

Shoalhaven Starches Expansion Modification 19

Traffic Impact Assessment

Manildra Group

1 September 2020



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1. INTRODUCTION

1.1 Background

Bitzios Consulting (Bitzios) has been engaged by Manildra Group to prepare a traffic impact assessment (TIA) for the proposed Modification 19 of the Shoalhaven Starches Expansion Project (SSEP) Approval (MP 06_0228). The existing development is located at 22 & 24 and No. 171 Bolong Road, Bomaderry as shown in Figure 1.1.



SOURCE: Nearmap

Figure 1.1: Site Location

1.2 Scope

The scope for the proposed development expansion assessment is as follows:

- Estimation of the development's traffic generation and the distribution onto the external road network
- Car parking assessment considering additional car parking spaces required to support the proposed expansion
- Assessment of proposed car parking facilities and modifications to heavy vehicle servicing areas
- Assessment of on-site pedestrian and cycling facilities and connectivity to the surrounding network within the vicinity of the site.

1.3 Approval History

The SSEP Approval was granted by the Minister for Planning on the 28th January 2009 and encapsulated previous approvals into one overall approval. The SSEP is a 'transitional Part 3A Project' for the purposes of Schedule 6A of the Environmental Planning & Assessment Act. The modifications to the SSEP MP 06_0028 that are relevant as part of this assessment are as follows:

- Modification 12 (date of approval: 01/09/2017) involved modifications to the existing Ethanol Distillation Plant to provide Beverage Grade Alcohol. Specifically, additional infrastructure to the ethanol distillery plant comprised of the installation of four 're-boiler' columns and associated equipment immediately to the east of the existing ethanol distillery plant
- Modification 16 (date of approval: 18/06/2019) involved a new speciality product processing facility, new gluten dryer, modifications to flour mills and on-site power generation facilities and other associated works. Bitzios have been previously engaged to provide a traffic impact assessment (*Reference: P3530.003R Shoalhaven Starches Expansion TIA Report, dated 09/05/2018*) as part of the approval for Modification 16
- Modification 17 (awaiting approval) includes the relocation of baghouse for starch dryer no.5, installation of service lifts for starch dryer no.5, elevation of service conduit to packing plant, the use of woodchips as boilers 2 and 4 fuel and a modification to condition 14J(e)
- Modification 18 (awaiting approval) involved relocation of approved gas fired boiler to facilitate the production of hand sanitiser grade ethanol in response to supply demand due to COVID-19 pandemic including extension of existing gantry, new storage silo and storage shed.

2. EXISTING CONDITIONS

2.1 Existing Site

The Shoalhaven Starches facility presently receives wheat, grain and flour which is processed to produce a variety of products including gluten, glucose, starch, ethanol and dried distiller's grains with solubles (DDGS). The facility is currently approved for a maximum of 300ML of ethanol production per year which consists of both beverage and non-beverage grade ethanol.

2.2 Existing Road Network

Details of the road network surrounding the subject site is shown in Table 2.1.

Table 2.1: Surrounding Road Network Hierarchy

Road Name	Jurisdiction	Hierarchy	No. Lanes	Divided	Speed Limit
Bolong Road	Council ¹	Rural Arterial	2	No	60km/h
Meroo Street	Council	Local Street	2	No	50km/h
Princes Highway	TfNSW ²	Arterial	4	Yes	70km/h

1 – Shoalhaven City Council

2 – Transport for New South Wales

2.3 Active Transport

No dedicated cycle facilities are provided within the vicinity of the site. Existing pedestrian footpaths are present on Bolong Road fronting the subject site and on the eastern side of Meroo Street. Pedestrian refuges are also provided at two (2) locations along Bolong Road. Pedestrian facilities fronting the site are illustrated in Figure 2.1.



SOURCE: Nearmap

Figure 2.1: Pedestrian Facilities

2.4 Public Transport

Bomaderry Train Station is located approximately 600m from the southern side of the subject site and as such is considered to be within reasonable walking distance. Heavy rail services depart from this station hourly during peak periods or every second hour outside peak hours.

Two (2) bus stops are also within walking distance with a stop located at the Bomaderry Train Station and a second stop on Meroo Street opposite Bunberra Street. Both bus stops are serviced by Route 721 - Nowra to Bomaderry via Bomaderry Station (Loop Service). Services at each stop run hourly during peak periods and every second hour outside of peak between 7:30am and 6:00pm. The nearby bus stops and Bomaderry train station is displayed in Figure 2.2.



SOURCE: Nearmap

Figure 2.2: Surrounding Active Transport Facilities

3. PROPOSED DEVELOPMENT

Modification 19 proposes changes to the existing ethanol distillery plant located at the Bomaderry factory on-site. Modifications to the ethanol distillery plant are illustrated by development plans provided in **Appendix A**. The proposed modifications include increasing the proportion of 'beverage' grade ethanol produced which involves undertaking the following changes to the subject site:

- The installation of distillation columns and associated processing equipment immediately to the west of the existing Ethanol Distillery Plant.
- The distillery modification in the proposed location will require a boundary adjustment adjacent to Bolong Road to ensure sufficient separation is achieved between external pedestrians and plant. Discussions have commenced with Shoalhaven City Council and an application has been submitted seeking a boundary adjustment with Council (*Drawing No. MN6953-002*)
- An additional 3 ethanol storage tanks within the existing ethanol storage area (*Drawing No. MN6953-007 and Drawing No. MN6953-008*)
- The construction of an additional ethanol loadout is proposed immediately east of the storage tanks (*Drawing No. MN6953-007 and Drawing No. MN6953-008*)
- The relocation of the existing ethanol distillery control room from its current position adjacent the existing ethanol plant, to the old fire pump station building which is located adjacent to the Bolong Road frontage of the site. This use was originally approved as part of Modification 12
- The construction of additional cooling towers and the relocation of container storage at the eastern end of the site (*Drawing No. MN6963-016*)
- Extension of the western car park.

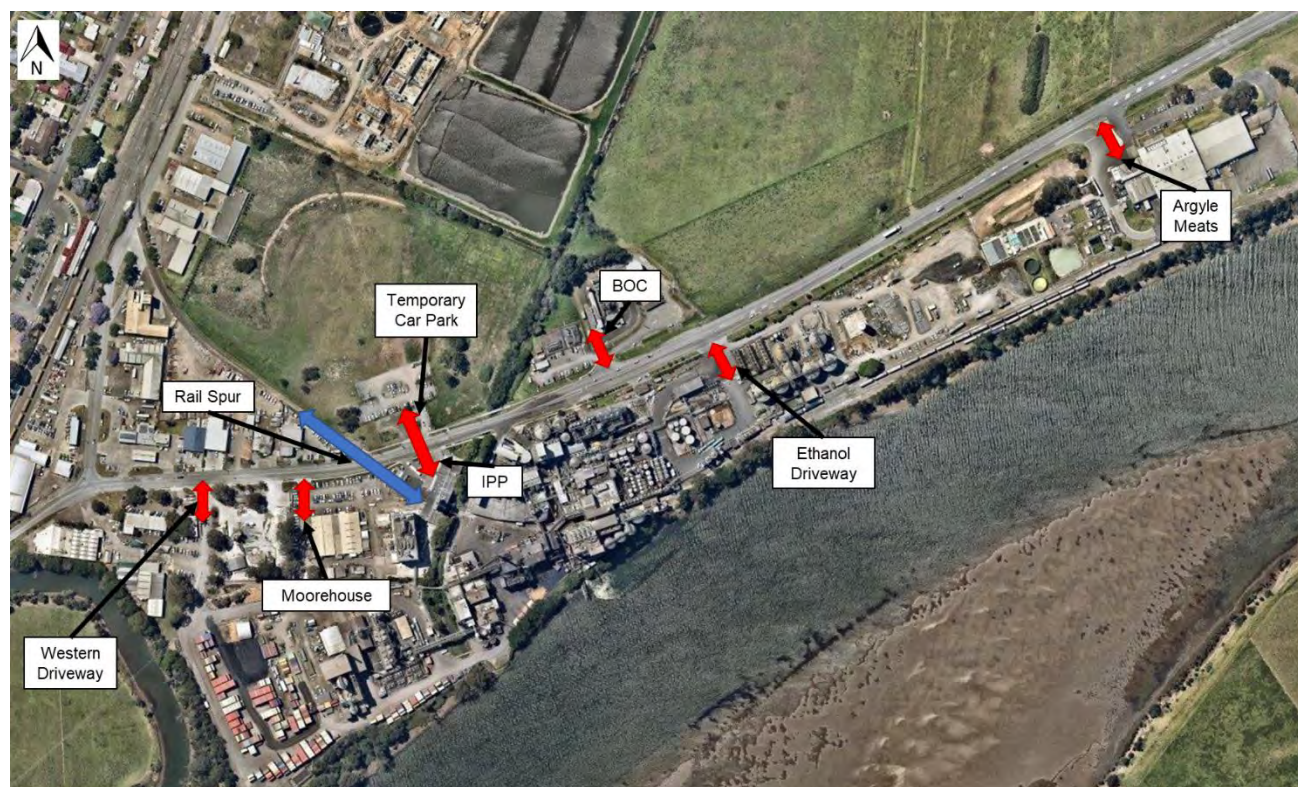
It is noted that the overall ethanol production of the site is not increased above the currently approved 300ML per year and no changes to heavy vehicle movements are expected as a result of Modification 19.

Modification 19 proposes further ancillary works associated with the approved product dryer and specialty product buildings located to the west of Abernethy's Creek. Given these are ancillary, it is understood these are not relevant to the assessment of traffic regarding Modification 19.

4. SITE ACCESS & CONNECTIVITY

4.1 Vehicular Access

The Shoalhaven Starches factory and supporting facilities are accessed via several points off Bolong Road. Heavy rail access is also available to the site via a private rail spur line extending from Bomaderry Train Station. Figure 4.1 illustrates the location of all accesses.



SOURCE: Nearmap

Figure 4.1: Site Access Locations

As a result of the proposed Modification 19, there is to be no change in the method or location of delivery / removal of resources, products or waste. As such, any additional heavy vehicles continually accessing the site as a result of the proposed Modification 19 will use existing accesses approved for use by each relevant vehicle type.

It is noted that some additional heavy vehicles may be temporarily required to access the site for construction works. It is expected that existing access locations would be sufficient to accommodate all construction traffic, however it is recommended that construction traffic operations be subject to a Construction Traffic Management Plan (CTMP).

4.2 Proposed Loadout

Modification 19 proposes an additional ethanol loadout east of the ethanol storage area. A swept path assessment was undertaken and is provided at **Appendix B**. The assessment demonstrates 25.0m B-double vehicles are able to safely and efficiently manoeuvre around the circulating area and proposed load out. Swept paths also demonstrate ingress and egress movements from the relevant Bolong Road access.

4.3 Pedestrian Connectivity

As a result of the proposed boundary adjustment, footpath on the Bolong Road frontage will need to shift immediately behind the kerb. The proposed footpath as a result of Modification 19 is illustrated in Figure 4.2.

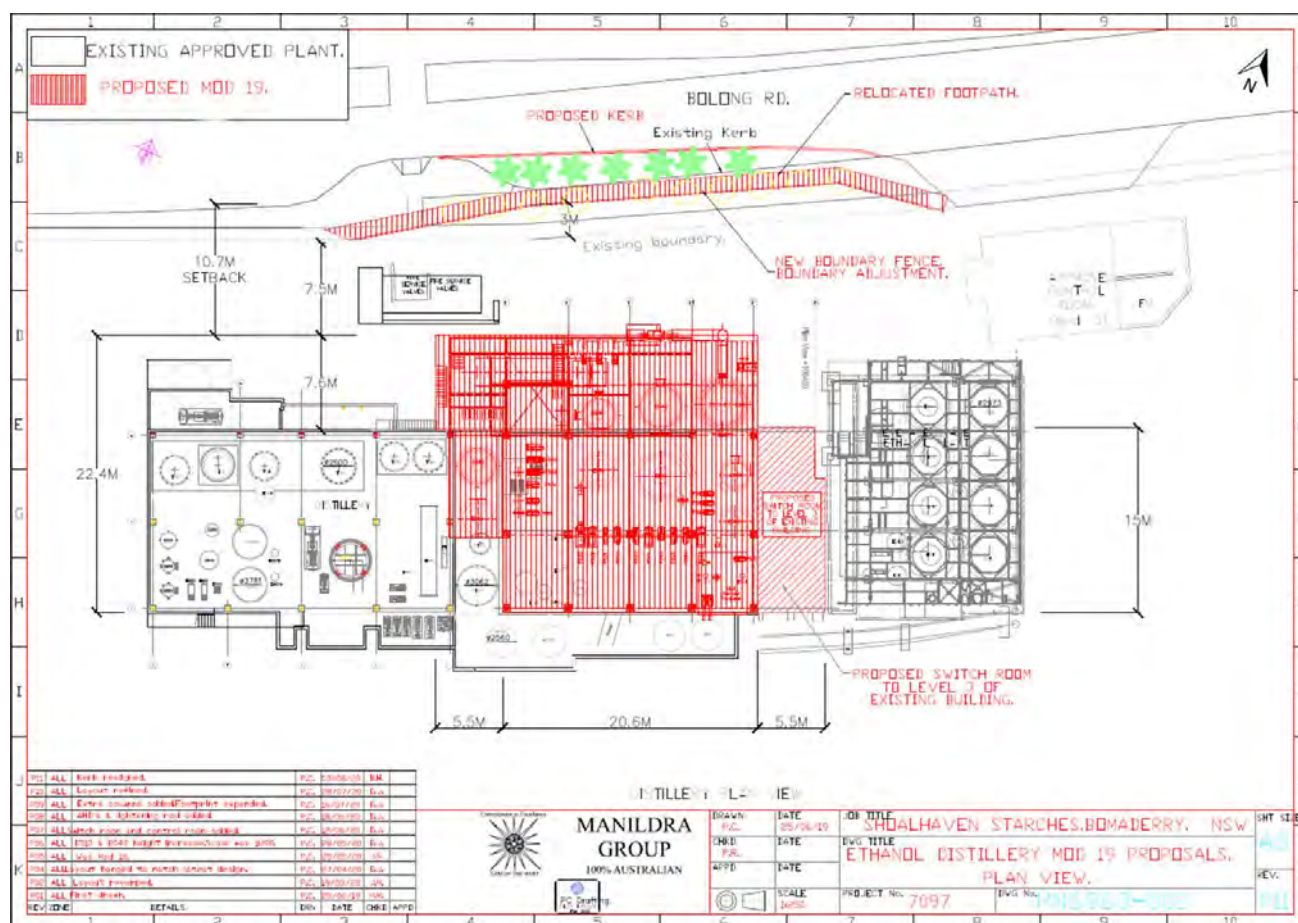


Figure 4.2: Footpath Fronting Bolong Road

As shown, the relocated footpath would be directly adjacent to the existing kerb line. As such, to ensure sufficient separation between vehicles travelling west along Bolong Road and pedestrians, kerb widening is proposed as shown. Noting that 'No Stopping' signage is currently present at this location, the proposed kerb modification is considered to maximise pedestrian safety and does not impact any on-street parking.

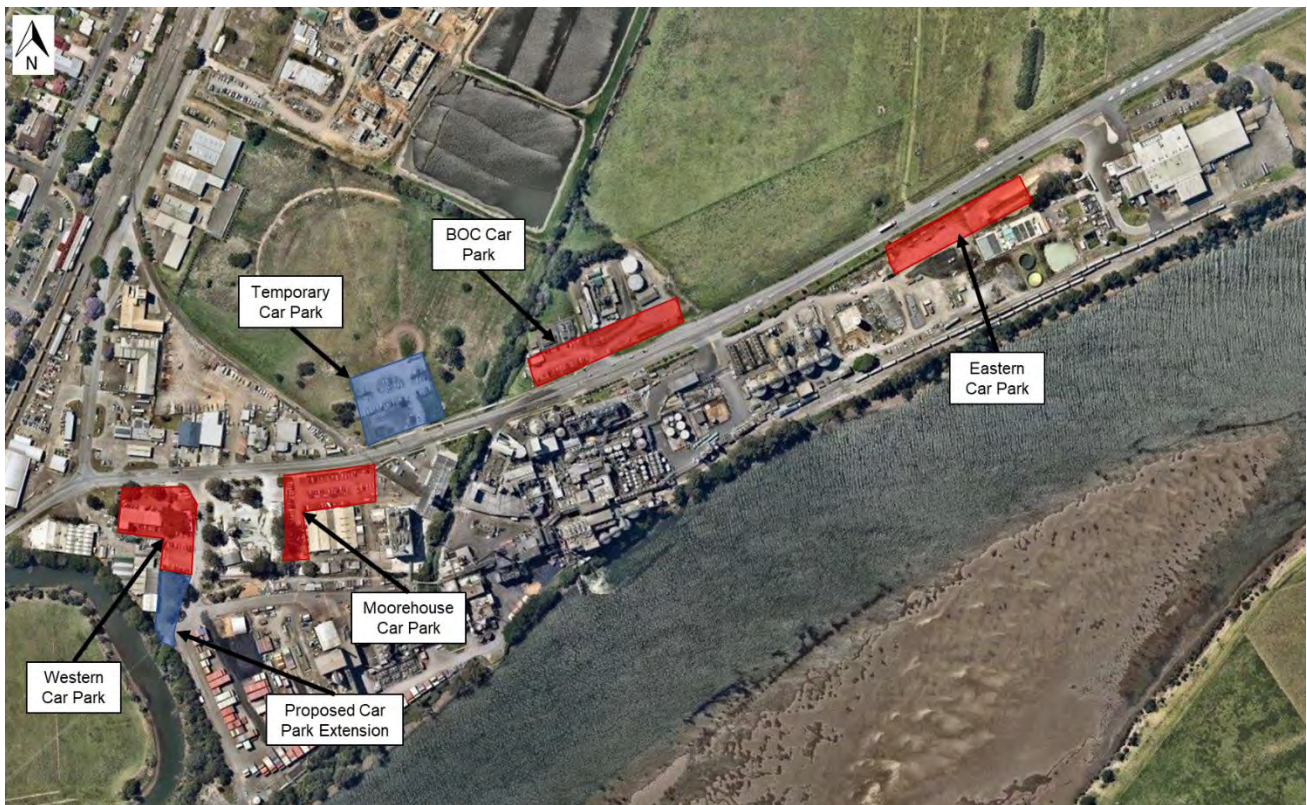
5. PARKING ASSESSMENT

5.1 Car Park Provision

In accordance with the Shoalhaven Starches, Bomaderry, Access & Parking Assessment (SSBAPA) completed by ARC in April 2017, existing parking demand is accommodated by several car parks across the site. An existing temporary car park is also present on the northern side of Bolong Road to the east of the rail spur. An extension of the western car park is also proposed as a part of MOD 19. The capacity of these existing and proposed car parks is as follows:

- Existing permanent car parking:
 - Western car park: 52 spaces
 - Moorehouse car park: 110 spaces
 - Eastern car park: 60 spaces
 - BOC car park: 58 spaces
- Temporary car parking: 100 spaces
- Proposed car parking extension: 31 spaces

As such, a total of 311 permanent car parking spaces are proposed with an additional 100 spaces located in the temporary car park. The location of these existing car parks is illustrated in Figure 5.1.



SOURCE: Nearmap

Figure 5.1: Existing Car Park Locations

It is noted that there is also potential throughout the site for some vehicles to park at informal parking locations. However, the number of parking spaces available cannot be quantified and thus for the purposes of this assessment informal parking has been disregarded.

5.2 Existing Car Parking Demand

In accordance with the SSBAPA, 311 staff are employed across the Shoalhaven Starches site. However, as the factory operates 24 hours per day with varying shift times, there are typically a maximum of 157 employees currently on-site during the period between 8:00am and 2:00pm. However, as stated in the MOD 16 traffic assessment, the maximum number of staff on-site may be higher with contract staff or increased peak staff numbers coinciding with new infrastructure coming on-line. It is also noted that MOD 16 was expected to generate an additional 5 permanent staff. As such, as per the MOD 16 traffic assessment (*P3530.003R Shoalhaven Starches Expansion TIA Report*), existing permanent parking provision shall accommodate the demand of a total of 220 permanent staff on-site simultaneously.

The SSBAPA indicated that permanent staff car occupancy is very low. Furthermore, access to the site by alternate transport means is limited. As such, for a conservative assessment, it is assumed that permanent parking provision must accommodate for one (1) parking bay for each of the Shoalhaven Starches permanent employees and contract staff.

5.3 Modification 19 Car Parking Demand & Requirements

Manildra has provided information regarding additional permanent and construction personnel requiring parking provision. The proposed Modification 19 will result in an additional two (2) permanent Manildra personnel on-site simultaneously requiring permanent car parking.

As per the information provided by Manildra, Modification 19 construction works involve a total of 65 construction employees on-site daily. As such, parking provision for a total of 65 construction staff is required. In accordance with Section 1.3.3 of the SSBAPA it is estimated that 65 construction staff would generate a formal parking demand of up to 39 spaces or 0.6 parking spaces per construction employee. These rates are consistent with the MOD 16 traffic assessment and are considered appropriate as:

- It is unlikely that all personnel for all construction works taking place simultaneously will be on-site at the same time
- It is expected that some vehicles for construction works would park in informal locations near the works locations
- A small amount of carpooling or alternate transport use by construction employees is expected.

As such, the provision of 39 parking spaces is required for Modification 19 construction employees. The car parking demand and provision for the Shoalhaven Starches site is therefore outlined in Table 5.1.

Table 5.1: Car Parking Demand and Provision

Car Parking Type	Existing Staff	Modification 19 Staff	Parking Rate	Total Parking Demand	Provision	Excess / Shortfall
Permanent	220	2	1 per staff	222	311	+89
Temporary	N/A	65	0.6 per staff	39	100	+61
Total	220	67	N/A	261	411	+150

As shown, the proposed car parking provision exceeds the expected permanent and temporary / construction parking requirements.

5.4 Proposed Car Park Extension Layout & Geometry

The proposed western car park extension layout has been assessed against the relevant requirements of AS2890.1 as summarised in Table 5.2.

Table 5.2: Western Car Park Extension Layout Assessment

Component	Requirement	Proposed	Compliant
Staff Car Parking (User Class 1A)	2.4m x 5.4m	2.4m x 5.5m	YES
Parking Aisle	5.8m (+0.3m where bounded by a wall)	7m	YES
Aisle Extension	Minimum 1m	5.5m	YES
Grades (Car Parking Modules)	Max. 1:20 parallel to direction of bay and max. 1:16 in any other direction	Not shown, assumed flat	YES

As shown, the proposed car park extension complies with the relevant requirements of AS2890.1.

6. TRAFFIC ASSESSMENT

6.1 Permanent Traffic

The applicant has indicated that the increase in proposed beverage grade ethanol will not result in a change to the current overall production of 300ML per year. As such, no changes are to be made to the heavy vehicle trips associated with the change in ethanol production as part of Modification 19.

Manildra has also indicated that, as a result of the proposed modification, an additional two (2) permanent staff will be employed. As such, conservatively assuming new staff members arrive and depart during peak hours, an additional two (2) light vehicle trips will be generated in the AM and PM peak periods. Permanent traffic generated by the proposed modification is therefore expected to have no adverse impacts on the surrounding road network.

6.2 Temporary Construction Traffic

Manildra anticipates a maximum of 65 construction personnel will be involved in construction works of the development on a daily basis. In accordance with the *Shoalhaven Starches, Bomaderry, Access & Parking Assessment*, light vehicle traffic generated by the facility is equal to 0.5 peak hour trips per parking space. As such, construction traffic for Modification 19 is estimated to generate approximately 33 peak hour light vehicle trips. This is equivalent to approximately just one (2) vehicle every two (2) minutes. This is also considered a conservative assessment as:

- It is unlikely that all construction works will be occurring simultaneously
- Construction traffic peak is not expected to align with the commuter / network peak.

As a result of the construction works, some additional heavy vehicles are also expected to access the site. Construction activities are expected to generate heavy vehicle traffic related to concrete pours and delivery of material or machinery. However, the volume of this traffic is not expected to be significant and will rarely coincide with network peak traffic times.

Considering the traffic volumes outlined above, construction traffic volumes are not expected to have an adverse impact on the surrounding road network considering the following:

- In accordance with SIDRA analysis conducted by ARC, as outlined in the *Shoalhaven Starches, Bomaderry, Access & Parking Assessment* (2017) and the *Shoalhaven Starches, Bomaderry MP 06_0028 Modification Traffic Impact Assessment* (2017), the Bolong Road / Railway Street intersection and all accesses operate well within acceptable performance limits in terms of LOS, delay and queuing
- Increases in queuing at accesses as a result of development or construction traffic will be contained on-site and thus have no impact on the surrounding road network
- The proposed construction works are expected to occur over a limited time period and as such construction traffic will have no lasting impact on the network.

6.3 Railway Crossing Impacts

It is noted that the site is accessed by heavy rail freight services via a private rail spur crossing Bolong Road. However, the proposed Modification 19 is not expected to generate additional heavy rail movements to and from the site. As such, Modification 19 is not expected to have any adverse impacts on the surrounding road network in relation to the Bolong Road railway crossing at the heavy rail site access.

7. CONCLUSION

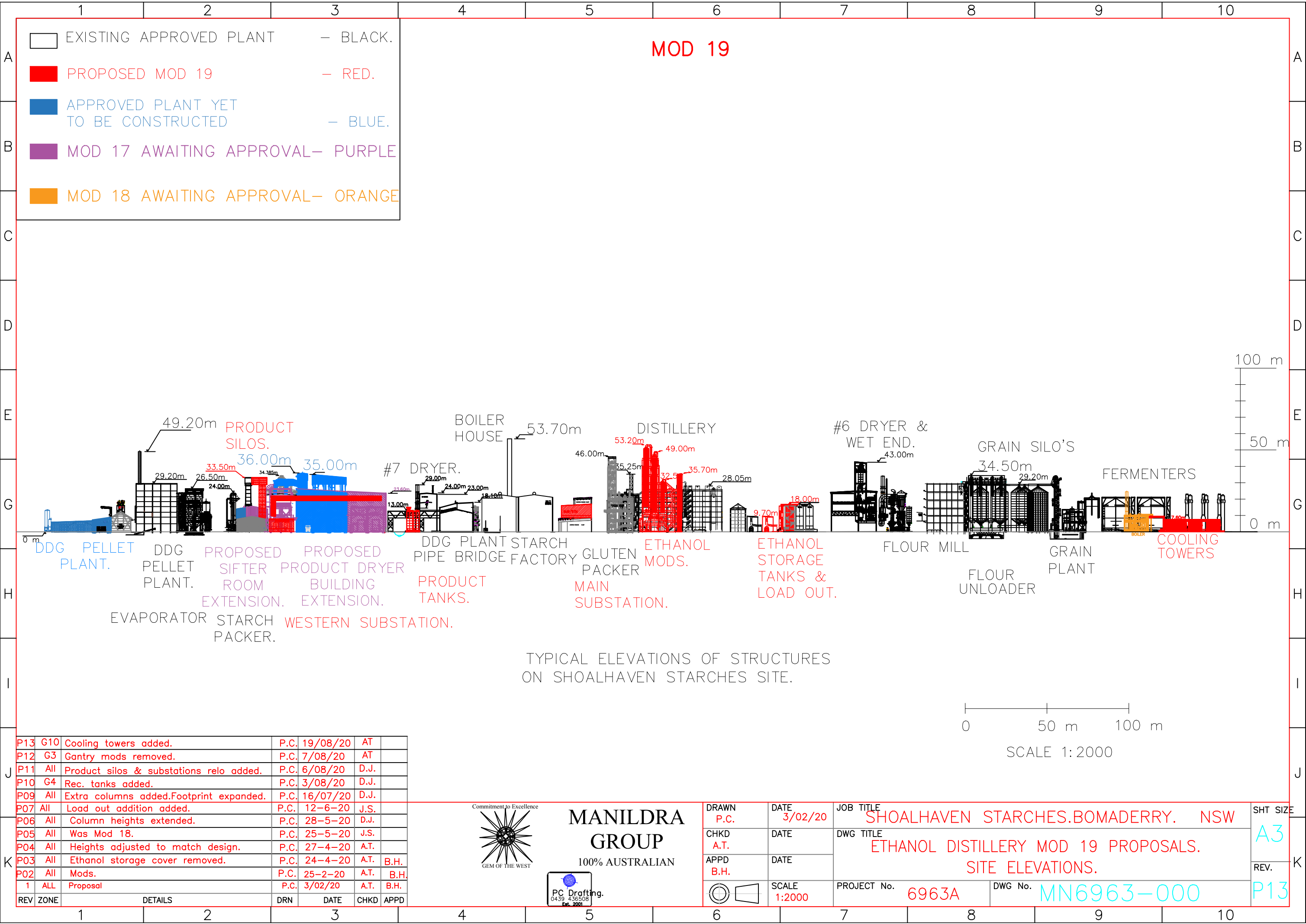
The key findings of the traffic impact assessment for the proposed Shoalhaven Starches expansion location at 22 & 24 and 171 Bolong Road, Bomaderry are as follows:

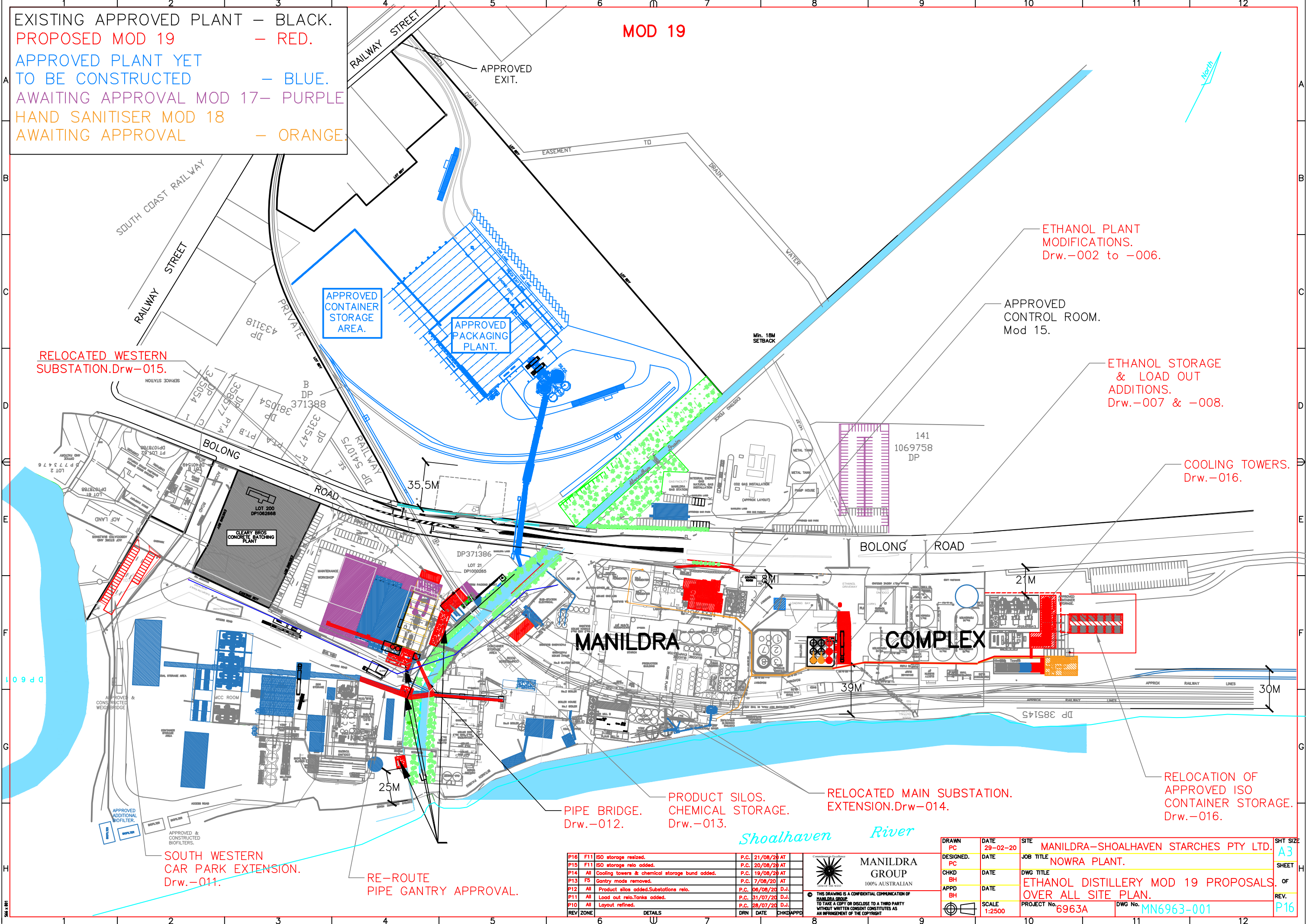
- The proposed expansion (Modification 19) proposes the installation of distillation columns, associated processing equipment, boundary adjustment to Bolong Road, additional 3 ethanol storage tanks, additional ethanol load out, relocation of the existing ethanol distillery control room, additional cooling towers, relocation of container storage and other ancillary works
- Public transport access to the site is limited with a single bus and rail service approximately 600m from the subject site with services every 1-2 hours
- Pedestrian footpaths are provided fronting the site and two (2) pedestrian refuges provide active transport connectivity between areas of the subject site
- The subject site is accessed via several existing accesses off Bolong Road and the proposed modification will not result in any changes to access location or form and the vehicle types accessing the site will not change
- A swept path assessment demonstrates that a design service vehicle (25m B-Double) can safely and efficiently access the proposed load out and circulate the relevant area of the site
- The proposed modification of a short segment of footpath and kerb on the southern side of Bolong Road facilities safe pedestrian separation from proposed plant infrastructure and through traffic on Bolong Road.
- The proposed car parking provision exceeds the expected permanent and temporary / construction parking requirements
- The proposed extension of the western car park complies with relevant requirements of AS2890.1
- Excluding construction traffic, the proposed modification is expected to generate no additional heavy vehicle movements and a maximum of two (2) light vehicle trips in the AM and PM peak hours
- Construction traffic volumes are not expected to have an adverse impact on the surrounding road network
- Modification 19 is not expected to have any adverse impacts on the surrounding road network in relation to the Bolong Road railway crossing at the heavy rail site access.

Based on the above assessment we conclude that there are no significant traffic or transport impacts associated with the proposed development expansion to preclude its approval and relevant conditioning on traffic or transport planning grounds.

Appendix A: Development Plans







EXISTING APPROVED PLANT — BLACK.
PROPOSED MOD 19 — RED.
APPROVED PLANT YET TO BE CONSTRUCTED — BLUE.
AWAITING APPROVAL MOD 17— PURPLE
HAND SANITISER MOD 18
AWAITING APPROVAL — ORANGE.

MOD 19

North

ETHANOL PLANT MODIFICATIONS.
Drw.—002 to —006.

APPROVED CONTROL ROOM.
Mod 15.

ETHANOL STORAGE & LOAD OUT ADDITIONS.
Drw.—007 & —008.

COOLING TOWERS.
Drw.—016.

RELOCATED MAIN SUBSTATION.
EXTENSION.Drw—014.

RELOCATION OF APPROVED ISO CONTAINER STORAGE.
Drw.—016.

PRODUCT SILOS.
CHEMICAL STORAGE.
Drw.—013.

PIPE BRIDGE.
Drw.—012.

RE-ROUTE PIPE GANTRY APPROVAL.

SOUTH WESTERN CAR PARK EXTENSION.
Drw.—011.

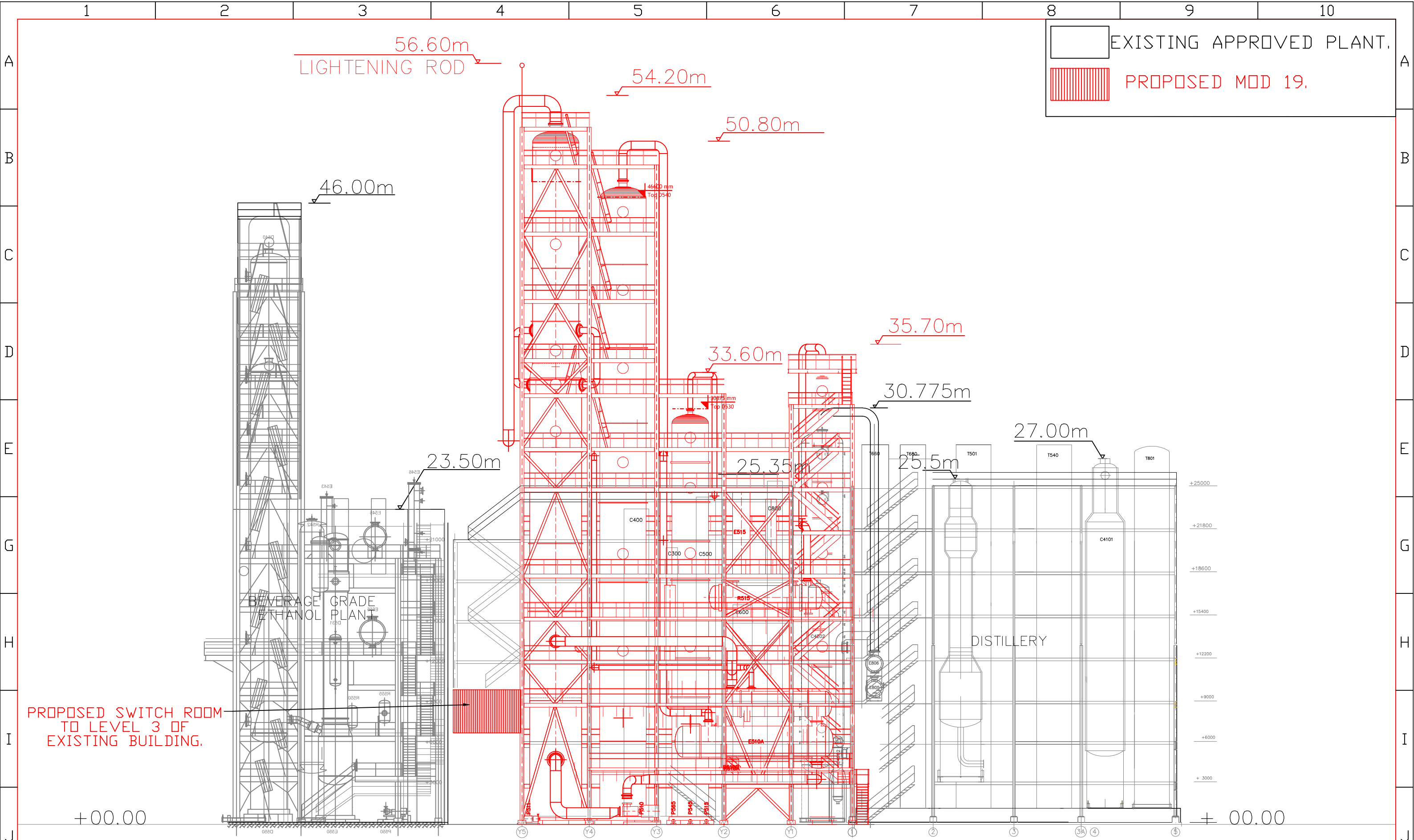
P16	F11	ISO storage relo added.	P.C.	21/08/20	AT
P15	F11	ISO storage relo added.	P.C.	20/08/20	AT
P14	All	Cooling towers & chemical storage bund added.	P.C.	19/08/20	AT
P13	F5	Gantry mods removed.	P.C.	7/08/20	AT
P12	All	Product silos added.Substations relo.	P.C.	06/08/20	D.J.
P11	All	Load out relo.Tanks added.	P.C.	31/07/20	D.J.
P10	All	Layout refined.	P.C.	28/07/20	D.J.
REV	ZONE	DETAILS	DRN	DATE	CHKD/APPD



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DRAWN PC	DATE 29-02-20	SITE MANILDRA-SHOALHAVEN STARCHES PTY LTD.	SHT SIZE A3
DESIGNED PC	DATE	JOB TITLE NOWRA PLANT.	SHEET OF
CHKD BH	DATE	DWG TITLE ETHANOL DISTILLERY MOD 19 PROPOSALS.	REV. P16
APPD BH	DATE	PROJECT No. 6963A	DWG No. MN6963-001
SCALE 1:2500			



ELEVATION LOOKING SOUTH FROM BOLONG ROAD.

P10	ALL	Layout refined.	P.C.	28/07/20	D.J.	
P09	ALL	Extra columns added.Footprint expanded.	P.C.	20/07/20	D.J.	
P07	ALL	AHD's & lightening rod added.	P.C.	18/06/20	D.J.	
P07	ALL	AHD's & lightening rod added.	P.C.	18/06/20	D.J.	
P06	ALL	D510 & D540 height increase.Scale was 1:200.	P.C.	28/05/20	D.J.	
P05	ALL	Was Mod 18.	P.C.	25/05/20	J.S.	
REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD

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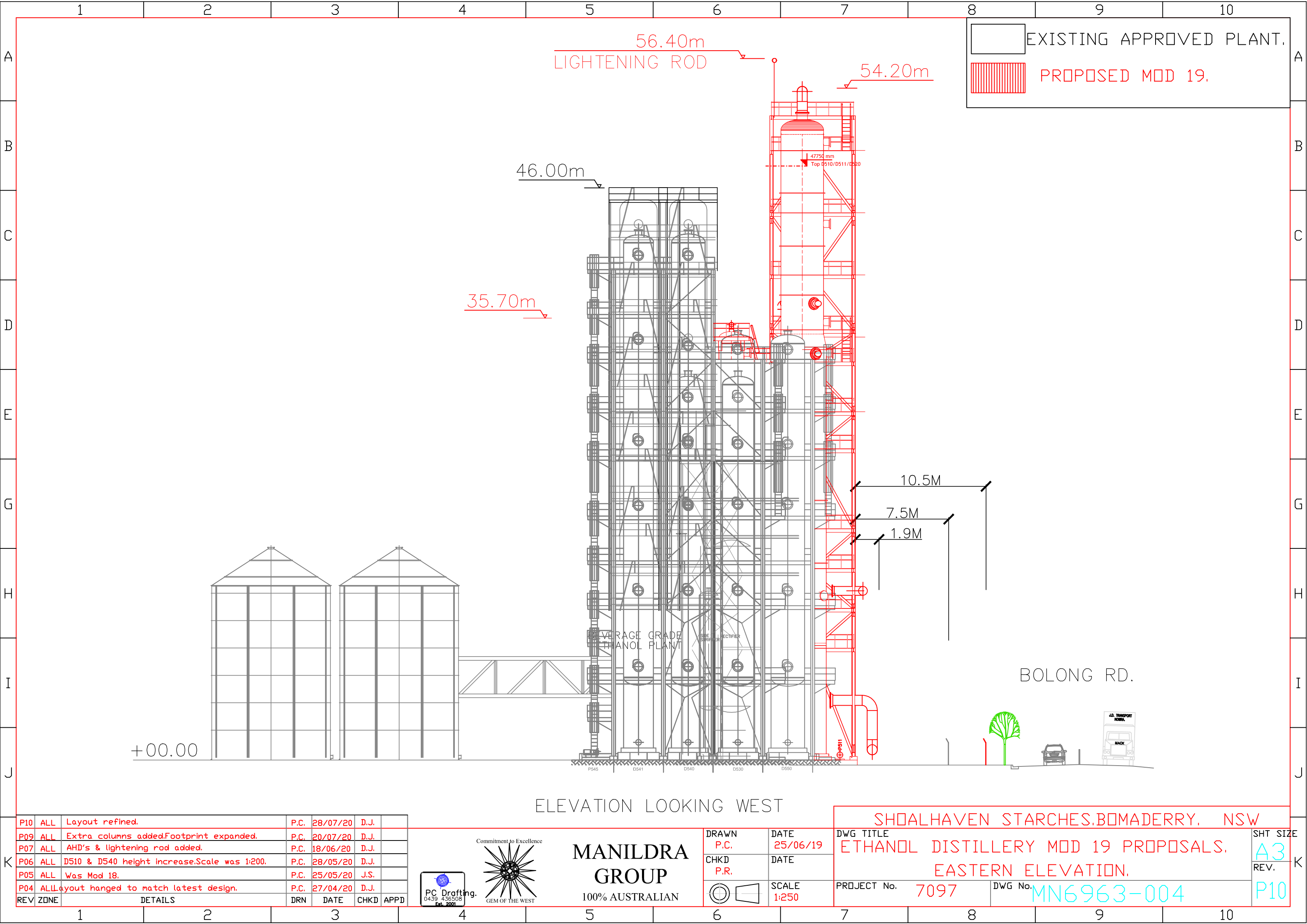
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GEM OF THE WEST

SHOALHAVEN STARCHES.BOMADERRY, NSW			
DWG TITLE ETHANOL DISTILLERY MOD 19 PROPOSALS, NORTHERN ELEVATION.			SHT SIZE A3 REV. P10
PROJECT No. 7097		DWG No. MN6963-003	



EXISTING APPROVED PLANT.

PROPOSED MOD 19.

ELEVATION LOOKING WEST

P10	ALL	Layout refined.	P.C.	28/07/20	D.J.	
P09	ALL	Extra columns added.Footprint expanded.	P.C.	20/07/20	D.J.	
P07	ALL	AHD's & lightening rod added.	P.C.	18/06/20	D.J.	
P06	ALL	D510 & D540 height increase.Scale was 1:200.	P.C.	28/05/20	D.J.	
P05	ALL	Was Mod 18.	P.C.	25/05/20	J.S.	
P04	ALL	Layout hanged to match latest design.	P.C.	27/04/20	D.J.	
REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD

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GEM OF THE WEST

MANILDRA
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DRAWN
P.C.

DATE
25/06/19

CHKD
P.R.

SCALE
1:250

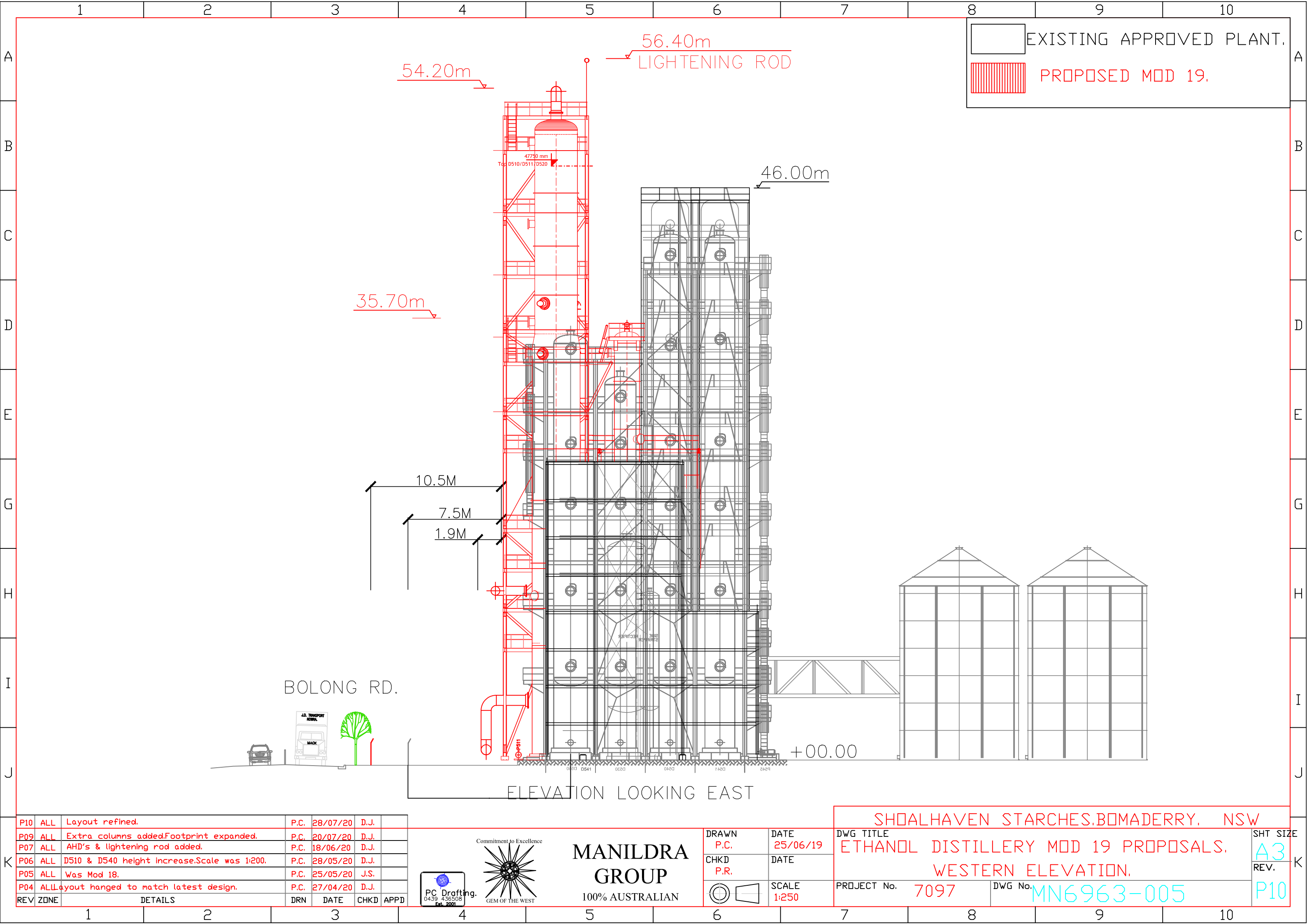
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ETHANOL DISTILLERY MOD 19 PROPOSALS.
EASTERN ELEVATION.

PROJECT No. 7097

DWG No. MN6963-004

SHT SIZE
A3
REV.

P10



P10	ALL	Layout refined.	P.C.	28/07/20	D.J.	
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P07	ALL	AHD's & lightening rod added.	P.C.	18/06/20	D.J.	
P06	ALL	D510 & D540 height increase.Scale was 1:200.	P.C.	28/05/20	D.J.	
P05	ALL	Was Mod 18.	P.C.	25/05/20	J.S.	
P04	ALL	Layout hanged to match latest design.	P.C.	27/04/20	D.J.	
REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD



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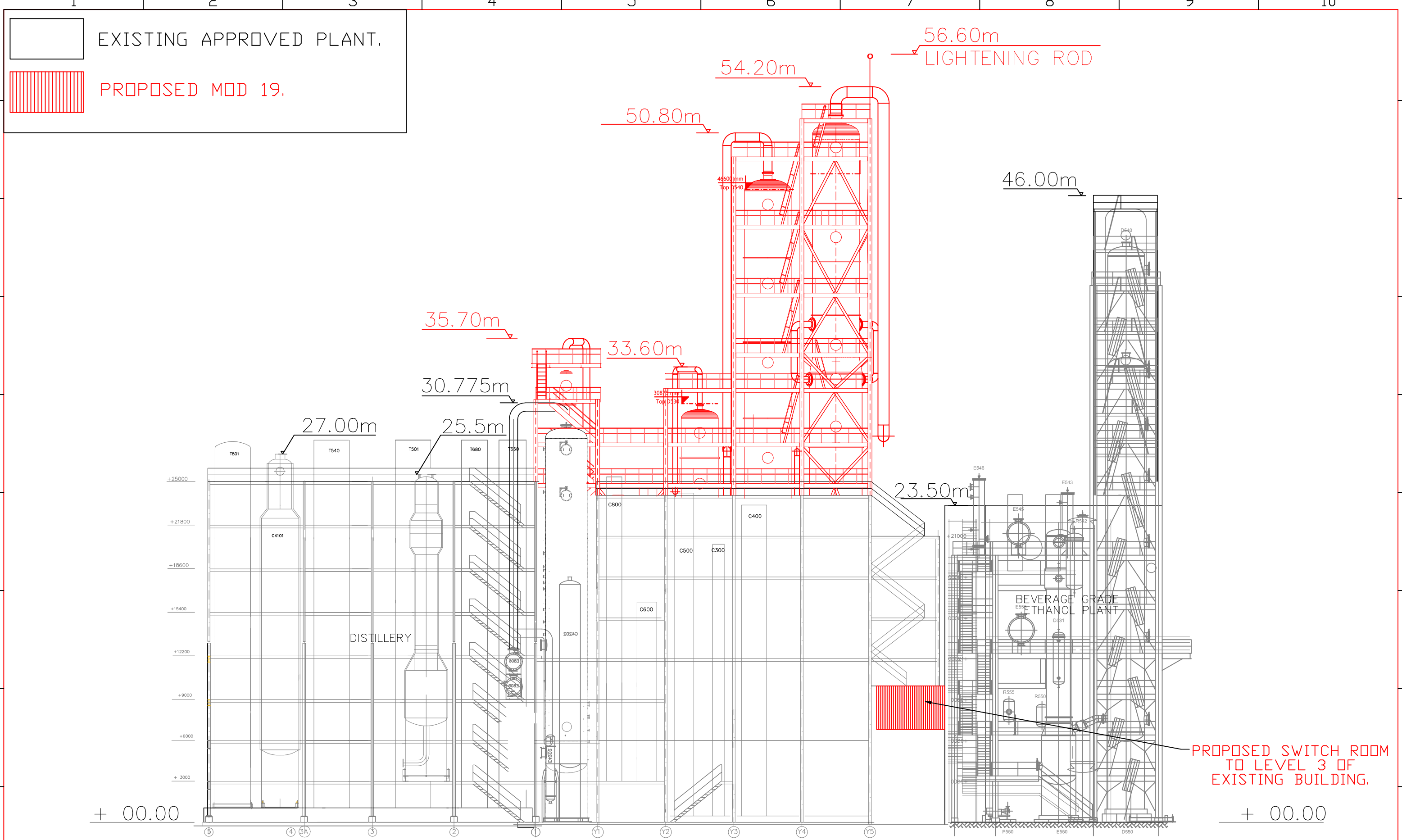
DRAWN
P.C.

CHKD
P.R.

DATE
25/06/19

SCALE
1:250

SHOALHAVEN STARCHES.BOMADERRY. NSW		SHT SIZE
DWG TITLE		A3
ETHANOL DISTILLERY MOD 19 PROPOSALS.		REV.
WESTERN ELEVATION.		P10
PROJECT No.	7097	DWG No.
MN6963-005		



ELEVATION LOOKING NORTH TOWARDS BOLONG ROAD.

P10	ALL	Layout refined.	P.C.	28/07/20	D.J.	
P09	ALL	Extra columns added.Footprint expanded.	P.C.	20/07/20	D.J.	
P07	ALL	AHD's & lightening rod added.	P.C.	18/06/20	D.J.	
P06	ALL	D510 & D540 height increase.Scale was 1:200.	P.C.	28/05/20	D.J.	
P05	ALL	Was Mod 18.	P.C.	25/05/20	J.S.	
P04	ALL	Layout hanged to match latest design.	P.C.	27/04/20	D.J.	
REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD

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GEM OF THE WEST

DRAWN
P.C.

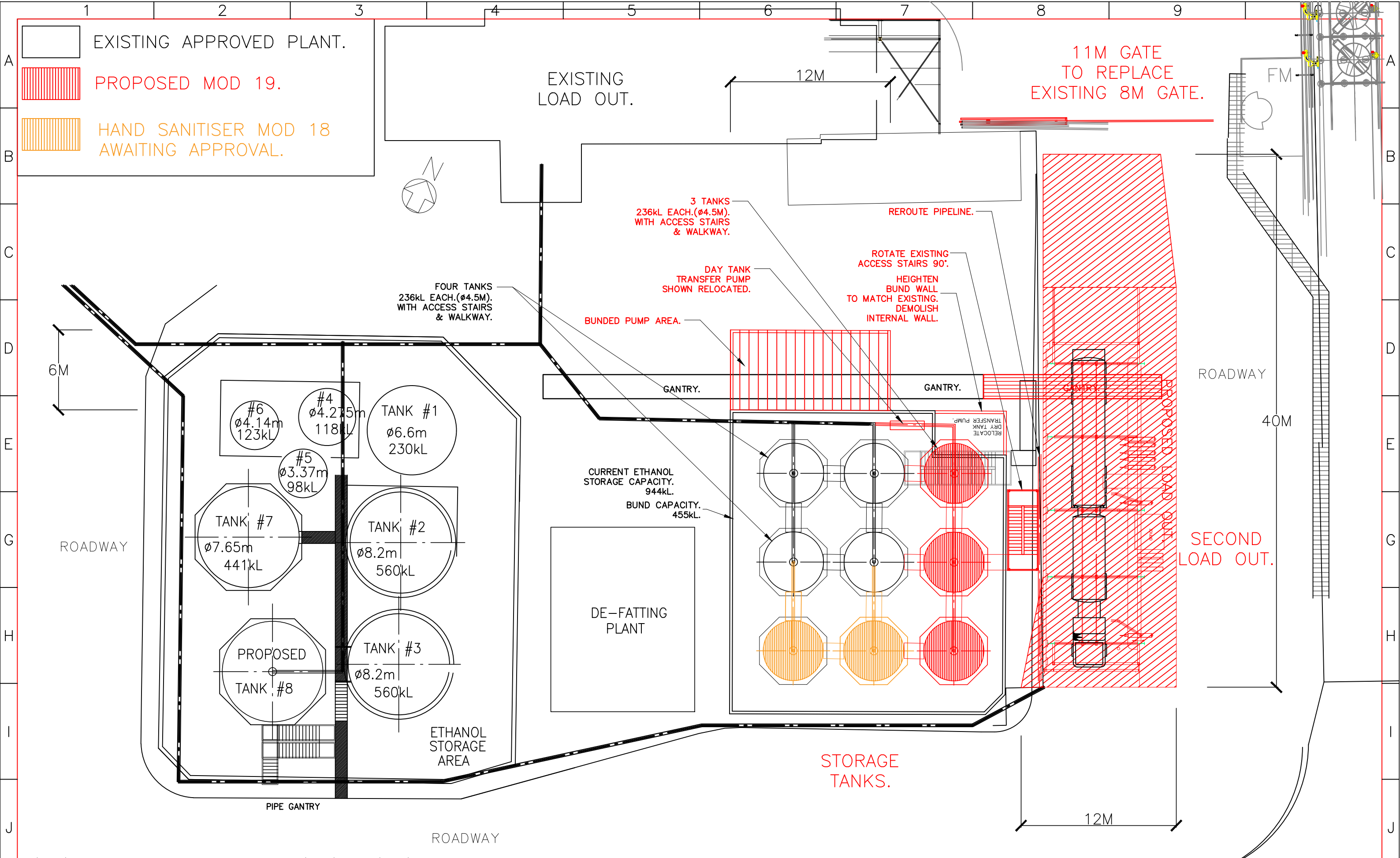
DATE
25/06/19

APPD

DATE

SCALE
1:250

SHOALHAVEN STARCHES.BOMADERRY. NSW		DWG TITLE	SHT SIZE
		ETHANOL DISTILLERY MOD 19 PROPOSALS. SOUTHERN ELEVATION.	A3 REV.
PROJECT No.	7097	DWG No.	MN6963-006
			P10



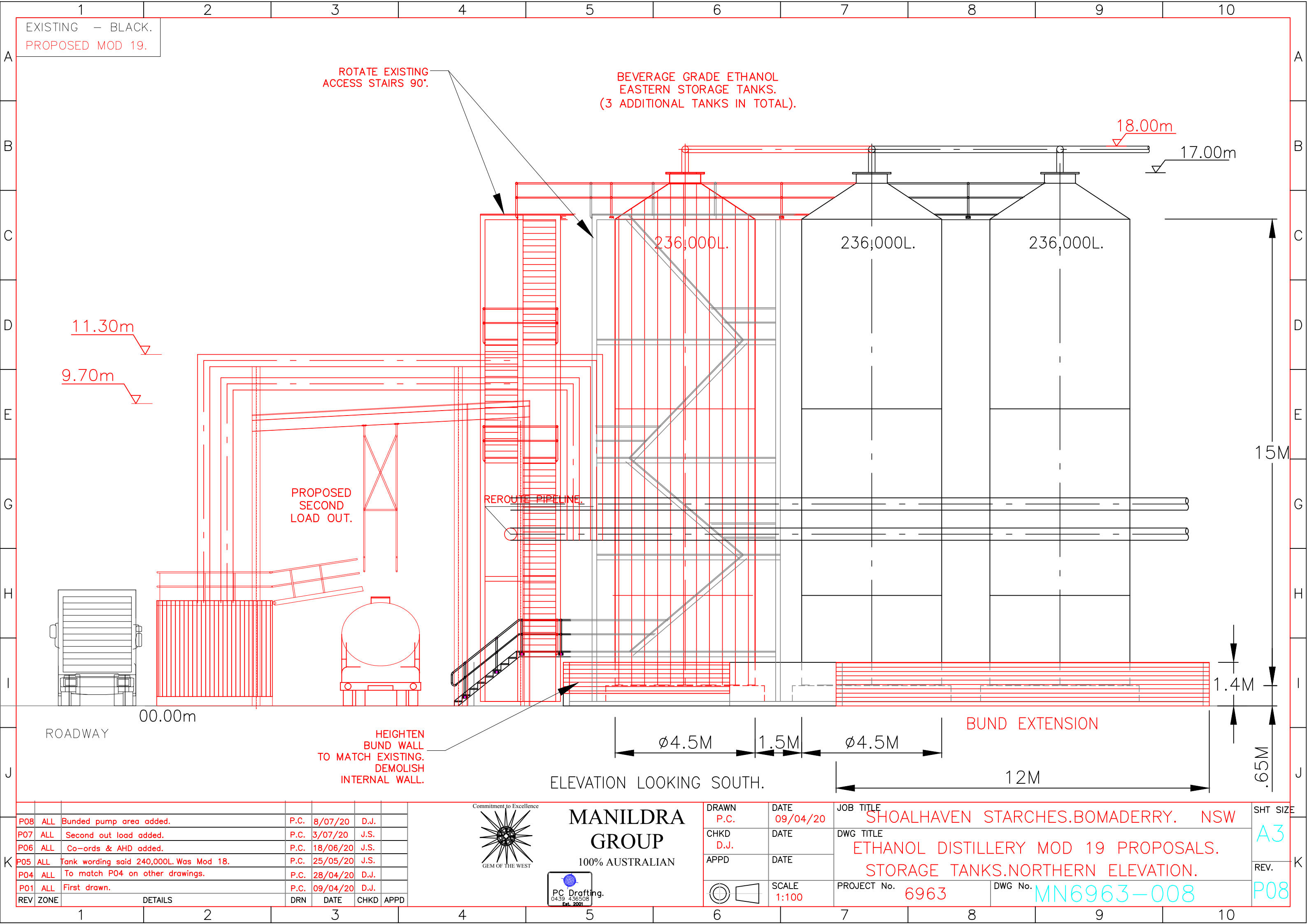
REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P08	ALL	Bunded pump area added.	P.C.	8/07/20	D.J.	
P07	ALL	Second out load added.	P.C.	3/07/20	J.S.	
P06	ALL	Co-ords & AHD added.	P.C.	18/06/20	J.S.	
P05	ALL	Was Mod 18.	P.C.	25/05/20	J.S.	
P04	ALL	2 tanks moved to hand sanitiser application.	P.C.	24/04/20	D.J.	
P01	ALL	First drawn.	P.C.	09/04/20	D.J.	

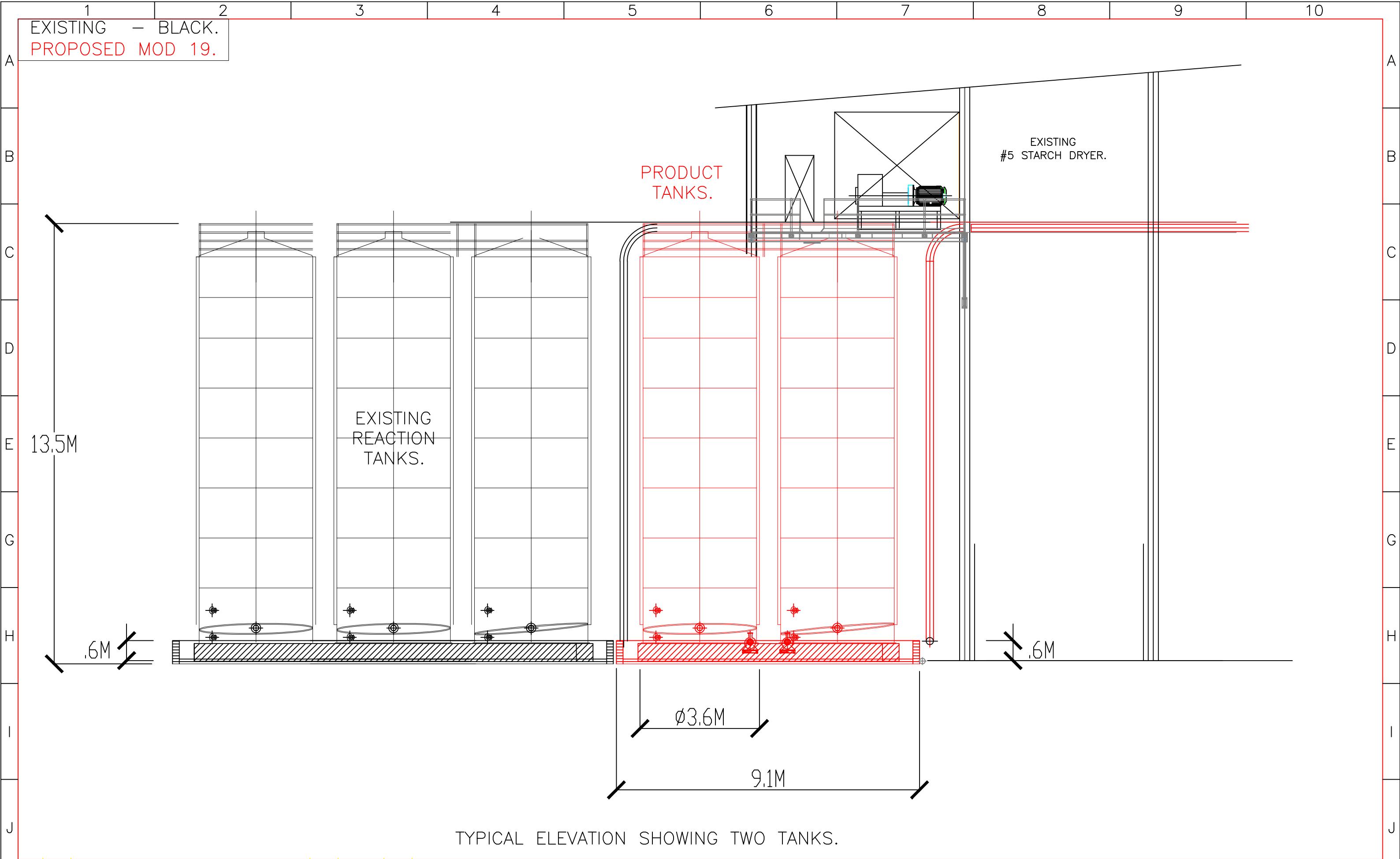


MANILDRA
GROUP
100% AUSTRALIAN



DRAWN P.C.	DATE 09/04/20	JOB TITLE SHOALHAVEN STARCHES.BOMADERRY. NSW	SHT SIZE A3
CHKD D.J.	DATE	DWG TITLE ETHANOL DISTILLERY MOD 19 PROPOSALS. STORAGE TANKS PLAN VIEW.	REV.
APPD	DATE	PROJECT No. 6963	DWG No. MN6963-007
SCALE 1:250			P08





REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P03	ALL	Replaces previous drawing.	P.C.	03/08/20	A.T.	



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GROUP
100% AUSTRALIAN



DRAWN
P.C.
CHKD
A.T.
APPD

DATE
01/07/20
DWG TITLE

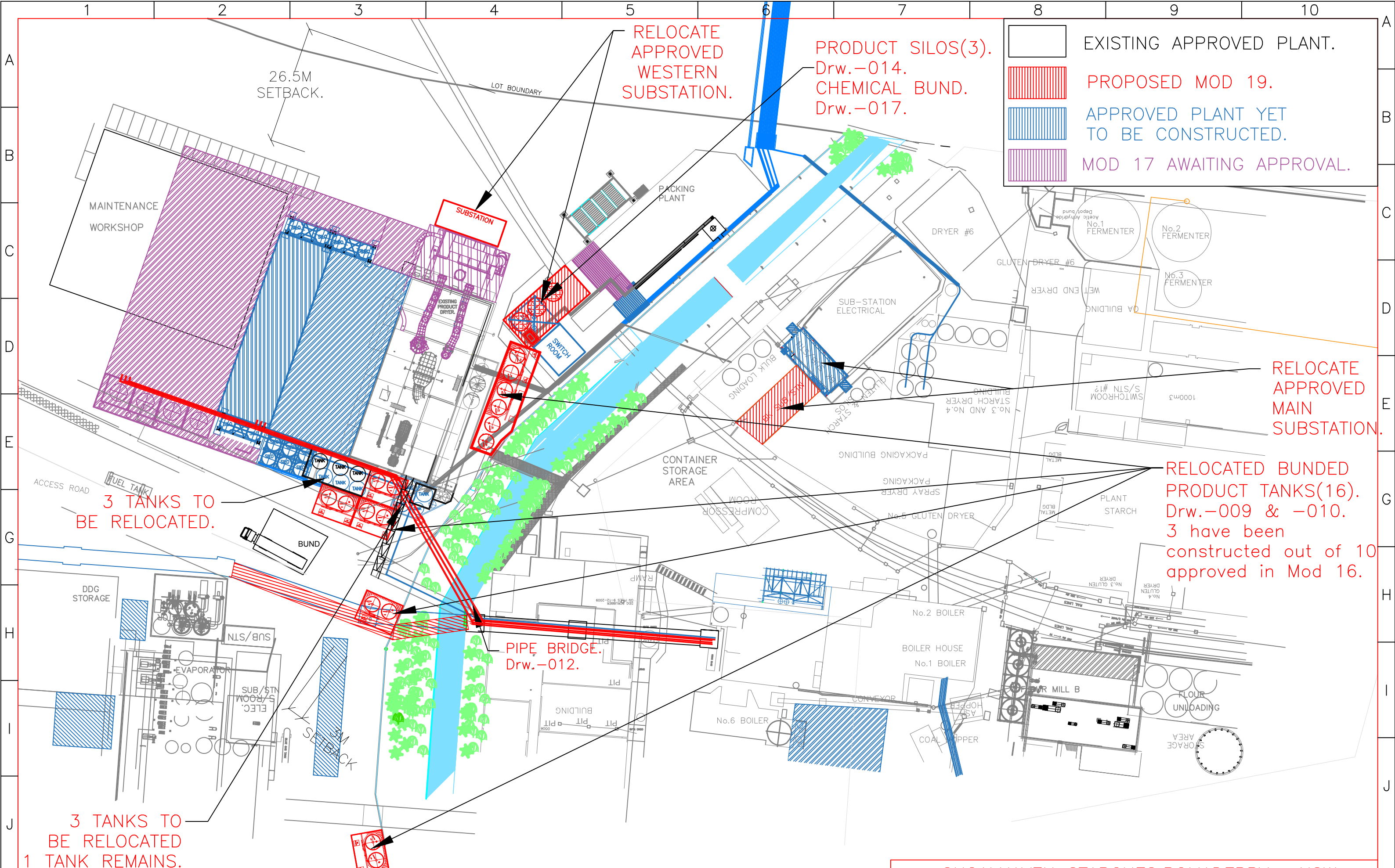
JOB TITLE
SHOALHAVEN STARCHES.BOMADERRY. NSW

SCALE
1:100

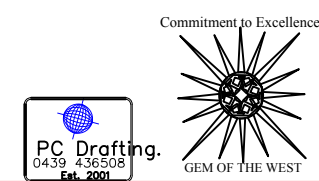
PROJECT No.
6963

DWG No.
MN6963-009

SHT SIZE
A3
REV.
P03



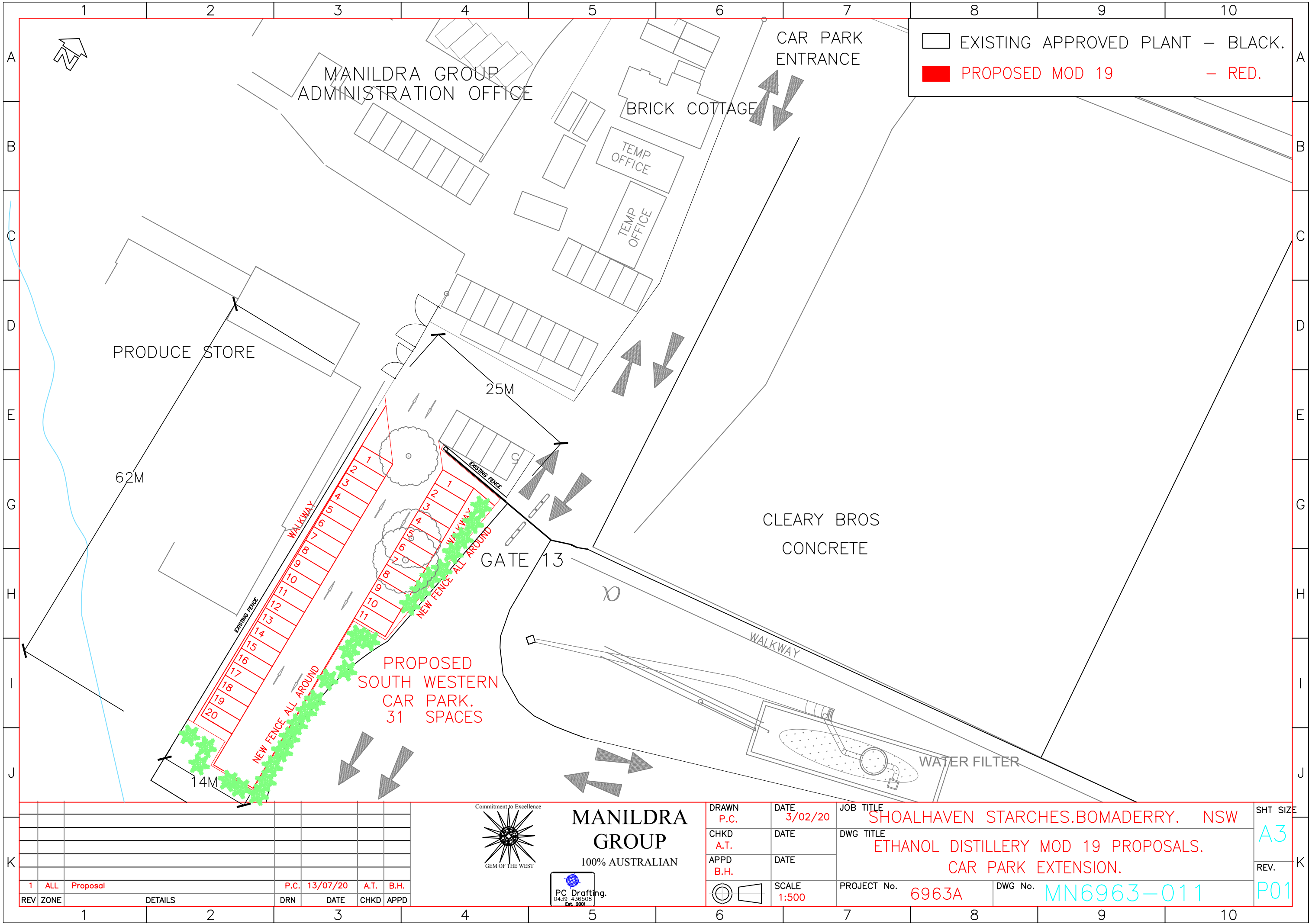
P09	ALL	Chemical bund shown..	P.C.	21-8-20	J.S.	
P08	ALL	Tank wording added & modified.	P.C.	11-8-20	J.S.	
P07	ALL	Pipe bridge re-routed.	P.C.	10-8-20	A.T.	
P06	ALL	Layout revamped.	P.C.	7-8-20	A.T.	
P05	ALL	Product silos added.2 tanks added.	P.C.	5-8-20	A.T.	
REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD



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DRAWN	P.C.	DATE	25/06/19
CHKD	D.J.	DATE	
		SCALE	1:750

SHOALHAVEN STARCHES.BOMADERRY. NSW		DWG TITLE		SHT SIZE	
		ETHANOL DISTILLERY MOD 19 PROPOSALS.		A3	
		SITE PLAN.		REV.	
		PROJECT No. 6963		DWG No. MN6963-010	
				P09	



REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
1	ALL	Proposal	P.C.	13/07/20	A.T.	B.H.



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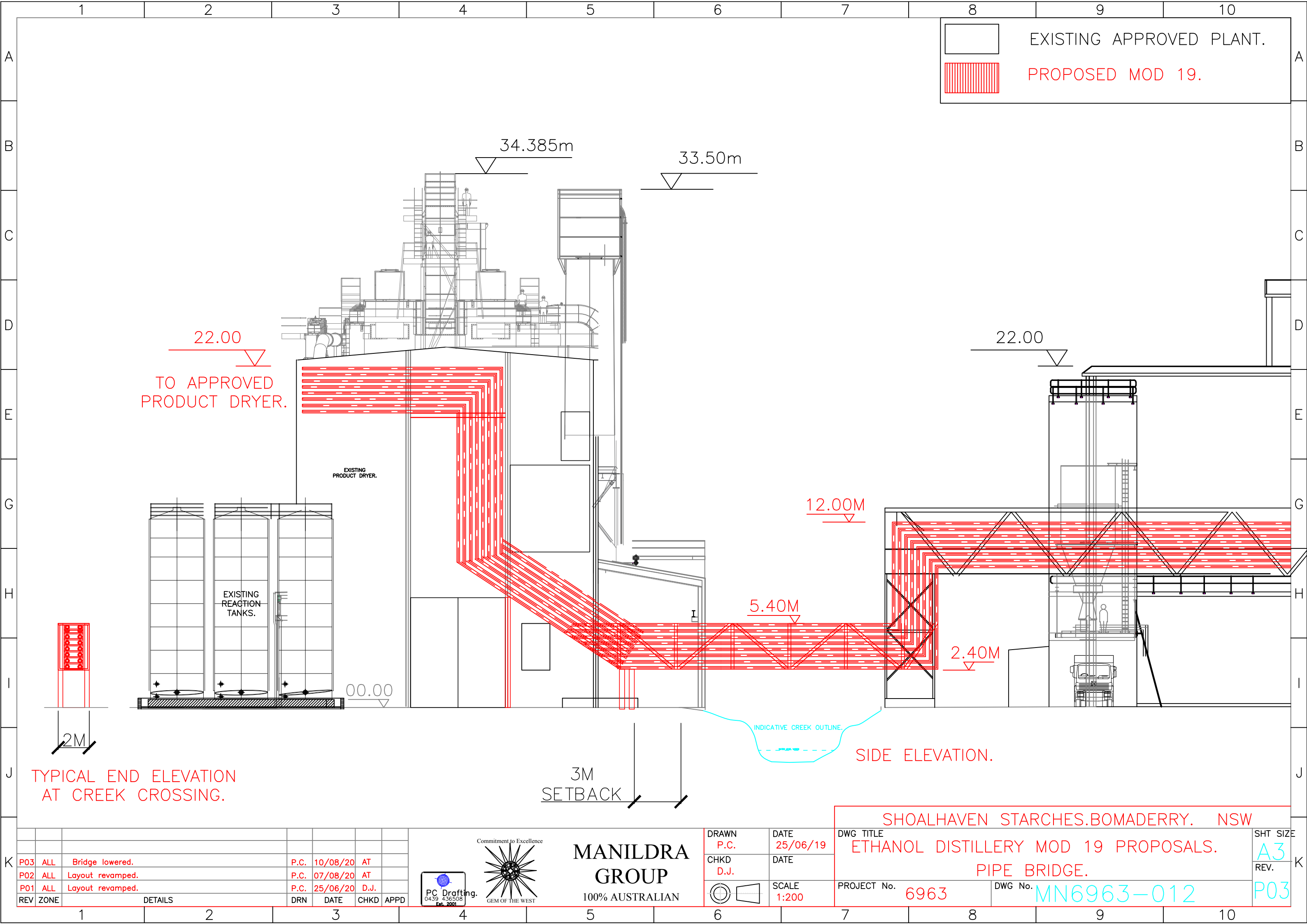


DRAWN P.C.	DATE 3/02/20
CHKD A.T.	DATE
APPD B.H.	DATE

SCALE 1:500

JOB TITLE SHOALHAVEN STARCHES.BOMADERRY. NSW
DWG TITLE ETHANOL DISTILLERY MOD 19 PROPOSALS. CAR PARK EXTENSION.
PROJECT No. 6963A
DWG No. MN6963-011

SHT SIZE A3
REV. P01



EXISTING APPROVED PLANT.

PROPOSED MOD 19.

REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P03	ALL	Bridge lowered.	P.C.	10/08/20	AT	
P02	ALL	Layout revamped.	P.C.	07/08/20	AT	
P01	ALL	Layout revamped.	P.C.	25/06/20	D.J.	

PC Drafting.

0439 436508

Est. 2001

Commitment to Excellence

GEM OF THE WEST

MANILDRA GROUP

100% AUSTRALIAN

DRAWN
P.C.

CHKD
D.J.

DATE
25/06/19

DATE

SCALE
1:200

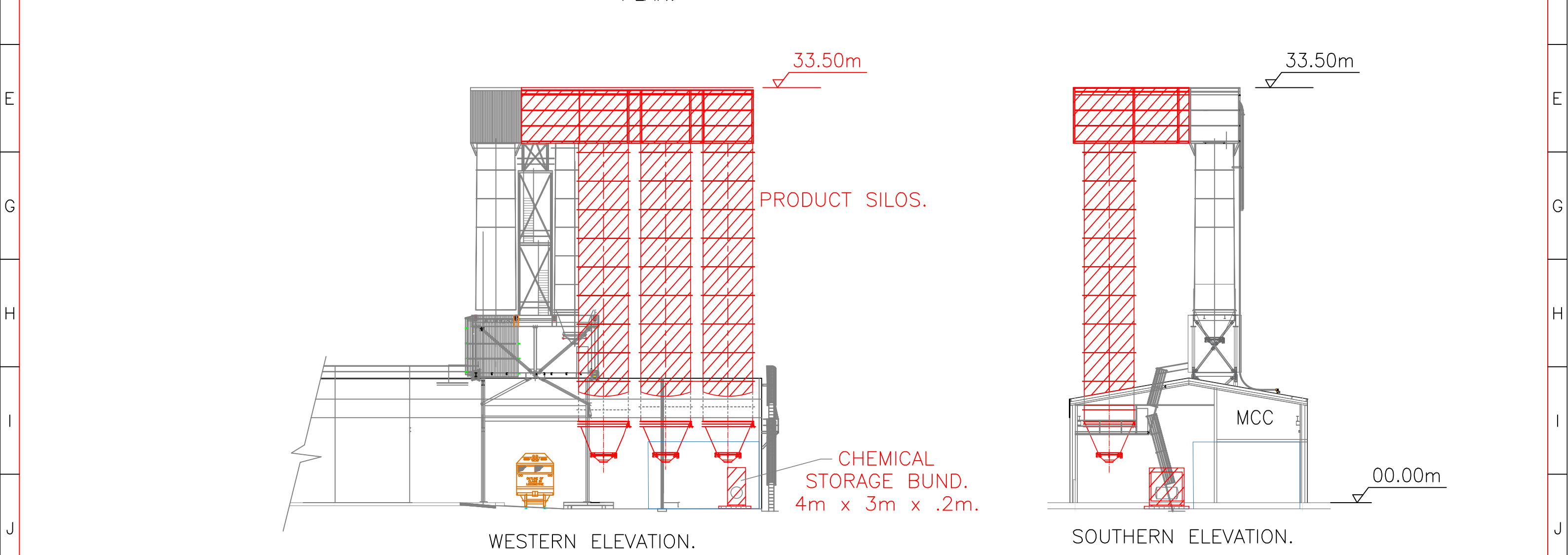
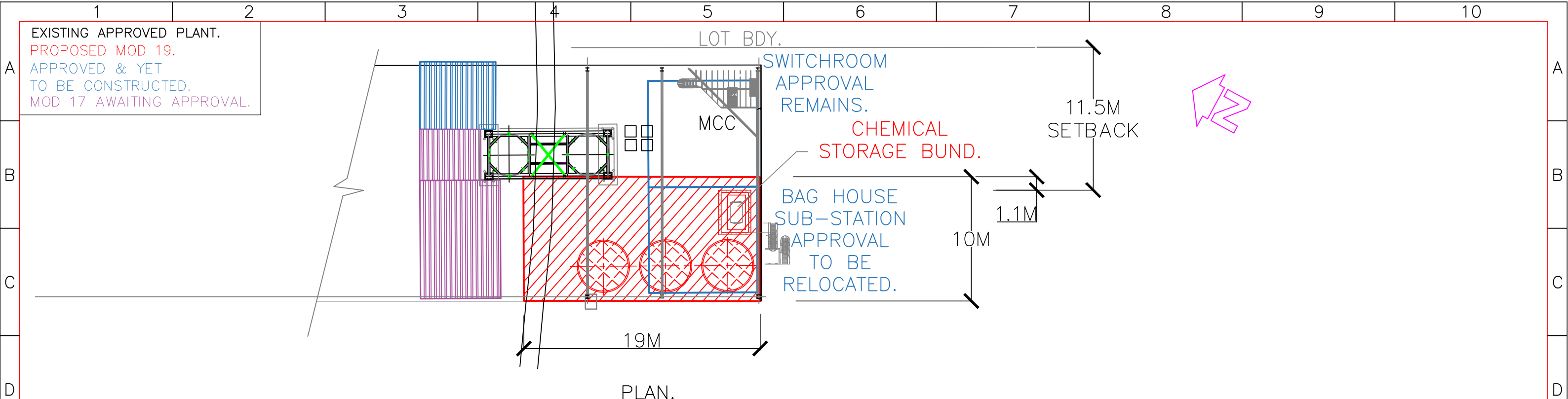
SHOALHAVEN STARCHES.BOMADERRY. NSW

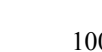
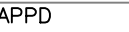
DWG TITLE
ETHANOL DISTILLERY MOD 19 PROPOSALS.
PIPE BRIDGE.

PROJECT No. 6963

DWG No. MN6963-012

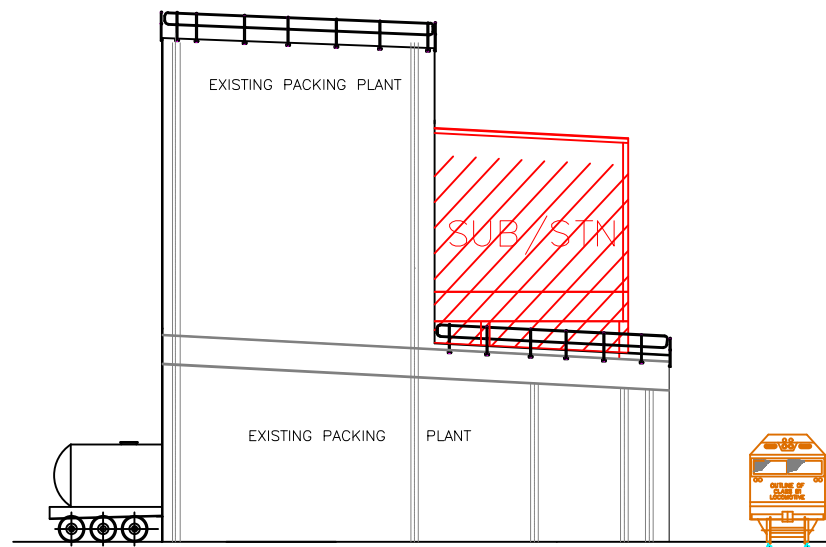
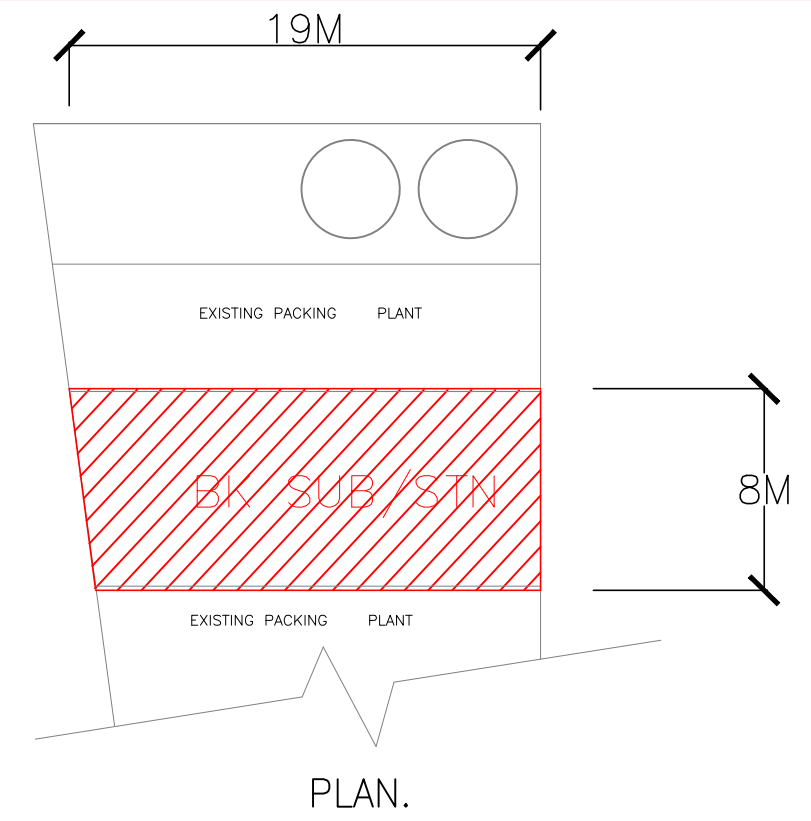
SHT SIZE
A3
REV.
P03



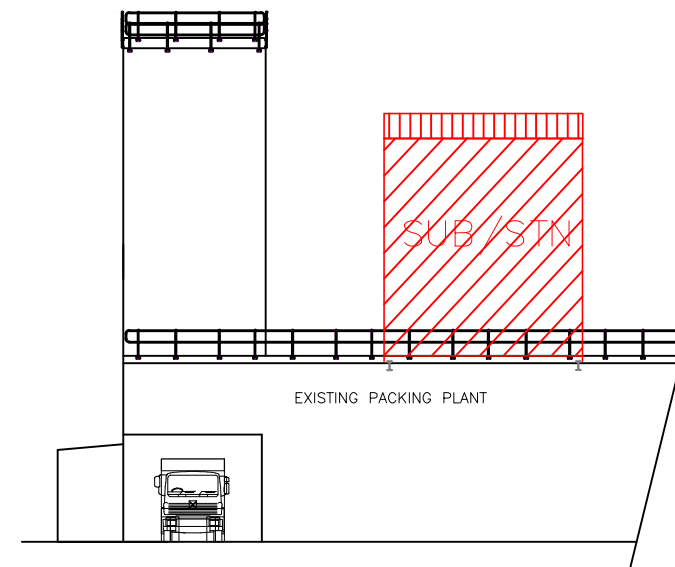
							Commitment to Excellence  MANILDRA GROUP 100% AUSTRALIAN 		DRAWN P.C. DATE 05/08/20 JOB TITLE SHOALHAVEN STARCHES.BOMADERRY. NSW		SHT SIZE A3								
							CHKD A.T. DATE DWG TITLE ETHANOL DISTILLERY MOD 19 PROPOSALS. PRODUCT SILOS.		REV.										
							APPD DATE PROJECT No. 6963 DWG No. MN6963-013		P03										
							 SCALE 1:300												
P03 ALL Chemical bund added. P.C. 19/08/20 AT P02 ALL Replaces previous drawing no. P.C. 5/08/20 AT P01 ALL Silo proposal. P.C. 5/08/20 D.J. REV ZONE DETAILS DRN DATE CHKD APPD																			
1		2		3		4		5		6		7		8		9		10	

EXISTING APPROVED PLANT.
PROPOSED MOD 19.

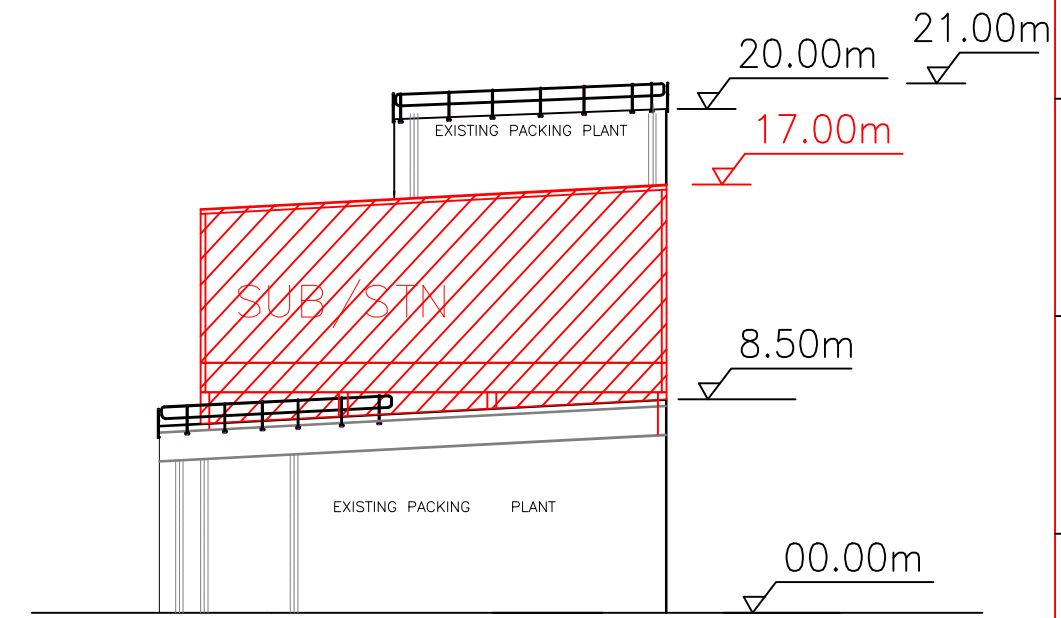
RELOCATION OF APPROVED
MAIN SUBSTATION EXTENSION.



WESTERN ELEVATION.



SOUTHERN ELEVATION.



EASTERN ELEVATION.

REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P02	ALL	Replaces previous drawing no.	P.C.	5/08/20	AT	
P01	ALL	Silo proposal.	P.C.	5/08/20	D.J.	



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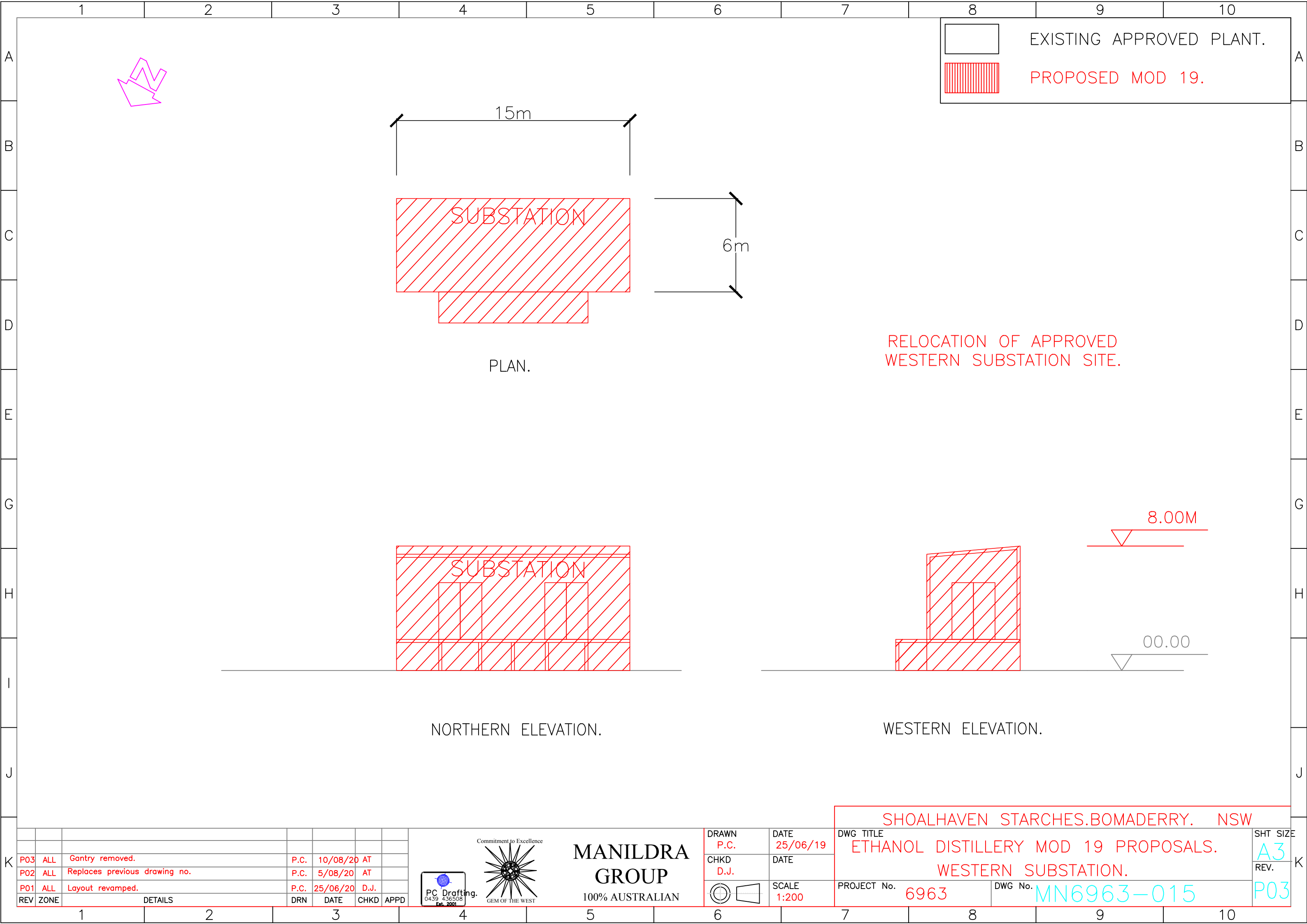


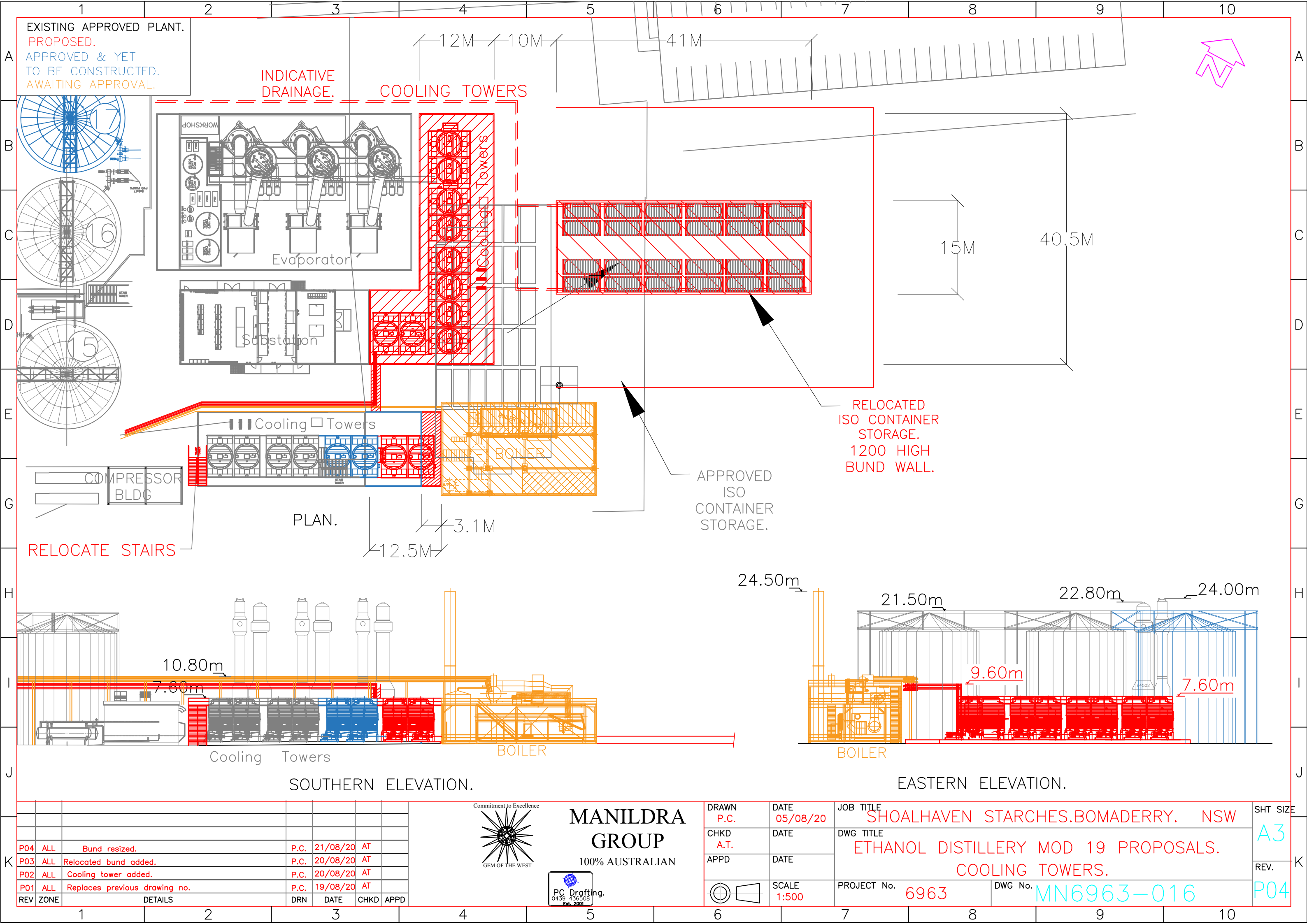
DRAWN
P.C.
CHKD
A.T.
APPD

DATE
05/08/20
DATE
DATE
SCALE
1:300

JOB TITLE
SHOALHAVEN STARCHES.BOMADERRY. NSW
DWG TITLE
ETHANOL DISTILLERY MOD 19 PROPOSALS.
RELOCATED MAIN SUBSTATION EXTENSION.
PROJECT No. 6963
DWG No. MN6963-014

SHT SIZE
A3
REV.
P02





EXISTING APPROVED PLANT.
PROPOSED.
APPROVED & YET
TO BE CONSTRUCTED.
AWAITING APPROVAL.

INDICATIVE
DRAINAGE.

COOLING TOWERS

WORKSHOP

Evaporator

Substation

Cooling Towers

COMPRESSOR
BLDG

PLAN.

RELOCATE STAIRS

APPROVED
ISO
CONTAINER
STORAGE.

RELOCATED
ISO CONTAINER
STORAGE.
1200 HIGH
BUND WALL.

10.80m
7.60m

Cooling Towers

BOILER

SOUTHERN ELEVATION.

24.50m

21.50m

22.80m

24.00m

9.60m

7.60m

BOILER

EASTERN ELEVATION.

REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P04	ALL	Bund resized.	P.C.	21/08/20	AT	
P03	ALL	Relocated bund added.	P.C.	20/08/20	AT	
P02	ALL	Cooling tower added.	P.C.	20/08/20	AT	
P01	ALL	Replaces previous drawing no.	P.C.	19/08/20	AT	



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DRAWN
P.C.

DATE
05/08/20

JOB TITLE

SHOALHAVEN STARCHES.BOMADERRY. NSW

CHKD
A.T.

DATE

DWG TITLE

ETHANOL DISTILLERY MOD 19 PROPOSALS.
COOLING TOWERS.

APPD

DATE

SCALE
1:500

PROJECT No.

6963

DWG No.

MN6963-016

SHT SIZE

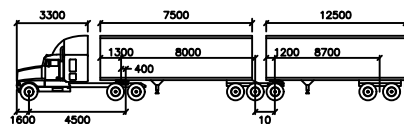
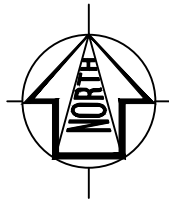
A3

REV.

P04

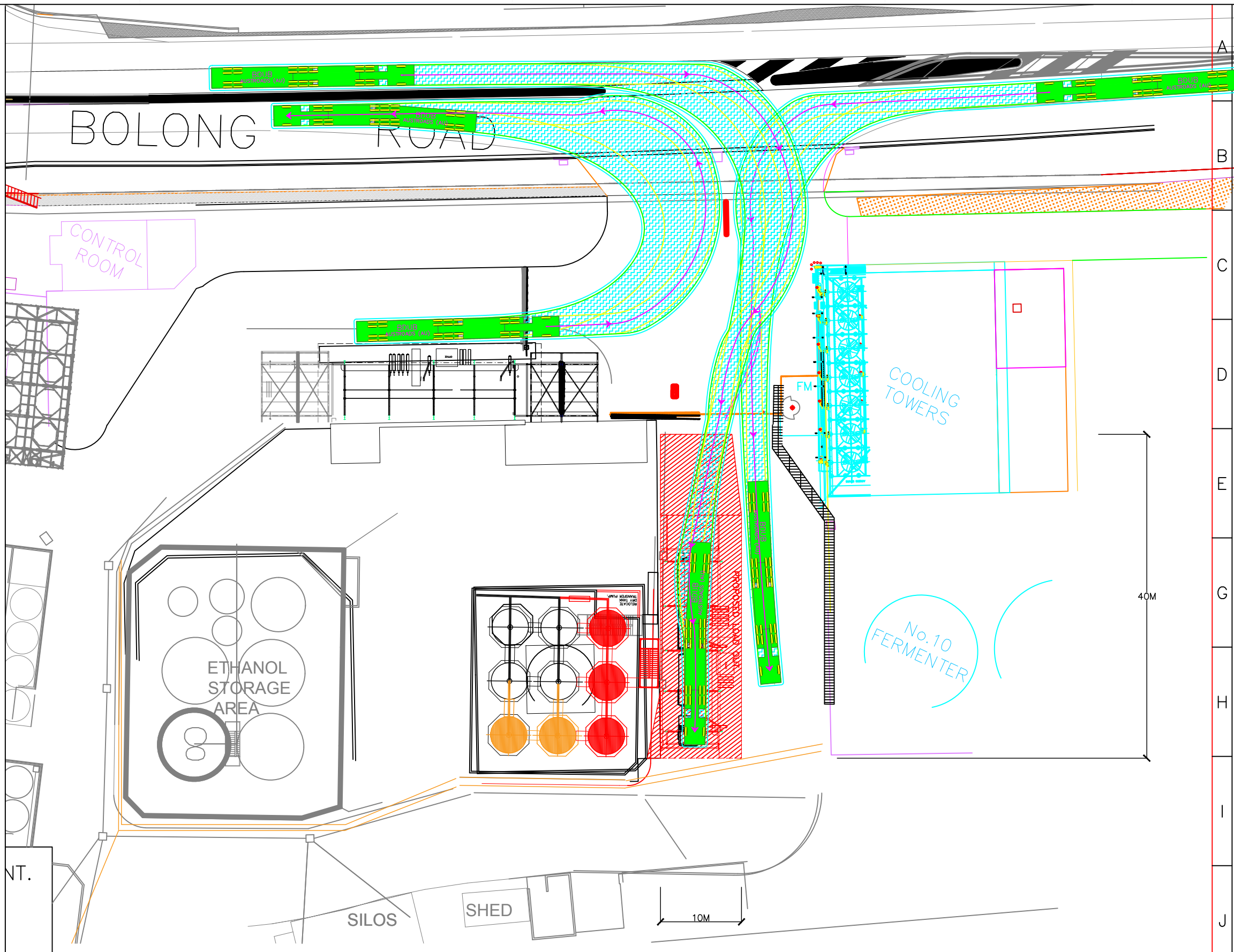
Appendix B: Swept Path Assessment





Tractor Width	: 2500	Lock to Lock Time	: 6.0
Tractor Track	: 2500	Steering Angle	: 23.5
Tractor Track	: 2500	Articulating Angle	: 70.0
Tractor Track	: 2500		

DESIGN VEHICLE

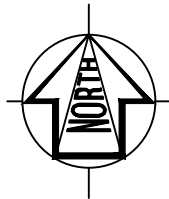


Gold Coast
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Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042
P: (02) 9557 6202

REVISIONS			
Issue	Revisions/Descriptions	Drawn	Date
001	SWEPT PATH ASSESSMENT	J.BE	11.08.2020

Scale @ A3			
0	5	10	15 20 25 1:500
ENGINEERING CERTIFICATION (RPEQ)			
Name	Signature	No.	Date

Project	SHOALHAVEN STARCHES EXPANSION PROJECT - MODIFICATION 19		Design	J.BE	Drawn	J.BE	Checked	A.P
	Title		25.0m B-DOUBLE DESIGN VEHICLE - ETHANOL ACCESS		CONCEPT ONLY		Date	11.08.2020
			Project Number	P4713	Sheet Number	1	Issue	001



BOLONG ROAD

CONTROL ROOM

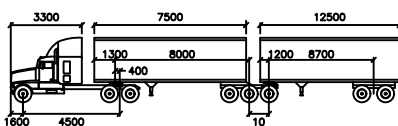
COOLING TOWERS

No.10 FERMENTER

ETHANOL STORAGE AREA

SILOS

SHED



BDUB
Tractor Width : 2500
Tractor Track : 2500
Trailer Width : 2500
Trailer Track : 2500
Lock to Lock Time : 6.0
Steering Angle : 23.5
Articulating Angle : 70.0

DESIGN VEHICLE



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REVISIONS		Drawn	Date
Issue	Revisions/Descriptions		
001	SWEPT PATH ASSESSMENT	J.BE	11.08.2020

Scale @ A3
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ENGINEERING CERTIFICATION
(RPEQ)

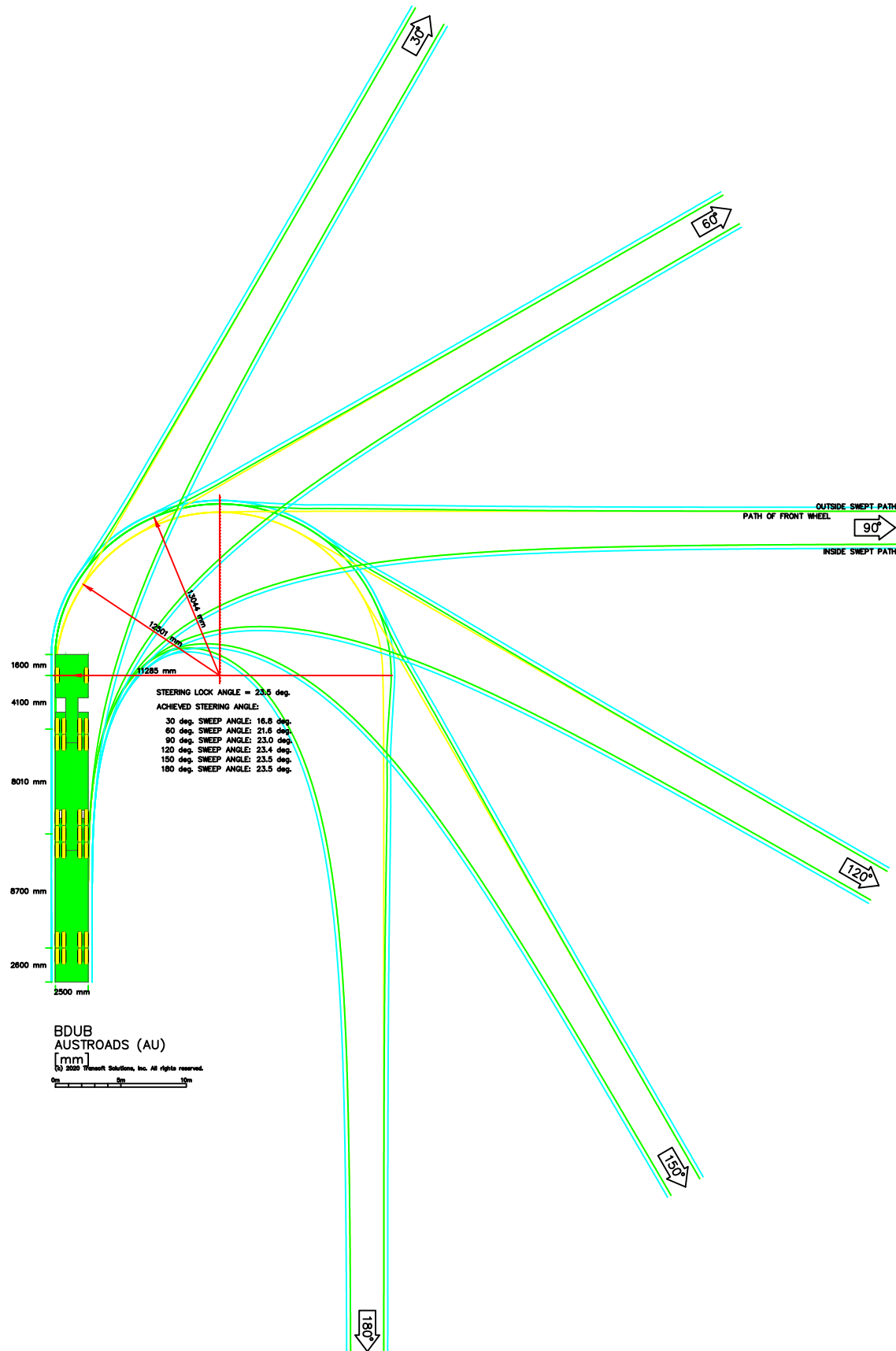
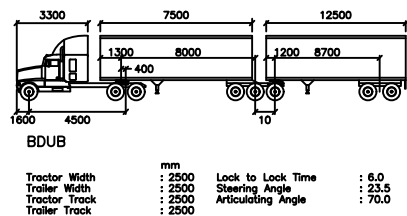
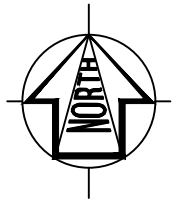
Name	Signature	No.	Date

Project
SHOALHAVEN STARCHES
EXPANSION PROJECT -
MODIFICATION 19

Title
25.0m B-DOUBLE
DESIGN VEHICLE -
ETHANOL ACCESS

Design	Drawn	Checked
J.BE	J.BE	A.P
CONCEPT ONLY		
Project Number	Sheet Number	Issue
P4713	2	001

Date
11.08.2020



DESIGN VEHICLE



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REVISIONS			
Issue	Revisions/Descriptions	Drawn	Date
001	SWEPT PATH ASSESSMENT	J.BE	11.08.2020

Scale @ A3			
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20	25	1:500	
ENGINEERING CERTIFICATION (RPEQ)			
Name	Signature	No.	Date

Project		SHOALHAVEN STARCHES EXPANSION PROJECT - MODIFICATION 19	Design	J.BE	Drawn	J.BE	Checked	A.P
Title		VEHICLE TEMPLATE	CONCEPT ONLY		Date		11.08.2020	
			Project Number	P4713	Sheet Number	3	Issue	001