PPE to be worn by all Access restricted to only trained qualified persons Correct procedures to be followed at all times Peer observation Periodic breaks	3	Thong Lam

STEP	Activity step ***Break the activity down into steps. List the steps in this column.***	Hazards Identification *Identify any potential hazards associated with each step – and any related risks. Detail the hazards and risks in this column, and enter the risk rating in the next column.*	Initial risk rating (1-6)	Controls Implemented *Decide whot contrals to use to eliminate or minimise the risks. Detail the contrals in this column, and enter the revised risk rating in the next column. Note: If the risk rating is still 1-2, do nat begin work.*	Revised risk rating (1-6)	Person responsible
14	Cleaning of substructure and voids where required by HEPA rated vacuum, this is to include walls of building	Electrocution Manual Handling Slip, Trip Injury Electrocution	1	Correct PPE to be worn by all Access restricted to only trained qualified persons Peer observation by all Ensure personnel are attached to anchor points Ensure vacuum has current test tag and is in good working order	3	Thong Lam
15	Fine clean work area after all contaminants have been removed	Dust ingestion, Contaminated material Cross contamination Moving equipment Heat fatigue Manual Handling trip injury, cross contamination	2	Correct PPE to be worn by all Access restricted to only trained qualified persons All PPE to be removed prior to leaving the work area No PPE to be worn outside the work area All personnel to be vigilant around moving equipment	4	Thong Lam
16	Clearance inspection by hygienist	Ingestion of hazardous dust, Slip and trip injury	4	Correct PPE to be worn by hygienist as per industry standard Observation by all qualified persons	6	Thong Lam

STEP	Activity step ***Break the activity down into steps. List the steps in this column.***	Hazards Identification *Identify any potential hazards associated with each step – and any related risks. Detail the hazards and risks in this column, and enter the risk rating in the next column.*	Initial risk rating (1-6)	Controls Implemented *Decide what controls to use to eliminate or minimise the risks. Detail the controls in this column, and enter the revised risk rating in the next column. Note: If the risk rating is still 1-2, do not begin work.*	Revised risk rating (1-6)	Person responsible
17	Apply PVA sealer to areas that are porous, timbers, gyprock and concrete if requested	Splash and spill on skin and clothing Contaminated material being transferred to a non-work area	2	Correct PPE to be worn by all Only ASA qualified and employed by P&D personnel allowed in the work area Correct PPE to be worn by all	4	Thong Lam
18	Final inspection	Fine fibres and dust Ingestion of hazardous dust, heat fatigue, lifting injury and trip injury	5	Use correct access equipment. Correct PPE to be worn by all Access restricted to only trained qualified persons	6	Thong Lam
19	Final inspection for tools, equipment and any remnants or residue of contaminants	Fine fibres and dust Lifting, trip & slip hazards	5	Correct PPE to be worn by all Hard Hat Safety Boots Hi Visibility clothing Access restricted to only authorised PD Envirotech employees	6	Thong Lam

STEP	Activity step ***Break the activity down into steps. List the steps in this column.***	Hazards Identification *Identify any potential hazards associated with each step – and any related risks. Detail the hazards and risks in this column, and enter the risk rating in the next column.*	Initial risk rating (1-6)	Controls Implemented *Decide what controls to use to eliminate ar minimise the risks. Detail the controls in this column, and enter the revised risk rating in the next column. Note: If the risk rating is still 1-2, do not begin work.*	Revised risk rating (1-6)	Person responsible
20	Travel from job	Fatigue, possible collision Motor Vehicle Accident – Fatality	1	Comply with speed limit and take caution of pedestrians when entering and exiting site. Driver to obey road rules and rest break protocol – observe traffic management plan. Vehicle checks and maintenance. Spotter to assist vehicle operator where visibility is limited.	3	Hygienist

ITEMS REQUIRED FOR THIS WORK ACTIVITY			
QUALIFICATIONS	**Project Officer (Manager)**	Dave Riches 0419 225 223	WHS experience and relevant inductions to suit project (Confined Space etc.),ASA competent person
	Occupational Hygienist	EBG	Tertiary Qualifications in Environmental Science, Accredited testing recognition, Relevant Insurances and Safe Work Method Statement
	Site Officer (Supervisor)	Thong Lam 0405 229 921	WorkCover Asbestos Competent Person, WorkCover General Induction, Friable Asbestos Ticket, Confined Space Ticket
	Asbestos Removalists	TBC	WorkCover General Induction, White card, Asbestos ticket
	WHS Officer	Danny Moreira 02 4256 8801	Relevant WHS qualifications, WorkCover General Induction, Friable Asbestos ticket
	Site Electrician / worker	Client	Electrician's License, Relevant Insurances, WMS, Site Induction
	Transport Company	N/A	EPA License
	Waste Disposal Facility	SITA Kemps Creek	EPA License
	Truck driver / worker	N/A	Truck Drivers Licence, Asbestos Awareness Ticket, Truck registration details, WMS and relevant insurances (Carrier company), Site induction, DECC accreditation (Carrier company)

TRAINING	Site Specific Induction – presented by Site Officer (Supervisor) <u>Includes:</u> Worksite and designated work area directive (with Occupational Hygienist) Confined Space Awareness – in walk-around with Project Officer (Manager) / Site Officer (Supervisor) Emergency Plan Site Safety Rules Housekeeping WHS Construction Induction (Greencard)
CODES OF PRACTICE OR AS/NZS STANDARDS TO BE COMPLIED WITH	• Hazardous Manual Tasks Code of Practice 2011 • National CODE OF PRACTICE for Induction for Construction Work • How to Manage Work Health & Safety Risks Code of Practice 2011 • Managing the Work Environment and Facilities Code of Practice 2011 • Preparation of Safety Data Sheets for Hazardous Chemical Code of Practice 2011 • Managing Noise & Preventing Hearing Loss at Work Code of Practice 2011 • Work Health & Safety Consultation Cooperation and Coordination Code of Practice 2011 • WHS Act 2011 • WHS Regulations 2011 • Code of Practice – How to Safely Remove Asbestos 2011 • How to Manage and Control Asbestos in the Workplace Code of Practice 2011

Declaration by workers and contract workers

I have been **consulted** and have assisted in the development of this WMS.

I have been given the opportunity to comment on the content of this WMS.

I have **read** and **understand** how I am to carry out the activities listed in this WMS.

I have been supplied with the **personal protective equipment** identified on this WMS and I have been given **training** in the safe use of this equipment.

I have read and understand the requirements set out in the **material safety data sheets** for the **hazardous substances** identified in this WMS.

NAME	SIGNATURE	DATE

(This WMS is to provide workers with knowledge of the health and safety issue that are relevant to the safe work practices on site by your organisation).

The following P&D Envirotech Pty Ltd workers have received work activity instruction and training and have had the opportunity to participate and provide input into the development of the Safe Work Method Statement procedures submitted for the above-mentioned project by

NAME: _____ DATE: _____

This document is to be read and signed below by all visitors and workers of P&D Envirotech Pty Ltd that are working on and visiting this site. Signatories below acknowledge that they have read and understand this document.			
Declaration	**Worker Name (Print)**	**Signature**	**Date**
I understand my PCBU's Safe Work Method Statement and will comply with its safe work practices			
I understand my PCBU's Safe Work Method Statement and will comply with its safe work practices			
I understand my PCBU's Safe Work Method Statement and will comply with its safe work practices			

Qualified Removalist Name	**Date**	**Signature**

Site Officer (Supervisor) /Responsible Person Name	**Date**	**Signature**

Personal Protective Equipment Record

(This is to certify that workers have been issued with the personal protective equipment identified in the WMS to perform this work).

The following company workers have received their Personal Protective Equipment (PPE) and have had the opportunity to return or obtain additional items. They have also been made aware that they are responsible for returning damaged or inappropriate PPE to obtain new or appropriate PPE.

NAME: ______________________ DATE: ______________________

DECLARATION	WORKER NAME (Print)	SIGNATURE	DATE
I have received or provided my own PPE as outlined in the WMS above namely (Hard Hat, Steel Capped Safety Boots, Gloves, Ear Plugs, Sun Protection, Hazmat Suit, P2 Face Respirator). These items have been supplied as new and are in correct working order. I will return the items for replacement or replace the items if they are broken or damaged and unsuitable for use.			
I have received or provided my own PPE as outlined in the WMS above namely (Hard Hat, Steel Capped Safety Boots, Gloves, Ear Plugs, Sun Protection, Hazmat Suit, P2 Face Respirator). These items have been supplied as new and are in correct working order. I will return the items for replacement or replace the items if they are broken or damaged and unsuitable for use.			
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DECLARATION	WORKER NAME (Print)	SIGNATURE	DATE
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This WMS has been developed by and authorised by:		P&D Envirotech Pty Ltd PO Box 233 OAK FLATS NSW 2529 ABN: 63 099 258 723 WMS No: **9344 - 2**
Name: Paul Dickinson	**Date:** 22 September 2015	
Position: Project Manager	**Phone:** 0417 584 896	
Signature:	**Email:** Paul@pdenvirotech.com.au	
Description of work activity: Removal asbestos box gutter		
Trades involved with undertaking this work activity: Asbestos Removalists, Hygienist		
Notification or Permit Required: Non-Friable Notification		

This WMS is to be submitted to (sub contractor):	
Company: Manildra Group	**Contact Name:** Tony Barton
Site Address: Various Sites – 160 Bolong Rd Bomaderry	**Phone:** 0407 494 663

This WMS was reviewed by (principal contractor):	
Name:	**Position:**
Signature:	**Date:**
Phone:	**Comment:**

Person responsible for supervising and implementing, on the contractor's behalf, the OHS controls associated with each step of this work activity.	
Name: Thong Lam	**Phone:** 0405 239 921
Signature:	**Date:**

WorkCover
NEW SOUTH WALES

FRIABLE ASBESTOS REMOVAL LICENCE

Issued under the *Work Health and Safety Regulation 2011* (NSW). This licence is not transferable.

Licence: AD210930

Licence class: Class A

Licence period: From: 30/03/2012 To: 29/03/2017

Licence holder name: P & D Envirotech Pty Ltd

ABN:

Trading name:

Address: 13 Rivulet Cres ALBION PARK RAIL NSW 2527

Description of the work that can be undertaken under this licence

- All friable asbestos removal work.
- All non friable asbestos removal work.

Licence holder obligations

A nominated supervisor must be present at the site whenever licensed friable asbestos removal work is being carried out and is readily available to attend the site when licensed non friable asbestos removal work is being carried out.

This licence document must be available for inspection.

All licensed asbestos removal work is to be notified to WorkCover NSW at least 5 days prior to the work commencing.

The licence holder must notify WorkCover NSW in writing of any changes in licence or supervisor details within 14 days.

Making a difference

Epsilon Underwriting Agencies

ABN 68 097 402 134 FSL # 245612

Certificate of Currency

This Certificate confirms that the undermentioned Policy is effective in accordance with the details shown:

Insurer:	Certain Underwriters At Lloyd's
Class of Business:	Contractors Pollution Liability
Insured:	P & D Envirotech Pty Ltd
Policy Number:	STA0007CPL
Period of Insurance:	From: 31st October, 2014 at 4pm local standard time To: 31st October, 2015 at 4pm local standard time
Limit of Indemnity:	$10,000,000 in the aggregate any one Period of Insurance (inclusive of Defence costs).

EPSILON UNDERWRITING AGENCIES

Authorised Representative of the Insurer. 1/4/2015 Date

This Certificate:
-Is issued as a matter of information only and confers no rights upon the holder.
-Does not amend, extend or alter the coverage afforded by the Policy listed.
-Reference must be made to the current Policy wording for full details of the cover provided.

This Certificate of Currency is issued by Epsilon Insurance Broking Services Pty Ltd t/as Epsilon Underwriting Agencies as Agent for and on behalf of the Insurer.

Skip to content

New South Wales Government WorkCover NSW

Asbestos & Demolition

Online Notification System

Login Id: P&D6 | Last Login: 22/09/2015 9:49 AM |

Create an Account | Logout | Help | FAQ | Contact Us

Home
My Account
My Notifications

Home>>My Notifications>>Notification Summary A A A

Notification Summary

To make changes to this Notification please click the 'Amend' button below.

Read Only

NFRINOT: Notification of Class B (Non Friable) Asbestos Removal Work

Reference Number: 940R-00089547-02

Status: Accepted

Date Lodged: 24/08/2015 08:34:24

Start Date of Work: 7/09/2015

Finish Date of Work: 6/11/2015

Licence Details

Licence Name: P & D Envirotech Pty Ltd

Licence No: 210930

Class(es): Class A / ASA Class B / ASB

Expiry Date: 29/03/2017

Registered Business Name: P & D Envirotech Pty Ltd

A.B.N: 63099258723

Daytime Contact Number: 02 4256 8801

Amend | Withdraw

Tasks:	Details:	Action Required:
Applicant Details	P & D Envirotech Pty Ltd	Done
Work Site Owner	Manildra Group	Done
Site Details	160 Bolong Road, Bomaderry, NSW 2541	Done
Clearance Certificate Details	Greencap - Andrew Brabek	Done
Supervisor	MR Lam, Thong	Done
Type of Work - Asbestos	A selection has been made - see details	Done
Asbestos Removal Control Plan (Safe Work Method Statement)	Details have been entered - see details	Done

Declaration	DANNY MOREIRA, COMPLIANCE OFFICER	Done

Comments(3) Attachments(0) Notification Output(2)

Epsilon
Underwriting Agencies

ABN 68 097 402 134 FSL # 245612

Certificate of Currency

This Certificate confirms that the undermentioned Policy is effective in accordance with the details shown:

Insured:	P & D Envirotech Pty Ltd
Class of Business:	Public & Products Liability
Limit of Indemnity:	$20,000,000 any one Occurrence in respect of public liability and in the aggregate during the Period of Insurance in respect of products liability. Primary Liability $10,000,000 any one claim or series of claims arising from one occurrence but in all in respect to Products Liability. Excess Liability $10,000,000 any one claim or series of claims arising from one occurrence but in all in respect to Products Liability in excess of $10,000,000 any one claim or series of claims arising from one occurrence but in all in respect to Products Liability
Insurer:	Primary Liability: Co-Insurers: Certain Underwriters at Lloyds – 75% Berkley Insurance Company T/as Berkley Re Australia – 25% Excess Liability: Berkley Re Australia
Policy Number:	STA0490CGL WRB0148XL
Period of Insurance:	From: 31st October, 2014 at 4pm local standard time To: 31st October, 2015 at 4pm local standard time
Business Description:	Principally removal of hazardous goods (primarily asbestos abatement and removal), paint removal (including lead paint), painting, site remediation including clean up and demolition up to 15 meters in height.

EPSILON UNDERWRITING AGENCIES

Authorised Representative of the Insurer.

10.10.2014
Date

This Certificate:
-Is issued as a matter of information only and confers no rights upon the holder.
-Does not amend, extend or alter the coverage afforded by the Policy listed.
-Reference must be made to the current Policy wording for full details of the cover provided.

This Certificate of Currency is issued by Epsilon Underwriting Agencies Pty Ltd as Agent for and on behalf of the Insurer.

Suite 401 Level 4, 68 York Street Sydney NSW 2000.

Ph 02 9299 3466 Fax 02 9299 3488

CERTIFICATE OF CURRENCY

CGU Workers Compensation

P & D ENVIROTECH PTY LTD
PO Box 233
OAK FLATS NSW 2529

Dear Sir/Madam,

1. STATEMENT OF COVERAGE

The following policy of insurance covers the full amount of the employer's liability under the Workers Compensation Act 1987.

This Certificate is valid from 18/3/2015 to 18/3/2016.

The information provided in this Certificate of Currency is correct at: 19/03/2015 .

2. EMPLOYERS INFORMATION

POLICY NUMBER	20WOR0206031122
LEGAL NAME	P & D ENVIROTECH PTY LTD
TRADING NAME	
ABN	63099258723
TRUST NAME	
TRUST ABN	

WorkCover Industry Classification Number (WIC)	Industry	Numbers of Workers*	Wages**
421010	Demolition	25	$1,317,640.00

* Number of workers includes contractors/deemed workers
**Total wages estimated for the current period

3. IMPORTANT INFORMATION

Principals relying on this certificate should ensure it is accompanied by a statement under section 175B of the Workers Compensation Act 1987. Principals should also check and satisfy themselves that the information is correct and ensure that the proper workers compensation insurance is in place, ie. compare the number of employees on site to the average number of employees estimated; ensure that the wages are reasonable to cover the labour component of the work being performed; and confirm that the description of the industry/industries noted is appropriate.

A principal contractor may become liable for an outstanding premium of the sub contractor if the principal has failed to obtain a statement or has accepted a statement where there was reason to believe it was false.

Yours Faithfully

NSW WorkCover Scheme

NICOLE BELL

CGU Workers Compensation (NSW) Ltd – Agent for the NSW WorkCover Scheme
ABN 83 564 379 108/007
Phone: 1300 666 506 Fax: 02 9088 9709

ANNEXURE 7

ANNEXURE 7

Soil Erosion and Sediment Control Plan

prepared by

Cowman Stoddart Pty Ltd

SOIL EROSION & SEDIMENT CONTROL PLAN

SOIL EROSION
AND
SEDIMENT CONTROL PLAN

- **TEMPORARY CAR PARKING AREA**
- **DEMOLITION OF "MOOREHOUSE" BUILDING**

BOLONG ROAD
BOMADERRY

Prepared for

Manildra Group

October 2015

Prepared by:

COWMAN STODDART PTY LTD

Town Planning, Agricultural & Environmental Consultants

SOIL EROSION
AND
SEDIMENT CONTROL PLAN

- TEMPORARY CAR PARKING AREA

- DEMOLITION OF "MOOREHOUSE" BUILDING

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

The Holt Centre, 31 Kinghorne Street, Nowra
PO Box 738, Nowra NSW 2541
Telephone (02) 4423 6198 (02) 4423 6199
www.cowmanstoddart.com.au
Fax (02) 4423 1569
Email – info@cowmanstoddart.com.au

COWMAN STODDART PTY LTD

CONTENTS

FIGURES

1.0 INTRODUCTION

This is a soil erosion and sediment control plan produced for the Manildra Group and relates to two components of a development at the Bomaderry Plant. This Soil Erosion and Sediment Control Plan has been prepared to satisfy the requirements of the Department of Planning & Environment dated 17th September 2015.

1. Temporary car parking area – This will be constructed in an open paddock on the northern side of Bolong Road with capacity for 60 vehicles. See **Photo No. 1**.

Photo No. 1: Control of sediment from the proposed car park is straightforward due to the favourable terrain features, dense pasture and low soil erodibility.

2. Demolition of "Moorehouse" building – An old single storey industrial building on a concrete slab will be demolished to allow a new Dryer facility to be constructed. See **Photo No. 2**.

Photo No. 2: Building to be demolished is on a concrete slab which will remain.

2.0 TEMPORARY CAR PARKING AREA

This has approximate dimensions of 85 metres by 20 metres. See **Figure 1**.

2.1 VEGETATION

The site has a dense pasture sward of kikuyu/white clover with other natural species such as Yorkshire Fog and weeds such as Fireweed.

2.2 GEOLOGY AND SOILS

The geology of the site is alluvium which has resulted in layers of soil material with a well-structured loam topsoil at least 20 cm deep.

2.3 DRAINAGE

The site drains to the east into a broad swale which drains to the north-east into a deep open drain at the boundary with the settling ponds at the Bomaderry Sewage Works. This open drain flows to the south-east into Abernethy's Creek, a tributary of the Shoalhaven River. See **Figure 2**.

2.4 SOIL EROSION

There is no existing soil erosion at the site. Stormwater runoff from the development site will flow 150 metres to the north-east parallel to Abernethy's Creek into an open drain adjacent to the sewage works.

This broad flowline has a grade of 1% (approx.) and the dense pasture will serve as an effective filter strip for any dirty water flowing off the site.

2.5 PRESERVATION OF TOPSOIL

The topsoil to a depth of 20 cm is of excellent quality and should be preserved for future use in landscaping/revegetation projects on other parts of the property. The topsoil (with attached pasture) should be removed with a road grader (or similar machine), and stockpiled for future use. The pasture will ensure that the stockpile revegetates quickly. It was noted during the soil assessment that subsoil had been spread over parts of the site in the distant past and has now revegetated. There is no value in preserving this poorer quality soil material.

Volume of topsoil

85 metres x 20 metres x 0.2 metres

= 340 m^3 less 25% topdressed with subsoil

= 250 m^3

FIGURE 1

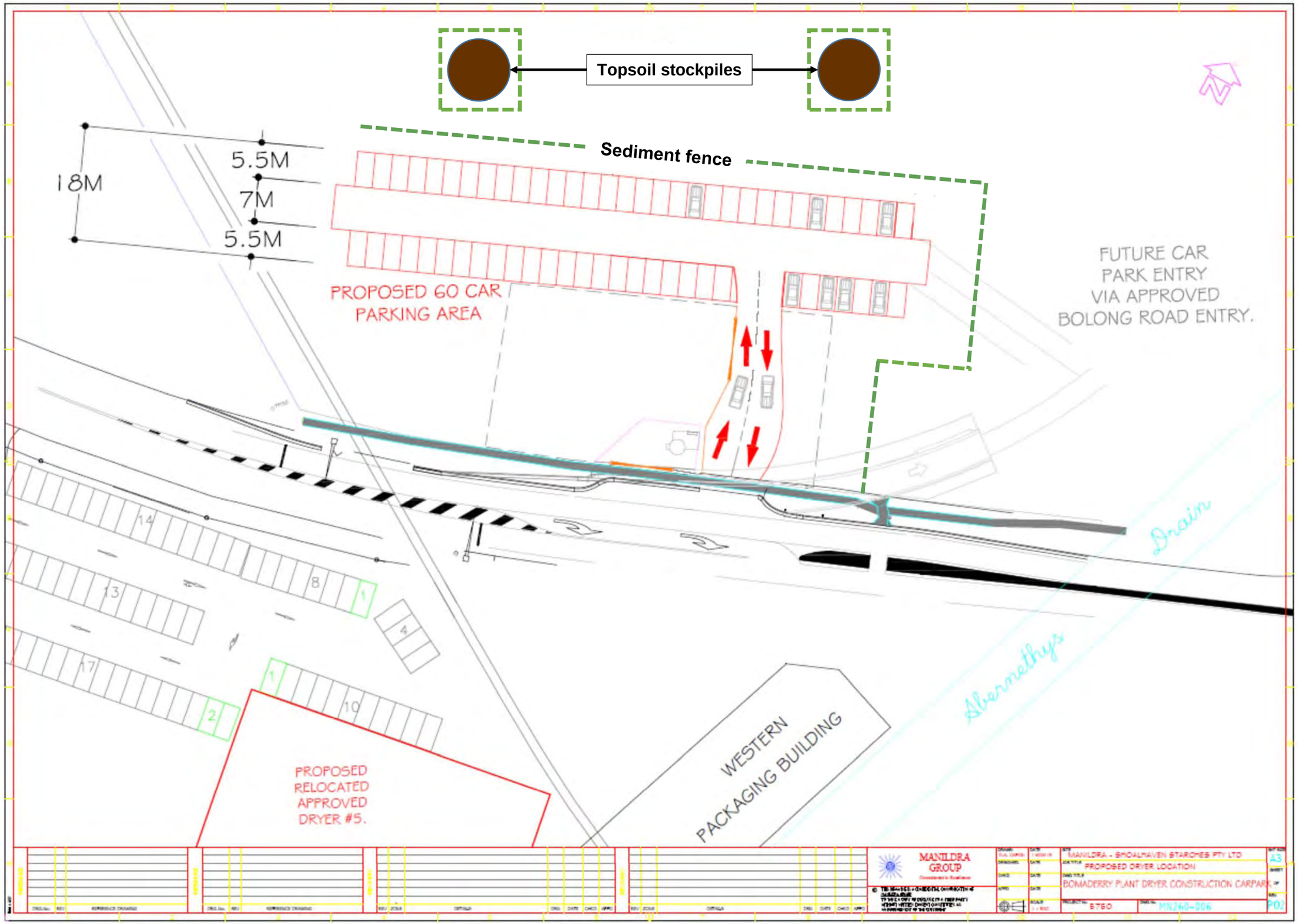
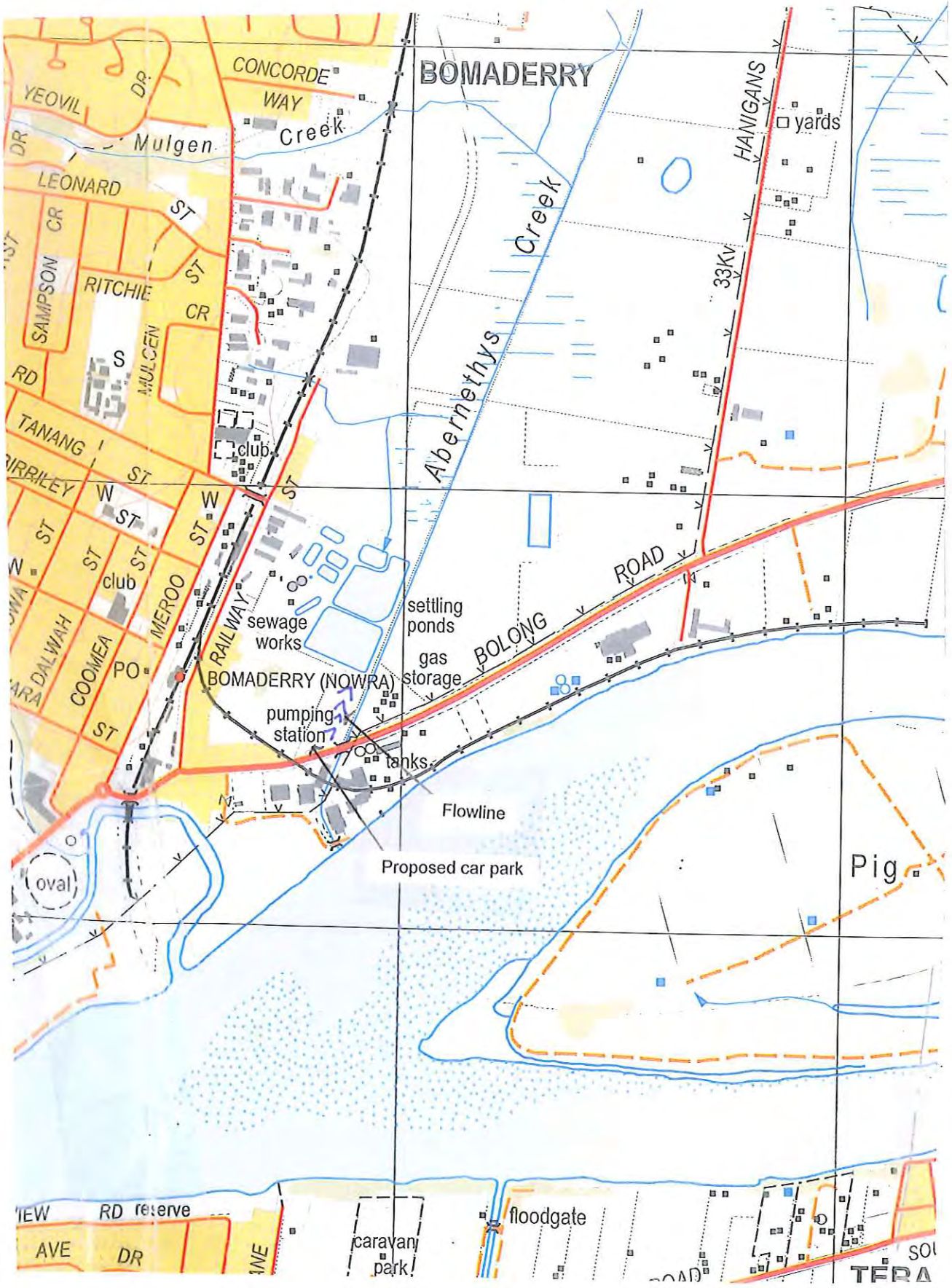

Topsoil stockpiles
Sediment fence
18M
5.5M
7M
5.5M
PROPOSED GO CAR PARKING AREA
FUTURE CAR PARK ENTRY VIA APPROVED BOLONG ROAD ENTRY.
PROPOSED RELOCATED APPROVED DRYER #5.
WESTERN PACKAGING BUILDING
Drain
Abermethys
MANILDRA GROUP
MANILDRA - SHOALHAVEN STARCHES PTY LTD
PROPOSED DRYER LOCATION
BOMADERRY PLANT DRYER CONSTRUCTION CARPARK
A3
5750
MNZH0-006
P02

FIGURE 2



COWMAN STODDART PTY LTD ABN 29 057 616 896 Town Planning, Agricultural and Environmental Consultants	**Enlarged extract of 1:25,000 topographic map showing location of car park and drainage**
Scale: 1:12,500 | Date: OCTOBER 2015	

Sediment control

The stockpile(s) should be surrounded by sediment fencing but it is acknowledged that the erodibility of the topsoil is low.

2.6 SEDIMENT CONTROL

After topsoil removal, sediment fencing should be erected on the northern and eastern boundaries of the car park site. See **Figure 1**.

3.0 DEMOLITION OF "MOOREHOUSE" BUILDING

The existing concrete slab will be retained and the building demolition relates to the removal of roofing, gutters, brick walls and general rubbish. The retention of the concrete slab will ensure that soils will not be disturbed on-site as a result of the works associated with this proposal. As such, the potential sediment to be controlled is most likely to be generated from building debris and waste. To that end, the different waste materials should be placed into the appropriate Skip Bins as soon as possible during the demolition process and emptied on a regular basis.

Other housekeeping measures that should be implemented include:

1. The concrete slab should be swept with brooms as necessary to remove potential sediment.
2. Instruct site workers on the need to prevent materials from washing into the stormwater system.
3. Provide approved bins for concrete and mortar slurries, paints, acid washes, lightweight waste and litter, and ensuring their regular clearance.
4. Ensure that any poisons are applied according to their registration and instructions on the label (eg. for termite control).
5. Ensure safeguards are in place to prevent residue paint and other chemicals from entering the stormwater system. Spray painting, high pressure washing and other activities that may permit particles to dissipate to waterways should be carefully controlled.
6. Straw bales should be used with some caution as they will restrict flows and may cause stormwater to back up on the flat site and cause temporary flooding within the site. Likewise sediment fences should not be placed across concentrated flows. However there is one site where straw bales should be used and a drain where a coarse screen (or steel grate) could be used to advantage. See **Figure 3**.

   Straw bales

   An earthen bank on the south-eastern side discharges onto the steep eroding batter above Abernethy's Creek. See **Photo No. 3**. Straw bales should be fixed in position (with steel stakes) as an extension of the bank. There would also be some benefit in placing kikuyu turf on the bare soil.

Photo No. 3: Bare soil and weeds on steep batter above Abernethy's Creek. Straw bales will be used to filter the runoff.

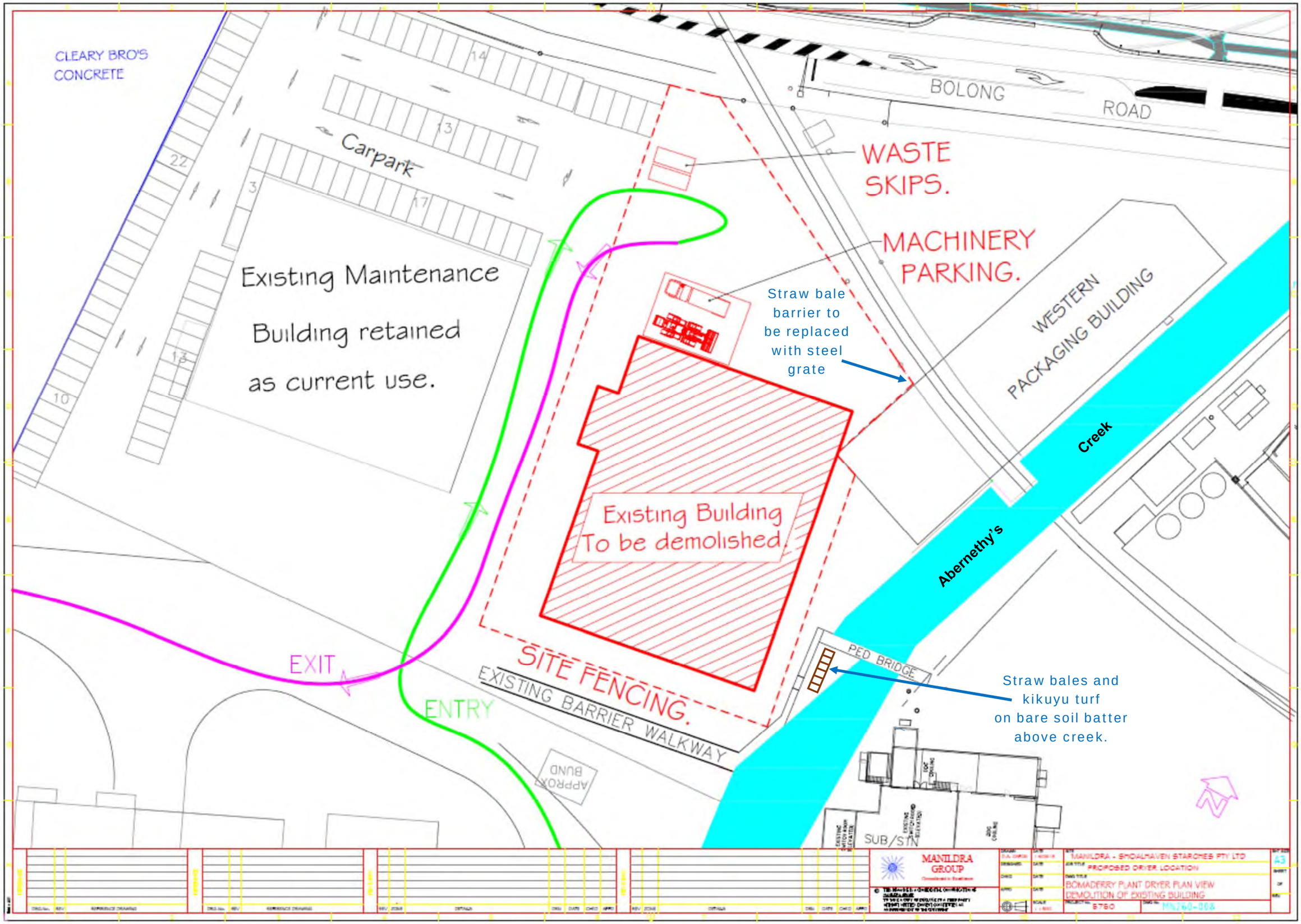
Coarse screens or grates

The existing straw bale barrier serves no purpose. It should be removed and replaced with a steel grate to prevent building debris or rubbish being washed into the Creek. See **Figure 3** and **Photo No. 4.**

Photo No. 4: Existing straw bale serves no purpose and should be removed and replaced with a steel grate.

Peter Cowman

FIGURE 3


CLEARY BRO'S
CONCRETE
BOLONG
ROAD
WASTE
SKIPS.
MACHINERY
PARKING.
Carpark
Existing Maintenance
Building retained
as current use.
Straw bale
barrier to
be replaced
with steel
grate
WESTERN
PACKAGING BUILDING
Creek
Abernethy's
Existing Building
To be demolished.
SITE FENCING.
EXISTING BARRIER WALKWAY
EXIT
ENTRY
APPROX
BUND
PED BRIDGE
Straw bales and
kikuyu turf
on bare soil batter
above creek.
SUB/STN
MANILDRA
GROUP
MANILDRA - SHOALHAVEN STARCHES PTY LTD
PROPOSED DRYER LOCATION
BOMADERRY PLANT DRYER PLAN VIEW
DEMOLITION OF EXISTING BUILDING
A3
8760
MN760-008

ANNEXURE 8

ANNEXURE 8

Risk Assessment
for Proposed Demolition Works

prepared by

All Construction Engineering

Telephone :(02)4274 8003
Facsimile: (02) 4274 8005
Email info@allcon.com.au

ABN 91 089 195 899
All Construction Engineering

Bay A Bakers Lane,
Kemblawarra,
NSW, 2505

Risk Assessment

Project Title: New Dryer Site Preparation						Date: September 2015		
Site Address: Manildra Bomaderry						Client: Manildra Group		
Job Description: Demolition of Redundant Workshop / Warehouse								
Hazard Identified	**Possible Consequences**	**Con's**	**Likely**	**Risk Score**	**Safety Measures**	**New Con's**	**New** Likely	**New Risk Score**
Site Set Up Unloading trucks Using Fork lift / crane	Shifting loads Falls Crush injuries. Damage to equipment ***Training Needs*** Relevant RTA Lic National LF qualification Rigger / Dogman Loading and Unloading Trucks ACE-SOP-OHS-018 Semi Trailer ACE-SOP-OHS-057 Hiab ACE-SOP-OHS-052 Mobile Equipment and Forklift Safety ACE-SOP-OHS-017	4	C	H	Under no circumstances are persons permitted to access back of trucks unless fitted with recognized access points and hand rails Check to ensure loads are stable prior to releasing restraints Keep body out of firing line when releasing restraints Only qualified and authorised person to operate forklift Place loads in suitable areas away from walk ways If using crane all rigging of loads to be done from ground level Visually inspect lifting gear tools & equipment for apparent damage before use. Ensure good communications with crane driver, Be aware where crane hook is at all times	4	B	M

Manual Handling -Lifting - installing temporary fencing	Back Injuries, Strains	4	C	H	Identify potential pinch points Avoid lifting in difficult positions. Use mechanical lifting aids. Ask for assistance from another member of work crew Keep fingers limbs clear of suspended load. Visually inspect lifting gear tools & equipment for apparent damage before use.	4	B	M
	Pinch points	3	C	M	Select suitable gloves for the task Keep fingers clear when moving, adjusting or lifting components Keep fingers out of firing line of crush zones	3	A	L
	Crush Injury ***Training Needs*** Manual Handling Hand Safety	4	C	H	Keep People clear of Loads. Keep body parts out of line of fire Don't stand between load and solid structures	4	A	M
Stored Energy	Electric Shock Exposure	4	D	H	Ensure isolation is complete and verified on all services	4	A	M

Telephone :(02)4274 8003
Facsimile: (02) 4274 8005
Email info@allcon.com.au

ABN 91 089 195 899
All Construction Engineering

Bay A Bakers Lane,
Kemblawarra,
NSW, 2505

Removal of the Roof

Hazard Identified	Possible Consequences	Con's	Likely	Risk Score	Safety Measures	New Con's	New Likely	New Risk Score
Removal of Wall sheeting	Falling material Nicks/cuts	3	C	M	Demarcated no go zones around tower while removing sheeting. Tool lanyards to be used Correct PPE to be worn when removing sheeting **(Gloves are a must)** Sheeting to be removed only in calm weather conditions	3	A	L
Working at heights	Falls to the ground ***Training Needs*** National EWP Accreditation Working at heights training	4	C	H	Ensure persons involved are adequately trained in working at heights Select most suitable method of access Working from a ladder is prohibited Use of an EWP by qualified person only Inspect unit daily Ensure unit is set up on a flat stable area When using an EWP persons working in basket must be harnessed and attached at all times Static lines to be set up in areas not accessible from EWP's Ensure the crew has a rescue plan in place	4	B	M
	Slips, trips and falls	3	C	M	Place all material directly into designated scrap bin	3	A	L

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Hazard Identified	Possible Consequences	Con's	Likely	Risk Score	Safety Measures	New Con's	New Likely	New Risk Score
	Falling objects ***Training Needs*** Working at Heights and Below ACE-SOP-OHS-013 Barricading and Flagging ACE-SOP-OHS-006	4	C	H	Keep bolts & nuts in suitable container Use Tool lanyards Barricade area below Appoint ground watcher when required	4	B	M
Remove Sarking / mush and timber purlins	Equipment Failure Damage to plant Falls from Heights ***Training Needs*** National EWP Accreditation Working at heights training	4	C	H	Demarcated no go zones around tower while removing Only Qualified and authorised persons to operate Inspect equipment daily in accordance with manufactures guidelines Set machine on level ground of suitable compaction Only tools and equipment to be taken in basket Safety harness must be worn with 100% connection Be aware of power lines in area Be aware and keep body clear of crush zones Place tools and fasteners in suitable container Barricade area around boom lift and below work area Use watcher / walker when moving machine around site Equipment undertaken intro to site	4	B	M

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	Personal injury / cuts abrasions Dust	3	C	M	Select suitable gloves for the task Keep fingers clear when moving, adjusting or lifting components Hard hat to be worn at all times Suitable breathing apparatus may be required	3	B	M
	Slips, trips and falls	3	C	M	Place all material directly into designated scrap / waste bin Stack & Strap timber in allotted area	3	A	L

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Remove Steel Roof Trusses / Roller doors etc.	Shifting loads Falls Crush injuries. Damage to equipment ***Training Needs*** Relevant RTA Lic National crane qualification Rigger / Dogman Accreditation	4	C	H	Only qualified and authorised person to operate Crane Identify suitable area to store roof Visually inspect lifting gear tools & equipment for apparent damage before use. Ensure good communications with crane driver, Be aware where crane hook is at all times Equipment has undergone intro to site Check to ensure loads are stable prior to releasing restraints Keep body out of firing line when releasing restraints Ensure No go zone in place when lifting roof, Exclusion zones to be demarcated Spotter to be used on the ground SWMS to be developed and followed when removing the roof Crane lifts are only to be carried out in calm weather conditions Lift study to be completed before lifts are carried out	4	B	M

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Hot work - Oxy Cutting	Fire, Burns, explosions. ***Training Needs*** Oxy cutting ACE-SOP-OHS-009 Trades Hotwork ACE-SOP-OHS-008 Fire Safety Training ACE-SOP-OHS-007	4	B	H	Inspect Gas Cutting equipment daily (refer ACE-F-OHS-043) Ensure Bottles are in an upright position and suitably secured Check flash back arrestors are fitted at bot torch and regulator end Route hoses away from walkways / work area Ensure area is clear of combustible material / gases. Have fire fighting equipment available on site. Wear correct PPE for task Use screening / blankets to shield sparks Be aware of other workers / groups in general area	4	C	M
Hot Work Grinding	Personal injury Electric Shock ***Training Needs*** Grinding ACE-SOP-OHS-011 Hotwork ACE-SOP-OHS-008 Fire Safety Training ACE-SOP-OHS-007	3	D	H	Inspect prior to use (refer ACE-F-OHS-038) Ensure current inspection tag is fixes Use Earth leakage box Suspend leads on suitable insulated hooks away from walk ways Don't use in damp areas Use double eye protection Shield sparks Communicate with other work groups	3	A	L

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Using pneumatic tools	Personal injury Injury to others Noise Trip and falls	3	C	M	Conduct daily inspections of air compressor in accordance with manufactures guide lines Ensure air hoses are in good condition and have safety pins / lanyards attached Use locking pins on impact sockets Hearing protection must be worn Route hoses away from walkways / work area Wear correct PPE for task Be aware of other workers / groups in general area	3	A	L
Electrical leads/Equipment Construction leads	Electrocution ***Training Needs*** Electrical Safety	4	C	H	Ensure all power is provide with earth leakage protection (ELP). Ensure leads are run no more than 30m and are kept off the ground outside the immediate work area. Provide insulated lead hooks. Ensure all electrical equipment has been tested and tagged for the current month.	4	B	M

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Manual Handling -Lifting	Back Injuries, Strains	4	C	H	Identify potential pinch points Avoid lifting in difficult positions. Use mechanical lifting aids. Ask for assistance from another member of work crew Keep fingers limbs clear of suspended load. Visually inspect lifting gear tools & equipment for apparent damage before use.	4	B	M
	Pinch points	3	C	M	Select suitable gloves for the task Keep fingers clear when moving, adjusting or lifting components Keep fingers out of firing line of crush zones	3	B	M
	Crush Injury ***Training Needs*** Manual Handling Hand Safety	3	C	M	Keep People clear of Loads. Keep body parts out of line of fire Don't stand between load and solid structures	3	B	M
Slips Trips and Falls - Scrap material Lying around	Sprains, Breaks.	3	C	M	Keep leads and hoses away from walkways Endeavour to clean up and place scrap in scrap bins daily	3	A	L

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Noise - Construction Equipment	Hearing Loss ***Training Needs*** Use of hearing protection	2	D	M	Provide ear muff or plugs to personnel operating noisy machinery. Also provide hearing protection to the personnel working around this equipment. In any event excessively noisy equipment will be removed from site.	2	B	L
Dust and Flying Particles	Eye Injuries ***Training Needs*** Use of eye protection Use of Respiratory Protection	3	C	M	Wear safety glasses as a minimum. Consider using full face shields Water down yard on windy days	3	B	L

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Demolish Brick / concrete walls **Using excavator**	Equipment failure Falling objects Injury to operator Dust ***Training Needs*** Experienced / competent excavator operator	**4**	**C**	**H**	Inspect equipment prior to use Exclusion area to be cleared prior to commencement Watchers to be in suitable locations Operator to stay within cabin of excavator Ensure Boundary fence is suitably placed to protect people / equipment in the area (**Note** it will be required to move materials an relocate temporary fencing adjacent to the Western Packaging building when working in this area) Hose down area if required Wear appropriate breathing apparatus if / when required	4	A	M

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Load out Rubble	Truck Movements Excessive Noise Interaction ***Training Needs*** Suitable RTA HV licence	4	C	H	Ensure loads are covered and with-in load limits of vehicles and roads to be travelled. Trucks to stay on designated route to disposal area Watcher to be assigned when moving through high pedestrian area's If noise is excessive, hearing protection must be used Be aware of what other work groups are doing Exclusion zone to be established around loading area	4	A	M
Environment	• Spills to ground / storm water • Waste • Noise • Fumes / Smoke • Dust	**4**	C	**H**	All plant and equipment inspected prior to entering site Spill kit to be kept on hand during dismantling All open drains to be suitably bunded All waste to be place in correct bin with all recyclable material separated. Noise to be kept to a minimum with work proceeding during prescribed hours An adequate number of fire extinguishers / hose reels to be kept in the area to extinguish fires during hot work Hose down area during brick wall demolition	4	A	L

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Risk Assessment Table (Guide Only)

RISK SCORE		CONSEQUENCE				
		1	2	3	4	5
LIKELYHOOD	E	M	M	H	E	E
	D	M	M	H	H	E
	C	L	M	M	H	E
	B	L	L	M	M	H
	A	L	L	L	M	H

RISK LEGEND
E=Extreme
H=High
M=Medium
L=Low

CONSEQUENCE TABLE			
	Safety		**Environment**
5	Fatality or permanent disability	**5**	Toxic release off site with detrimental effect
4	Lost time injury or illness	**4**	Off site release with no detrimental effect
3	Medical treatment	**3**	Off site release contained with outside assistance
2	First-Aid treatment	**2**	On site release immediately contained
1	Incident report only	**1**	No environmental impact

LIKELIHOOD TABLE		
E	Almost Certain	1 / 10
D	Likely	1 / 100
C	Moderate	1 / 1000
B	Un likely	1 / 10,000
A	Rare	1 / 1000,000

EXTREME / HIGH RISK = Stop job and notify Maintenance manager, incident report & enter into risk register. **MEDIUM RISK =** Supervisor must sign off before work starts.

Hierarchy of Control:

Highest level of Control – **Elimination ➖▶ Substitution ➖▶ Engineering ➖▶ Administration ➖▶ PPE -** *Lowest Level of Control*

NOTE: The above 'Hierarchy of Controls' must be considered and applied as part of the risk assessment process. Where ELIMINATION cannot be reasonably applied then, SUBSTITUTION, ENGINEERING, ADMINISTRATION & PPE can be considered as preferred controls in descending order.