

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

**SHOALHAVEN STARCHES
PROPOSED MODIFICATION IN RELATION
TO LOCATION, DESIGN AND FOOTPRINT
OF THE DDGS PELLETISING PLANT
PROJECT APPROVAL MP 06_0228**

Prepared for

Shoalhaven Starches Pty Ltd

February 2014



Prepared by:

COWMAN STODDART PTY LTD

ENVIRONMENTAL ASSESSMENT

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PROJECT APPROVAL MP 06_0228

Ref. 07/31

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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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31 Kinghorne Street
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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 62 DP 1078788

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

Proposed Modification to Project: Proposed modifications to DDGS Pelletising Plant as approved under the Project Approval (MP 06_0228) to alter the location, footprint and design of the DDGS Pelletising Plant from that originally approved.

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: 17th February 2014

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EXECUTIVE SUMMARY

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

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

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 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” 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 has enabled Shoalhaven Starches to increase its ethanol production in a staged manner at its Bomaderry Plant 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 installation of a Dried Distiller Grain Solids (DDGS) Pelletising Plant within the factory site.

Following detailed engineering design investigations Shoalhaven Starches have identified that the approved footprint, design and location of the approved DDGS Pelletising Plant is required to be modified to that which was originally approved. The proposed DDGS Pelletising Plant is

required to be relocated slightly; its overall height increased slightly; and its overall footprint on the site will need to be increased from that originally approved.

These modifications to the DDGS Pelletising Plant however do not involve any increase in the overall amount of DDGS product that will be produced from the site; nor will it involve any change in the level of emissions from the site.

The modifications to the DDGS Pelletising Plant will not result in any increase in the capacity of the plant or production capability. The modifications merely reflect a more refined engineering design investigation that has occurred since the submission of the original Project Application back in 2009.

The “Shoalhaven Starches Expansion Project” 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 Infrastructure;
- Shoalhaven City Council.

In a meeting with the Director-General of Planning & Infrastructure and Departmental staff on the 6th February 2014 we were advised that this modification was considered to be a “minor” modification. Formal Director-General Requirements for the preparation of this EA were considered by the Director-General as unnecessary. Under these circumstances it was indicated that the Modification Application should be supported with basic background information in relation to the proposed modification to the DDGS Pelletising Plant.

This Environmental Assessment has been prepared to provide background information in relation to the proposed modification and outline the proposed modification and its implications in relation to the original approved development.

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 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 increase in ethanol production associated with this Project Approval also required a range of upgrading works to be undertaken to the “Stillage Recovery Process”. The Stillage Recovery process is a system whereby suspended and soluble solids are removed from the waste water associated with the ethanol production process. Following processing these solids or Dried Distiller Grain Solids (DDGS) are marketed as a feed for livestock, thereby value adding to what would otherwise be a waste stream from the overall production process.

The Shoalhaven Starches Expansion Project included a proposal to install a DDGS Pelletising Plant, which consisted of a series of bins and mills which would process the loose granular DDGS into a pellet form.

Processing DDGS into a pellet form provides greater flexibility to meet market (and in particular export market) demand for this product.

The Pelletising Plant was also recognised by the Environmental Audit that was undertaken separately by GHD (October 2007) and which supported the EA for this project as potentially reducing fugitive odours and dust emissions that were associated with the handling and storage of granular DDGS.

Until present however the DDGS Pelletising Plant has not yet been installed as market circumstances did not justify the expenditure required to install this plant.

The company has now successfully identified significant new international and domestic market opportunities for the DDGS Pellet product. It therefore wishes to proceed as expeditiously as possible to install the DDGS Pelletising Plant to secure these new value added business opportunities.

Further detailed engineering design investigations carried out by the company of DDGS Pelletising Plant designs both in Australia and overseas have however concluded that the optimum location, design and footprint of the plant on the site however would need to differ slightly from that currently approved as part of the MP 06_0228.

The modified proposal however will not involve any intensification or increase in production from the site. Nor will it involve any increase in emissions from the site. In effect the modified proposal will be consistent with the existing approval for this project.

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 **Plate 1**).



Plate 1: Aerial view 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

<i>Lot</i>	<i>Deposited Plan (DP) / FP.</i>
Factory	
1	838753
A	334511
B	334511
B	376494
62	1078788
201	1062668
1	385145
241	1130535
Packing Plant	
16	1121337
2	538289

Table 1 (continued)

Lot	Deposited Plan (DP) / FP.
Wastewater Treatment Plant & Environmental Farm	
4	610696
	131008
1	842231
2	842231
3	235705
1	235705
2	235705
Part 2	854837
4	1109510
22	811233
164	4469
2	854764
210	6131
211	6131
PT 212	6131
213	6131
214	6131
248	6131
2	955009
42	751268
63	751268
PT 2	854837
3	1109510
2	1109510
1	1109510
2	833181
Overhead Bridge – Bolong Road Reserve	
2	538289
Fire Services	
241	1130535

The proposed DDGS Pelletising Plant is to be sited on Lot 62 DP 1078788, within the western part of the factory site.

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 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.

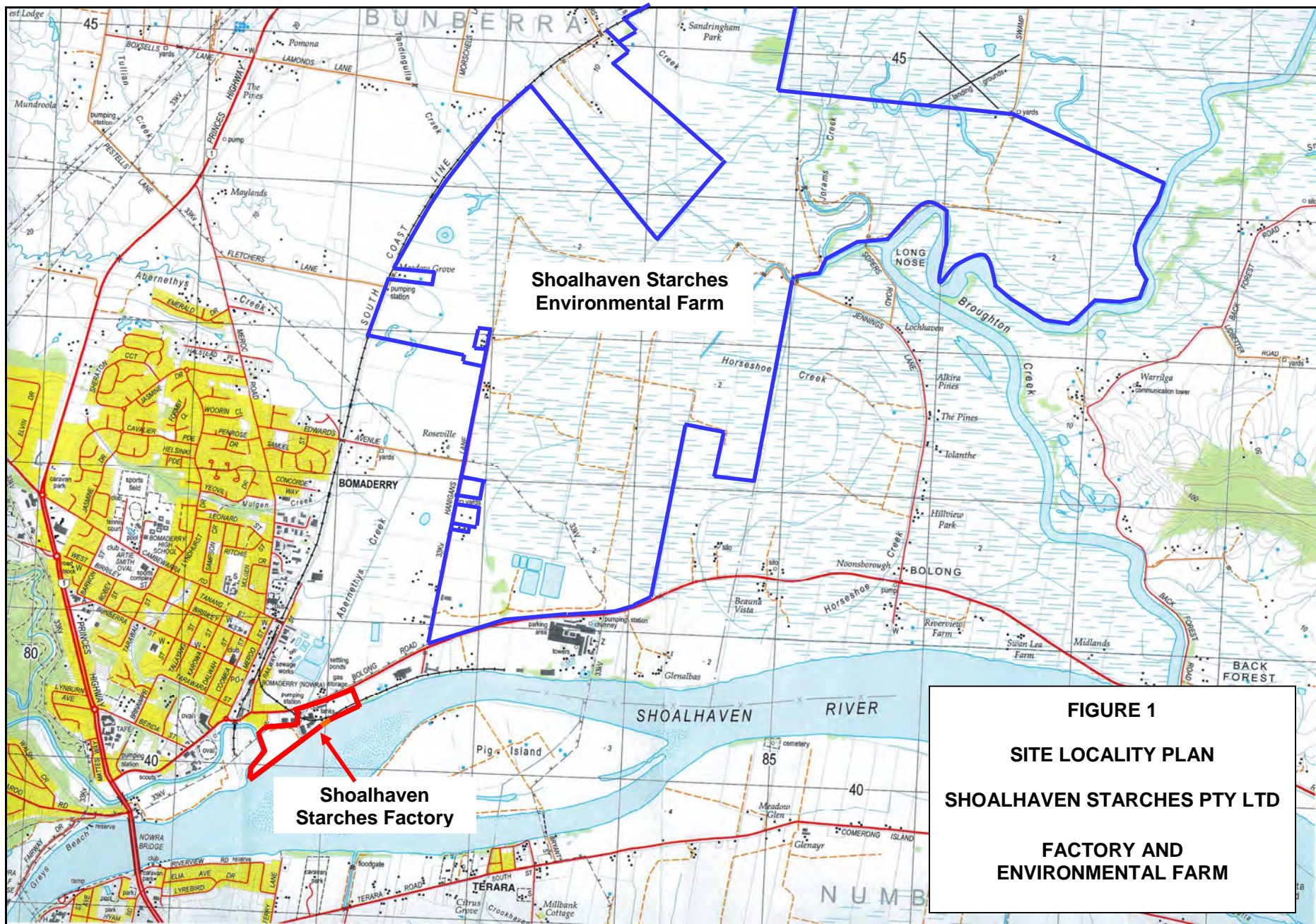
The Company also has an Environmental Farm located over 1000 hectares on the northern side of Bolong Road. This area is cleared grazing land and contains spray irrigation lines and wet weather storage ponds (total capacity 925 Mega litres). There are at present 6 wet weather storage ponds on the farm 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 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 1 is a site locality plan depicting the location of the factory site and Environmental Farm as well as the surrounding locality.

Figure 2 is a plan of the existing factory site depicting the layout of existing plant on the site as well as plant that has been previously approved as part of the Shoalhaven Starches Expansion Project (MP 06_0228). This figure shows the location of the DDGS Storage area including the proposed DDGS Pelletising Plant.

Plate 1 provides an aerial view over the factory site.



[illegible]

FIGURE 2: Site Plan Depicting Proposed Additions to Factory Site.

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 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.

The starch that is separated from the flour is either dried or remains in liquid form. The dried and liquid starch is sold to the paper and food industries. The starch is used for food, cardboard, paper and other industrial purposes. 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 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 waste 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. 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 used entirely in the production of ethanol and DDG. 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 KI from the town water supply, and 4300 KI from a raw water supply provided by Shoalhaven City Council via a pipeline from the 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 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 (to be further discussed in Section 4.1 of this report), 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 have subsequently received the following development approvals:

- The establishment of a flour mill on the factory site. This proposal provides for the transportation of wheat 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 undertook 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.

The Project Approval required that the DDGS Pelletising Plant comprise one of the mandatory odour controls referred to in Appendix 3 of the Project consent conditions. The Project Approval was however subsequently modified (MOD1 dated 30th September 2011) which removed the requirement to install the DDGS Pelletising Plant as one of the mandatory odour controls; rather the plant was added to a list of additional odour controls as part of the Project Approval.

3.6 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.

4.0 DESCRIPTION OF PROPOSAL

4.1 WASTE WATER TREATMENT AND DISPOSAL – STILLAGE RECOVERY

The 2003 approval by the Minister for Planning of the Company's Pollution Reduction Program No. 7 introduced a Stillage Recovery process into the production process at the plant. Stillage recovery essentially seeks to remove suspended and soluble solids from the Company's waste water system.

This process includes the use of decanters, evaporators and DDGS dryers.

Decanters are essentially mechanical separation devices, which operate by centrifugal separation process that separates out the unfermented suspended solids in stillage, ie. the waste liquid left over from the distillation of ethanol (refer **Plate 2**). The increase in ethanol production will require the installation of an additional 10 decanters in a new purpose built building to the west of the site.

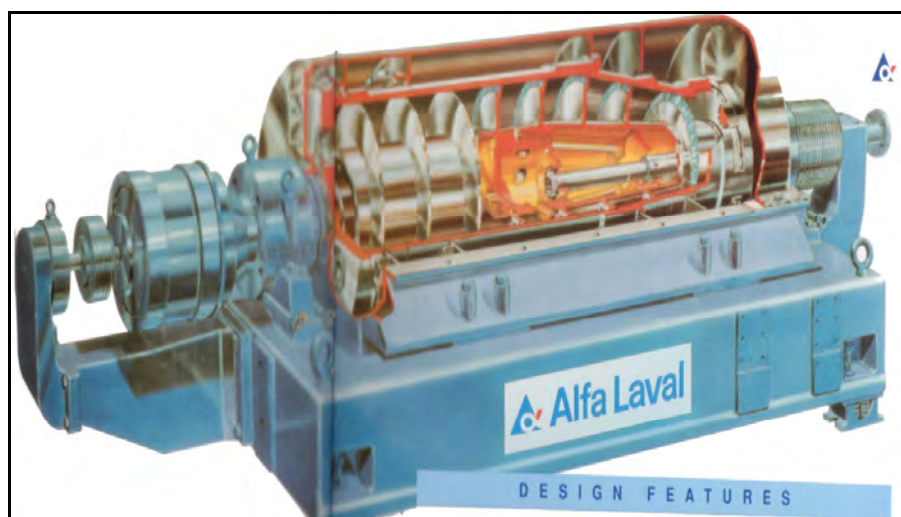


Plate 2: Decanter.

Evaporators (**Plate 3**) are designed to reduce the water content of “thin” stillage after it passes through the decanters and the coarse solids are removed. The evaporators operate by mechanical vapour recompression. The thin stillage from the decanters is fed into tubes within the evaporator and heated by recompressed steam. The water within the overflow is heated to a point where the water evaporates and is separated from the remaining solids, which remain as syrup. The liquid (ie. condensate) is captured and directed to the Environmental Farm for irrigation.



Plate 3: Existing Evaporator.

The evaporation plant located at the factory has sufficient capacity to accommodate the increase in production of ethanol associated with the Shoalhaven Starches Expansion Project. Only one additional evaporator was required to be erected within the existing evaporation plant to accommodate the Shoalhaven Starches Expansion Project.

The syrup product is directed to DDGS dryers for further drying (refer **Plate 4**). The DDGS dryer is essentially a barrel in which a bundle of steam heated tubes are rotated at low speed. Evaporator concentrate (syrup) and decanter concentrate (wet insoluble solids) are fed into one end of the barrel and traversed through to the other end by shovels. Heat from the tubes removes moisture.

Dried DDGS is removed from the barrel and conveyed to the storage room for loading into trucks.

The increase in ethanol production as a result of the Shoalhaven Starches Expansion Project required the installation of 6 additional DDGS dryers with the associated 10 new decanters to be installed within the western portion of the site. The new plant associated with the stillage recovery process increases dry DDGS product from the current approved 2030 tonnes per week to 6400 tonnes per week.



Plate 4: Existing Dryer.

The six (6) new dryers and associated decanters have been fitted with the required equipment to meet statutory emission requirements for particulate and odour emissions.

The product from the drying process results in a dry product that is sold for use as stock feed.

The increase in DDGS product required the existing DDGS load-out to be extended to enable the storage of the additional product.

The equipment is housed in a new building located to the west of the existing DDG plant area. The building is maintained under slight negative pressure in order to minimise fugitive odour emissions from the building.

Discharges to air from the dryers, decanters and associated equipment are collected and ducted to a biofilter for treatment. The biofilter is situated adjacent the building housing the dryers and associated equipment.

The Shoalhaven Starches Expansion Project included approval to build a DDGS Pelletising Plant, which provides the Company with greater flexibility to meet market demand (particularly export) for this product.

It should also be noted that the installation of a DDGS Pelletising Plant was one of the recommendations of the Environmental Audit on the basis that it would reduce fugitive

odour and dust emissions currently associated with the handling and storage of the granular DDG product.

The DDGS Pelletising Plant will consist of:

- A pellet mill, housed in an extension to the existing DDG storage area. The pellet mill machinery would include two discharges (through baghouses), each with a discharge rate of approximately 500 m³/min.
- An internal mill conveyor under negative pressure and vented through a baghouse at a discharge rate of approximately 12 m³/min.
- An enclosed product conveyor to transport the pelletised DDG from the pellet mill to the existing DDG storage facility; and
- A pellet out-load system, which would be aspirated through a baghouse with a nominal discharge rate of approximately 20 m³/min.

Given the potential for offensive odour emissions from the DDGS plant process, air emissions from the above discharge points will be ducted to the approved biofilter.

Essentially the Pelletising Plant would process granular DDGS material into pellets to better enable this product to meet export demand. The existing granular DDGS material is more suited to domestic markets. The processing of this granular material into pellets enables the Company to export this material overseas during periods when the local demand for DDGS is reduced. This proposal essentially seeks to provide greater flexibility for the processing of DDGS on the site to meet the demands of both the local and export markets.

The Pelletising Plant provides an alternative means of processing the DDGS material that is processed on the site into a modified form of the product for re-sale and re-use.

Essentially DDGS that would otherwise be directed to the DDGS load out as granular material will be able to be re-directed to the Pelletising Plant.

4.2 SECTION 75W OF THE EP&A ACT

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

75W Modification of Minister's approval

(1) *In this section:*

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

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

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

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

In this regard initial consultation with staff from the Department of Planning & Infrastructure have indicated that this modified proposal is considered to be a "minor" modification. Under these circumstances the Director-General of Planning has determined that there is no need for formal requirements to be issued with respect to the preparation of an Environmental Assessment for this Modification Application.

4.3 PROPOSED MODIFICATION

This application seeks the Minister's approval to modify MP 06_0228 by modifying the location, design and footprint of the proposed DDGS Pelletising Plant.

Annexure 1 to this report are a set of plans detailing the location of the approved location and footprint of the DDGS Pelletising Plant; and the modified footprint and location as proposed by this Modification Application. These plans also provide elevation details providing a comparison between the original approved plant and the current modified proposal.

It is evident from a review of these plans that:

- The proposed modified DDGS Pelletising Plant is to be located slightly further south by 19 metres compared to that which was originally approved.
- The footprint of the original DDGS Pelletising Plant as shown on the approved plans comprised an area of 224.5 m²; whereas the footprint of the modified proposal will be 600 m².
- The original elevations that were approved by the Project Approval showed the DDGS Pelletising Plant as having a height above ground level of 21.6 metres; whereas the modified proposal will have a height of 28 metres.

The proposed modification to the DDGS Pelletising Plant have come about following engineering design investigations carried out by the company of DDGS Pelletising Plant designs both here in Australia and overseas. These investigations have identified that the optimum location, footprint and design of the plant on the site would need to differ slightly from that currently approved as part of the MP 06_0228.

The modified proposal however will not involve any intensification or increase in production from the site. Nor will it result in any changes to emissions from the site from that which was originally approved. In effect the modified proposal will be consistent with the existing approval for this project.

5.0 CONSULTATION

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

- Department of Planning;
- Shoalhaven City Council;

Shoalhaven Starches have consulted with staff from the Department of Planning & Infrastructure (including the Director-General) with respect to this proposal. The Director-General agreed that the proposed modification was a “minor” modification and therefore did not require the preparation of formal requirements for this Environmental Assessment. Furthermore staff from the Department have indicated that they will only need to consult with Shoalhaven City Council; and that any public exhibition period will be limited to between 10 to 14 days.

Shoalhaven Starches staff have also discussed the proposed modification with staff from Shoalhaven City Council (Mr Russ Pigg – General Manager, Mr Tim Fletcher, Director – Development & Environment Services and Mr Robert Russell – Development Manager) on the 20th February 2014. No issues of concern were raised by Council to this modification proposal.

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 2**) compares the potential impacts from the proposed modification against the approved project. The comparison uses the key environmental impacts assessed in the EA and summarises the relative change in environmental impacts associated with the proposed modification.

Table 2
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	<p>One of the primary issues that was addressed in the original EA for the Shoalhaven Starches Expansion Project concerned the need for a comprehensive odour assessment and reduction of odours as part of the project.</p> <p>The original Environmental Audit undertaken by GHD Pty Ltd in relation to the site; and the subsequent EA for the Expansion Project both identified that the pelletising of DDG Product had the potential to reduce odours generated from the site. The original Project Approval required the implementation of the Pelletising Plant as a mandatory odour control.</p> <p>This requirement was subsequently modified as part of MOD1 approved by the Minister on the 30th September 2011 in which the need for the pelletising plant was removed from the mandatory odour controls and included with other odour controls provided a range of alternative odour controls were implemented including:</p> <ul style="list-style-type: none"> • Installing Moduflex Bellow Feeders and dust extractors on the DDG load chute; • Extending and enclosing the load out shed with motorised doors; • Ducting the Palmer Cooler discharge stack and DDG Recovery Plant emissions to the boilers for odour destruction; and • Ducting air from the DDG Evaporator to the bio-filter. <p>The installation of the DDGS Pelletising Plant however will be consistent with the "Other Odour Controls" identified in the Project Approval for this project. The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant will however have no adverse impact on overall odours generated from the site; indeed it is consistent with the terms of the Project Approval which seek to reduce odours generated from the site.</p>	No additional management or mitigation measures proposed	Not a key Issue

Table 2 (continued)

Issue	Relative Change in Environmental Impact	Additional Management or Mitigation Measures Required	Significance of Issue with this Modification Proposal
Greenhouse Gas Emissions	The proposed modification of the DDGS Pelletising Plant will have no impact in terms of greenhouse gas emissions emitted from the site. The original Greenhouse Gas Assessment prepared by GHD and which supported the original EA did not specifically identify the pelletising of DDGS as a significant contributor to greenhouse gas emissions. No change in environmental impacts from that originally identified in EA.	No additional management or mitigation measures proposed.	Not a key Issue.
Wastewater Treatment	The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant will not result in any change to the amount of wastewater generated from the site nor that will require treatment. No change in environmental impacts from that originally identified in EA.	No additional management or mitigation measures proposed.	Not a key Issue.
Effluent Irrigation and Storage	The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant will not result in any change to the amount of wastewater generated from the site and that will require to be irrigated 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	The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant will have no additional environmental impact in terms of: <ul style="list-style-type: none"> • Water supply • Stormwater management • Acid sulphate soils • Site contamination No change in environmental impacts from that originally identified in EA.	No additional management or mitigation measures proposed.	Not a key Issue.

Table 2 (continued)

Issue	Relative Change in Environmental Impact	Additional Management or Mitigation Measures Required	Significance of Issue with this Modification Proposal
Noise	<p>The original Noise Impact Assessment that accompanied the EA identified that the DDG Pelletising Plant will be housed within a building constructed of Ultra Panels having an Rw of not less than 35. Furthermore any equipment that has a sound power level above 90 db(A) is required to be enclosed in a separate room with walls and ceiling / floor having an Rw of not less than 40. The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant will have no additional environmental impact in terms of noise generated from the site.</p> <p>No change in environmental impacts from that originally identified in EA.</p>	No additional management or mitigation measures proposed	Not a key Issue
Transport & Traffic	<p>It is anticipated that the transportation of DDG product will generate the same number and type of heavy vehicles to the local traffic network whether in pellet or non-pellet form. As a result, the proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant would not alter the vehicle generation of the site, or by association result in any adverse impacts on the local road system.</p>	No additional management or mitigation measures proposed	Not a key Issue.
Hazards	<p>The proposed DDGS Pelletising Plant was not identified by the Preliminary Hazard Analysis undertaken by GHD Pty Ltd. that supported the original EA document as comprising a source of major hazard associated with the Shoalhaven Starches Expansion Project and was therefore not considered in detail as part of this assessment. The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant will not raise any additional issues with respect to hazards and risk associated with the site. No change in environmental impacts from that originally identified in EA.</p>	No additional management or mitigation measures proposed	Not a key Issue

Table 2 (continued)

Issue	Relative Change in Environmental Impact	Additional Management or Mitigation Measures Required	Significance of Issue with this Modification Proposal
River bank stability and Riparian Management	The proposed modification does not propose any works within the vicinity of the Shoalhaven River or any other watercourse. No change in environmental impacts from that originally identified in EA.	No additional management or mitigation measures proposed	Not a key Issue
Flooding	The DDGS Product Storage Shed and DDGS Pelletising Plant were included in the original flood assessment for the site carried out by Webb McKeown & Associates. The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant will not raise any specific additional issues in terms of flooding risk associated with the site. No change in environmental impacts from that originally identified in EA.	No additional management or mitigation measures proposed	Not a key Issue
Waste Management	The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant will not alter the level of waste that is required to be managed on site. The Waste Management Assessment carried out by Stephenson Environmental Management Australia (SEMA) did not identify the DDG Pelletising Plant as a significant contributor to the waste generation, nor did it specify any specific requirements for this component of the Expansion Project. The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant will not alter the way waste is managed on the site. No change in environmental impacts from that originally identified in EA.	No additional management or mitigation measures proposed	Not a key Issue

Table 2 (continued)

<i>Issue</i>	<i>Relative Change in Environmental Impact</i>	<i>Additional Management or Mitigation Measures Required</i>	<i>Significance of Issue with this Modification Proposal</i>
Visual Impact	The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant not have significant impact in terms of the scenic amenity of the locality. Whilst the modified DDGS Pelletising Plant will comprise a height of development which will be 6.4 metres taller than that originally approved, in context of the height of approved and existing development on the site; and given the bulk and scale of works within the vicinity of this plant it is not envisaged that this slight increase in height of the development will have a significant visual impact within the broader landscape. No change in environmental impacts from that originally identified in EA.	No additional management or mitigation measures proposed	Not a key Issue
Flora and Fauna	The DDG Product Storage Shed is located within the factory site which is devoid of vegetation. The original Flora and Fauna Assessment carried out by Kevin Mills & Associates for the Expansion Project did not identify any specific ecological constraints with this part of the site. The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant will not require any additional vegetation to be disturbed. 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	The DDGS Product Storage Shed and proposed Pelletising Plant are located within the factory site which was not previously identified by the EA for the Shoalhaven Expansion Project as an area subject to either Aboriginal or European cultural heritage significance. The original Aboriginal Archaeological Assessment that supported the EA prepared by South East Archaeology did not identify any constraints with respect to this part of the site or this project. The proposed modification to the location, footprint and height of the proposed DDGS Pelletising Plant will have no additional impact in terms of indigenous or non-indigenous heritage. No change in environmental impacts from that originally identified in EA.	No additional management or mitigation measures proposed	Not a key Issue

7.0 CONCLUSION

The “Shoalhaven Starches Expansion Project” 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 installation of a DDG Pelletising Plant as one of the mandatory odour controls of the Project consent conditions.

MOD1 of the Project Approval removed the requirement to install the DDGS Pelletising Plant as one of the mandatory odour controls and the plant was added to a list of additional odour controls.

To date the DDG Pelletising Plant has not been required to be installed as an additional odour control and accordingly the company had decided to defer the installation of the plant due to market and other commercial constraints.

Shoalhaven Starches have now been successful in identifying significant new international and domestic market opportunities for a pelletised DDGS product. It therefore wishes to proceed to install a DDGS Pelletising Plant to secure these new value added business opportunities.

Detailed engineering design investigations carried out by the company of DDGS Pelletising plant designs both in Australia and overseas have concluded however that the optimum location, design and footprint of the plant on the site will need to differ slightly from the current approved location. The modified proposal however will not involve any intensification or increase in production or emissions from the site. In effect the modified proposal will be consistent with the existing approval for this project.

This application is made pursuant to Section 75W of the Environmental Planning & Assessment Act 1979 and seeks to modify the location, footprint and design of the approved DDGS Pelletising Plant.

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

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

Following a comparison of the modified proposal to that originally approved having regard to the key issues originally identified associated 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

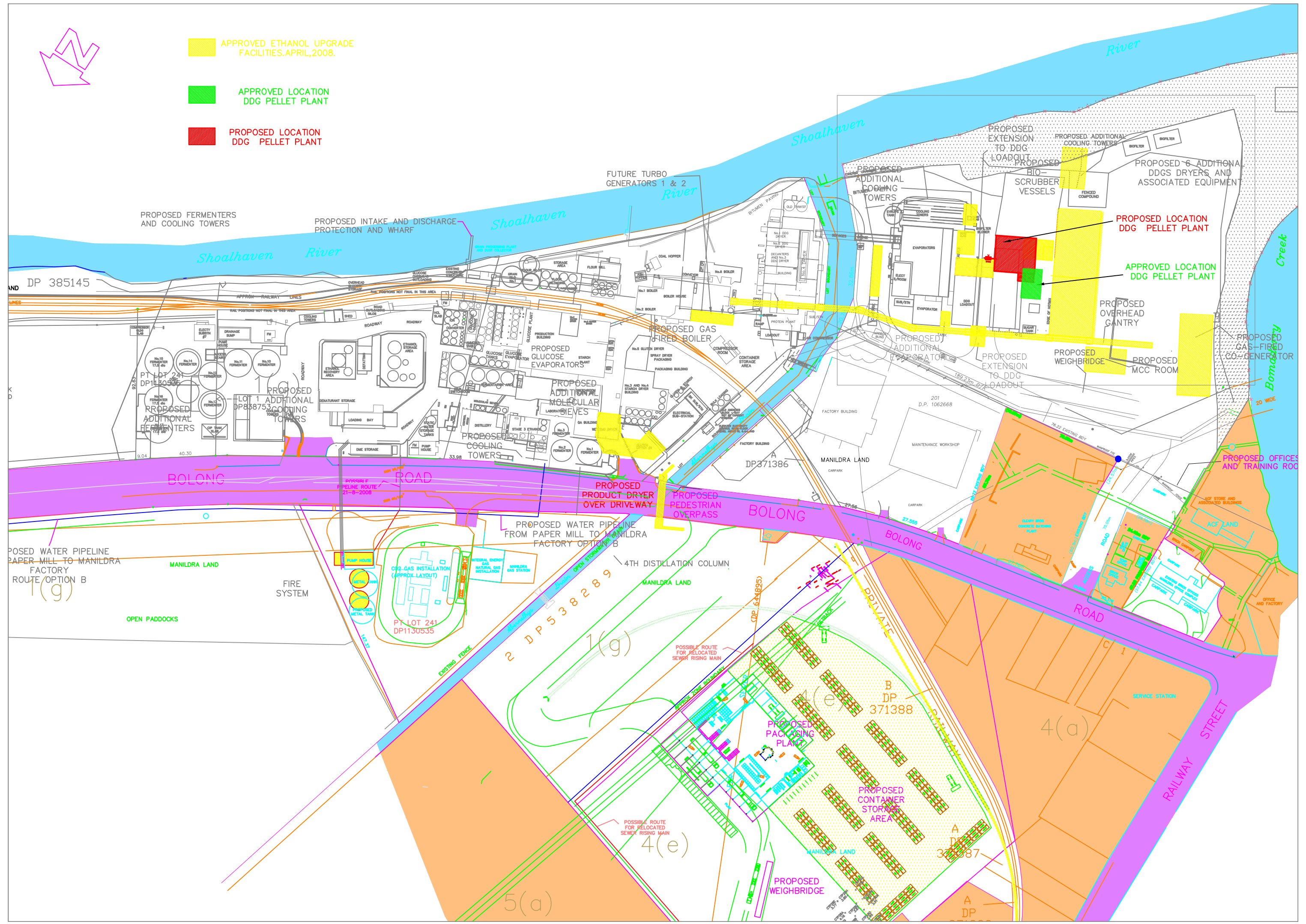
Plans of Proposed Modification to DDGS Pelletising Plant

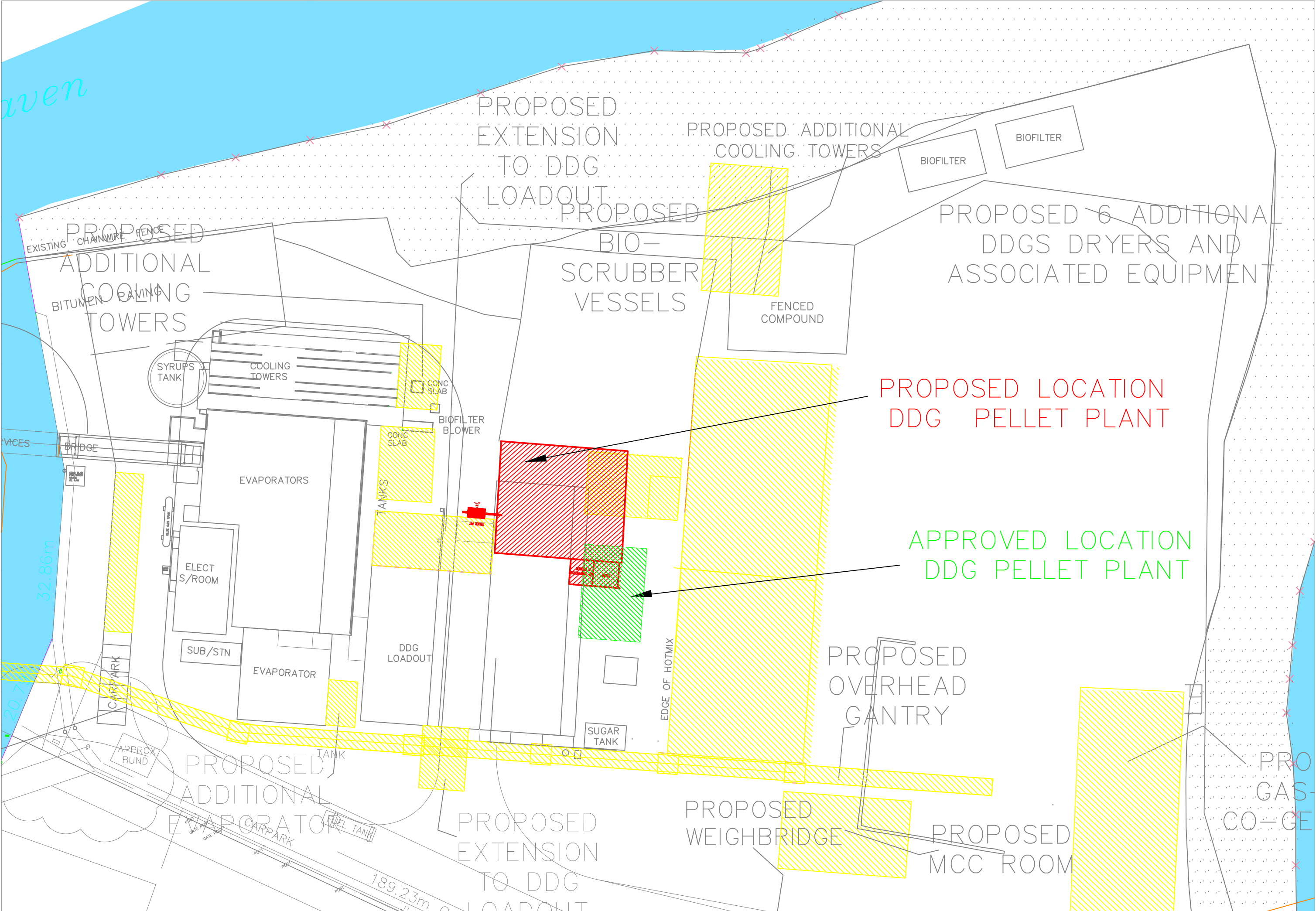


APPROVED ETHANOL UPGRADE FACILITIES, APRIL, 2008.

APPROVED LOCATION DDG PELLET PLANT

PROPOSED LOCATION DDG PELLET PLANT





aven

PROPOSED
EXTENSION
TO DDG
LOADOUT

PROPOSED ADDITIONAL
COOLING TOWERS

BIOFILTER

BIOFILTER

PROPOSED 6 ADDITIONAL
DDGS DRYERS AND
ASSOCIATED EQUIPMENT

PROPOSED
BIO-
SCRUBBER
VESSELS

FENCED
COMPOUND

PROPOSED LOCATION
DDG PELLET PLANT

APPROVED LOCATION
DDG PELLET PLANT

PROPOSED
OVERHEAD
GANTRY

PROPOSED
WEIGHBRIDGE

PROPOSED
MCC ROOM

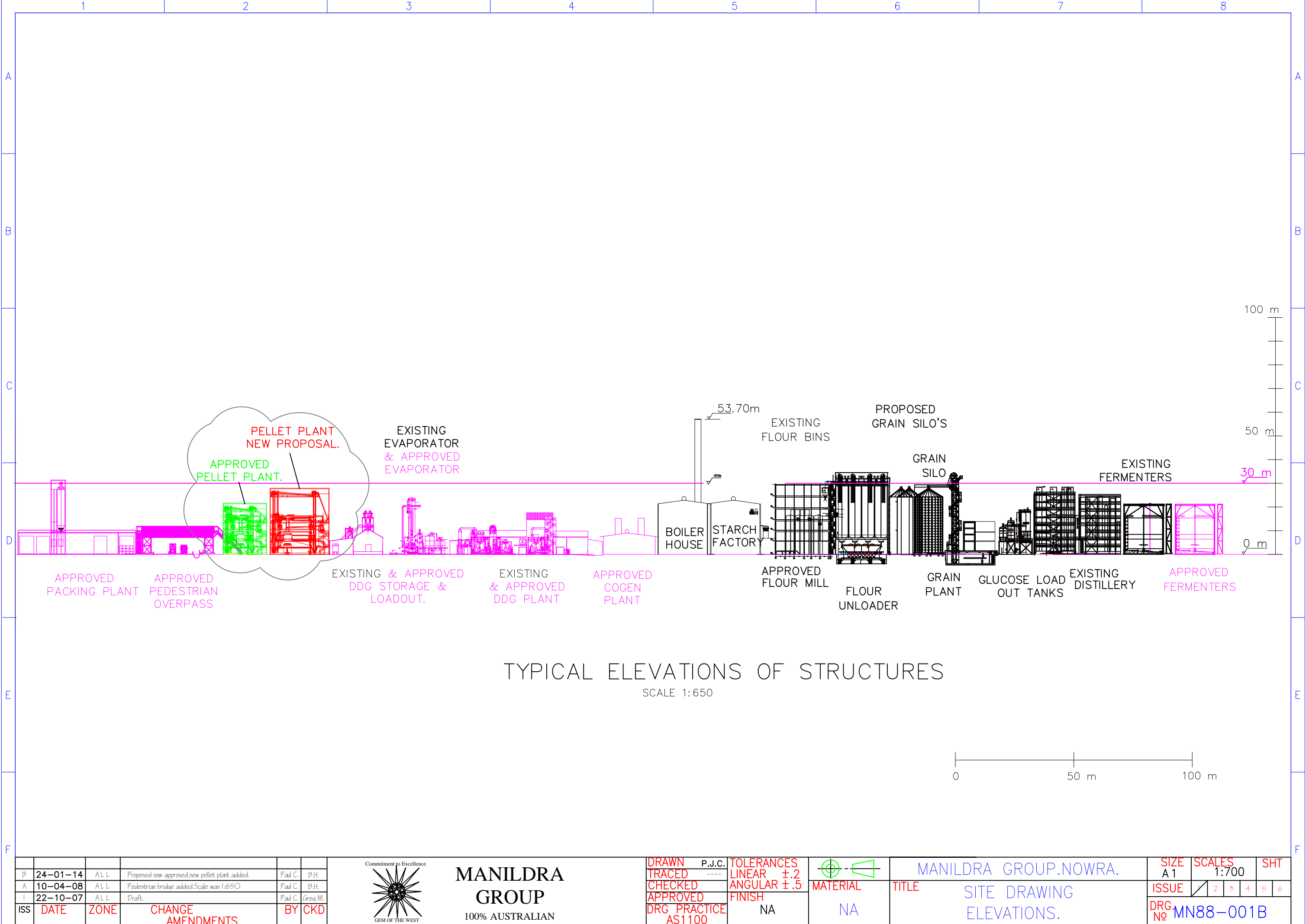
PRO
GAS-
CO-GE

PROPOSED
EXTENSION
TO DDG
LOADOUT

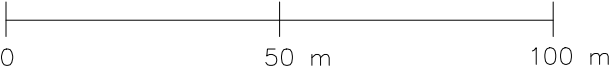
PROPOSED
ADDITIONAL
EVAPORATOR

32.86m
20.7m

189.23m



TYPICAL ELEVATIONS OF STRUCTURES
SCALE 1: 650



B	24-01-14	ALL	Proposed now approved, new pellet plant added.	Paul C.	B.H.
A	10-04-08	ALL	Pedestrian bridge added. Scale was 1:650	Paul C.	B.H.
I	22-10-07	ALL	Draft.	Paul C.	Greg M.
ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD

Commitment to Excellence

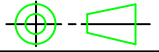


GEM OF THE WEST

MANILDRA GROUP

100% AUSTRALIAN

DRAWN	P.J.C.	TOLERANCES
TRACED	----	LINEAR $\pm .2$
CHECKED		ANGULAR $\pm .5^{\circ}$
APPROVED		FINISH
DRG PRACTICE		NA
AS1100		


MATERIAL
NA

MANILDRA GROUP.NOWRA.
TITLE
SITE DRAWING ELEVATIONS.

SIZE	SCALES	SHT
A 1	1:700	
ISSUE	2 3 4 5 6	
DRG No	MN88-001B	