Proposed Distillery Heat Recovery and associated works (Mod 31)

Geotechnical, Contamination and Acid Sulfate Soil Assessment

Manildra Group

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Executive summary

Manildra Group Pty Ltd (Manildra) was previously granted Project Approval (MP06_0228, dated 28 January 2009) by the Minister of Planning for the proposed Shoalhaven Starches Expansion project, which encapsulated previous approvals for the general site. GHD Pty Ltd (GHD) understands that Manildra intends to undertake modifications to the existing approval (Mod 31). The modification includes the construction of additional facilities and / or infrastructure within five development areas ('sites'), which are described below:

– Site 1: Dried Distillers Grain (DDG) Heat Exchangers
– Site 2: Distillery Heat Recovery Evaporator.
– Site 3: Distillery Heat Recovery Building
– Site 4: Northern carpark extension for the relocation of 94 existing car parking spaces
– Site 5: Installation of an electrical cable linking two substations

Manildra has commissioned GHD to carry out Geotechnical, Contamination, and Acid Sulfate Soil (ASS) assessments for proposed development areas to support the Modification Application.

The assessment objectives were as follows:

– Geotechnical, comprising riverbank stability in relation to proposed development:
  - Review geotechnical information on the anticipated ground conditions with respect to the proposed development works.
  - Provide preliminary geotechnical advice in relation to likely fill and natural soil conditions in relation to shallow footings for structures where appropriate, and estimated rock depths for deep piled footings.
– Preliminary Site Investigation (PSI) for contamination:
  - Assess the likelihood for contamination to exist at the proposed development sites from past or present activities and provide recommendations for further investigation and/or options management (if applicable) with respect to the proposed development based on the findings of the assessment.
– Preliminary ASS assessment:
  - Provide a preliminary ASS assessment to assess the potential for acid sulfate soils to be present in the area of the proposed works within the anticipated depth of disturbance with recommendations on the need for management during construction.

The scope of work developed to meet these objectives included a desktop study of site history and review of previous investigation reports, site walkover, interpretation of results, and conclusions and recommendations in relation to the above objectives.

Based on the previous and current investigation results, the assessment findings, conclusions and recommendations are summarised below.

Geotechnical

Based on previous geotechnical investigations across the sites, along with recent site observations by a senior GHD engineering geologist, the following conclusions are provided regarding the potential effects of the proposed structures on the stability of Bomaderry, Abernethys Creek, and the Shoalhaven River are made below. This includes a high-level review of anticipated ground conditions relevant to the proposed development works, inferred observations on likely fill and natural soil conditions for shallow footings, and approximate rock depth estimates to support concept-stage planning. Ground conditions have been interpreted based on borehole data and summary descriptions from nearby locations and may not fully represent conditions directly beneath the site.

- For Site 1, previous investigations indicate the presence of controlled fill up to depths of approximately 1.0 m bgl, underlain by soft to stiff alluvial clays and sands. Residual soils and extremely weathered sandstone were encountered from around 3.7 m to 5.7 m, transitioning to more competent sandstone from approximately 9.3 m depth. These conditions suggest shallow footings may be feasible where stiff to very stiff soils are present, while deep piled footings may need to extend beyond 6 m bgl to reach suitable founding strata. Site 1 is located approximately 110 m from the eastern bank of Bomaderry Creek and 125 m from the northern bank of the Shoalhaven River. Assuming the proposed DDG Heat Exchangers will be supported on competent alluvium or deeper pile footings within moderately weathered rock, and considering the setback from the Bomaderry Creek and the Shoalhaven River, the additional loads applied to the upper soil profile are not expected to affect the current stability of the eastern creek bank or north river bank.
- For Site 2, sandy and gravelly fill such as roadbase and subgrade materials are likely present between the surface and 0.8 m bgl. Beneath this, alluvial units may extend for significant depths, potentially up to 15.75 m depth (based on a nearby borehole), predominantly comprising silts and clays, including deep soft zones of sensitive fine-grained materials. Groundwater inflows have previously been recorded at approximately 2.5 m bgl, rising to approximately 1.6 m bgl. Below the alluvium, highly to slightly weathered sandstone interbedded with shale has been encountered from 16.55 m, with boreholes terminating at 22.6 m within the unit, before fully proving the thickness of the rock unit. Shallow footings may be unsuitable at Site 2 based on available borehole data, particularly if soft soil zones within the alluvial unit are encountered. In such cases, deeper foundations extending into competent rock should be considered. Site 2 is located approximately 100 m north of the Shoalhaven River and 150 m east of Abernethys Creek. Assuming the proposed structures are supported on deep pile footings and given the setback from both Abernethys Creek and the northern bank of the Shoalhaven River, the additional loads imposed on the upper soil profile are not expected to affect the current creek or river bank stability.
- Site 3: Sandy and gravelly fill materials such as roadbase and subgrade are likely present at Site 3 due to its current use. Disturbed, reworked ground from past service installations is also likely and may be encountered at various locations within the footprint of both sites. Beneath the disturbed ground and fill, natural alluvial soils are expected, with variable consistencies. It is inferred that the general stratigraphy and depth to rock will likely be similar to those encountered at Site 2. Site 3, assuming the proposed structures are largely supported on deep pile footings, and considering the setback (approximately 115 m east) from Abernethys Creek, the additional loads that may be applied to the upper soil profile unlikely not influence the current stability of the banks of Abernethys Creek or the Shoalhaven River.
- Site 4 (eastern portion) is currently occupied by thick vegetation (i.e. grass, weeds, shrubs), parts/equipment and is at least 1 m lower than the adjoining carpark, west of the site. It is anticipated that vegetation and parts/equipment will be removed, and fill (likely gravel from a quarry) will be placed to raise the ground surface to a similar level to the existing carpark. Site 4 (north-western portion) occurs within the existing northern carpark and will include a change in carpark configuration only (i.e. no civil or structural modifications proposed).
- Site 5:
  - The proposed electrical cable route passes through various ground conditions. In the west, soft to very soft soils and shallow groundwater overlying deep alluvium soils; and towards the east, ground conditions are typically very stiff to hard clays, and/or friable, and medium dense sands. No previous investigations have been carried out within the mid-section of the electrical cable route (i.e. north of northern carpark). Given the elevation and areas where surface water accumulates during prolonged wet weather, it is anticipated that subsurface conditions could also include soft soils and shallow groundwater.
  - The western end of the proposed electrical cable is above ground parallel to Abernethys Creek. An overhead electrical bridge will be constructed over Bolong Road. The bridge has a span of 53.2 m and height of 13.6 m. The cable will be attached to this bridge to cross the road then continue north approximately 150 m above ground. The electrical bridge is anticipated to be founded on deeper pile footings within competent rock which could occur below 13.2 m (based on the nearest borehole SBH01). An appropriate offset from the banks of Abernethys Creek will need to be considered based on the size of the foundations for the overhead electrical bridge supports. Currently the offset distance between the foundations and the eastern creek bank is 6.6 m.

- Once the cable is north of the carbon dioxide gas installation it will continue east then south-east below ground. The size and depth of the trench required for the cable installation has not been provided. Trenching within the mid-section and eastern section (north of Bolong Road) may encounter soft soils and shallow groundwater. Appropriate excavation supports (i.e. shoring, benching and/or battering) may be required to manage trench instability. Dewatering may also be necessary particularly following prolonged periods of rain or short intense rainfall events. Excavation and backfilling should be sequenced to minimise open trench exposure, and spoil should be kept clear of trench edges to avoid surcharge loading, particularly where ground is soft or water charged. Excavations occurring at the western end of the trenched section should consider sediment and erosion controls, and monitoring of Abernethys Creek. The drawings indicate that the western end of the trench is 6.6 m east of the eastern creek bank. Given the presence of soft soils, risk of slope instability of the creek banks will need to be appropriately managed at this section of the cable trench.
- The eastern end of the electrical cable terminates at the proposed substation south of Bolong Road, within the main plant. Previous investigations (Coffey, 2014b) in nearby boreholes (CBH02 and CBH03) indicate sandy gravel fill (DGB20) to 0.6 m overlying stiff to very stiff alluvium clays and medium dense clayey silty sands are likely to be encountered in this area of the site. Groundwater was encountered at depths below 2.7 m from the ground surface. It is anticipated that better trench stability will be encountered within this area of the site. Depending on the depth of the trench groundwater inflows may require management.

Contamination

GHD was commissioned to carry out a PSI for contamination within the five proposed development areas (Sites 1 to 5) as part of the Mod 31 upgrade to the Manildra Plant infrastructure.

Site history information indicated that the areas where the developments are proposed were previously agricultural land with minimal development. The sites and surrounding areas were progressively developed from the early 1950s starting with the Horlicks Factory (a milk processing plant) which occupied an area west and south-west of the current investigation sites and immediately east of Abernethys Creek. Shoalhaven Starches was established at the Horlicks Factory site in 1970s and produced wheat, starch and gluten products. Between 1993 and 2025, more facilities were installed across the main plant area (proposed development Site 1, Site 2 and Site 5 (south of Bolong Road) to accommodate the increase in ethanol production. Facilities included silos, tanks, distillery, dryers, evaporation plants, electrical substations, workshops, incinerator, boiler house and coal storage, cooling towers, fermenters, biofilters, forklift maintenance area, chemical storage areas, maintenance workshops, buildings, railway lines and carparks.

Sites 3, 4 and 5, located north of Bolong Road, and immediate surrounds remained generally undeveloped until 2002 after which a gas facility, shipping containers, toilet block, carpark and additional demountable structures were constructed east of Abernethys Creek. The area west of Site 4 was a grass paddock until late 2022 after which a gravel carpark was constructed.

Several site investigations for geotechnical, contamination and ASS, have been carried out over the past 30 years. The investigations identified several Areas of Environmental Concern (AECs) where potentially contaminating activities were carried out within or close to the proposed development areas. Limited soil and groundwater sampling and analysis have been carried out across the main plant assessing some of the AECs identified that also affected the sites. Typically, Contaminants of Potential Concern (COPCs) in soil samples did not exceed adopted human health assessment criteria for industrial / commercial land use (NEPC, 2013). In groundwater, concentrations of anthracene marginally exceeded adopted ecological assessment criteria (ANZECC/ARMCANZ, 2000) reported in one well within the eastern portion of the main plant. The reports generally concluded that there was a low likelihood of widespread contamination that would adversely affect the proposed development, however localised contamination could exist. Localised areas of contamination in the form of asbestos containing materials (ACM) fragments and total recoverable hydrocarbons (TRH) were identified in the eastern part of the main plant however unlikely to affect Site 5 (eastern end south of Bolong Road).

Based on investigation results, potential for contamination was identified in eight AECs potentially impacting soil, surface water and groundwater. The occurrence of contamination (if present) is expected to be localised. Potential Source-Pathway-Receptor (SPR) linkages were assessed and could be complete, if contamination is present, for:

– Human receptors:
    - Construction workers/visitors that have direct contact with soil and groundwater may be exposed to contamination via dust and vapours (via inhalation) generated during excavation or installation of piles.
– Ecological receptors:
    - During construction, in the vicinity of Abernethys Creek, potential impacts to aquatic species are possible from the mobilisation of contaminants from soil and / or groundwater.
    - Additional exposure to soil and perched groundwater may occur during the construction phase where hardstand areas may be removed, or soil exposed in resulting excavations, in areas north of Bolong Road.

Based on the results of this PSI for contamination, a Targeted Site Investigation (TSI) is recommended for AECs where the likelihood of contamination to exist is assessed as moderate to high, to assess if SPR linkages are complete. AECs where the likelihood of contamination was assessed as moderate, low and very low can be managed at the time of construction should contamination be encountered.

It is recommended that a Construction Environmental Management Plan (CEMP) be prepared to manage the potential contaminant exposure risks during construction activities, and manage potential unexpected finds (e.g. buried waste, demolition waste, ACM, etc.) that could be encountered. Therefore, the CEMP should also include an Unexpected Finds Protocol (UFP) and site-specific Work Health Safety and Environment (WHSE) plan. A site-specific WHSE plan should be prepared, to ensure appropriate safety and workplace hygiene practices are implemented to minimise potential risks from exposure to contamination. The WHSE plan must address all relevant regulatory requirements and as a minimum, should consider incorporating the relevant practices set out in CRC Care (2018) National Remediation Framework: Guideline on health and safety, Version 0.1: August 2018.

Site workers should be advised of the potential contamination risks at the sites and have appropriate personal protective equipment (PPE) available should contamination be encountered, and should have also read and understood management documents that apply to the construction sites.

– Soils excavated as part of the development should be assessed for waste classification to allow off-site disposal of surplus materials to an appropriately licenced waste facility.
– For general contamination risk management, a contamination register should be prepared which clearly documents where contamination has been identified at the site or likely to be encountered based on previous investigation results.
– Prepare and implement an Environmental Management Plan (EMP) which focuses on improving site practices and minimisation of future contamination.

Acid sulfate soil

Based on the results of previous investigations, ASS may be encountered at variable depths within the proposed development areas where deep footing systems such as bored or continuous flight auger (CFA) piles or trenching/excavations deeper than 1 m are required. Soft dark grey to black clays and loose grey sands were encountered at test locations within or in the vicinity of the development areas, particularly in the main plant area and adjacent to Abernethys Creek and north of the existing northern carpark, which are indicative of coastal ASS. Limited ASS investigations have been carried out to assess the presence of ASS. ASS occurrence at each site is summarised in Table 3.3 in Section 3.4.2.

Therefore, it is recommended that an acid sulfate soil management plan (ASSMP) be developed and actioned where excavations associated with the proposed development will disturb ASS and/or require dewatering which could result in the lowering of the water table. It is understood that ASSMPs already exist for some areas of the Main Plant. Existing ASSMPs should be reviewed and updated to reflect changes in ground disturbance activities, quantities and guidelines. Further investigations could be considered to assess the absence or presence of ASS to better inform ASS management options during soil disturbance.

* * *

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.6 and the assumptions and qualifications contained throughout the Report.

Contents

Abbreviations and definitions ix

1. Introduction 1

1.1 General 1

1.2 Purpose of this report 1

1.3 Drawings relating to the proposed development sites 1

1.4 Objectives 2

1.5 Scope of work 3

1.6 Limitations 3

2. Proposed development 4

3. Site setting 6

3.1 Site identification 6

3.2 Topography and drainage 8

3.3 Soil landscape 8

3.4 Acid sulfate soil occurrence 9

3.4.1 Regional 9

3.4.2 Specific 10

3.5 Geology 11

3.5.1 Regional 11

3.5.2 Site specific 11

3.6 Hydrogeology 16

3.6.1 Regional 16

3.6.2 Site specific 19

4. Site history 20

4.1 General 20

4.2 Historical aerial photography 20

4.2.1 Site 1: DDG heat exchanger 20

4.2.2 Site 2: Distillery Heat Recovery Evaporators 22

4.2.3 Site 3: Distillery Heat Recovery Building 22

4.2.4 Site 4: Northern carpark extension 24

4.2.5 Site 5: Electrical cable 27

4.3 NSW EPA registers 34

4.4 Section 10.7 Planning Certificates 35

4.5 Chemical storage inventory 36

4.6 Previous reports 38

4.6.1 Contamination Sampling and Testing, Proposed Evaporators, Fermentation Tanks, and Cooling Towers (Coffey, 2002) 38

4.6.2 Preliminary Environmental Site Assessment and Geotechnical Investigation (Coffey, 2008b) 39

4.6.3 Geotechnical and Preliminary Environmental Investigations, Proposed New Silos (Coffey, 2014a) 41

4.6.4 Contamination Assessment (Coffey, 2015a) 41

4.6.5 Preliminary Geotechnical, Contamination, ASS Assessments modifications to the existing ethanol distillery (Mod 19) (GHD, 2020) 45

4.6.6 Asbestos clearance certificates and waste classification 46

4.6.7 Soil test pit investigation – former Dairy Farmers soil mound (ENRS, 2021) 46
4.6.8 Preliminary Geotechnical, Contamination, ASS Assessments for the proposed gas pipeline (Mod 2) (GHD, 2022b) 47
4.6.9 Preliminary Geotechnical, Contamination, ASS Assessments for the Proposed Evaporators, MVR & Substations (Mod 29) (GHD, 2024a) 48
4.6.10 Preliminary Geotechnical - River Bank Stability, Contamination, Riparian and Acid Sulfate Soil Assessment Proposed Ethanol Plant Stage 3 Upgrade (Mod 22) (GHD, 2024b) 49
4.7 Interviews 51
4.7.1 General 51
4.7.2 Site 1: DDG heat exchanger 52
4.7.3 Site 2: Distillery Heat Recovery Evaporators 52
4.7.4 Site 3: Distillery Heat Recovery Building 52
4.7.5 Site 4: Northern carpark extension 53
4.7.6 Site 5: Electrical cable 53
4.8 Gaps in the site history 55
4.9 Site history summary 55
4.9.1 General 55
4.9.2 Main plant (Sites 1 and 2, and Site 5 western and eastern ends) 56
4.9.3 North of Bolong Road (Sites 3, 4 and 5) 57
5. Site observations 58
5.1 Site 1: DDG Heat Exchanger 58
5.2 Site 2: Distillery Heat Recovery Evaporators 59
5.3 Site 3: Distillery heat recovery building 61
5.4 Site 4: Northern carpark extension 62
5.4.1 Eastern end 62
5.4.2 North-western end 62
5.4.3 General observations 62
5.5 Site 5: Electrical cable 63
6. Preliminary conceptual site model 74
6.1 Potential sources 74
6.1.1 On-site sources 74
6.1.2 Off-site sources 76
6.1.3 Contaminants of potential concern 76
6.1.4 Potential contamination affecting sites 76
6.2 Pathways 78
6.3 Receptors 78
6.4 Source-pathway-receptor (SPR) linkages 78
6.4.1 Future workers/visitors 78
6.4.2 Groundwater users 79
6.4.3 Ecological receptors 79
6.5 CSM conclusions 79
7. Discussion and conclusions 80
7.1 Geotechnical 80
7.1.1 Site 1 – DDG Heat Exchangers 80
7.1.2 Site 2 – Distillery Heat Recovery Evaporators 80
7.1.3 Site 3 and 4 – Heat Recovery Building and Northern Carpark Extension 81
7.1.4 Site 5 – Electrical Cable 81
7.2 Contamination 82

7.3 Acid sulfate soil 86

8. References 87

Table index

Table 1.1 Drawings defining the proposed development sites 1
Table 2.1 Summary of the proposed development for Mod 30 4
Table 3.1 Summary of site identification details 6
Table 3.2 Summary of topography and watercourses 8
Table 3.3 Summary of previous ASS assessments 10
Table 3.4 Summary of previous investigation locations 12
Table 3.5 Subsurface conditions in vicinity of Site 1 – DDG Heat Exchangers 14
Table 3.6 Subsurface conditions in vicinity of Site 2 – Distillery Heat Recovery Evaporators 15
Table 3.7 Subsurface conditions at Site 5 (eastern end, south of Bolong Road) – Electrical Cable 16
Table 3.8 Summary of registered groundwater bores 17
Table 4.1 Summary of NSW EPA search results 34
Table 4.2 Summary of Section 10.7 regarding contamination matters 35
Table 4.3 Summary of chemical storage inventory as at 25 March 2025 and site observations 36
Table 4.4 Summary of conclusions and recommendations for identified AECs for Mod 22 50
Table 6.1 Summary of potential contamination source per site 77
Table 7.1 Summary of conclusions and recommendations for identified AECs for Mod 31 Sites 1 to 5 84

Figure index

Figure 2.1 Shoalhaven Starches overall site plan showing proposed modifications (in red) (Ref: Project 7462, DWG No. MN7462-001, dated 25/11/2024 (Rev. P04)) 5
Figure 3.1 ASS Occurrence approximately shown relative to each site (DLWC, 1997) 9
Figure 3.2 Groundwater bores closest to sites (source: WaterNSW) 18
Figure 4.1 Former effluent treatment facility in May 2011 (Coffey, 2015a, p. 278) 43
Figure 4.2 Generalised areas of identified soil contamination within the 2014 site boundary shown by the red outline (Coffey, 2015a, p. 34) 44
Figure 4.3 Site layout plan for Gas Pipeline Mod 2 investigation showing AECs and land use information (GHD, 2022b) 48

Appendices

Appendix A	General Notes
Appendix B	Figures
Appendix C	Proposed Development Drawings
Appendix D	Manildra Plant Drainage Drawings
Appendix E	Aerial Photographs
Appendix F	NSW EPA Registers
Appendix G	Section 10.7 Planning Certificate
Appendix H	Chemical Register
Appendix I	SDS – Fire Fighting Foams
Appendix J	Figures from Coffey 2015 contamination assessment (Coffey, 2015a)

Abbreviations and definitions

Abbreviation	Definition
AASS	Actual acid sulfate soils
ACM	Asbestos containing material
AEC	Area of environmental concern
AMP	Asbestos Management Plan
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZG	Australian and New Zealand Guideline
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ASS	Acid sulfate soils
ASSMP	Acid sulfate soil management plan
BOD	Biological oxygen demand
BTEXN	Benzene, toluene, ethyl benzene and xylenes plus naphthalene
CFA	Continuous Flight Auger
CLM Act	Contaminated Land Management Act 1997 (incorporating amendments made by the Contaminated Land Management Amendment Act 2003)
COD	Chemical oxygen demand
COPC	Contaminant of potential concern
CSM	Conceptual Site Model
DDGS	Dried Distillers Grain with Solubles
DO	Dissolved oxygen
DP	Deposited Plan
DPE	Department of Planning and Environment
DSI	Detailed Site Investigation
EC	Electrical conductivity
EIL	Ecological Investigation Level
EMP	Environmental Management Plan
EPL	Environmental Protection Licence
ESA	Environmental Site Assessment
ESL	Ecological Screening Level
GHD	GHD Pty Ltd
GPRF	Gas Pressure Reduction Facility
Ha	Hectare
HDPE	High-density polyethylene
HIL	Health Investigation Level (relating to defined land use scenario)
HSL	Health Screening Levels
<	Less than (laboratory reporting limit)
LOR	Limit of reporting
mAHD	Elevation in metres from Australian Height Datum
mbgl	Metres below ground level

Abbreviation	Definition
mg/kg	Milligrams per kilogram
NATA	National Association of Testing Authorities of Australia
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NSW EPA	New South Wales Environmental Protection Authority
OEH	Office of Environment and Heritage
PAH	Polycyclic aromatic hydrocarbons
PASS	Potential acid sulfate soil
PCB	Polychlorinated biphenyl
PFAS	Per and polyfluoroalkyl substances
pH	-log[H]
PID	Photoionisation detector
PPE	Personal protective equipment
ppm	Parts per million
PSI	Preliminary Site Investigation
REMS	Reclaimed Effluent Management Scheme
RIS	Reduced Inorganic Sulphur
SPR	Source Pathway Receptor
SWL	Standing water level
TAA	Total Actual Acidity
TEQ	Toxicity Equivalence Quotient
TPH	Total petroleum hydrocarbons
TRH	Total recoverable hydrocarbons
TSI	Targeted Site Investigation
UCL	Upper Confidence Limit
UFP	Unexpected Find Protocol
ug/L	Micrograms per litre
VENM	Virgin Excavated Natural Material
VHC	Volatile halogenated compound
VOC	Volatile organic compound
WHSE	Work Health Safety and Environment
WWTP	Wastewater treatment plant

1. Introduction

1.1 General

Manildra Group Pty Ltd (Manildra) was previously granted Project Approval (MP06_0228, dated 28 January 2009) by the Minister of Planning for the proposed Shoalhaven Starches Expansion project, which encapsulated previous approvals for the general site.

GHD Pty Ltd (GHD) understands that Manildra intends to modify their existing approval (Mod 31) to include the following proposed developments:

– Site 1: Dried Distillers Grain (DDG) Heat Exchangers
– Site 2: Distillery Heat Recovery Evaporator.
– Site 3: Distillery Heat Recovery Building
– Site 4: Northern carpark extension for the relocation of 94 existing car parking spaces
– Site 5: Installation of an electrical cable linking two substations

These modifications are further discussed in Section 2 and the site location is shown in Figure 1, Appendix B.

Manildra has commissioned GHD to carry out Geotechnical, Contamination, and Acid Sulfate Soil (ASS) assessments for proposed development areas to support the Modification Application.

These assessments have been carried out in general accordance with GHD's proposal ref: 12662565-35995-1, dated 11 February 2025.

1.2 Purpose of this report

The purpose of this report is to document the findings of the assessment, which will support the Modification Application and address anticipated requirements from the Department of Planning and Environment (DPE). The requirements anticipated for the Modification Application are listed in a letter from Allen Price Pty Ltd (Allen Price) (letter reference: 131353-CS, MP06_0228, dated 6/12/2024, p. 14) and amended scope of work provided by Allen Price via email dated 6/2/2025.

1.3 Drawings relating to the proposed development sites

The proposed development sites are shown in drawings listed in Table 1.1 below and shown on Figure 1 in Appendix B. A copy of these drawings is included in Appendix C.

Table 1.1 Drawings defining the proposed development sites

GHD Site ID	Drawing Title	Drawing No.	Date	Drawing Rev.
DDG Heat Exchangers, Bunded Evaporators, Heat Recovery Works and Carpark proposed developments				
Sites 1 to 5	Overall site plan	MN7462-001	23/05/2025	P08
DDG Heat Exchangers and Heat Recovery Works				
Sites 1 and 3	Site Elevations GA	MN7462-000	28/05/2025	P06
Bunded Evaporators, Heat Recovery Works, Carpark and Electrical Cable				
Sites 2 to 5	BG1 & BG2 Heat Recovery O/A Site Plan	MN7994-001	23/05/2025	P09
Sites 2 and 3	BG1 & BG2 Heat Recovery Site Elevation	MN7994-002	28/05/2025	P06
DDG Heat Recovery Works				
Site 3	BG1 & BG2 Heat Recovery Gantry Sectional Elevation	MN7994-003	05/05/2025	P05

GHD Site ID	Drawing Title	Drawing No.	Date	Drawing Rev.
Site 3	BG1 & BG2 Heat Recovery Distillery Heat Recovery Building	MN7994-004	05/05/2025	P05
Site 3	Plan View	1208-SK01	11/04/2025	P2
Site 3	South Elevation	1208-SK02	11/04/2025	P2
Site 3	Fan Building South Elevation	1208-SK05	11/04/2025	P2
Site 3	Fan Building East Elevation	1208-SK06	11/04/2025	P2
Site 3	Fan Building North Elevation	1208-SK07	11/04/2025	P2
Site 3	Fan Building South Elevation	1208-SK08	11/04/2025	P2
DDG Heat Exchangers				
Site 2	BG1 & BG2 Heat Recovery Distillery Heat Recovery Evaporators	MN7994-005	28/05/2025	P06
Site 2	Control Room Additions	MN7994-006	07/05/2025	P16
Site 2	East Elevation at Evaporators	1208-SK03	11/04/2025	P2
Site 2	North Elevation	1208-SK04	11/04/2025	P2
DDG Heat Exchangers				
Site 1	DDG Heat Exchangers Site Plan	MN7462-017	22/01/2025	P04
Site 1	DDG Heat Exchangers Site Elevation	MN7462-025	22/01/2025	P02
Electrical Cable				
Site 5	Overhead Electrical Bridge	MN7994-007	23/05/2025	P03
Site 5	Elec Bridge Plan	1208-SK09	11/04/2025	P2
Site 5	Elec Bridge Sections	1208-SK10	11/04/2025	P2

1.4 Objectives

The assessment objectives were as follows:

– Geotechnical, comprising riverbank stability in relation to proposed development:
  - Review geotechnical information on the anticipated ground conditions with respect to the proposed development works.
  - Provide preliminary geotechnical advice in relation to likely fill and natural soil conditions in relation to shallow footings for structures where appropriate, and estimated rock depths for deep piled footings.

– Preliminary Site Investigation (PSI) for contamination:
  - Assess the likelihood for contamination to exist at the proposed development sites from past or present activities and provide recommendations for further investigation and/or options management (if applicable) with respect to the proposed development based on the findings of the assessment.

– Preliminary ASS assessment:
  - Provide a preliminary ASS assessment to assess the potential for acid sulfate soils to be present in the area of the proposed works within the anticipated depth of disturbance with recommendations on the need for management during construction.

1.5 Scope of work

The scope of work for this assessment comprised the following:

– Desktop study including a review of existing subsurface information in the vicinity of the proposed structures.
– Review previous reporting/advice by Coffey and GHD on geotechnical, contamination and ASS assessments relating to the site.
– Site visit and observations by Contaminated Land Technical Director and Senior Engineering Geologist from GHD to visually assess potential sources of contamination and also to observe surrounding land uses, topography, drainage and nearby sensitive environments to confirm the findings from previous reports and assess any major changes to site conditions since the previous report.
– Report on desktop review, drawing upon information within recent reports prepared for areas adjacent to the proposed development sites, site observations and recommendations in accordance with the objectives outlined above.

1.6 Limitations

This report: has been prepared by GHD for Manildra and may only be used and relied on by Manildra for the purpose agreed between GHD and Manildra as set out in Sections 1.2 and 1.4 of this report.

GHD otherwise disclaims responsibility to any person other than Manildra arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

GHD has prepared this report on the basis of information provided by Manildra and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

This report is to be read in conjunction with document titled "General Notes" (Ref: DS5.5.1 Issue 0 Date: 05/10/2018), located in Appendix A of this report.

2. Proposed development

The proposed changes under Modification Application (Mod 31) are indicated by red polygons and labels in Figure 2.1 below, as provided by Allen Price. Detailed drawings of the proposed development are included in Appendix C. A description of the proposed Mod 31 development is provided in Table 2.1 below.

Table 2.1 Summary of the proposed development for Mod 30

Site ID	Structure	Description
1	DDG Heat Exchangers	– Installation of two heat exchangers, designated #4 and #5 DDG Heat Exchangers. – Associated pipework linking the structures occurs overhead via pipe bridges or gantries.
2	Distillery Heat Recovery Evaporators	– The drawings indicate four units situated on the eastern side of the distillery (beverage grade ethanol plant) occupying an area of 13.5 by 13 m. A fifth unit is proposed on the northern side of the distillery, west of the control room. – Height 58.7 m.
3	Distillery Heat Recovery Building	– Four storey, 52.10 m by 19.75 m building, height 26.33 m – Building also includes two switch rooms on the lower two floors. – An overhead gantry, spanning Bolong Road, is proposed linking the distillery heat building and distillery heat recovery evaporators. The gantry has a nominal clearance above Bolong Road of 5 m. The gantry will contain pipelines and cabling, and an access walkway. The length of the gantry is 40 m.
4	Northern Carpark Extension	– Expansion of existing car park located on the northern side of Bolong Road. – It is proposed to expand this car park by an additional 78 parking spaces to accommodate the relocation of spaces associated with the new distillery heat recovery building, and to provide additional parking for construction contractors. The proposal also includes the formation of new entry and exit points. – A smaller carpark extension is proposed on the western side of the existing carpark area comprising 16 additional parking spaces.
5	Electrical Cable	– Electrical cabling required to connect two substations, one near Abernethys Creek (western substation) and the other, yet to be constructed, within the eastern plant area (eastern substation). The eastern substation is designated as the main distribution substation 0.2 & 0.3, – At the western substation, the electrical cable is above ground, passing above Bolong Road via an overhead gantry/electrical cable bridge parallel to Abernethys Creek. The overhead gantry/electrical bridge has a nominal clearance above Bolong Road of 6 m. North of the carbon dioxide gas plant, the electrical cable continues below ground in an easterly direction then turning south, going below Bolong Road, connecting with the eastern substation. The depth of the trench is anticipated to be approximately 1.5 m.

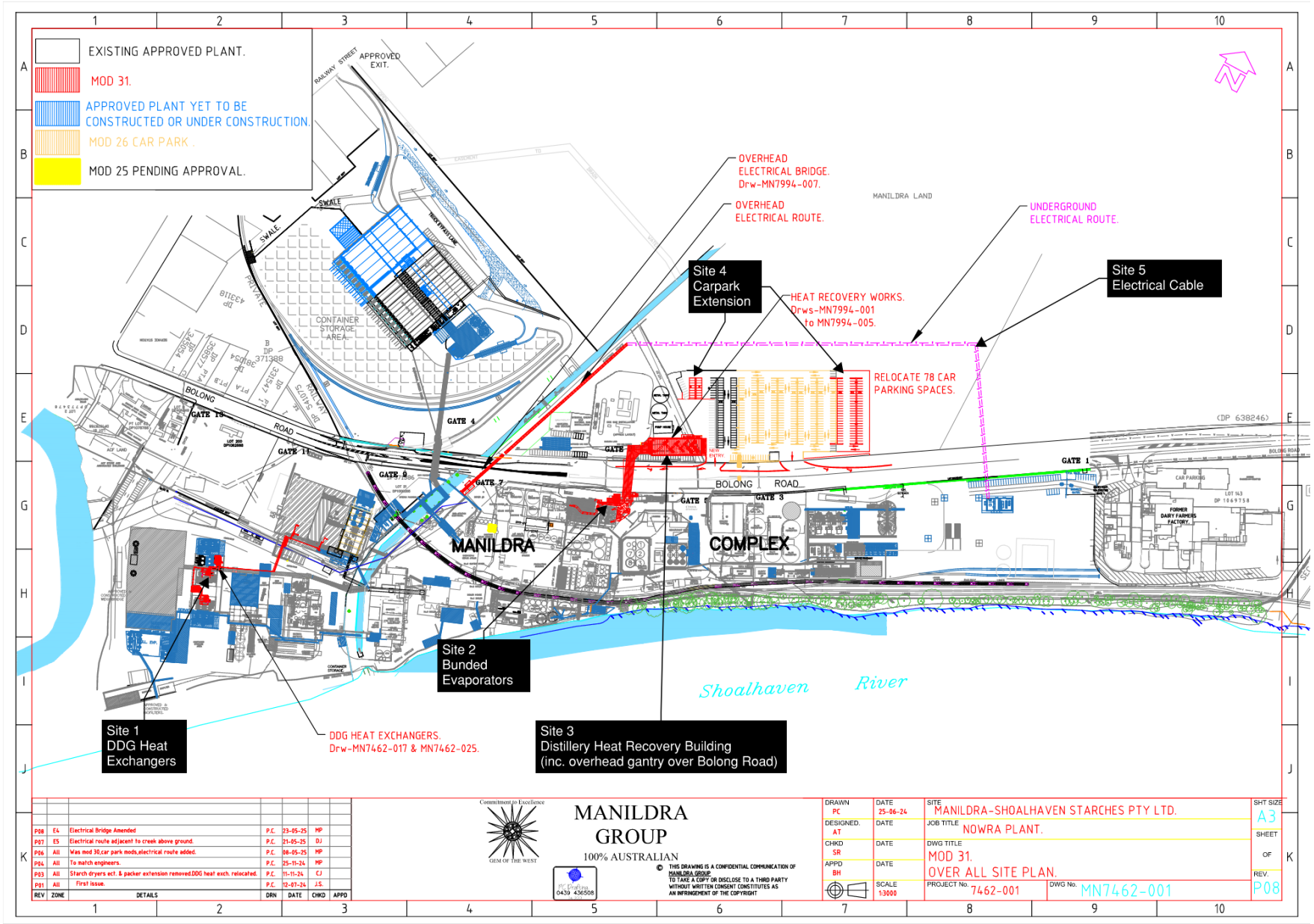


Figure 2.1 Shoalhaven Starches overall site plan showing proposed modifications (in red) (Ref: Project 7462, DWG No. MN7462-001, dated 25/11/2024 (Rev. P04))

3. Site setting

3.1 Site identification

The site locations are shown in Figure 1, Appendix B and in Figure 2.1. Site identification details are summarised in Table 3.1 below.

Table 3.1 Summary of site identification details

Site ID	Structure	Address	Approximate site area	Lot / DP	Zoning under the Council Local Environment Plan (LEP) (LEP, 2014)	Current land use	Surrounding land use
1	DDG Heat Exchanger	No. 32 Bolong Road, Bomaderry, NSW	500 m^2	Lot 34 DP1222627	E4 – General industrial C2 – Environmental Conservation	#4 and #5 DDG dryer, control room, workshop, vacant concrete bunded area.	– North: #5 DDG dryer and temporary workshop – East: DDG pellet mill – South: #4 DDG dryer – West: Co-generation plant
2	Distillery Heat Recovery Evaporators	No. 160 Bolong Road, Bomaderry, NSW	470 m^2 (65 m by 30 m irregular shaped)	Lot 1 DP1305953	E4 – General industrial SP2 – Infrastructure	Ethanol storage area, above ground storage tank (AST), ethanol control room, firefighting system.	– North: Ethanol control room, grassed area and Bolong Road – East: Access roadway – South: Access roadway – West: Distillery
3	Distillery Heat Recovery Building	No. 171 Bolong Road & Hanigans Lane, Bomaderry, NSW	Building: 780 m^2 (15 m by 52 m) Gantry length: 40 m	Lot 241 DP1130535 Lot 243 DP1309744	E4 – General industrial RU1 – Primary Production (Lot 243) RU2 – Rural Landscape (Lot 243)	Accessway adjacent to the distillery.	– North: Fire station and two water tanks. – West and north-west: BOC Gas (carbon dioxide) facility, Integral Energy natural gas installation, and Manildra gas station. – East: Northern carpark. – South: Bolong Road, the main Shoalhaven Starches Plant. – West: access driveway to BOC, fire station and northern carpark.

Site ID	Structure	Address	Approximate site area	Lot / DP	Zoning under the Council Local Environment Plan (LEP) (LEP, 2014)	Current land use	Surrounding land use
4	Northern Carpark Extension	Bolong Road, Bomaderry, NSW	2,800 m^2 (40 m by 70 m) (eastern car park) 300 m^2 (15 m by 20 m) north-western carpark	Lot 243 DP1309744	E4 – General industrial	Paddock and Bolong Road	– North and east: Grass paddock – South: Bolong Road – West: Carpark.
5	Electrical Cable	No. 160, 171 and 220 Bolong Road Bomaderry & Hanigans Lane, Bomaderry, NSW	690 m	Lot 1 DP1305953 Lot 241 DP1130535 Lot 243 DP1309744 Lot 143 DP1069758	E4 – General industrial SP2 – Infrastructure (Lot 1 only)	Pavement areas, paddock and Bolong Road	– North: Grass paddock – South: Northern carpark (middle section of cable route), electrical substation and Dryer #6 (western substation), workshops (eastern substation – to be constructed) – North: Bolong Road, grass paddock (middle section of cable route) – West: Abernethys Creek (western end), north of Bolong Road grass paddocks (eastern end) and internal access road.

3.2 Topography and drainage

Based on Google Earth the topography of the Manildra property, which includes the proposed development sites, ranges from 1 m Australian Height Datum (AHD) to 6 m AHD.

The ground surface within the main plant area is near level with an overall gentle fall towards the east. However, the northern bank of the Shoalhaven River is steep (>45 degrees to locally near vertical), falling approximately 4 to 5 m in elevation to the river shoreline. The banks of Abernethys Creek that passes through the main plant are also steep with some sections supported by near vertical walls. The eastern bank of Bomaderry Creek near the western end of the plant is also steep ranging from about 45 degrees to locally near vertical.

The topography and positions of nearby watercourses, based on a review of topographic maps on SIX Viewer (NSW Government, 2025) for the site, are summarised in Table 3.2 below. Elevations listed in the table below are based on approximate levels provided in Google Earth.

Table 3.2 Summary of topography and watercourses

Site ID	Structure	Elevation (m AHD) (approximate)	Slope direction	Nearby watercourse
1	DDG Heat Exchanger	5	Near level	Bomaderry Creek 110 m to west at closest point Shoalhaven River 105 m to south at closest point
2	Distillery Heat Recovery Evaporators	5	Near level	Abernethys Creek 120 m to north-west Shoalhaven River 90 m to south at closest point
3	Distillery Heat Recovery Building	3	Near level	Abernethys Creek 90 m to west Shoalhaven River 140 m to south at closest point
4	Northern Car Park Extension	1 to 2	Near level	Abernethys Creek 210 m to north-west at closest point Shoalhaven River 160 m to south at closest point
5	Electrical Cable	1 to 6	Near level however a fall towards the north for the mid-section of cable route	Abernethys Creek 5 m to west Shoalhaven River 120 m to south at closest point

3.3 Soil landscape

Reference to the 1:100,000 Kiama Soil Landscape Series Sheet (9028, First Edition) (DECCW, 2010) indicates that the site is located on Shoalhaven Soils. These soils are described as moderately deep Prairie Soils on levees, Red Earths and Yellow and Red Podzolic Soils on terraces and Alluvial Soils and Gleyed Podzolic soils on the floodplains. The soil landscape map also indicates that this group is subject to flood hazard, seasonal water logging, permanently high water table, hardsetting, acid sulphate potential (subsoil), strongly acidic and moderate shrink-swell potential.

3.4 Acid sulfate soil occurrence

ASS is naturally occurring soil and sediment containing iron sulfides which when exposed to oxygen can generate sulfuric acid.

3.4.1 Regional

Reference to the Burrier/Berry 1:25,000 Acid Sulfate Soil Risk Map (1997) Edition 2, prepared by the Department of Land and Water Conservation (DLWC) (DLWC, 1997), indicates that the proposed development areas are mapped within an area having a low probability of ASS occurrence (yellow shading) (Figure 3.1). The ASS risk map also shows estuarine bottom sediments (magenta shading) with a high probability of ASS occurrence below the Shoalhaven River and Bomaderry Creek.

The sites are situated within the following depositional environments:

– Sites 1 and 5 (eastern end): alluvial levee landform (Al4) where the depth of ASS occurrence is depths greater than 3 m below the ground surface. Elevation is greater than 4 m AHD.
– Sites 2, 3, 4 and 5 (western end and mid-section): alluvial plain landform (AP2) where the depth of ASS occurrence is between 1 and 3 m of the ground surface. Elevation between 2 and 4 m AHD.



Figure 3.1 ASS Occurrence approximately shown relative to each site (DLWC, 1997)

3.4.2 Specific

Several previous ASS assessments at Shoalhaven Starches inform the management of ASS that may be disturbed during the construction. Obvious visual evidence of ASS such as scald areas, iron leaching or jarosite staining were not noted on the surface of the areas that had been previously assessed. Table 3.3 summarises the key information from these assessments.

Table 3.3 Summary of previous ASS assessments

Site ID	Proposed development	Conclusions	Report reference
1	DDG Heat Exchanger	Alluvial silty clays, brown to dark brown, firm were encountered at BH08 at depths between 0.55 m and 1.4 m. Very stiff to hard clays and medium dense sands encountered at CG7, which are not typical for Coastal ASS. However, loose sands between 4 m and 6.5 m bgl were encountered. At MGP9, soft clays were encountered between 0.5 m and 5.0 m bgl, then another zone of soft material between 7 m and 8 m bgl. Soft and loose material can be indicative of Coastal ASS. ASS materials were indicated in CBH101/1.0-1.45 representing alluvial silty clay soils where TAA results exceeded the assessment criterion of 18 moles H^+ / tonne.	(Coffey, 2002) (Coffey, 2008b) (GHD, 2022a)
2	Distillery Heat Recovery Evaporators	ASS are likely to exist at depths greater than 3 m at the Shoalhaven Starches site. ASS results for the central plant (CBH107 closest area to Site 2) did not identify ASS within the upper 2.1 m of the soil profile	(Coffey, 2008b) (Coffey, 2014a)
3	Distillery Heat Recovery Building	Alluvial clayey silts were encountered at test pit locations CTP29 (immediately north of the site) and CTP31 (on-site). ASS laboratory results indicated that no ASS was present at depths between 0.5 m and 1.6 m bgl, however acid soils were identified.	(Coffey, 2008b)
4	Northern Car Park Extension	A thin band of estuarine soil logged as clayey silt was encountered at CBH111, located approximately 85 m east of the pump house and within the general alignment of the proposed fire water line. Field screening results indicated that the ASS could be present and sporadic. ASS was not encountered at borehole locations east of CBH112.	(Coffey, 2008b)

Site ID	Proposed development	Conclusions	Report reference
5	Electrical cable	**Eastern end and mid-section** The previous Coffey (2008b) investigation indicated that actual ASS were not encountered however screening results suggested that unoxidised sulfides may be present. Chromium reducible sulfur testing was carried out on soil sample CTP30/1.0-1.1, which is about 20 m from the proposed gas pipeline immediately west of Abernethy's Creek. Chromium reducible sulfur concentrations for sample CTP30/1.0-1.1 were below laboratory reporting limits, indicate RIS was not present. Abernethy's Creek crossing from eastern side north of Bolong Road: – Total Actual Acidity (TAA) concentration exceeded action criteria of 18 moles H+/tonne in the following samples: • CBH14/0.7-0.8 m (clayey silt) • CBH15/1.7-1.9 m (silty clay) • CBH16/0.7-0.9 m (clayey silt) • CBH16/1.8-1.9 m (silty clay) – Total Potential Acidity (TPA) concentration exceeded action criteria of 18 moles H+/tonne in the following samples: • CBH15/1.7-1.9 m (silty clay) • CBH16/0.7-0.9 m (clayey silt) • CBH16/1.8-1.9 m (silty clay) – SPOS between 0.04% and 0.07% marginally exceeded action criterion of 0.03% at in samples from borehole locations CBH15 and CBH16. Based on the results of the Coffey (2008) investigation, ASS are likely to be encountered within the lower lying areas, in the north and east, adjacent to Abernethy's Creek. ASS are likely to be sporadic and possibly occur in lenses. Soft and very soft clay soils were encountered at borehole locations SBH01, SBH02 and SBH03 to depths of 4 m, 6.5 m and 9.8 m bgl, respectively. The clays were estuarine and described as dark grey high plasticity with silts, sands and shell fragments (SMEC, 2020). No other ASS indicators were recorded by SMEC. Also refer to Site 4 above. **Western end** It is possible that ASS could be intersected at depths greater than 4 m bgl based on results from CBH01 and CBH02, and potentially at depths greater than 1 m (Coffey, 2015a).	(Coffey, 2008b) (SMEC, 2020) (Coffey, 2015a)

3.5 Geology

3.5.1 Regional

Reference to the 1:250,000 Wollongong Geological Series Sheet (S1 56-9, Second Edition) (NSW Department of Mines, 1966) indicates the development areas are likely to be underlain by Quaternary Alluvium, gravel, swamp deposits and sand dunes. The Berry Formation, which is described as siltstone, shale and sandstone, is likely to occur below the Quaternary Alluvium.

3.5.2 Site specific

Our experience from investigations within and around the Manildra plant indicates that deep alluvial and estuarine deposits occur within the proposed development areas. These alluvial and estuarine deposits may include silts and clays, silty sands and sands of variable consistency or density, including some very soft or very loose zones. The underlying rock in the vicinity of the site belongs to the Berry Formation (GHD, 2018).

Table 3.4 summarises the closest previous investigation locations to the sites. These locations are shown in Figure 2 in Appendix B.

Table 3.4 Summary of previous investigation locations

Site ID	Investigation location	Approximate distance and direction from site	Report Reference	Report available
1	CBH11, CBH12 CBH1, CBH2, CBH5, CBH23, MGP8 MGP5, CBH3, CBH4 CBH9 CBH100	40 to 42 m north-east and south-east. 15 to 65 m north-west, west and south-west. 40 to 60 m west and south-west. 75 m south. 95 m north-west targeting subsurface conditions close to Bomaderry Creek. All off-site.	(Coffey, 2008b) (GHD, 2021)	Yes (no logs) Yes (provides summary of subsurface conditions encountered during 2008 investigations)
	BH8 (2022) BH6 BH9 (2022) BH3 BH7 BH01 to BH05 (2022)	10 m south-west. 25 m north-west. 30 m south-west. 40 m north-west 50 m south-west. 45 m to 90 m north, north-west and west. All off-site.	(GHD, 2022a)	Yes
	WCP1 to WCP4	Off-site: 40 to 90 m, north-west, north-east, south-west, south-east	(Coffey, 2002)	Yes
2	CP2 / NC2 CP6 DIS1 CBH107 / MGP12C	10 m south-east 25 m south-west 35 m south-west 40 m west All off-site	Coffey 1992 Coffey 1992 (Golder, 1994a) (Coffey, 2008b)	No No Yes Yes (no logs)
3	CTP31 CBH110 CBH14 to CBH16 CTP29 HA1, HA2 CBH111 CBH112	On-site Off-site: 95 m south-west Off-site: 65 to 75 m north-west. Off-site: 10 m north Off-site: 25 and 40 m north Off-site: 50 m south-east Off-site: 200 m east site.	(Coffey, 2008a) (Coffey, 2008b)	Yes (no logs included, summarised description in report)

Site ID	Investigation location	Approximate distance and direction from site	Report Reference	Report available
4	CTP31 CBH110 CBH14 to CBH16 CTP29 HA1, HA2 CBH111 CBH112	45 m south-west 160 m south-west 95 to 130 m south-west and west. 30 m south-west 25 and 30 m south-west, west 50 m south-east 140 m south-west. All off-site	(Coffey, 2008a) (Coffey, 2008b)	Yes (no logs included, summarised description in report)
5 (western end and mid-section)	SCPT09	Off-site: 10 m west of site.	(SMEC, 2020)	Yes (raw CPT results only – no interpretation)
	CTP30, GBH01, SBH01, SCPT01 DCP01, DCP02, CBH14 to CBH16	Off-site: 25 m north-west Off-site: 25 to 35 m north-west Off-site: 5 to 10 m south-east	(Coffey, 2008b) (SMEC, 2020) (GHD, 2022b) (GHD, 2023a)	Yes (no logs) Yes Yes Yes
	CTP31, CTP29, HA1, HA2, CBH111, CBH112	75 to 130 m south.	(Coffey, 2008a) (Coffey, 2008b)	Yes (no logs included, summarised description in report)
5 (eastern end)	CBH02 and CBH03	50 and 65 m south-west and south-east	(Coffey, 2014b)	Yes
	CTP8, CTP10	15 to 10 m south-west	(Coffey, 2015a)	Yes

3.5.2.1 Site 1: DDG Heat Exchangers

Several subsurface investigations have been carried out west, south-west and north-west of Site 1. GHD reviewed previous site investigation reports as part of a slope stability assessment of Bomaderry Creek in 2021 (GHD, 2021). The GHD (2021) report provided the following summary of subsurface conditions, which is considered relevant to Site 1:

– Fill: No fill was encountered at CBH100, MGP8 and other boreholes located near Bomaderry Creek during the investigation in 2007 and 2008. However, various earthworks followed by pavement construction were conducted from 2008, including preparation and construction of the current pavement and container storage. It is estimated that a nominal 0.5 m thick pavement underlain by controlled fill up to 1.0 m is present below the current container storage area. Topsoil is likely to have been stripped from the site but where present, previous borehole logs indicate the topsoil comprised silty clay / clayey silt, firm to stiff. Coalwash was encountered at the near surface and topsoil at 0.3 m at CBH3. Topsoil was also encountered at CBH4 and CBH10, and general fill at CBH9.
– Alluvium and estuarine soils were encountered in previous boreholes, comprising silty clay/clayey silt, firm to hard and medium dense sand, at depths of 1.5 m (based on CBH100 and CBH23).
– Sandstone: Fine to coarse grained, pale white/grey to pale yellow was encountered at depths of 4.9 m (CBH100) and 8.0 m (CBH23).

In 2022, GHD carried out geotechnical investigation for the co-generation plant, which has been recently constructed west of Site 1 (GHD, 2022a). In addition to the above information, subsurface conditions from the 2022 investigation are considered relevant to Site 1 and are summarised in Table 3.5 below.

Table 3.5 Subsurface conditions in vicinity of Site 1 – DDG Heat Exchangers

Unit	Unit description	Density / Consistency	Depth range to top of unit (m)	Thickness of unit (m)	Location
Fill	Asphalt wearing course.	-	Surface	0.14 to 0.2	BH1, BH3, BH9
	Sandy GRAVEL, fine to coarse grained, sub-angular, dark grey. Medium to coarse grained sand.	Very dense	Surface to 0.2	0.4 to 1.0	All locations
	Sandy GRAVEL: medium to coarse, rounded to sub-rounded, pale yellow-brown-orange and pink, medium grained sand.	Very dense	0.6	0.55	BH5 only
Alluvium	Silty CLAY: low plasticity, brown to dark brown.	Soft to firm Stiff at BH5	0.4 to 1.15	0.4 to 1.7	All locations
	CLAY: medium plasticity, brown, trace fine grained sand.	Soft	2.0	0.4	BH5
	CLAY: medium to high plasticity, brown mottled orange, and pale grey mottled orange-red-yellow, trace fine, sub-rounded gravel. Clayey SAND/Sandy CLAY: fine to medium grained sand, uniformly graded, yellow-orange.	Stiff Stiff/very stiff (BH8) Firm/stiff (BH6)	1.4 to 2.1 2.4 at BH5	1.8 to 3.2	All locations
	SAND: fine to medium grained, well graded, grey-yellow, trace black mineral sands. Clayey SAND/Sandy CLAY: fine to medium grained sand uniformly graded, pale yellow to grey.	Loose becoming loose/medium dense from 5m at BH5	3.7 to 3.8	1.4 to 2.9	BH3, BH5
Residual / extremely weathered sandstone	SAND/Clayey SAND: medium grained, pale yellow to red-orange. Clayey SAND/Sandy CLAY: fine to medium grained sand, uniformly graded, red-orange to pale yellow. CLAY: low plasticity, pale grey mottled red-orange, trace fine grained quartz sand.	Medium dense Loose zone at 4.5 m associated with groundwater inflow at BH7. Very stiff/hard (extremely weathered zones)	3.7 to 5.7	0.4 to 3.3	BH2, BH3, BH4, BH6, BH7, BH8, BH9
Sandstone	Extremely to highly weathered	-	4.1 to 6.5	0.5 to 5.7*	All locations
	Moderately to slightly weathered	-	9.3 to 10.7	Not assessed	BH1, BH3, BH5, BH7

Note: *Thickness of unit only assessed in core boreholes BH1, BH3, BH5, BH7.

3.5.2.2 Site 2: Distillery Heat Recovery Evaporators

Coffey (2008b) indicated sandy and gravely fill soils, which typically comprised roadbase and subgrade materials for pavements. Fill was typically encountered between 0.2 m and 0.6 m bgl.

Piezocone plots MGP12C show a crusted surface clay layer to an approximate depth of 1.0 m followed by a deep soft zone consisting of sensitive fine grained materials and soft clays to approximate depths of 8.0 m and 13.0 m respectively. The deep soft zone at each location was underlain by very dense sand lenses, very stiff clays or other fined grained materials. MGP12C was terminated at approximately 14.0 m due to excessive skin friction. This is consistent with subsurface conditions encountered at DIS1 (Refer to Table 3.6).

Table 3.6 Subsurface conditions in vicinity of Site 2 – Distillery Heat Recovery Evaporators

Material	Depth to top of unit (m)	Unit thickness (m)	Description
Fill / topsoil	0	0.8	SILT and SAND: black and yellow brown, some rounded medium to coarse grained gravel. Fill was noted to be associated with kerb construction.
Alluvial	0.8	15.75	Clayey and sandy SILT: low liquid limit, dark brown with ready or dark grey mottles. Moist with groundwater level rising to 1.6 m bgl from an inflow point of approximately 2.5 m bgl. Consistency soft to very soft, and loose from 15.7 m bgl where silty sand, fine to coarse grained, yellow brown was encountered.
Highly to slightly weathered sandstone and shale	16.55	Not proven (end of borehole at 22.6 m bgl	Sandstone, fine to medium grained, light grey to white becoming yellow-brown with depth, massive. Some extremely weathered bands noted. Interbedded with shale. Shale, light grey, horizontally bedded.

3.5.2.3 Site 3: Distillery Heat Recovery Building

No fill was encountered at test pits CTP29 and CTP31. Reworked alluvial clayey soils were encountered at some locations used to assess the proposed pipeline route out to the environmental farm. It was inferred that the reworked soil was associated with the installation of services adjoining the assessment area (Coffey, 2008b, p. 77). Borehole and test pit logs were not available for review for CTP29, CTP31, CBH111 and CBH112. The natural soils within Site 3 are likely to be similar to those described for the proposed packing plant located approximately 160 m west of the site, at its closest point. The natural soils were described as alluvial, silty clay, mottled orange, yellow, brown, grey, medium to high plasticity, stiff to very stiff. Clayey silts and silty sands were encountered.

3.5.2.4 Site 4: Northern Carpark Extension

Refer to Section 3.5.2.3 above.

3.5.2.5 Site 5: Electrical Cable

Western end

Four investigation locations by Coffey were used to assess the subsurface conditions for the gas facility (CBH14 to CBH16) and gas pipeline along Bolong Road (CBH110) (Coffey, 2008b). The gas facility (Manildra Gas Station) and gas pipeline have since been constructed.

The Coffey (2008b) report provided to GHD was incomplete and did not include borehole logs. The depth of the boreholes has been inferred from samples tested and other comments made throughout the report. Borehole location CBH110 was advanced with a hand auger and refused on a possible underground service at 1.2 m bgl. One sample was collected from this location from the upper 0.06 m and the soil was described as topsoil/fill. Borehole locations CBH14 to CBH16 appear to have been drilled to a depth of at least 1.9 m bgl. Five soil samples were collected and analysed from these boreholes, described as follows:

– CBH14/0.7-0.8 m: clayey silt
– CBH15/0.0-0.2 m: topsoil
– CBH15/1.7-1.9 m: silty clay
– CBH16/0.7-0.9 m: clayey silt
– CBH16/1.8-1.9 m: silty clay

Soft and very soft clay soils were encountered at borehole location SBH01 to a depth of 4 m bgl, west of Abernethys Creek. The clays were estuarine and described as dark grey, high plasticity with silts, sands and shell fragments. No anthropogenic materials were noted (SMEC, 2020). Stiff alluvial soil described as clay, with silt trace sand, high plasticity, orange-brown mottled red-brown; becoming very stiff to hard residual clay with gravel from 6.4 m bgl. Highly weathered sandstone was encountered from 13.2 m bgl.

The subsurface conditions encountered in GHD borehole (GBH01) differed from those at SBH01; however the consistency was similar where soft to very soft clayey silt was encountered between 0.1 m and 2.8 m bgl, overlying loose clayey sands from 2.8 m to 3.5 m bgl. Stiff sandy clays were encountered below 3.5 m, becoming very stiff from 5.9 m bgl. Dark grey estuarine clays with shell fragments were not encountered at GBH01. The lithology comprised alluvium overlying residual/extremely weathered rock.

For the gas pipeline Mod 3 investigation (GHD, 2023a), DCP results for DCP01, close to the HDD alignment, indicate soft soils occur between 0.9 m and 1.9 m bgl, with soft to firm soils from 1.9 m to 2.5 m. DCP results for DCP02 were similar to DCP01 where soft soils occurred between 0.9 m and 2.1 m bgl. Deeper soft soils are known to occur further to the east below the BOC gas plant and on the eastern side of the plant.

No fill or evidence of contamination such as odours, staining or asbestos containing materials (ACM) were observed at GBH01.

Mid-section

No previous investigations have been carried out in the mid-section of electrical cable route. However, based on elevation (i.e. relatively low lying and subject to flooding), soft soils may be present.

Eastern end

Refer to Section 3.5.2.3 above for north of Bolong Road.

The subsurface condition encountered during Coffey's 2014 investigation (Coffey, 2015a) and at borehole locations CBH02 and CBH03, which formed part of Coffey (Coffey, 2014b) investigation, are considered relevant to Site 5 (eastern end, south of Bolong Road) and are summarised in the Table 3.7 below. A fill mound previously occupied the area where the proposed substation has been planned at the eastern end of the electrical cable route. The fill mound was removed between 8 and 14 July 2021 (GHD, 2024a).

Table 3.7 Subsurface conditions at Site 5 (eastern end, south of Bolong Road) – Electrical Cable

Location	Unit	Description
West of the site	Fill	Gravelly sand / sandy gravel, fine to coarse grained, road base fill to 0.5 to 0.6 m bgl (CBH02, CBH03). Sandy clay, low to medium plasticity clays, fine to coarse grained sands, brown-grey-orange mottled. With foreign materials (poly pipe, asphalt, plastic fragments) at CTP11 to a depth of 0.4 m. Clayey gravel, fine to coarse grained yellow-grey at CTP12 to 0.1 m bgl. Topsoil (silty clay, brown) was encountered at CBH04 to depths of 0.15 m bgl. Fill to depths were between 0.1 m and 0.6 m bgl.
Entire site and surrounding areas	Natural (alluvium)	Clayey sand, clayey silt, silty sand, sandy clay, silty clay, typically medium to high plasticity clays, fine to medium grained sands, dark brown to dark grey, yellow-red-brown-grey-orange. Alluvial soils are clayey sand and mottled in areas below the former effluent pond. Clays very stiff to hard, and/or friable, sands medium dense.

3.6 Hydrogeology

3.6.1 Regional

A search of the WaterNSW groundwater bore database indicates that there are 21 registered groundwater bores within 500 m of the site (Refer to Figure 3.2). Five of these bores (GW110107, GW110108, GW110109, GW114595, GW114596) are within the main plant area. The remaining 16 groundwater bores were located west and north-west of the main plant area. Table 3.8 provides a summary of bore depth, and where available, standing water levels for the 23 registered groundwater bores.

Table 3.8 Summary of registered groundwater bores

Bore ID	Installation date	Registered purpose	Depth of bore (m bgl)	Standing water level (m bgl)
GW110109	2009	Monitoring	4.0	1.27 (in 2009)
GW110108	2009	Monitoring	4.5	0.644 (in 2009)
GW110107	2009	Monitoring	6.0	4.02 (in 2009)
GW114595	2014	Monitoring	5.6	3.85 (in 2014)
GW114596	2014	Monitoring	7.5	3.1 (in 2014)
GW113119	2008	Monitoring	5.2	Not recorded
GW113120	2008	Monitoring	6.2	Not recorded
GW113121	2008	Monitoring	5.2	Not recorded
GW113122	2008	Monitoring	5.2	Not recorded
GW113123	2008	Monitoring	4.9	Not recorded
GW113124	2008	Monitoring	4.0	Not recorded
GW113125	2008	Monitoring	4.2	Not recorded
GW113126	2008	Monitoring	4.0	Not recorded
GW114453	2011	Monitoring	6.0	2.5 (in 2011)
GW114454	2011	Monitoring	7.0	3.7 (in 2011)
GW114455	2011	Monitoring	6.0	4.5 (in 2011)
GW113052	2000	Monitoring	5.1	Not recorded
GW113053	2000	Monitoring	4.5	Not recorded
GW113054	2000	Monitoring	5.0	Not recorded
GW113055	2000	Monitoring	5.1	Not recorded
GW113056	2013	Monitoring	6.0	Not recorded

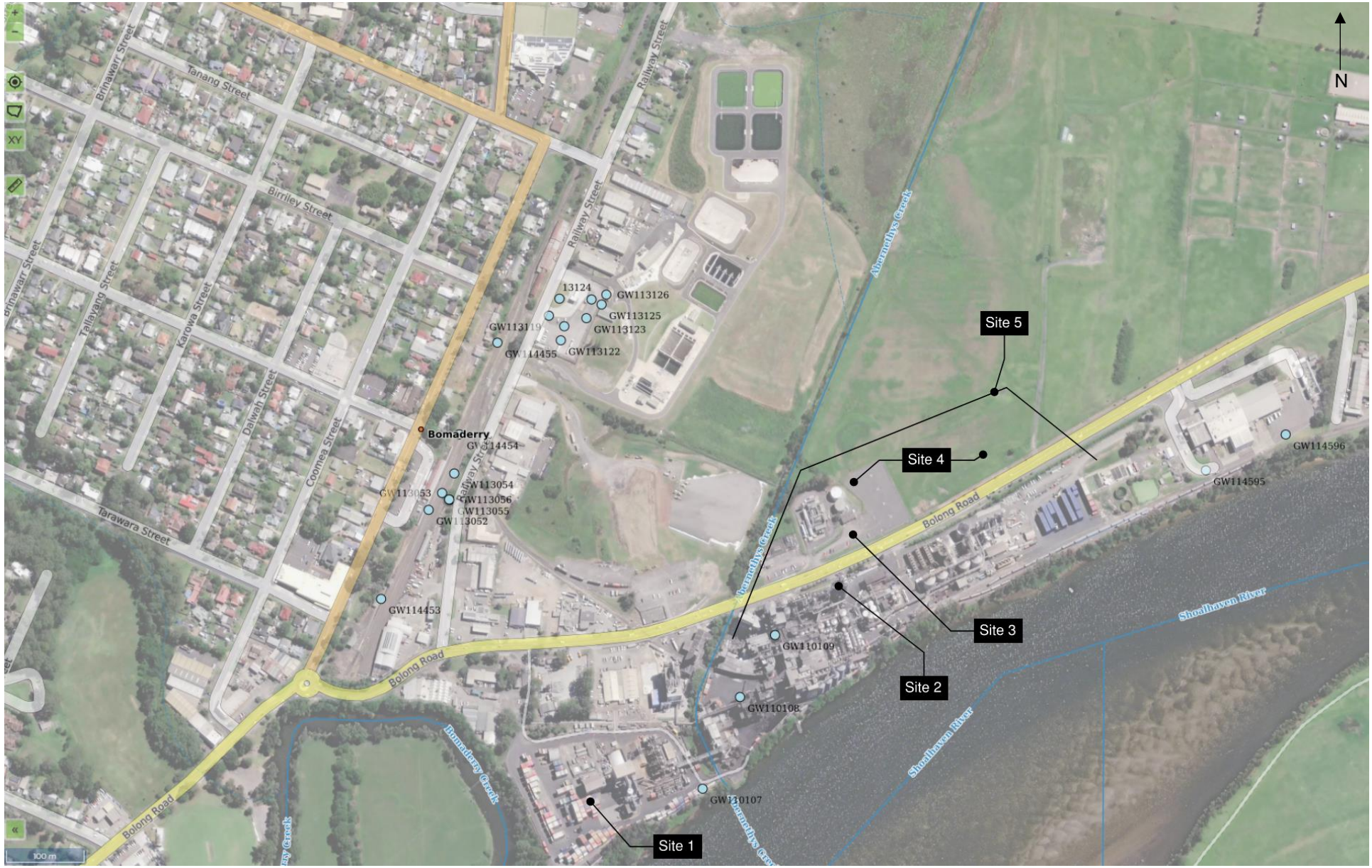


Figure 3.2 ***Groundwater bores closest to sites (source: WaterNSW)***

3.6.2 Site specific

Based on topography, groundwater in areas close to the Shoalhaven River is expected to flow in a southerly direction, whereas areas closer to Bolong Road and north of Bolong Road, groundwater may flow towards the north and north-west.

3.6.2.1 Site 1: DDG Heat Exchangers

Groundwater inflows observed at various borehole and test pit locations through the main plant ranged from 0.8 m to 4 m bgl, whilst standing water levels were measured between 0.9 m and 3 m bgl (Coffey, 2008b). Groundwater inflow and standing levels observed during other investigations carried out within the main plant area were consistent with those reported in the Coffey (2008b) report.

3.6.2.2 Site 2: Distillery Heat Recovery Evaporators

Refer to Section 3.6.2.1 above.

3.6.2.3 Site 3: Heat recovery building

Groundwater inflows were encountered 1.5 m bgl at borehole locations CBH111 (Coffey, 2008b).

3.6.2.4 Site 4: Norther carpark extension

Groundwater inflows were encountered 1.5 m bgl at borehole locations CBH111 and CBH112 (Coffey, 2008b). Depth to groundwater may be shallower within the northern portions of the proposed carpark extension.

3.6.2.5 Site 5: Electrical cable

Western end

Groundwater has been observed at depths between 0.6 m and 2.8 m bgl, specifically:

– A groundwater inflow was observed in GBH01 at 2.7 m which was deeper than the groundwater inflow observed at SBH01 of 0.6 m bgl.
– Groundwater inflow was recorded at 2.8 m bgl at piezocone location SCPT09 (SMEC, 2020).
– Groundwater inflow was observed in CBH104 a depth of 2.2 m bgl (Coffey, 2008b)
– The water level in Abernethys Creek measured from the underside of the pedestrian footbridge adjacent to Bolong Road, was approximately 3.2 m below the underside of the footbridge deck. The creek bed was measured at approximately 3.45 m below the underside of the footbridge deck.

Mid-section

There are no prior investigations of this area of the site, however based on elevation groundwater is anticipated to be encountered between 0.5 m and 1 m of the ground surface. The depth of groundwater is likely to be influenced by rainfall.

Eastern end

Groundwater has been observed at depths between 2.5 m and 3.9 m bgl, specifically:

– Groundwater inflows were observed at 3.5 m (CBH02, CBH04) and 2.5 m bgl (CBH05) during drilling (Coffey, 2015a).
– Groundwater inflow was observed at 2.8 m bgl at CTP23 and was described as a rapid inflow (Coffey, 2015a). The inflow at CTP23 occurred between the sandy clay and clayey sand interface.
– The standing water level was measured in boreholes at 3 m bgl (CBH01), 3.1 m bgl (CBH02), 2.7 m bgl (CBH03), and 3.9 m bgl (CBH04) in 2014 (Coffey, 2014b).

4. Site history

4.1 General

Information on the site history was obtained from:

– Review of selected aerial photographs (1949 to 2025).
– A search of NSW EPA register for listings of the site and nearby properties.
– A review of Section 10.7 planning certificates.
– Chemical storage inventory provided by Manildra.
– A review of previous investigation reports and summarising the relevant sections.
– Interview with a Manildra representative, John Studdert.
– Other historical references.

A summary is provided below. Relevant historical details are shown in Figure 2 in Appendix B.

4.2 Historical aerial photography

The review of aerial photography is summarised in the sections below. Aerial photographs are included in the Lotsearch report (ref: LS013205EA, dated 30 June 2020 (Lotsearch, 2020)) presented in Appendix E. Aerial photographs that were on file or accessed via Google Earth, Nearmap and NSW Government Historical Imagery Viewer[1] have also been included in Appendix E and / or reproduced in the sections below.

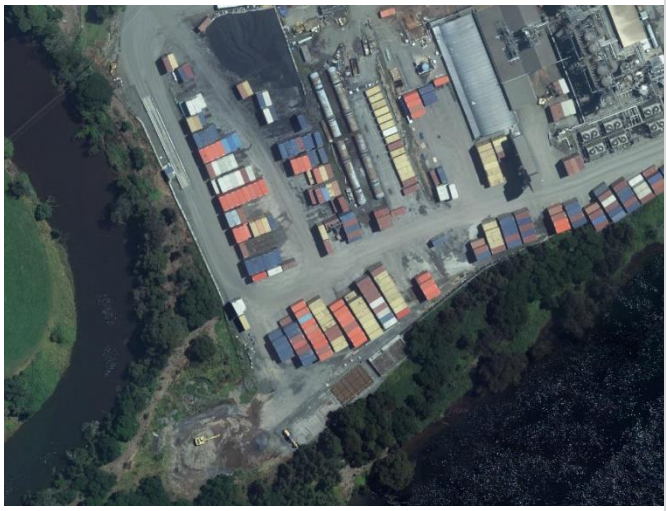
4.2.1 Site 1: DDG heat exchanger

Site 8 is situated in the south-western area of the main plant, east of Bomaderry Creek and north of the Shoalhaven River and immediately south of DDG Dryer #4. The site was a grass paddock until some time between 2002 and 2010. Between 2010 and 2020, the south-western portion of the main plant was initially used for the storage of coal and shipping containers. Coal storage occurred west and north-west of Site 1, approximately 20 m from the closest point to the site. The area used for coal storage substantially reduced over the subsequent years and was gradually used for shipping container storage. Coal storage ceased by 2020. Between 2014 and 2024, structures including mill feed silos, DDG storage area, DDG Dryer #4 and co-generation plant were constructed in areas immediately adjacent to Site 1.

In 2010, the site and surrounding areas appeared to be occupied by pale blue-brown possibly cylindrical objects forming two rows and by shipping containers. The area between the cylinders was used for storage of various items and eventually became grass covered. By January 2016, the cylinders had been removed and the ground surface appeared to comprise grey gravel. In November 2013, the ground surface at the site and nearby access roads were black relative to other access roads within the south-western plant area and may have been associated with the placement of new pavement materials (e.g. gravel or asphalt) or dust suppression activities. Since 2010 the ground surface at the site and surrounding areas appears to have been filled with grey material to form hardstand pavements. The site was later used for the storage of shipping containers. The paved area on-site and immediately south of the DDG Dryer #4 appeared to be stained black and possibly associated with rubber transfer from forklift tyres.

Selected aerial photographs from 2012 to 2024 showing Site 1 are below.

[1] Historical Imagery Viewer:
https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccddda8075238cb



2012 (SIX viewer)



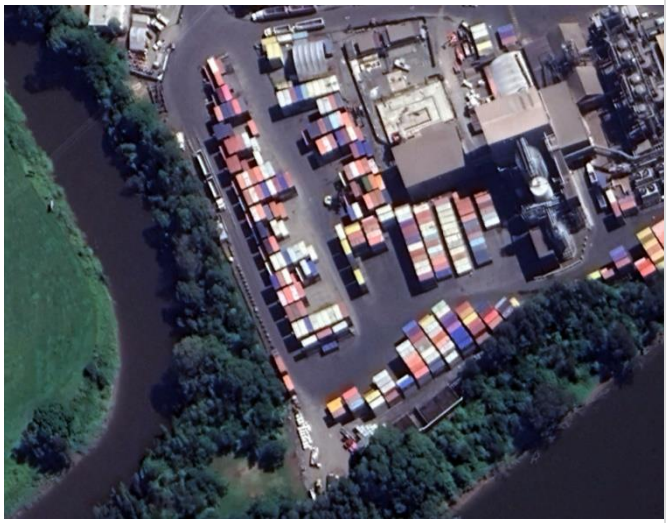
November 2013 (Google Earth)



17/1/2016 (Google Earth)



2020 (Google Earth)



2022 (Google Earth)



19/1/2024 (Nearmap)

4.2.2 Site 2: Distillery Heat Recovery Evaporators

In 1949, Site 2 and areas immediately surrounding the site were generally undeveloped, except for Bolong Road. Areas to the north and south of Bolong Road appeared to be grass paddocks. Horlicks Factory milk processing plant located immediately east of Abernethys Creek and on the northern banks of the Shoalhaven River was evident in the 1949 aerial photograph. The plant area progressively expanded east over time.

By 1981, a driveway was evident immediately east of the site and the site itself appeared to be occupied by trees. The driveway was no longer evident in the 1993 aerial photograph. The driveway entrance and area to the west which includes Site 2, appears to be occupied by a relatively small concrete slab.

By 2012, the concrete slab was occupied by a brown rectangular building resembling the current control room. By April 2021, the western two-thirds of the control room roof had been replaced with a white/grey roof and larger than the original brown roof. By February 2023, a roof was installed over the fire suppression system that occupied the area immediately east of the control.

Intensive development of areas surrounding the control room has occurred. The development has been associated with the expansion of the Starches Plant comprising expansions to the distillery, various above ground tanks, and access ways constructed between August 2021 and May 2023. The site and immediate surrounding areas appear relatively unchanged since 2023.

4.2.3 Site 3: Distillery Heat Recovery Building

Bolong Road, south of Site 3, was evident since 1949, initially as an unsealed road but becoming sealed at some stage in the 1960's.

Between 1949 and 1984 the area where the site is located appeared undeveloped and vegetated with grass. From 1974, trees and/or shrubs progressively increased lined the banks of Abernethys Creek, which is located west of Site 3. Site 3 formed part of a larger parcel of land, which extended north-east and appeared to be used for agricultural purposes. A possible road reserve between the lot boundary and Bolong Road is evident. The grass occupying this strip appears to have been mown and relatively small areas of exposed ground are also evident.

In 1993, immediately west of Site 3, ground disturbance was evident within the easement and extend east adjacent to Bolong Road, suggesting a possible underground service installation. A section of disturbed ground extended north-west from the easement, perpendicular to Bolong Road, terminating near to the centre of the site. The surrounding ground surface appeared to be grass but a lighter shade of green relative to the adjoining paddock north-east of the site. Approximately 60 m north along Abernethys Creek appears to be an object, possibly a footbridge, that crosses Abernethys Creek. In 1997, grass cover on-site and areas immediately north-east were and west was brown relative to other grass paddocks in the general area. A grey rectangular area was evident immediately west of Site 3. Bolong Road appeared to have been widened.

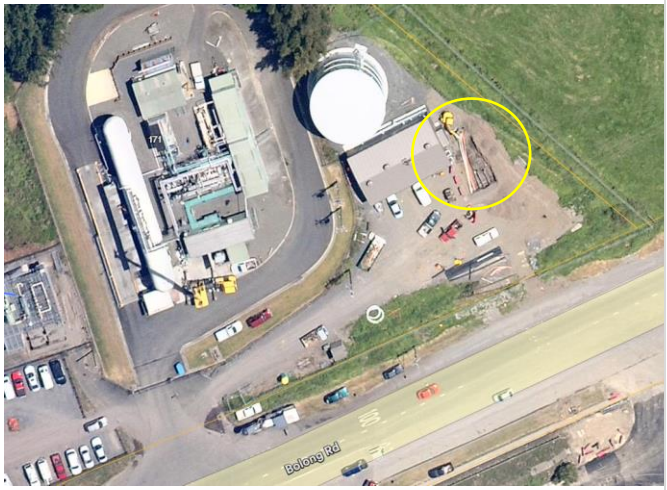
By 2002, the carbon dioxide gas installation and natural gas installation facilities had been installed north-west of the site. A driveway connecting the natural gas installation with Bolong Road was evident and occupies part of the subject site. Remaining areas of the site appear generally grassed covered however some minor ground disturbance was evident.

By 2010, Site 3 had been developed and was occupied by a gravel carpark and a small rectangular object (possibly a demountable) within the western portion of the site. The site appeared to be used as a laydown area with various items stored within the gravel areas. Immediately north of the site was a rectangular structure (fire house pump station) and a large white circular structure (fire-water tank). A second water tank was constructed by July 2017.

In 2011, an excavation containing services was evident in the northern part of Site 3 and immediately south-east of the fire house pump station. The excavation was backfilled by June 2011 and a new rectangular structure was evident adjacent to the southern site boundary. Between 2010 and 2012, fill appeared to have been placed along the southern and eastern boundaries of Site 3. Two elongated trenches, parallel to Bolong Road, had been formed by 2012. These trenches, possibly earthen drains later appeared green suggesting a form of vegetation growth. The site remained relatively unchanged until September 2018, where the earthen drains appeared to have been filled with grey material (possibly gravel). It appears that the earthen drain has been replaced with two PVC pipes. A stockpile of grey-brown material was stored in the south-eastern portion of Site 3. By August 2019, the

construction of a gravel carpark (northern carpark) had commenced immediately east of Site 3. The site was used to provide access to the new carpark. The carpark was completed by October 2019. From October 2019, Site 3 appeared to be used as a carpark, with parking occurring along the southern and eastern site boundaries.

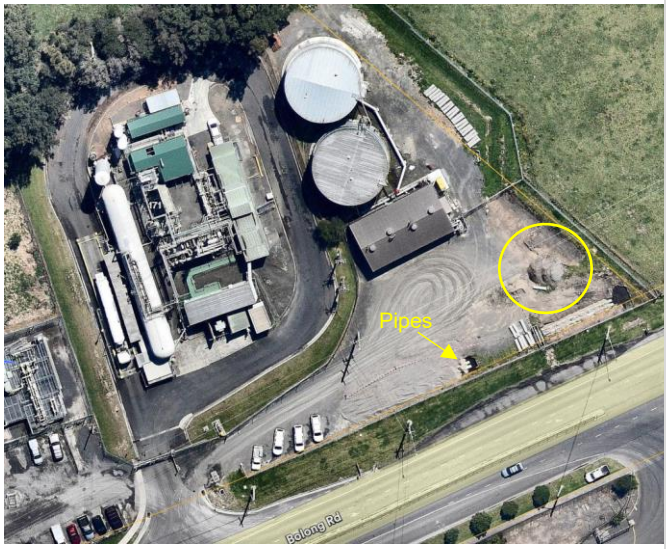
In February 2023, a trench had been excavated within the southern portion of Site 3 (previously used for carparking), which extended east into the adjoining property. White geofabric and two black pipes had been placed inside the trench. Several small stockpiles of gravel were located between the trench and site boundary. The trench was backfilled by May 2023, and a small object (pipe or valve manifold system) had been installed within the western portion of the site. By October 2023, Site 3 was asphalt paved, and a new rectangular structure had been constructed immediately north-east of the site and east of the fire station pump house. Asphalt pavement continued into the northern carpark east of Site 3. Apart from the construction of another rectangular building immediately north of Site 3, the site and immediate surrounds remained relatively unchanged since 2023.



1/2/2011 (Nearmap) – the area within the yellow circle appears to be an excavation with services



17/7/2012 (Nearmap) – possible earthen drain in area outlined in yellow



21/9/2018 (Nearmap) – stockpiled stored in the south-eastern corner of Site 3 and installed pipes.



1/8/2019 (Nearmap)



2/2/2023 (Nearmap)



14/10/2023 (Nearmap)

4.2.4 Site 4: Northern carpark extension

The area where Site 4 is located has previously been a grass paddock since at least 1949. During this time, changes in the shading of the grass were evident; where in black and white photos, the grass was sometimes much darker than surrounding areas, and in colour photos, generally green but sometimes brown. The changes in colour may be associated with variability in rainfall, fertilising, ploughing or other forms of ground disturbance.

In 1993, a possible easement was evident immediately north of Bolong Road. The grass along this strip had a lighter colour. The lighter coloured grass also extended to an area west of the site. This area was developed by 2002 and occupied by a CO_2 gas facility. In 2014, the site was used for cattle grazing.

Below are aerial photographs showing the changes to the site between 2022 and 2025.

Eastern carpark area

By October 2019, the site and areas immediately east and west were occupied by a grass paddock that had been recently slashed. Ground disturbances were evident along the southern site boundary extending into surrounding areas. In the 2020 aerial photograph, the disturbed ground surface had revegetated. An access track also passed through the southern quarter of the site.

Sometime between 2019 and 2020 the area west of was developed into a gravel carpark. The carpark was extended east between 2022 and 2023, where grass cover was removed and ground disturbance occurred on Site 4. The carpark immediately west of the site was completed by February 2023.

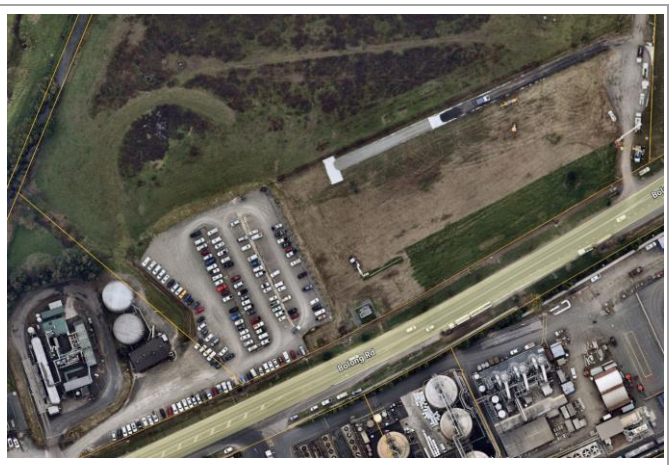
In 2023, Site 4 appeared to be occupied by several elongated features (possibly pipelines, rail lines, yellow painted concrete), stockpiles of grey (possibly gravel) and brown (sourced from site) material, access tracks. and earth moving equipment. By 2024, stockpiles and earthmoving equipment were no longer evident. The site appeared to be mostly covered in green vegetation however some areas of vegetation were brown suggesting stress or herbicide application. Areas of brown vegetation had significantly reduced by 2025.

North-western carpark area

By August 2019, the northern carpark, including the north-eastern portion of Site 4 was under construction. At this time, grey material (gravel) was being placed on white geofabric. By October 2019, the gravel hardstand carpark appeared to have been completed. The gravel carpark remained relatively unchanged until October 2023 / January 2024 where the pavement appeared to be asphalt and designated car spacing had been marked on the pavement. No further changes to Site 4 north-western carpark area since January 2024.



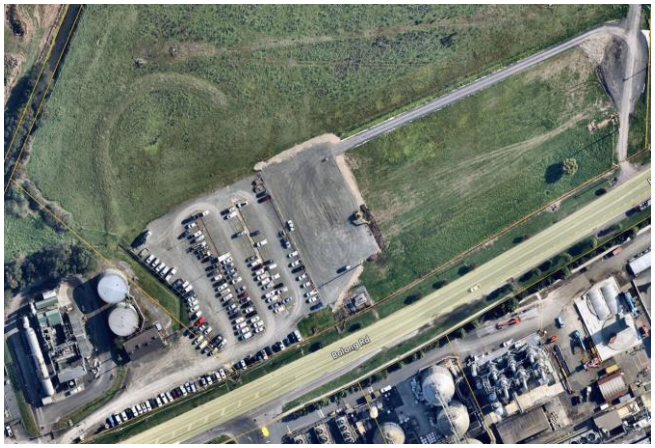
14 February 2022 (Nearmap)



24 June 2022 (Nearmap)



30 July 2022 (Nearmap)



12 September 2022 (Nearmap)



2 February 2023 (Nearmap)



30 May 2023 (Nearmap)



30 June 2023 (Nearmap)



14 October 2023 (Nearmap)



19 January 2024 (Nearmap)



26 March 2024 (Nearmap)



24 August 2024 (Nearmap)



23 February 2025 (Nearmap)

4.2.5 Site 5: Electrical cable

Western end

Bolong Road was evident since 1949, initially as an unsealed road but becoming sealed at some stage in the 1960's. The Starches Plant was evident on the banks of the Shoalhaven River and Abernethys Creek. The Plant progressively expanded over time, developing surrounding paddocks previously used for agricultural purposes.

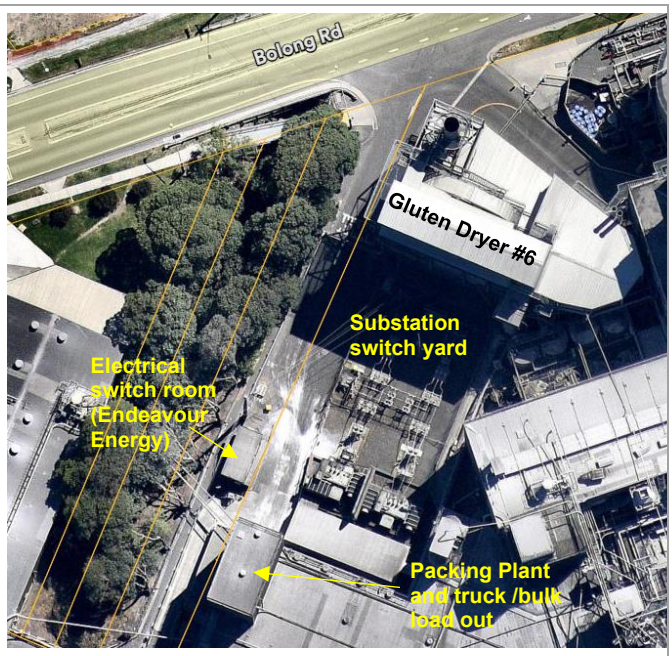
South of Bolong Road adjacent to existing substation

The area where the existing substation is located and electrical cable is proposed, was undeveloped grass paddock until some time between 1949 and 1961. From 1961, a building and carpark were evident to the east and south, respectively. The site itself was grass covered with trees lining Abernethys Creek immediately west. By 1993, the carparking configuration had changed and a portion of the site was used as an unpaved carpark. Some time between 1997 and 2010, the substation switch yard was constructed, and the construction of Gluten Dryer #6 had commenced. Since 2010, the area where the electrical cable is proposed has been mainly has an accessway and the storage of various items (e.g. IBCs, rubbish bins, temporary laydown area). The area immediately south included an electrical switch room (owned by Endeavour Energy) and packing plant and truck / bulk load out area. The accessway was asphalt paved. A white substance, possibly starch, was evident on the ground surface immediately north-east of the packing plant and truck / bulk load out area and within the south-western portion of the substation switch yard in the October 2019 aerial photograph. By May 2023, a new concrete walkway was constructed immediately south-east of Abernethys Creek which connected with a pedestrian bridge/service gantry over Abernethys Creek.

Aerial photographs from 2010 and 2019 showing key features of the site are shown below.



12 November 2010 (Nearmaps)



27 October 2019 (Nearmaps)

North of Bolong Road

Between 1949 and 1984 the area where the site is located appeared undeveloped and vegetated with grass. The site was part of a larger parcel of land, which extended north-east and appeared to be used for agricultural purposes. The grass strip immediately north of Bolong Road appeared thicker than grass in the remainder of the paddock. This thicker grass strip also contained power poles and was fenced off from the adjoining paddock, suggesting it may be an easement and not used for agricultural purposes. Trees and/or shrubs were evident in Abernethys Creek near Bolong Road. The remaining sections of the creek appeared to have grass banks and contained little to no vegetation such as trees and shrubs. By 1984, a significant increase in trees and/or shrubs lining Abernethys Creek was evident. The vegetation extended to the sewerage treatment pond approximately 170 m north of the site.

In 1993, east of Abernethys Creek, ground disturbance was evident within the easement and extended east adjacent to Bolong Road, suggesting a possible underground service installation. A section of disturbed ground extended north-west from the easement, perpendicular to Bolong Road, terminating near to the centre of the site (i.e. sewer easement). The surrounding ground surface appeared to be grass but a lighter shade of green relative to the adjoining paddock north-east of the site. Approximately 70 m north of Bolong Road appeared to be an object, possibly a footbridge, that crosses Abernethys Creek. In 1997, grass cover on-site and areas immediately north-east were brown relative to other grass paddocks in the general area. A grey rectangular area was evident about 70 m north-east of Bolong Road and 35 m south-east of Abernethys Creek (approximate location of where the carbon dioxide gas installation and natural gas installation facilities are presently located). Bolong Road appeared to have been widened.

By 2002, the carbon dioxide gas installation and natural gas installation facilities had been installed north-east of the site. A driveway connecting the natural gas installation with Bolong Road was evident and occupied part of the subject site. Remaining areas of the site appeared generally grassed covered however some minor ground disturbance was evident.

By 2012, the gas station had been constructed along with a small rectangular building, gravel carpark and turning lane off Bolong Road. The north-east portion of the site falls within the gravel carpark. The remaining areas of the site appear relatively unchanged since 1997.

In the 2013 aerial photograph, Abernethys Creek was green suggesting an algal bloom.

Between 2015 and 2021, the area where the site is located appears relatively unchanged since 2012 except for a small rectangular object, possibly a shed, that occupied the north-eastern part of the gas station from July 2015. A small red shed was visible adjacent to the gas station from 2017. The development for the packing plant, west of Abernethys Creek, was evident in 2019 and was still in progress in the 2021 aerial photograph. Between 2021 and 2022 two apparent shipping containers were established on-site adjacent to the gas station, replacing the red shed visible in 2017. By 2023 an additional storage shed, or building is visible in the south-west of the gas plant, north-east the Site 5 (western end) alignment.

Mid-section

The mid-section of Site 5 has been a grass paddock since at least 1949. Minor changes to the site were observed over time typically relating to changes in the appearance of vegetation from green to brown, grazing livestock and formation of access tracks. Changes in vegetation appearance may be associated with periods of dry and wet, and ploughing of the paddocks.

In 1993, a possible access track had been formed on or in the vicinity of Site 5 and appeared to be associated with the ploughing of a paddock east of the site and possibly part of early construction stage of a rectangular dam. This dam was decommissioned between 2018 and 2021 by way of backfilling with grey-brown and grey materials. The backfilled area appeared to be used for stockpiling material and laydown area. Access to the laydown area was via a gravel access track that bisected the proposed cable route.

In 2010, a livestock drinking trough and holding pen were evident in the vicinity of the eastern end of the mid-section of the proposed electrical cable route. In the June 2014 aerial photograph, a relatively small stockpile of grey-brown material was located immediately south-west of the drinking trough. Approximately 25 and 35 m south-east of the drinking trough were two blackened areas suggesting either burnt vegetation or placement of coal/coke. In 2016, feed (i.e. hay wrapped in plastic) was stored approximately 35 to 40 m south-east of the drinking trough. Feed was periodically stored in this area between 2016 and 2019.

In the March 2018 aerial photograph, a semi-circular feature north-east of the fire-water tanks was evident and appeared to be associated with the placement of fill. Two relatively small stockpiles were evident on the southern side of the semi-circle feature. In subsequent aerial photographs, this feature appeared raised relative to surrounding ground level suggesting it was a fill mound / berm.

By August 2019, a gravel hardstand compound containing various pieces of equipment, shipping containers, vehicles and a possible horizontal directional drill (HDD) were evident. This compound occurs in an area where the electrical cable trench is proposed. West of this compound and north of the cable alignment, was another excavation area. A small pond and several stockpiles of grey material were evident. In subsequent years, the disturbed ground associated with excavation activities revegetated. In the July 2022 aerial photograph, possible lengths of water pipe have been stored on the ground surface at the western end of the mid-section of the site. No other activities were observed since 2022.



16 June 2014 (Nearmap) – area within the yellow circle is where the possible burnt vegetation or black fill (possible coal/coke) has been placed. Refer to the next photo on the right for a close up of this area.



Close up of the burnt vegetation or placement of black fill (possible coal/coke)



11 March 2018 (Nearmap) – placement of fill at the western end of the mid-section of the electical cable route.



26 April 2019 (Nearmap)



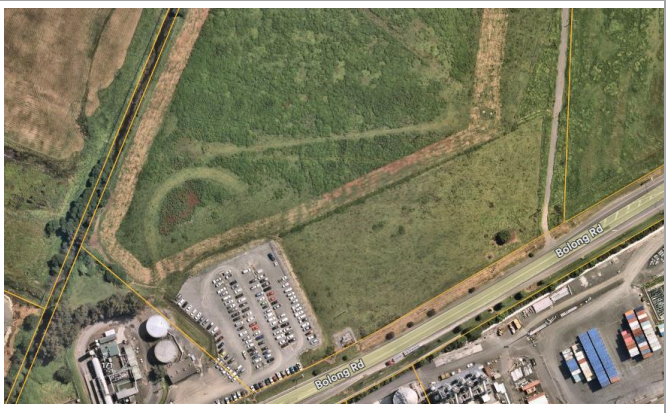
1 August 2019 (Nearmap) – the area within the yellow circle appears to be a possible HDD site. Refer to close up of area in photograph to the right.



Close up of possible HDD which occupies the eastern end of the mid-section of the proposed electrical cable trench.



27 October 2019 (Nearmap)



14 February 2022 (Nearmap) – formation of an access path around the perimeter of the paddock

Eastern end

North of Bolong Road

This area of the site has generally been a grass paddock since at least the early 1960s. Over the years, the grass has cycled between green and brown suggesting seasonal changes over time. Livestock tracks were also noted throughout the site. Immediately east of the site appeared to be an ephemeral watercourse. Other wet areas were also observed on-site suggesting localised low points.

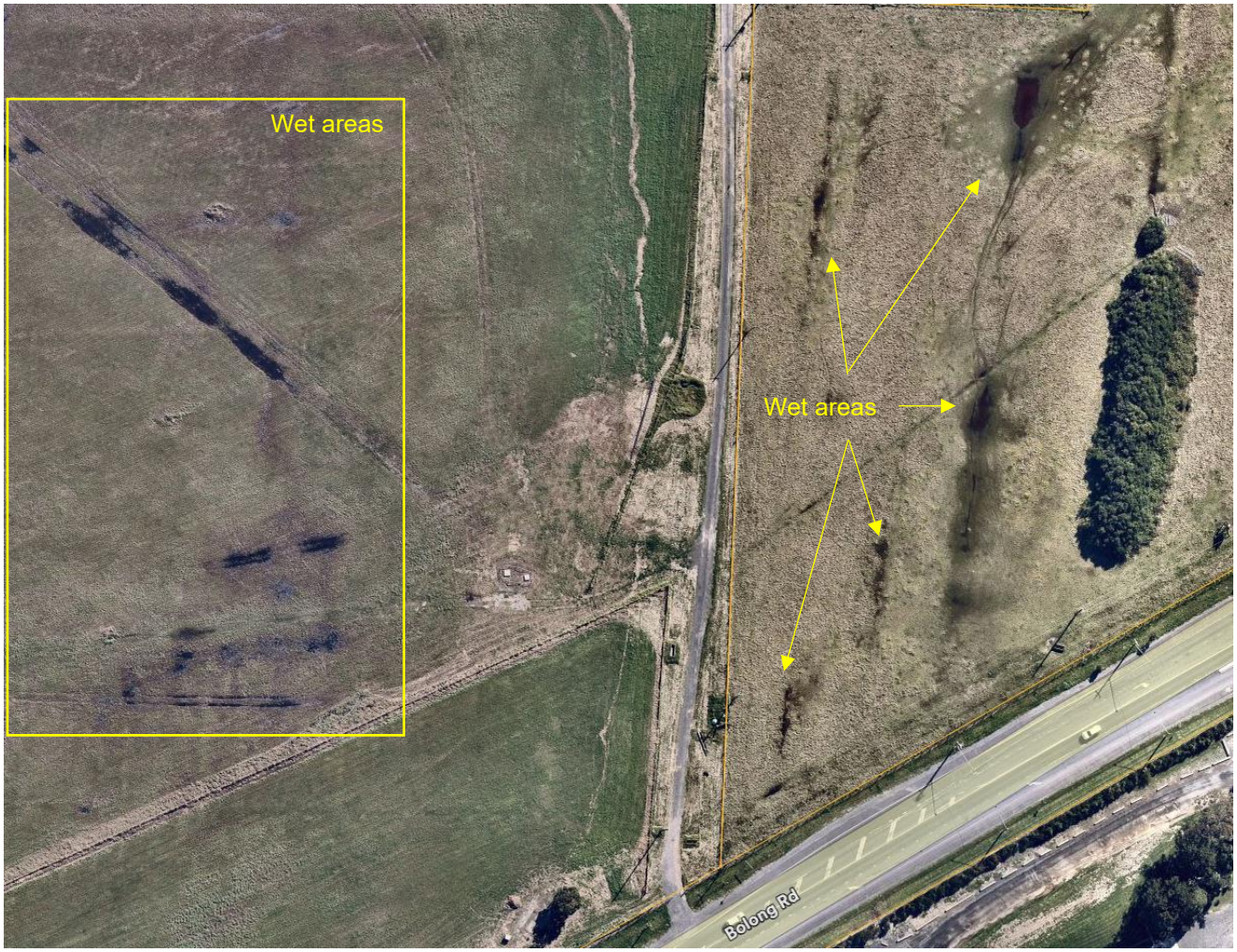
East of the watercourse was a grove of trees and/or shrubs (wind break); these trees/shrubs were removed by February 2023 (this occurred prior to Manildra acquiring this property). In the southern part of the site, parallel with Bolong Road, ground disturbance was evident in February 2023. This ground disturbance continued in areas east and west of the site and appeared to be associated with the installation of a pipeline. In the November 2017 aerial photograph, a relatively large area of ground disturbance was evident immediately north of Bolong Road. By April 2019, the disturbed area was revegetated by grass cover.



14 November 2017 (Nearmap) – disturbed ground immediately north of Bolong Road (within yellow circle), and localised wet areas



2 February 2023 (Nearmap) – removal of trees east of the site and disturbed ground parallel to Bolong Road (this occurred prior to Manildra acquiring this property)



20 August 2020 (Nearmap) – various wet areas as indicated above.

South of Bolong Road

Aerial photographs between 1960 and 2013 were reviewed as part of the previous investigation, as discussed in Section 4.6.4 (Coffey, 2015a). Prior to 1984, the site and area immediately surrounding the site was generally undeveloped paddock.

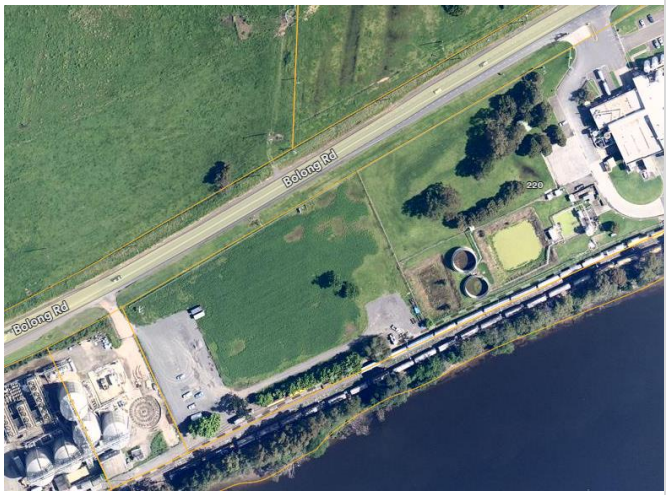
In the 1993 aerial photograph, the site was occupied by a grass covered fill mound and the area immediately north and south of the fill mound appeared to be exposed ground. Between 2013 and 2015, this area remained relatively unchanged except for changes to the appearance of the grass, which is inferred to be associated with dry or wet conditions. In 2016, several small brown features were evident within the fill mound area. By October 2021, grass cover and the fill mound had been removed. The ground surface was grey and possibly hardstand. The northern portion of this area appeared to be an access road linking the starches plant to the former dairy farmers facility. By the end of 2021, the site appeared to have been used as a laydown area, and by mid 2022 contractor workshops had been erected. Apart from items stored, the site appears relatively unchanged since mid 2022.

In 1993, east of the site was also exposed ground however remnant trees were evident. West of the site was grass paddocks. South of the exposed ground areas was an effluent treatment pond associated with the Dairy Farmers factory. A further two effluent treatment ponds and two circular structures (concrete tanks) were subsequently constructed south and south-east of the site by 2002. The effluent treatment ponds were progressively backfilled prior to 2006 to 2021. The two concrete tanks were also removed by 2021. Dairy Farmers ceased operations circa 2011 (Coffey, 2015a, p. 6). The area where ponds and circular structures were located have been asphalt paved. Numerous shipping containers were stored on the asphalt paved area.

In 2012, the Algae Demonstration Facility, used to produce biofuels, was constructed immediately south of the site. The facility comprised several structures that appeared to be above ground tanks and sheds on a concrete slab. The Algae Demonstration Facility ceased operation circa 2014 (Coffey, 2015a, p. 6). In 2015, the majority of the structures previously occupying the area where the Algae Demonstration Facility was located, had been removed and replaced by several new structures. The new structures comprised several small ponds connected in series in the west, several circular and rectangular structures occupying the remaining sections of the existing concrete slab. Since 2018, minor changes to the configuration of the Algae Demonstration Facility have been observed.

Between 2013 and 2016, the west of the site appeared to be used as a storage and/or laydown area. From 2015, the quantity of items stored increased and comprised several rectangular objects, some of which appeared to be vehicles, sheds and/or shipping containers. The objects were generally stored in groups and surrounded by access roads. The access roads were grey and possibly gravel hardstand. In September 2018, the objects had been removed, and earthworks were in progress, preparing the ground surface for asphalt pavement which was installed by December 2018. In the December 2018 aerial photograph, the western portion of the site appeared mostly paved with asphalt and used to store several shipping containers, and immediately north of this storage area adjacent to the northern boundary of Lot 143, was a gravel carpark. The western quarter of the site had been partially developed with several structures evident and also appeared to be used for storage. By December 2024, the accessway appeared to have been asphalt paved.

Below are aerial photographs showing the changes to the site between 2013 and 2025.



12 November 2010 (Nearmap)



2013 (Google Earth)



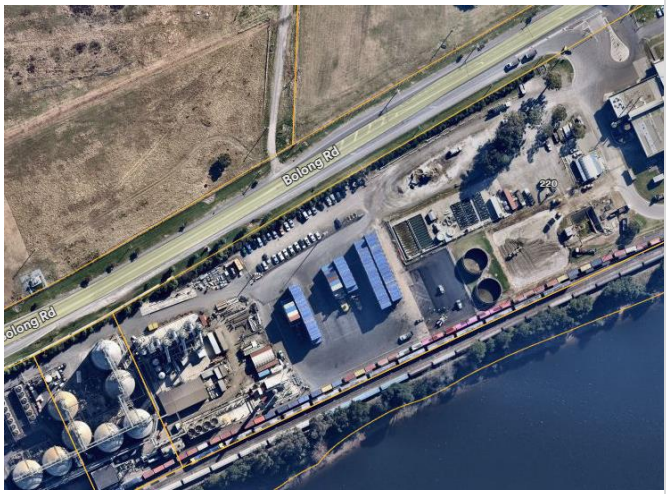
2015 (Google Earth)



2016 (Google Earth)



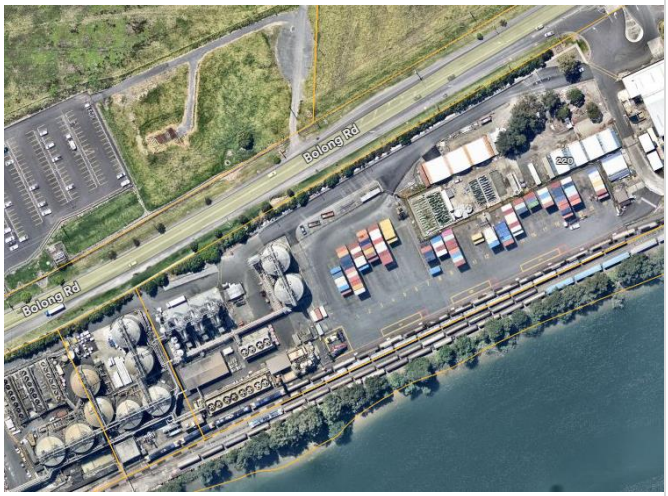
2018 (Google Earth)



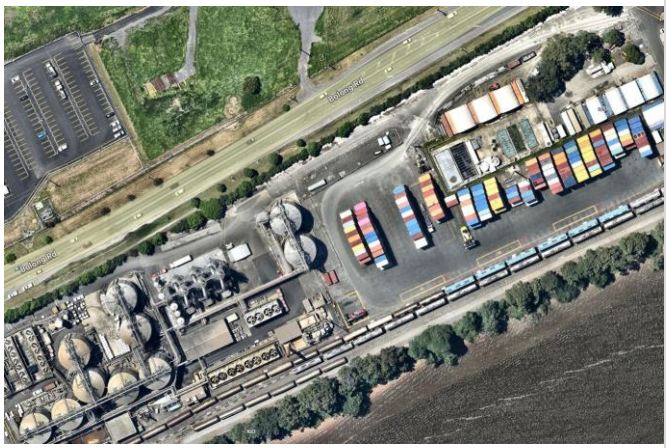
17 August 2021 (Nearmap) – removal of fill mound nearing completion



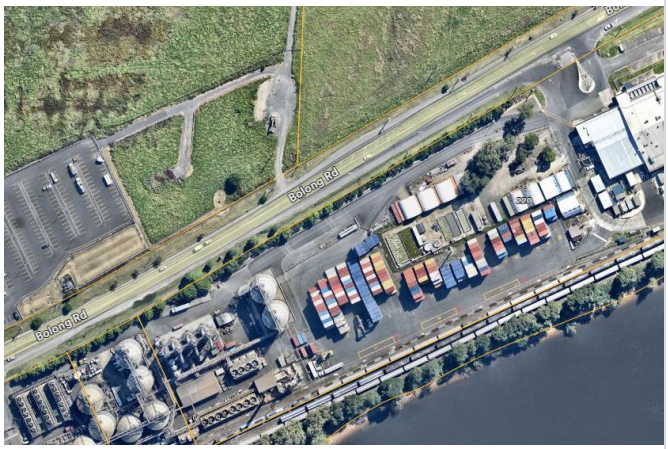
2022 (Google Earth)



22 October 2024 (Nearmap) – asphalt paved accessway



19 January 2024 (Nearmap)



5 April 2025 (Nearmap)

4.3 NSW EPA registers

GHD carried out a search of the NSW EPA registers on 28 March 2025. The results of that search are summarised in Table 4.1. Search results are included in Appendix F.

Table 4.1 Summary of NSW EPA search results

Search	Result
Contaminated Land Record of Notices	No records for the site or up to 2 km surrounding the site.
Notified Sites under the *Contaminated Land Management Act* 1997 (CLM Act, 1997)	Two records within 500 m of the site are listed as Notified Sites and the CLM Act: – Former Shell Depot Bomaderry for “Other Petroleum” contamination, approximately 350 m north-west of Site 5 (western end). Regulation is not required under the CLM Act at this Notified Site. – SRA Land Bomaderry for “unclassified” contamination, approximately 430 m north-west of Site 5 (western end). Regulation is not required under the CLM Act at this Notified Site.

Search	Result
Environmental protection licenses under the *Protection of the Environment Operations Act* 1997 (POEO, 1997)	Manildra (Shoalhaven Starches) has an EPL for plant operations which includes the production of dangerous goods, general chemicals storage and general agricultural processing. A copy of the EPL is included in Appendix F. A number of licence variations also exist. A penalty notice was issued to Shoalhaven Starches in May 2018 for contravening a condition of the licence. No further details were provided on the EPA website. The site is under multiple pollution studies and reduction programs for water and odour pollution, including three programs still in progress. NSW EPA issued Manildra (Shoalhaven Starches) a Clean-up Notice on 18 October 2024 (ref. 3510650) in response to an incident involving two grain silos collapsing into the Shoalhaven River. The incident resulted in significant quantities of grain spilling into the Shoalhaven River. The following licences were located within 500 m of the four development sites: – BOC Limited – Dangerous goods production and general chemicals storage – between Site 3 and Site 5 (western end). – SupaGas Pty Ltd – Dangerous goods production and storage (carbon dioxide associated with the Manildra Plant) – 280 east of the Site 5 (eastern end). – Shoalhaven City Council – Sewage Treatment Processing by small plants – 180 m north-west of Site 5 (western end). – Cleary Bros – Concrete works – 85 m north of Site 1 (no longer in force from 2008). – Dairy Farmers Bomaderry – Dairy processing – immediately east of the Site 5 (eastern end) (surrendered in 2006).
EPA PFAS Investigation Program	The Shoalhaven River, which is located within 105 m south of Site 1, forms part of the PFAS investigation program. Detectable concentrations of PFOS+PFHxS were reported in water samples collected from the river on 30 May 2019, but did not exceed assessment criteria for drinking water and recreational. The NSW PFAS Taskforce "*advised that no new or additional precautionary dietary advice is required for the area, based on the results".* Refer to **https://www.epa.nsw.gov.au/your-environment/contaminated-land/pfas-investigation-program/pfas-investigation-sites/shoalhaven-river** for more detail.

4.4 Section 10.7 Planning Certificates

The following Section 10.7 Planning Certificates were reviewed:

– Main plant:
  - Lot 34 DP1222627 (Site 1)
  - Lot 1 DP1305953 (Site 2 and Site 5 (western end))
  - Lot 143 DP1069758 (Site 5 (eastern end)
– North of Bolong Road:
  - Lot 243 DP1309744 (Site 4 and Site 5 (mid-section and eastern end))
  - Lot 241 DP1130535 (Site 5 (western end))

The results of the review are summarised in Table 4.2, and a copy of each certificate is included in Appendix G.

Table 4.2 Summary of Section 10.7 regarding contamination matters

Search	Result
Part (2) matters under section 59 (2) of the Contaminated Land Management Act 1997	Council has not been advised that the land is significantly contaminated, subject to a: management order; voluntary management proposal; ongoing maintenance order or site audit statement.
Part (5) Former land use identification	No records for current planning certificates. The planning certificate for Lot 1 DP1305953 where the main Starches plant operates stated that Council's records *"indicate that this is or may have been a Distillery site and may therefore have implications for development on this land".* The planning certificate for all lots indicates hazard land restrictions apply in relation to landslip, subsidence, ASS and contamination.

Search	Result
Loose-filled asbestos insulation Division 1A of Part 8 of the Home Building Act 1989	The land does not include any residential premises that are listed on the register that is required to be maintained under that Division.

4.5 Chemical storage inventory

Manildra provided a copy of the chemical storage inventory dated 25 March 2025 which included dangerous good storage areas site plans for the plant, which have been included in Appendix H. Table 4.3 provides a summary of chemicals stored near to or on the sites. Figure 2 in Appendix B shows the location of the storage depots relative to the sites. It is noted that the chemical inventory map provided by Manildra does not show chemical storage depots within the gas facility area near Site 3 and Site 5 (western end – new of Bolong Road) or in the vicinity of Site 5 (eastern end where it connects with the proposed substation).

Table 4.3 Summary of chemical storage inventory as at 25 March 2025 and site observations

Nearest Site ID	Hazardous Depot Area ID	Substance	Maximum Storage Quantity (L)	Storage Method	Approx. Distance and direction from nearest site
2	1-8	Ethanol	2,900,000	Above-Ground Tank (x8)	10 m, south-east
5 (western end)	9	Sulphuric Acid 50%	5,000	Above-Ground Tank	40 m, west
2	10-15	Methanol	30,000	Above-Ground Tank (x6)	40 m, south-east
		Methyl Isobutyl Ketone			
		Unleaded Petrol			
		Tert Butyl Alcohol			
		Unleaded Petrol			
		Unleaded Petrol			
2	16	Ethanol	1,440,000	Above-Ground Tanks	50 m, south-east
2	19	Sodium Hypochlorite 12.5%	1000	Tank (IBC)	60 m, south-west
		5-Chloro-2-Methyl-4-Isothiazolin-3-one (Biosperse CN7539)	250	Tank	
		Mixed Dialkyl (C8-C10) Dimethyl Ammonium Chloride, Ethanol (Biosperse CN6501-AP)	250	Tank	
		Sulfuric Acid 60%	250	Tank	
2	21	Sodium Borohydride & Sodium Hydroxide Solution	3000	Tank (IBC)	30 m, south-west
1	31	5-Chloro-2-Methyl-4-Isothiazolin-3-one (Biosperse CN7539)	300	Tank	20m, north-east
		Mixed Dialkyl (C8-C10) Dimethyl Ammonium Chloride, Ethanol (Biosperse CN6501-AP)	300	Tank	
		Sodium Hypochlorite 12.5%	300	Tank (IBC)	

Nearest Site ID	Hazardous Depot Area ID	Substance	Maximum Storage Quantity (L)	Storage Method	Approx. Distance and direction from nearest site
2	32	Hydrogen Gas	54 kg (8.8 m^3)	Gas Bottle	60 m, south-west
		Oxygen gas	54 kg (8.8 m^3)	Gas Bottle	
5 (western end)	35	Acetic Anhydride	3,000	Above-Ground Tank	30 m, west
1	36	Sodium Hypochlorite	36,000	Above-Ground Tank	20 m, north-east
2	37	Ethanol	150,000	In-process	10 m, south-west
2	38	Ethanol	43,000	In-process (tanker)	10 m, south-east
2	51	Methyl Isobutyl Ketone	50,000	Tank (IBC)	40 m, south-east
		Methanol			
		N-Propanol			
		Ethanol			
		Ethyl Acetate			
		Isopropanol			
		Toluene			
		Acetone			
		Methoxy Propanol			
		Propyl Alcohol			
		N Propyl Acetate			
		Xylene (DCI-11)			
		Petrol			
5 (western end)	58	Phosphorus Oxychloride	500	20Lt containers in cabinet	50 m, south-east
5 (western end)	60	Sodium Chlorite Solution	3,000	Above-Ground Tank	60 m, south-east
1	65	Sodium Hydrogensulphite 50% (Bisulfites Solution)	1,000	Tank (IBC)	50 m, south-west
		Sodium Hydroxide Solution 10%	1,000	Tank (IBC)	
1	68	Sulphuric Acid 60%	1,000	Tank (IBC)	Immediately west
		Sulphuric Acid <2.5% (Biosperse CX9400A)	1,000	Tank (IBC)	
		Sodium Hydrogensulphite (Amersite 2P)	1,000	Tank (IBC)	

Nearest Site ID	Hazardous Depot Area ID	Substance	Maximum Storage Quantity (L)	Storage Method	Approx. Distance and direction from nearest site
		5-Chloro-2-Methyl-4-Isothiazolin-3-one (Biosperse CN7539)	1,000	Tank (IBC)	
		Sodium Hydroxide (Amertrol HT3530)	1,000	Tank (IBC)	
		Cyclohexylamine, 2-diethylaminoethanol Solution (Amercor 8548)	1,000	Tank (IBC)	
		Sodium Hydroxide Solution 25%	1,000	Tank (IBC)	
		Phosphonic Acid Sodium Salt (Performax TK2272)	1,000	Tank (IBC)	
5 (western end)	C11	Proxitane	0.5 m^3	IBC	40 m, south-east
5 (western end)	C12	Hydrogen Peroxide and Peroxyacetic Acid	1 m^3	IBC	25 m, south-east
3, 5	Gas Facility	Carbon Dioxide	Not listed in dangerous goods register.	Above ground	Immediately north-west of Site 3 and immediately south of Site 5

4.6 Previous reports

Table 3.4 in Section 3.5.2 summarises the closest previous investigation location to the sites. These locations are shown on Figure 2 in Appendix B.

4.6.1 Contamination Sampling and Testing, Proposed Evaporators, Fermentation Tanks, and Cooling Towers (Coffey, 2002)

The Coffey (2002) investigation scope of works included limited sampling and testing for soil contamination at the sites of the proposed fermentation tanks, cooling, towers, and an evaporator plant at the Shoalhaven Starches Plant on Bolong Road, near to Site 1 (Mod 31). The investigation indicated that the site is located “within a broad floodplain environment and is underlain by deep alluvial and marine deposits associated with the Shoalhaven River”.

The investigation involved the excavation four test pits (WCP1 to WCP4) located between 40 and 90 m of Site 1 (Mod 31). One sample was selected for laboratory analysis based on the “visual and olfactory evidence of potential hydrocarbon contamination”.

Sample WCP3 (0-0.05 m bgl) was selected for analysis representing area where the evaporator was proposed. The sample was analysed for total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylene (BTEX), heavy metals, polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), and polychlorinated biphenyls (PCBs). The investigation adopted the NSW EPA (1994) Guidelines for Assessing Service Station Sites, and the NSW EPA (1998) Guidelines for the NSW EPA Site Auditors Scheme human health soil investigation levels for commercial/industrial land use. No exceedances of the adopted assessment criteria were reported in soil samples analysed. A sample from test pit WCP3 recorded detectable concentrations of TPH but these were below the adopted assessment criterion for TPH fractions C_6-C_9.

4.6.2 Preliminary Environmental Site Assessment and Geotechnical Investigation (Coffey, 2008b)

4.6.2.1 General

The Coffey (2008b) investigation assessed contamination aspects within the western, central and eastern areas of the Manildra Plant, adjacent to Bolong Road for a proposed pipeline linking the main plant with the environmental farm, and at the environmental farm. Therefore, it is considered that information from the Coffey (2008b) is relevant to this current investigation and provides broad information for Sites 1 to 5 (Mod 31). As noted in Section 3.5.2, soils were not directly assessed at all sites currently being investigated however collectively the laboratory results provides a general indication of contamination status across the site at that time.

The objectives of the investigation were to assess the likelihood for contamination to exist, in areas where upgrade works were proposed from past or present activities, and to make recommendations on the need for further investigation and/or remediation should contamination be present. The scope of work carried out to achieve this objective included a desktop and site history study, site walkover, and intrusive investigations from which soil samples were collected and analysed for identified contaminants of potential concern (COPC).

Site history information indicated that prior to the 1950s the site and surrounding areas where possibly used for rural land use. The development of the main plant appears to have commenced c1952 with the establishment of the Horlicks Factory (drink product, cheese, gluten production) immediately east of Abernethys Creek. Shoalhaven Starches (Manildra) commenced operations c1970, and over a period of 40 years, progressively expanded the plant west and east of Abernethys Creek, including establishment of the environmental farm located approximately 1.5 km east of Abernethys Creek.

There was no NSW EPA notice for the site under the Environmentally Hazardous Chemicals Act (1985) or the Contaminated Land Management Act (1997). The Section 149 (now Section 10.7) Planning Certificate stated that the site was not subject to investigation, remediation or site audit statement.

The investigation identified six Areas of Environmental Concern (AECs) and associated COPCs which were relevant to the current investigation areas (Mod 31) and included:

– AEC 1: Storage and use of fuels and chemicals (TRH, BTEX, PAH, pH)
– AEC 2: Potential weathering of hazardous building materials and demolition of site structures (lead, zinc, asbestos)
– AEC 3: Potential application of pesticides and fertilisers (OCP, OPP, heavy metals)
– AEC 4: Fill of unknown quantity and origin - fill soils imported to the site as part of landfilling activities to raise site levels (TPH, BTEX, PAH, OCP, OPP, PCB, heavy metals, asbestos).
– AEC 5: Storage and application of effluent waters (Nutrients, dissolved oxygen, Biochemical Oxygen Demand, pH, nutrients)
– AEC 7: Other unknown site activities due to gaps in the site history (TPH, BTEX, PAH, OCP, OPP, PCB, heavy metals, asbestos + others)

The likelihood of contamination occurring in AECs 1, 3, 4, 5 were low; and moderate for AEC 2.

The following sections discuss investigation results relative to each of the proposed development areas.

4.6.2.2 Western plant area – Site1 (Mod 31)

Between 1951 and 1962, Lot 62 (now Lot 32 DP1222627) was owned by British Chemicals and Biologicals Pty Ltd (1951-1955) and Fisms Chemicals Pty Ltd (1955-1962). However, aerial photographs indicated that this area was vacant and grassed rural paddock prior to 1994. No other information was available to confirm whether any chemical storage/manufacturing took place.

The western plant area comprised the DDGS load out facility and storage building, evaporators and cooling towers, storage areas and a coal stockpile. The coal stockpile was located west of Site 1 (Mod 31). The western plant area was generally unpaved except around the DDGS loadout facility. The area was used to store empty storage containers, steel framing, tubing, framing and disused storage containers.

AECs identified for the western plant area were AEC 1 (localised areas), AEC 2 (where former structures were located – though based on other site history no structures were evident), AEC 3, AEC 4 (though extensive filling was not expected) and AEC 7.

The intrusive investigations included the analysis of 25 soil samples from 14 borehole locations. Twenty (20) samples represented topsoil and/or fill. Fourteen (14) samples represented soils from upper 0.2 m targeting near surface with the remainder between 0.3 m and 1.0 m. Samples were analysed for COPCs including TPH, BTEX, PAH, OCP, OPP, PCB, heavy metals and/or asbestos. Samples from seven locations of varying depths were selected for analysis of all COPCs identified. Concentrations of COPCs did not exceed the human health investigation (HILs) levels for industrial/commercial land use adopted at the time (NEPC, 1999) nor did concentrations exceed current HILs assessment criteria (NEPC, 2013). Heavy metal concentrations were generally low. Copper and zinc were elevated relative to expected background concentrations in some samples but well below assessment criteria. Higher concentrations of zinc were noted in some topsoil and coalwash (possibly ash) samples whilst elevated copper concentrations appeared to be associated with samples representing road base. Road base is typically sourced from quarries mining latite, where copper is naturally occurring (Bowman, 1971). Concentrations of organic COPCs were generally less than the laboratory limit of reporting (LOR), except for TPH fractions C_{15}-C_{28} or C_{29}-C_{36} where detectable concentrations were reported in three samples but close to the LOR and not exceeding assessment criteria.

4.6.2.3 Central plant area – Site 2 and Site 5 (western end) (Mod 31)

Site history information indicated that prior to 1950, the sites and surrounding areas were possibly used for rural land use. In 1952, Horlicks Factory occupied an immediately east of Abernethys Creek and Site 5 (western end) (Mod 31). The Horlicks Factory was a milk processing plant producing 9 million pounds of milk product per year in 1952[2]. Horlick expanded their production to include starch and gluten products[3]. Shoalhaven Starches was established at the Horlicks Factory in 1970s and produced wheat, starch and gluten products[4]. Between 1970 and 1992, Shoalhaven Starches expanded the plant infrastructure to increase production and to produce ethanol products. The processing plant, as of 1967, comprised factory buildings, silos, flour store, milk platform, workshops, incinerator, garage, railway lines, offices and amenities and boiler house. The location of these structures was not provided in the version of the report provided (i.e. report was incomplete). Between 1993 and 2003, facilities including a distillery (west of Site 2 (Mod 31)), dryers and evaporation plant were installed at the plant.

At the time of fieldwork in February 2008, the central plant area comprised ethanol distillery, fermenter tanks, workshop, starch dryers, substation, offices, electrical substation, asphalt paved accessways, and chemical storage in ASTs and IBCs in bunded areas and smaller 200L plastic drums. The chemicals stored in the central plant area included sodium hypochlorite, sulphuric acid, hydrogen peroxide, acetic anhydride, sulphuric acid and/or ethanol. Minor spills were noted on the ground surface. The substance spilled was not described. USTs and ASTs were also noted near the rail unloading and storage facility and boiler house but were decommissioned and removed in 1992.

AECs identified for the central plant area were AEC 1 (localised areas), AEC 2 (where former structures were located – though based on other site history no structures were evident), AEC 3, AEC 4 (though extensive filling was not expected) and AEC 7.

Seven samples from four borehole locations and one surface sample location were analysed for TPH, BTEX, PAH, OCP, OPP, PCB, heavy metals and/or asbestos. Three samples were selected for analysis of all COPCs identified. Six samples represented fill material whilst one sample represented estuarine soil. Samples analysed were collected from near surface, upper 0.5 m, and the deepest sample 1 to 1.5 m. Concentrations of COPCs did not exceed the HILs for industrial/commercial land use adopted at the time (NEPC, 1999) nor did concentrations exceed current HILs assessment criteria (NEPC, 2013). Heavy metal concentrations were generally low; asbestos was not detected and organic COPCs were below the LOR.

[2] National Library of Australia: **https://nla.gov.au/nla.obj-299676609/view?sectionId=nla.obj-311973044&partId=nla.obj-299702071#page/n33/mode/1up**
[3] South Coast Register: **https://www.southcoastregister.com.au/story/5281987/horlicks-makes-global-impact-from-bomaderry/**
[4] Manildra Group: **https://www.manildra.com.au/about-manildra-group/**

4.6.2.4 Proposed carpark – Site 4 and Site 5 (eastern end north of Bolong Road) (Mod 31)

The area where Site 4 and Site 5 (eastern end north of Bolong Road) (Mod 31) is proposed was described as a grass paddock, with no obvious evidence of filling, waste materials or stressed vegetation observed.

Surface samples from borehole locations CBH111 and CBH112 were collected and analysed for OCP, OPP and heavy metals. Concentrations of COPCs did not exceed the human health investigation levels for industrial/commercial land use adopted at the time (NEPC, 1999) nor did concentrations exceed current HILs assessment criteria (NEPC, 2013). Heavy metal concentrations were generally low, and OCP/OPP were below the LOR.

Two samples (CBH111/0.0-0.06 and CBH112/0.0-0.06) representing topsoil were analysed for metals, OCP and OPP. Concentrations of COPCs did not exceed the human health investigation levels for industrial/commercial land use adopted at the time (NEPC, 1999) nor did concentrations exceed current HILs assessment criteria (NEPC, 2013). Laboratory results were consistent with field observations where no evidence of contamination was noted during sampling. No evidence of fill was observed at borehole locations CBH111 and CBH112, except for reworked natural material which was inferred to have been disturbed during the installation of underground services.

4.6.2.5 Gas facility – Site 3 and Site 5 (western end north of Bolong Road) (Mod 31)

Investigation locations included one borehole (CBH110) on-site, and three boreholes (CBH14 to CBH16) and three test pits (CTP29 to CTP31) within close proximity to the site. Soil samples collected from CBH110 and CTP30 at depths of 0.0 to 0.06 m and 0.0 to 0.1 m respectively were analysed for heavy metals, OCPs, and OPPs. Concentrations of these COPCs did not exceed the adopted human health assessment criteria for commercial / industrial land use (NEPC, 1999) nor did concentrations exceed current HILs assessment criteria (NEPC, 2013).

The report notes that test pits CTP29 and CTP30 contained “no obvious evidence of fill or contamination”.

4.6.2.6 Conclusions

No obvious evidence of contamination was noted in the soils at the sampling locations. The report concluded that *“based on the results of this assessment, the potential for widespread soil contamination that would preclude these areas from being redeveloped for industrial land use is considered to be low. Some relatively localised contamination could exist from previous activities (particularly within the Shoalhaven Starches Plant)*”.

4.6.3 Geotechnical and Preliminary Environmental Investigations, Proposed New Silos (Coffey, 2014a)

A geotechnical and preliminary environmental investigation assessment was carried out in the area of the proposed new silos approximately 120 m of Site 2 (Mod 31). The preliminary environmental investigation involved a desktop study and site history review, observations of potential sources of contamination, collection of soil samples for preliminary contamination, and acid sulfate soil assessment from two borehole locations (NSBH01 and NSB02) as part of the geotechnical investigation.

Samples BH1 (NSBH01) and BH2 (NSBH02) from depths of 1 m to 1.3 m were analysed for heavy metals, TRH, BTEX, PAH, OCPs, OPPs and PCBs. COPCs did not exceed the adopted Health Screening Levels (HSLs) and HILs for industrial / commercial land use and management limits (NEPC, 2013).

The contamination investigation determined that contamination was not likely to be present in the investigation area that would pose an unacceptable risk to site users based on the proposed site use. The ASS assessment recommended an acid sulfate management plan be developed for the excavation of soils greater than 3 m bgl.

4.6.4 Contamination Assessment (Coffey, 2015a)

A contamination assessment was carried out by Coffey in 2014 within the eastern plant area which included the eastern portion of Site 5 (south of Bolong Road) (Mod 31), where the electrical cable connects to the proposed substation (Coffey, 2015a).

The objectives relating to the contamination assessment were to:

– Assess the likelihood for contamination to exist on the site from past or present activities.
– Make recommendations on the need for further investigation or management (if required).

The scope of work developed to meet these objectives included review of site history information, making site observations, and soil, groundwater and water sampling across the site to assess AECs. The results of field and laboratory investigations were interpreted and reported with respect to the above objectives.

Site history information indicated that the site was generally used as rural grazing land including milk processing and cattle grazing until the 1970's. Some of the associated farmhouse buildings and structures were demolished between 1979 and 1993. Lot 143 was thereafter redeveloped as a milk processing facility, which included treatment of effluent in treatment ponds on the site under a NSW EPA licence. An experimental effluent to biofuel conversion facility (hereafter referred to as 'Algae Demonstration Facility') was constructed circa 2011 and operated for a couple of years, around the same time that the milk processing facility ceased operations. Since 2012, Manildra has owned the site, and has used a portion of the site for storage. The Algae Demonstration Facility ceased operations in 2014.

Based on site history and site observations, ten AECs were identified and five have relevance to Site 5 (eastern end, south of Bolong Road) (Mod 31). These AECs included:

– Former effluent treatment facility, treating effluent generated from the former Dairy Farmers factory located immediately south of Site 5 (AEC 1).
– Algae Demonstration Facility, conversion of algae into a biofuel (AEC 3).
– Former rural land use, including potential historical use of pesticides and herbicides across the site during farming activities, possible storage/use of fuels/other chemicals (AEC 4).
– Fill of unknown quality and origin (AEC 6 and AEC 7):
    - Anecdotal information indicates that the fill mound, that was previously located where Site 5 (and planned substation), was sourced from the excavation of the former treatment pond located south of the Algae Demonstration Facility. The fill mound was identified as AEC 6.
    - Fill was observed during previous Golder investigation (Golder, 1998; 1999) across the site. Fill outside of AEC 5 and AEC 6, is expected to be less 1 m thick (AEC 7).

Remaining AECs identified but not directly relevant to the sites, but which provide a general overview of general activities that occurred near Site 5 (eastern end, south of Bolong Road) (Mod 31) include:

– Diesel AST and bowser located approximately 100 m south-east of Site 5 (Mod 31). Black discolouration of the ground surface adjacent to the bowser was observed (AEC 2).
– Fill of unknown quality and origin (AEC 5):
    - A former treatment pond existed in the southern part of the site, immediately west of the two water treatment tanks. Figure 4.1 shows the former treatment pond on the right hand side of the two water treatment tanks. Anecdotal information indicates that the pond was backfilled with 'clean' fill some time between 2002 and 2006. Test pits and one borehole indicated that the pond had been backfilled with sandy clay / clayey silt fill with foreign materials (brick, asphalt, concrete, metal bar, PVC pipe), cobbles, and decaying straw, grass, and plant matter. The fill was between 1.8 m and 3.2 m bgl (AEC 5).
– Miscellaneous storage across the site, various items (soil stockpiles, IBC [waste oil] containers, timber and metals) have been stored approximately 60 m south-west of Site 5 (Mod 31) (AEC 8).
– Miscellaneous storage across the site, various items (200L drums, disused AST and transformers) have been stored in the area approximately 60 m south-east of Site 5 (Mod 31) (AEC 9).

Site observations and AECs are shown on Figures 2 and 3 in Appendix J, respectively.

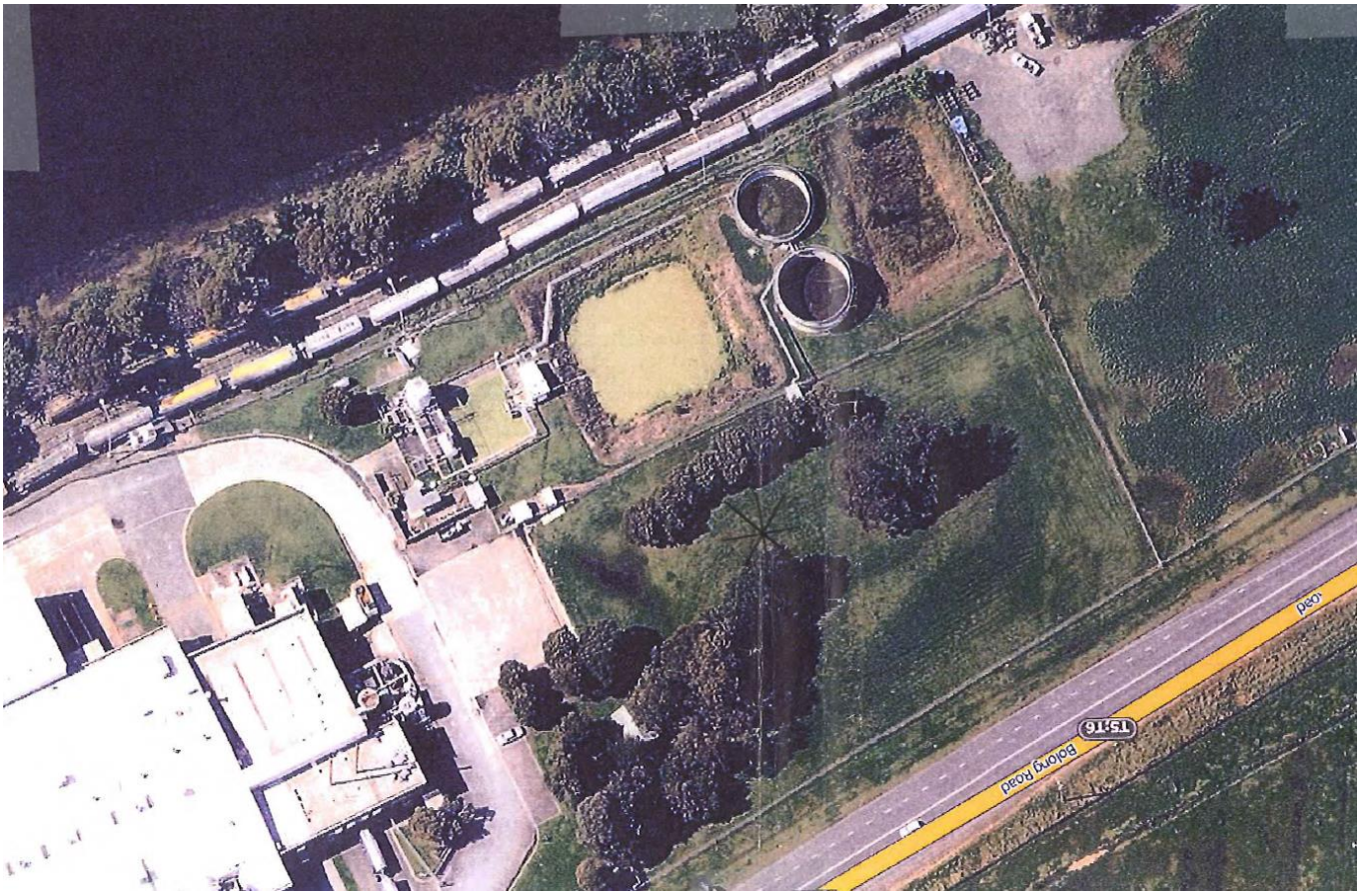


Figure 4.1 Former effluent treatment facility in May 2011 (Coffey, 2015a, p. 278)

Eighty (80) locations comprising boreholes, test pits, and surface samples were used to assess the 11 AECs identified. The depth of investigation targeted near surface soils (upper 0.1 m), and at depths between 0.3 m and 4.5 m, from which soil samples were collected from surface samples and test pits (CTP01 to CTP41). Soil samples were also collected from five boreholes (CBH01 to CBH05). Three boreholes (CBH01 to CBH03) extended to depths between 25 m and 35.15 m bgl for geotechnical purposes. The remaining two boreholes (CBH04 and CBH05) were extended to depths of 5.6 m and 7.5 m bgl, and were converted to groundwater monitoring wells.

The results of laboratory analysis of soil and groundwater samples were compared to assessment criteria for commercial / industrial land use, and ecological and drinking water, respectively. The following results are relevant to Site 3 and areas of soil impacts are shown on Figure 4.2 below:

– Six samples at SS05 reported concentrations of lead between 2,300 mg/kg and 33,000 mg/kg that exceeded HIL-D for commercial / industrial land use of 1,500 mg/kg. Impact was identified between 0 m and 0.25 m bgl. Source of the contamination may be associated with fill material. (AEC 7)
– SS08/0.0-0.1, reported concentrations of TRH (>C_{10}-C_{16}) and TRH (>C_{34}-C_{40}), which exceeded assessment criterion for management limits; and SS08/0.0-0.1 and SS19/0.0-0.1 reported concentrations of TRH (>C_{16}-C_{34}) which exceeded the HSL-D (direct contact) assessment criterion. (NEPC, 2013). (AEC 11)
– CTP03/1.1-1.2, a fragment of ACM was encountered that was identified to contain chrysotile asbestos. Two other ACM fragments were also observed in test pits excavated within the fill mound in the northern portion of the site, but the asbestos was at concentrations less than the assessment criteria. (AEC 6)
– CTP05/0.0-0.05, reported concentrations of TRH (>C_{10}-C_{16}) and TRH (>C_{16}-C_{34}), which exceeded assessment criterion for management limits (NEPC, 2013). No exceedances were reported in the sample collected directly below 0.05 m (CTP05/0.1-0.15), suggesting impacts are within the upper 0.1 m of the soil profile. Source of the TRH was associated with localised black staining adjacent to the diesel AST. (AEC 2)

– PACM1, a fragment of ACM that was collected from the ground surface at a location immediately south-west of the area formerly occupied by a farmhouse. Chrysolite asbestos was identified in this sample. No other ACM fragments were observed nearby. The laboratory did not identify asbestos in PACM2. (AEC 10) *(not applicable to Mod 31 development areas)*
– CTP11/0.0-0.05, reported concentrations of TRH (>C_{16}-C_{34}) and TRH (>C_{34}-C_{40}) which exceeded HSL-D (direct contact), and TRH (>C_{16}-C_{34}) which exceeded assessment criterion for intrusive maintenance worker (direct contact) (NEPC, 2013). No exceedances were reported in the sample collected directly below 0.05 m (CTP11/0.1-0.2) suggesting impacts are within the upper 0.1 m of the soil profile. Source of the TRH was associated with localised black staining adjacent to a waste oil disposal container (IBC container). (AEC 8)
– CBH05 (groundwater), concentrations of anthracene marginally exceeded the low reliability trigger value of 0.01 µg/L (ANZECC/ARMCANZ, 2000). Concentrations of metals, TRH, BTEX and other PAHs were close to or below the laboratory reporting limits. (AECs 1, 3 and 5)
– No other exceedances were reported.



Figure 4.2 ***Generalised areas of identified soil contamination within the 2014 site boundary shown by the red outline (Coffey, 2015a, p. 34)***

Based on the results of the investigation, the following management and remedial measures, relevant to Site 5 (eastern end, south of Bolong Road) (Mod 31), were recommended to address identified contamination:

– Manildra should improve general housekeeping in the short-term prior to redevelopment to prevent further or wider spread contamination occurring (e.g., through preventing further hydrocarbon spills). Areas with existing contamination should also be noted to prevent inadvertent access and/or spreading of these soils to other areas.
– Direct assessment for the former effluent treatment plant was not possible at the time of the investigation; therefore, it was recommended that observations be made during the demolition of the effluent treatment plant for evidence of contamination. For example, during removal of the grease trap tank.

The above remedial and management procedures should be further detailed in a Remediation Action Plan (RAP) or similar work plan, which should be prepared prior to intrusive construction works occurring on-site.

4.6.5 Preliminary Geotechnical, Contamination, ASS Assessments modifications to the existing ethanol distillery (Mod 19) (GHD, 2020)

A preliminary site investigation (PSI) for contamination was carried out by GHD in 2020, which assessed an area immediately south-west of Site 5 (eastern end south of Bolong Road) (Mod 31).

The objectives relating to the contamination assessment were to:

– Assess the likelihood for contamination to exist on the site from past or present activities.
– Provide recommendations for further investigation and/or options management (if applicable) with respect to the proposed development based on the findings of the assessment.

The scope of work developed to meet these objectives included a desktop study of site history and review of previous geotechnical investigation report, site walkover, interpretation of results and conclusions and recommendations in relation to the above objectives.

Based on site history and site observations, five AECs were identified, three of which have relevance to Site 5 (eastern end south of Bolong Road) (Mod 31). These AECs included:

– AEC 1: Storage and use of fuels and chemicals associated with operations at the plant
– AEC 3: Potential application of pesticides, herbicides, fertilisers
– AEC 4: Fill of unknown quantity and origin

The AECs and associated COPC were largely based on findings from the Coffey 2014 investigation (Coffey, 2015a), ACM fragments observed during the site walkover and changes to site activities since 2014.

Since 2014, the eastern portion of the main plant area has been progressively developed. The majority of the area was sealed with asphalt pavement in 2019 as part of the grain storage project. These asphalt paved areas were used as accessways and to store grain within shipping containers. No permanent structures have existed at the eastern portion of the main plant area except for the former farmhouses. These farmhouses were located approximately 80 m south-west of Site 5 (Mod 31). The area immediately east of the evaporators was being used as a laydown area for various contractors working on the adjoining development occurring west of the site. Chemical storage and use occurred west of the fermenters and included sulphuric acid, and biocides were used to control microbial build up on the cooling towers. No chemical spills were known to have occurred. Several suspected ACM fragments were observed in a gravel paved area approximately 25 m east of the fermenters and approximately 160 m south-west of Site 5 (Mod 31). The source of the suspected ACM fragments was unknown. Laboratory testing identified asbestos in two suspected ACM fragments collected during the site walkover. The ACM fragments were assessed as ‘bonded’. Other than roadbase or other gravels, no filling has occurred in the area. Apart from the suspected ACM, no other evidence of contamination such as odours or staining was observed.

The primary receptor is considered to be workers/visitors involved with earthworks associated with the development, such as those working directly working with soil. Earthworks are likely to involve shallow excavations associated with pavements and installation of underground services with deeper excavations required for foundations. This exposure scenario provides an increased likelihood that workers will be in direct contact with soil and groundwater and exposed via inhalation to dust and vapours generated during excavation. Therefore, the Source-Pathway-Receptor (SPR) linkages could be complete if contamination exists. SPR linkages for groundwater users were assessed to be incomplete. However, groundwater quality is unknown and therefore some uncertainty exists with respect to potential SPR linkages for ecological receptors [noting groundwater well CBH05 was east of the 2020 assessment area]. Potential impacts to ecological receptors are considered generally low because the majority of stormwater runoff and spills are captured by the drainage network and treated.

Based on the results of the PSI, the following recommendations, relevant to Site 5 (Mod 31), were made:

– Unexpected Finds Protocol (UFP) and site-specific Work Health Safety and Environment (WHSE) plan.
– Some opportunistic sampling and analysis could be undertaken to better assess risk associated with exposure. These samples could also be used to inform the waste classification of excavated spoil.
– Assess waste classification of soils to be excavated to allow off-site disposal of surplus materials to an appropriately licenced waste facility.

4.6.6 Asbestos clearance certificates and waste classification

Several ACM fragments were identified in an area between the new ethanol cooling towers and switch room approximately 140 m south-west of Site 5 (eastern end south of Bolong Road) (Mod 31) (GHD, 2020). A surface clearance of bonded ACM was carried out by a hygienist on 3 September 2020 however ACM fragments within fill were left in place. The hygienist provided a clearance certificate, and the remainder of the ACM is managed through an unexpected finds protocol (UFP) (ENRS, 2020).

4.6.7 Soil test pit investigation – former Dairy Farmers soil mound (ENRS, 2021)

ENRS carried out a soil investigation of a soil mound (i.e. fill mound) located north of the Algae Demonstration Facility on 12 July 2021. The fill mound was located on Site 5 (eastern end, south of Bolong Road) (Mod 31). The objectives of the investigation were to:

– Investigate if the soil at the site presents any visual or olfactory evidence of contamination.
– Conduct visual inspection for asbestos and collect samples for laboratory analysis if asbestos is observed.
– Document the extent of soil contamination (if any).
– Provide recommendations for site management and statement of suitability for ongoing site use.

To meet the above objectives, the scope of work included review of previous reports, historical records, site walkover and intrusive investigations using test pits from which observations were made for evidence of ACM fragments.

During the site walkover a 3 cm ACM fragment was observed within the western portion of the fill mound [GHD assumes this fragment was on the surface of the fill mound]. No other ACM fragments were observed.

The report does not specifically state the number of test pits used to assess the fill mound. The photo log attached to the report indicates nine test pits were excavated through the fill mound alongside batters and centre. The test pits terminated 0.5 m below natural ground [GHD notes that it is unclear from the report if the test pits extended through the entire thickness of the fill mound]. The test pits were excavated in 200 mm layers where the excavated material was raked to assist visual screening for asbestos. Steel and former farm machinery was encountered at a test pit excavated in the north-eastern portion of the fill mound. No other evidence of contamination such as odours, staining or ACM was identified and therefore, soil testing was not warranted. Observations were consistent with previous Coffey investigations (Coffey, 2015a).

The report concluded that due to the lack of contamination indicators that the fill mound was considered suitable for the proposed ongoing commercial and industrial land use. However, it recommended that *'if asbestos is identified the area should be managed in accordance with the Sites Asbestos Management Plan (AMP) and Unexpected Find Protocol (UFP)'*.

[GHD notes that it is unclear if the fill mound was assessed in accordance with *Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia* (WA DoH, 2021)].

4.6.8 Preliminary Geotechnical, Contamination, ASS Assessments for the proposed gas pipeline (Mod 2) (GHD, 2022b)

Manildra commissioned GHD to carry out a geotechnical assessment of the effects of the gas pipeline construction on the stability of the banks of Abernethys Creek; and ASS and contamination assessments at the site to support the modified application. The site investigated as part of gas pipeline Mod 2 new alignment extends east from the GPRF, passing under Abernethys Creek, then continuing south across Bolong Road terminating near Fermenter No. 2. The area investigated is considered relevant to Site 3 and Site 5 (western end north of Bolong Road) (Mod 31).

The objectives of the PSI were to assess the likelihood for contamination to exist on the site from past or present activities and provide recommendations for further investigation and/or options management (if applicable) with respect to the proposed development based on the findings of the assessment.

The scope of work developed to meet these objectives included a desktop study of site history and review of previous investigation reports, site walkover, intrusive investigation, interpretation of results and conclusions and recommendations in relation to the above objectives.

In 1993, east of Abernethys Creek, ground disturbance was evident within the easement and extending east adjacent to Bolong Road, suggesting a possible underground service installation. Between 2002 and 2012, the site and surrounding areas were developed. By 2002, the carbon dioxide gas installation and natural gas installation facilities had been installed north-east of the site. By 2010, the gas station had been constructed along with demountable buildings, gravel carpark and turning lane off Bolong Road. Between 2012 and 2021, shipping containers, toilet block and additional demountable structures were progressively added to the site and surrounding area. The demountable buildings were primarily used for office space, with some used to store small quantities (5-10L) of cleaning products (i.e. detergents and disinfectants), cleaning equipment and dry product samples. The shipping containers were used to store cleaning equipment and archived records associated with contractors involved with the packing plant development. The toilet block was not connected to septic tank or sewer. Waste was collected in an above ground tank situated below the toilet building. The tank had a volume of about 3,000 to 5,000L and is emptied once per week by a waste contractor where it is disposed off-site at a licenced waste facility. No leaks from the tank have occurred. The area remained a grass paddock up until late 2022 when the carpark construction had commenced. The carpark was completed in October 2023. Quarry product was imported to the sites to form the gravel carpark, and also placed below the demountable buildings to support the building foundations. No other fill has been imported to the sites.

Limited sampling and analysis of samples representing topsoil and near surface fill (upper 0.2 m of soil profile) reported concentrations of TPH, BTEX, OCP, OPP and / or heavy metals below the adopted human health assessment criteria for industrial/commercial land use (NEPC, 2013). Concentrations of TRH, BTEX, OCP and OPP were below the laboratory reporting limits, and heavy metal concentrations were relatively low and consistent with published background concentrations (Olszowy, Torr, & Imray, 1995, p. 17). Laboratory results were consistent with field observations, where no obvious evidence of contamination was observed.

For groundwater, lead and zinc concentrations exceeded the adopted assessment criteria (ANZECC/ARMCANZ, 2000). The source of zinc and lead was not identified but could have been associated with background concentrations. Faecal coliform concentrations were below the reporting limit suggesting leaks from the sewer main were not occurring in the vicinity of the groundwater monitoring well. It was concluded that the heavy metal impacts were not significant and did not warrant further investigation (ES, 2016).

No pesticide application or chemicals, apart from detergents and disinfectants, fuels or oils, have been stored at the site. No accidental releases of fuels or oils have occurred.

Based on previous and current investigation results, potential for contamination was identified in three areas of environmental concern (AECs) (see Figure 4.3 below), which included:

– AEC 1: Fill of unknown quality and origin.
– AEC 2: Potential leaks from toilet block above ground sewerage tanks
– AEC 3: Treated effluent releases into Abernethys Creek and impacted catchment water.

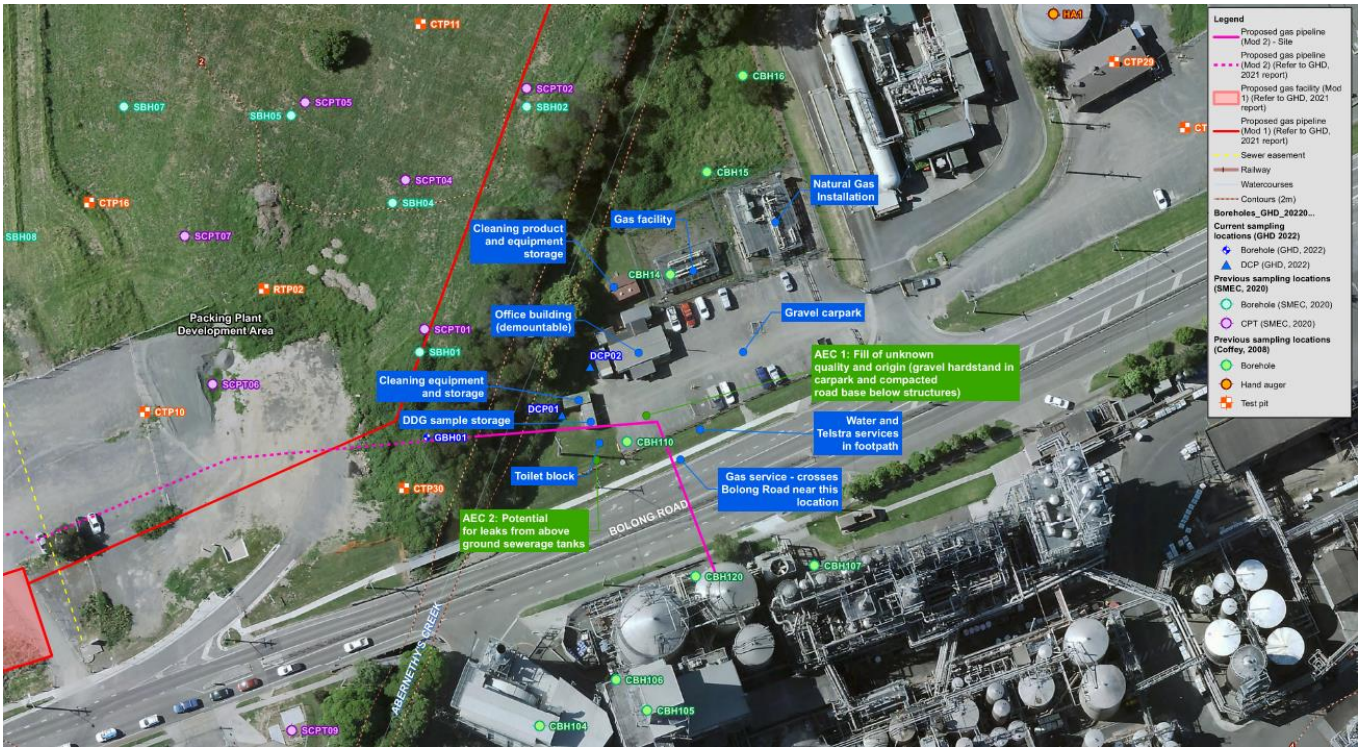


Figure 4.3 Site layout plan for Gas Pipeline Mod 2 investigation showing AECs and land use information (GHD, 2022b)

Based on review of the potential SPR linkages, the proposed development and future site works may provide direct contact / inhalation (i.e., vapours, dust) exposure opportunities for human and ecological receptors to contamination, if present within these AECs. Based on previous and current investigation results, the likelihood for contamination to exist at the site was assessed as low and very low. Therefore, due to the likely absence of contamination at the site, the SPR linkages were considered incomplete. No further investigation was warranted.

Although the likelihood for contamination was assessed as low, it was recommended that a CEMP be prepared to manage the occurrence of potential contamination, buried waste, demolition waste, ACM, etc. in all parts of the site during construction. The CEMP should also include an UFP. It was noted that GHD had prepared a CEMP on behalf of National Australian Pipelines Pty Ltd (contracted by Manildra), for the installation of the proposed gas pipeline.

4.6.9 Preliminary Geotechnical, Contamination, ASS Assessments for the Proposed Evaporators, MVR & Substations (Mod 29) (GHD, 2024a)

Manildra commissioned GHD carry out ASS, Contamination, and Geotechnical River Bank Stability assessments for proposed development areas to support the Modification Application. The development area defined as Site 4 (main distribution substation) in the Mod 29 assessment is considered relevant to the current Site 5 (eastern end south of Bolong Road) (Mod 31), as the electrical cable proposed (Site 5) will connect the proposed substation with the existing substation near Abernethys Creek.

The objectives were to assess the likelihood for contamination to exist on the site from past or present activities and provide recommendations for further investigation and/or options management (if applicable) with respect to the proposed development based on the findings of the assessment. The scope of work developed to meet these objectives included a desktop study of site history and review of previous investigation reports, site walkover, interpretation of results, and conclusions and recommendations in relation to the above objectives.

Based on investigation results, potential for contamination was identified in four AECs relevant to Site 5 (Mod 31):

– AEC 3: Former rural land use, including potential historical use of pesticides and herbicides across the site during farming activities, possible storage/use of fuels/other chemicals (COPCs: OCP, OPP, arsenic, nitrogen for fertilisers, and TRH, BTEX, PAH for fuels), likelihood of contamination was assessed as very low.
– AEC 4: Fill of unknown quality and origin (COPC: TRH, BTEX, PAH, OCP, OPP, PCB, heavy metals, asbestos):
    - 4a: General fill occurrence within proposed development areas (likelihood of contamination was assessed low)
    - 4b: Fill mound previously located on Site 5 (likelihood of contamination was assessed high due to ACM fragments previously identified within the fill mound)
– AEC 5: Miscellaneous storage of various items (COPC: TRH, BTEX, PAH, heavy metals, asbestos), likelihood of contamination was assessed as low
– AEC 7: Area formerly occupied by the Algae Demonstration Facility and production of bio-fuels (COPC: TRH), likelihood of contamination was assessed as very low.

In relation to SPR linkages the proposed development and future site works may provide direct contact / inhalation (i.e., vapours, dust) exposure opportunities for human receptors to contamination, if present within the AECs identified at the Sites. Groundwater users have not been identified as a receptor meaning that SPR linkages are incomplete, as groundwater does not appear to be a primary resource for the area.

The SPR linkages for ecological receptors were assessed as incomplete for Site 4 (main distribution substation).

Based upon the findings of the Mod 29 assessment, as outlined above, it was recommended that further assessment or mitigation of contamination risks associated with the Sites be undertaken prior to, during and post construction. Mitigation measures were to be facilitated by the preparation of an Asbestos Management Plan (AMP), site-specific Work Health Safety and Environment (WHSE) plan, an UFP and Environmental Management Plan (EMP).

4.6.10 Preliminary Geotechnical - River Bank Stability, Contamination, Riparian and Acid Sulfate Soil Assessment Proposed Ethanol Plant Stage 3 Upgrade (Mod 22) (GHD, 2024b)

Manildra commissioned GHD to carry out ASS, Contamination, and Geotechnical River Bank Stability assessments for proposed development areas to support the Modification Application. Mod 31 development areas occur close to or within sites that have been previously assessed as part of Mod 22. These areas are listed below:

– Mod 31 Site 1 (DDG Heat Exchangers) (Mod 22 Site 8 – Mill feed silos, exhaust stack, DDG dryer extension)
– Mod 31 Site 2 (Distillery Heat Recovery Evaporators) (Mod 22 Site 1 – Control room extension)
– Mod 31 Site 3 (Distillery Heat Recovery Building) and Site 5 (western end north of Bolong Road) (electrical cable) (Mod 22 Site 13 – Underground wastewater pipe)
– Mod 31 Site 4 (Northern Carpark Extension) (Mod 22 Site 2 – Northern Carpark Extension)

The objectives were to assess the likelihood for contamination to exist on the site from past or present activities and provide recommendations for further investigation and/or options management (if applicable) with respect to the proposed development based on the findings of the assessment. The scope of work developed to meet these objectives included a desktop study of site history and review of previous investigation reports, site walkover, interpretation of results, and conclusions and recommendations in relation to the above objectives.

Based on investigation results, potential for contamination was identified in 14 AECs potentially impacting soil, surface water and groundwater for Mod 22. Seven of these AECs were relevant to the current development areas being investigated as part of Mod 31. The occurrence of contamination (if present) is expected to be localised. The likelihood for contamination to exist within the identified AECs was assessed as very low to high, which is further discussed in Table 4.4Table 7.1 below along with associated COPCs. Potential SPR linkages were assessed and could be complete, if contamination were present, for:

– Human receptors:
  - Construction workers/visitors that have direct contact with soil and groundwater may be exposed to contamination via dust and vapours (via inhalation) generated during excavation or installation of piles.
– Ecological receptors:
  - During construction, in the vicinity of Abernethys Creek, potential impacts to aquatic species is possible from the mobilisation of contaminants from soil and / or groundwater.

Additional exposure opportunities to soil and perched groundwater may exist during the construction phase where hardstand areas may be removed, or soil exposed in resulting excavations, in areas outside of the main plant.

Based on the results of this PSI for contamination, a Targeted Site Investigation (TSI) was recommended for AECs where the likelihood of contamination to exist was assessed as moderate to high and high, to assess if SPR linkages are complete. AECs where the likelihood of contamination was assessed as moderate, low to moderate, low and very low can be managed at the time of construction should contamination be encountered.

Table 4.4 Summary of conclusions and recommendations for identified AECs for Mod 22

AEC	COPCs	Site 1 (Mod 31 Site 2)	Site 2 (Mod 31 Site 4)	Site 8 (Mod 31 Site 1)	Site 13 (Mod 31 Sites 3 and 5)	Likelihood*	Summary of recommendations
AEC 3: Former rural land use, including potential historical use of pesticides and herbicides across the site during farming activities, possible storage/use of fuels/other chemicals	OCP, OPP, arsenic Nitrogen for fertilisers TRH, BTEX, PAH for fuels	X	X	X	X	Very low	Manage during construction with CEMP, UFP, WHSE plan.
AEC 4: Fill of unknown quality and origin – 4a: General fill occurrence within proposed development areas	TRH, BTEX, PAH, OCP, OPP, PCB, heavy metals, asbestos	X	X	X	X	Moderate to high, south-western corner of the main plant (Site 8). Fill has not been previously assessed with respect to contamination. Low for remaining areas.	TSI for areas where moderate to high likelihood of contamination has been identified. Remaining areas manage during construction with CEMP, UFP, WHSE plan.
AEC 5: Miscellaneous storage of various items	TRH, BTEX, PAH, heavy metals, asbestos	X	X	X	X	Low.	Manage during construction with CEMP, UFP, WHSE plan.

AEC	COPCs	Site 1 (Mod 31 Site 2)	Site 2 (Mod 31 Site 4)	Site 8 (Mod 31 Site 1)	Site 13 (Mod 31 Sites 3 and 5)	Likelihood*	Summary of recommendations
AEC 6: Storage and use of fuels and chemicals associated with operations at the plant	TRH, BTEX, PAH, acetate, water dosing chemicals, hydrochloric acid, urea, etc. (refer to Table 4.3 for complete list of chemicals used throughout the main plant)	X	-	X	X	Moderate to high, where chemicals and petroleum products are stored in areas where bunding is not used. Low, for remaining storage areas.	TSI for areas where moderate to high likelihood of contamination has been identified. Remaining areas manage during construction with CEMP, UFP, WHSE plan.
AEC 9: Storage and use of PFAS based firefighting foams.	PFAS	X	-	-	-	Low	Manage during construction with CEMP, UFP, WHSE plan.
AEC 10: Storage of coal and ash.	TRH, PAH, heavy metals	-	-	X	-	Very low	Manage during construction with CEMP, UFP, WHSE plan.
AEC 12: Area formerly occupied by the Algae Demonstration Facility and production of bio-fuels.	TRH	-	-	-	X	Very low	Manage during construction with CEMP, UFP, WHSE plan.
AEC 14: Potential leaks from toilet block above ground sewerage tanks	TRH, faecal coliforms, pathogens, nutrients, heavy metals	-	-	-	X	Very low	Manage during construction with CEMP, UFP, WHSE plan.

Table notes:

"X" = AEC applicable to a particular site

"-" = AEC does not apply to a particular site

* Likelihood is the probability of contamination being present and subject to exposure during the proposed installation, categorised on a scale from high (near 100% probability of being present) to very low (near 0% probability of being present).

4.7 Interviews

An interview was undertaken with Mr John Studdert on 25 March 2025 during the site walkover. Subsequent information was provided by Mr Studdert via email. Mr Studdert provided the following information, to the best of his knowledge, for the site.

4.7.1 General

– Generally, no pesticides are applied however rodent baits are used throughout the main plant. Hypochlorite is routinely applied for hygiene purposes.

– The penalty notice that was issued to Shoalhaven Starches in May 2018 for contravening a condition of the licence was associated with a release of water containing starch into Abernethys Creek, which is outside the sites. The release was caused by a power failure which occurred in 2017. This incident did not occur within proposed development sites.

– The chemicals are typically stored within bunded areas throughout the plant. No major spills have occurred. Minor spills have occurred over the years but generally within bunded areas. The spills were transferred to the Wastewater Treatment Plant (WWTP) and no environmental harm was caused as the result of these minor spills.

4.7.2 Site 1: DDG heat exchanger

- The area where Site 1 is located has remained relatively unchanged since the Mod 22 report issued in 2024 (GHD, 2024b). Since completion of the Mod 22 report, the co-generation (co-gen) plant (located immediately west) was completed and is now operational.
- Historically, Site 1 was occupied by a cooling tower for DDG#4.
- The area west of Site 1 was previously used for coal storage, then shipping container storage prior to the construction of the co-gen plant. The area in the vicinity of the co-gen plant was filled with crushed rock to raise ground levels by approximately 1 m.

4.7.3 Site 2: Distillery Heat Recovery Evaporators

- The area where Site 2 is located has remained relatively unchanged since the Mod 22 report (GHD, 2024b).
- Prior to 2018, the site was a fire station and pump house. Between 2018 and 2023, the building was repurposed into a fire control room where roller doors were removed and replaced with windows and glass doors. The interior was refurbished to provide office space to facilitate operations. Redevelopment was approved as part of Mod 15. No ACM was identified during the refurbishment. Building materials used were Colorbond roofing and concrete.
- Immediately east of the site is a small fire suppression system, including foam storage.
- Between 1992 and 2004, PFAS (in particular, per fluorooctane sulfonate (PFOS)) based firefighting foam, 3M Light Water ATC, was used in the foam deluge system. Storage of 3M Light Water 400 L (in 20 L drums) and 3M ATC 14,300 L (6 tanks) occurred; however, the foams were never deployed. The foam deluge system was activated twice during its commissioning phase in 1992 using water only. Manildra is unaware of any PFAS contamination at the site.
- Prior to 1992, no firefighting foams were used. From 2004, the 3M Light Water ATC foam was replaced with non-PFAS based foams Tridol S AR-AFFF 6% and Alcoseal 3 6 AR-FFFP. The safety data sheets (SDS) provided by Manildra state that these foams contain fluorosurfactants. A copy of the SDS is included in Appendix I. There has been no activation for a fire suppression system in response to an incident. However, the fire deluge system activated on two occasions in response to a false alarm. The first event occurred on 5 September 2017, approximately 20 L to 40 L of foam was used. The second event occurred on 11 July 2018, approximately 1,800 L of foam was used. Both foam releases occurred within paved areas and were contained and sent to Manildra's wastewater treatment plant. The foam release occurred at the ethanol loadout bay located approximately 30 m south-east of Site 2.
- Up to 0.5 m of fill, possibly gravel fill, has been placed north of the distillery and below the current control room building.

4.7.4 Site 3: Distillery Heat Recovery Building

- The general activities of this area include a staff car park; BOC carbon dioxide plant; fire pump shed and firewater storage tank.
- The area circled in yellow in the February 2011 aerial photograph (refer to Section 4.2.3) appears to be underground services as part of construction of the fire pump shed and water storage tank.
- The area outlined with yellow in the July 2012 aerial photograph is an earthen drain and captures stormwater runoff from Bolong Road and areas immediately surrounding the earthen drain. No stormwater from the main plant is captured by this drain. The earthen drain was replaced with pipe drainage by September 2018.
- The aerial photograph dated July 2012 suggested fill was placed on-site however the source of this fill in unknown.
- A service installation parallel to Bolong Road was noted in aerial photograph dated February 2023. This installation was associated with the replacement wastewater pipeline between the main plant and the WWTP.
- There have been no spills or environmental incidents.
- No chemical application.

4.7.5 Site 4: Northern carpark extension

- Prior to the carpark the area was a grassed paddock used for cattle grazing. The north-western portion of the existing carpark also contained a swale drain.
- The carpark was built to accommodate workers. The carpark has only been used for the parking of vehicles.
- Fill material used in the construction of the carpark was largely sourced from South Coast Concrete Crushing & Recycling (SCCCR) (brown-grey and grey fill) however some material was sourced from Boral Quarry at Bombo, NSW (road base). The fill was used to raise the carpark to approximately 3 m AHD.
- Apart from the installation of the wastewater treatment pipeline and associated infrastructure, and underground services, no other development has occurred within the grass paddock.
- The yellow frame constructed of steel piping is protection for wastewater pipeline isolations. The wastewater pipeline runs from the main plant to the farm.
- The trench excavation observed in the February 2023 aerial photograph was for the pipeline installation from the main plant to the farm.
- The area where the eastern portion of the carpark extension is proposed was brown in the June 2022 aerial photograph. The brown surface occurred following the grass being cut.
- In the August 2024 aerial photograph, vegetation dieback was observed. This occurred following grass/weeds being cut then sprayed with herbicides (i.e. RoundUp) along the internal road.

4.7.6 Site 5: Electrical cable

Western end

- South of Bolong Road:
  - The main activities in the vicinity of the site include bulk truck load-out of the dry gluten and dry starch products.
  - Structures adjoining the site include Gluten Dryer #6 building, substation and switchyard.
  - The white substance noted on the ground in the October 2019 aerial photograph, was likely to be starch.
- North of Bolong Road:
  - Prior to the Council sewerage treatment works upgrade, Shoalhaven Water treated effluent would enter Abernethys Creek during heavy rainfall and flood events, temporarily impacting water quality of the Creek. Since the sewerage treatment system upgrades effluent releases to the creek are less common.
  - No fuels or chemicals (other than disinfectants) are stored in adjoining areas.
  - No accidental releases of fuels or oils have occurred in adjoining areas.
  - The site and immediate surrounds have been occupied by demountable buildings, shipping containers and gravel carpark since at least 2010. Prior to this time, and prior to the construction of the adjoining gas facility, the site was a grass paddock. The demountable buildings are primarily used for office space, with some used to store small quantities (5-10L) of cleaning products (i.e. detergents and disinfectants), cleaning equipment and dry product samples. The dry product samples, once sieved, are stored at the demountable building located next to the toilet block. The toilet block is not connected to septic tank or sewer. Waste is collected in an above ground tank situated below the toilet building. The tank has a volume of about 3,000 to 5,000L and is emptied once per week by a waste contractor where it is disposed offsite at a licenced waste facility. No leaks from the tank have occurred. Refer to Photo 42 in Section 5.
  - The shipping containers are used to store cleaning equipment (e.g. paper towel, scourers, mops, brooms, buckets, etc.) and archived records associated with contractors involved with the packing plant development. No fuels or other chemicals are stored on-site.
  - Gravel fill has been imported to place below the concrete paved pedestrian path and used in hardstand within the carpark and driveway in the eastern portion of the site. The gravel was sourced from Boral Quarries. No other fill has been imported to the site.

- Quarry product has been imported to the site to form the gravel carpark and placed below the demountable buildings to support the building foundations. The gravel was compacted and the building foundations, primarily concrete blocks, were placed on top of the compacted gravel. The material is likely to have been sourced from Boral Quarry at Bombo, NSW. The road base was sourced from Boral Quarry at Bombo, NSW, and was classified as VENM[5]. No other fill has been imported to the site. Refer to Photo 44 in Section 5.
- Apart from construction activities for the packing plant located west of Abernethys Creek, no new activities have occurred at the site since the adjoining areas were previously reported by GHD for the gas pipeline underbore (GHD, 2022b) and Site 13 for Mod 22 (GHD, 2024b).

Mid section

– Historically the paddock has been used for cattle grazing and is flood prone.
– In the May 2023 aerial photograph, the grass was brown. This occurred following the grass being cut where it turned brown. It was also inferred that the ground was saturated at the time causing the grass to die back.
– In the June 2014 aerial photograph possible burnt vegetation or black fill was observed in the paddock (refer to Section 4.2.5). There was no information available about this feature.
– In 2018 aerial photograph, a horseshoe shaped berm was formed north-east of the fire water tanks by Manildra. The purpose of the berm was to contain any potential factory process overflow incidents from the main driveway onto the Bolong Road kerb and gutter system that flows beneath the road via underground pipes to this area. The berm is no longer required due to recent upgrades to associated systems and processes. The origin of the fill used in the construction of the berm is unknown.
– In the August 2019 aerial photograph, there was a compound area which appeared to have a directional drill set up. The pipework appeared to be orientated in a north-south direction, suggesting it was linking with the main plant. In the October 2019, another directional drill set up, north-east of the fire water tanks was noted in the aerial photograph. Both drilling activities were associated with the Shoalhaven City Council Reclaimed Effluent Management Scheme (REMS). Treated water from sewage treatment plant pipe goes under the Shoalhaven River for water re-use by local Farmers.
– In the February 2022 aerial photograph, a perimeter had been formed along the fence boundary north of the existing northern carpark. Manildra indicated that this may have been an attempt to cut the grass but was too wet to complete (low-lying paddock).

Eastern end

– North of Bolong Road:
  - The area of disturbed ground observed in the November 2017 aerial photograph may be associated with a water connection for cattle troughs that has been removed.
  - Lot 242 DP1130535 was acquired by Manildra in early 2025, which has become part of Lot 243 DP1309744. The newly acquired property was previously used for horse adjustment. Limited site history information is available on the property.
  - The wet areas could be a combination of natural low points and / or low points constructed by the previous owner to direct surface water flow to a more centralised area of the property.
  - No chemical application has been undertaken by Manildra. Chemical usage by previous owner of Lot 242 is unknown.
– South of Bolong Road:
  - South and east of the site was a milk processing facility for Dairy Farmers. The dairy was decommissioned and sold to Manildra c2012.
  - The source of the fill mound that occupied the site is unknown. The area was filled by Dairy Farmers prior to Manildra purchasing the land. This fill mound was further assessed by ENRS in July 2021 (ENRS, 2021). The assessment did not identify asbestos in the fill mound and assessed the material as suitable for reuse on-site (refer to Section 4.6.7). Manildra indicated that the material was transferred to

[5] The NSW EPA has provided advice that *"commercially quarried material is not considered a waste material and therefore would not be required to be classified under the waste classification process or require a VENM certificate* (NSW EPA, 2020)*"*

a Manildra owned property north of Bolong Road and used to partially fill an earthen dam located in the central eastern portion of Lot 141 DP1069758.

- South of the site was previously occupied by the Algae Demonstration Facility which only produced algae, and former effluent treatment plant associated with Dairy Farmers. No biofuels were generated. The effluent treatment plant was decommissioned in 2021, which involved removing the stored water, de-sludging using a vacuum truck, and backfilling. The water and sludge were taken off-site to Manildra's wastewater treatment facility. The backfill material comprised crushed recycled concrete and road base (GHD, 2023b, p. 35).
- No remediation of TRH contamination identified in the Coffey 2015 site investigation has been undertaken. It is understood that these areas have either been covered with gravel hardstand or asphalt pavement.
- The former diesel AST and bowser located 60 m east of Site 5 were removed by Park Petroleum. No contamination was observed during the removal of the AST and bowser. The area is now covered with gravel hardstand material sourced from a local quarry.
- Gravel hardstand material used at the site was sourced from a local quarry.
- There have been no changes to this area of the site since proposed substation development area was assessed by GHD (Mod 29) (GHD, 2024a).
- There has been no spills or incidents at the workshop, which currently occupies this area of the site, causing potential for contamination.

4.8 Gaps in the site history

The following gaps in the site history were identified:

– Limited information is available for land use activities prior to 1949; however available information indicates prior use was likely to have been for agricultural purposes.
– Limited information on the source and quality of fill within some of the development areas.
– Contamination status of asbestos impacted areas identified by Coffey in 2015. Areas where TPH and lead impacts were identified do not directly relate to current development areas.

4.9 Site history summary

4.9.1 General

There are no Contaminated Land Record of Notices, Notified Sites under the Contaminated Land Management Act 1997 associated with the site or within 500 m of the development areas.

Manildra (Shoalhaven Starches) has an Environmental Protection Licence (EPL) for plant operations which includes the production of dangerous goods, general chemicals storage and general agricultural processing. A penalty notice issued to Shoalhaven Starches in May 2018 for contravening a condition of the licence was associated with a release of water containing starch into Abernethys Creek, which is outside the sites. The release was caused by a power failure which occurred in 2017. This release occurred off-site.

Generally, no pesticides are applied and however rodent baits are used throughout the site. Hypochlorite is routinely applied for hygiene purposes, in particular the main plant. Substations where transformers are in use have not operated with PCB based oils.

Previous investigation reports generally concluded that there was a low likelihood of widespread contamination that would adversely affect the proposed development, however localised contamination could exist. Typically, localised contamination could be managed during construction with a CEMP, UFP and WHSE plan. TSI have been also recommended for AECs where the likelihood of contamination to exist is assessed as moderate to high and high, to assess if SPR linkages are complete.

4.9.2 Main plant (Sites 1 and 2, and Site 5 western and eastern ends)

Site history information indicated that prior to 1950, the sites and surrounding areas were possibly used for rural land use largely comprising grassed paddocks. In 1952, the Horlicks Factory occupied an area west and south-west of the current investigation sites and immediately east of Abernethys Creek. The Horlicks Factory was a milk processing plant. Horlicks Factory expanded their production to include starch and gluten products. Shoalhaven Starches was established at the Horlicks Factory in 1970s and produced wheat, starch and gluten products. Between 1970 and 1992, Shoalhaven Starches expanded the plant infrastructure to increase production and to produce ethanol products, including a railway line. Between 1993 and 2023, facilities have been installed and developed across these sites, including silos, tanks, distillery, dryers, evaporation plants, electrical substations, workshops, incinerator, boiler house and coal storage, cooling towers, fermenters and buildings. The railway corridor, parallel to the Shoalhaven River, appeared to have been constructed in the 1960s. Since the mid-2000s remnant paddock areas have been progressively developed as part of the Shoalhaven Starches expansion project.

Site history information indicated that the eastern plant area (including Site 5) was generally used as rural grazing and farming land until the 1970's, and included some farmhouse buildings and structures that were demolished between 1979 and 1993. From 1993 to 2013, Site 5 was grassed paddocks then after 2013 the area was used for car parking and storage.

Site 1 is located west of Abernethys Creek. The site and surrounding areas were grass paddocks up until mid 1990s to early 2000s. After this time, gravel hardstand replaced the grass and areas were used as carparking and / or storage areas (e.g. coal, shipping containers, equipment, etc.). The south-western area of the main plant has also been progressively filled generally with gravel up to 1 m depth in some areas. The main plant progressively expanded east to west where structures including cooling towers, DDGS and co-gen plant were eventually constructed.

Chemicals (i.e. petroleum hydrocarbons, acids, alkalis, biocides, etc.) are used and stored throughout the main plant in ASTs and IBCs. Generally, chemicals are stored in bunded areas, and any spills are captured, directed to a concrete tank located in the middle of the Manildra plant (south-east of Site 2), then pumped out to the treatment farm located approximately 1.5 km north-east of the main plant. Stormwater captured through the western plant area (i.e. west of Site 5 eastern end) is collected in drains which then directs water to holding tanks and is then treated at Manildra's environmental farm about 1.5 km to the north-east of the plant. Some areas of the main plant, notably in the east and in the south-western corner are not connected with the on-site stormwater drainage system.

Between 1992 and 2004, PFAS based firefighting foam, 3M Light Water ATC, was used in the foam deluge system located that is located near Site 2. The foam deluge system was activated twice during its commissioning phase in 1992 using water only. Prior to 1992, no firefighting foams were used. From 2004, the 3M Light Water ATC foam was replaced with non-PFAS based foams Tridol S AR-AFFF 6% and Alcoseal 3 6 AR-FFFP. There has been no activation for a fire suppression system in response to an incident. However, the fire deluge system activated on two occasions in response to a false alarm. The first event occurred on 5 September 2017, approximately 20 L to 40 L of foam used. The second event occurred on 11 July 2018, approximately 1,800 L of foam used. Both foam releases occurred within paved areas and were contained and sent to Manildra's WWTP. There are no known PFAS contamination issues at the plant.

The Shoalhaven River, which is located south of main plant area, forms part of the PFAS investigation program. Detectable concentrations of PFOS+PFHxS were reported in water samples collected from the river on 30 May 2019, but did not exceed assessment criteria for drinking water and recreational. The NSW PFAS Taskforce "advised that no new or additional precautionary dietary advice is required for the area, based on the results".

Several site investigations for geotechnical, contamination and ASS, have been carried out over the past 30 years. The investigations identified several AECs where potentially contaminating activities were carried out within or close to the proposed development areas. These activities include use of fill of unknown quality and origin, railway corridor, storage and use of chemicals (e.g. petroleum hydrocarbons, acids, alkalis, biocides, etc.), use of hazardous building materials, miscellaneous storage of various items (empty IBC containers, empty shipping containers, pallets, steel pipe and framework), use of pesticides, workshops and use of PFAS based AFFF. The associated COPCs included TRH, BTEX, PAH, OCP, OPP, PCB, PFAS, heavy metals and/or asbestos. The likelihood of contamination to occur within the AECs varied from very low to high. Limited soil and groundwater sampling and analysis have been carried out across the main plant assessing some of the AECs identified that also affected the sites. Typically, COPCs in soil samples did not exceed adopted human health assessment criteria for industrial / commercial land use (NEPC, 2013). In groundwater, concentrations of anthracene marginally exceeded adopted ecological assessment criteria (ANZECC/ARMCANZ, 2000) reported in one well within the eastern portion of the main plant. It should be noted that PFAS has not been previously tested in soils and groundwater from the main plant.

4.9.3 North of Bolong Road (Sites 3, 4 and 5)

General

Site history information indicated that between 1949 and 1984 the area where Sites 3, 4 and 5 are located appeared undeveloped and vegetated with grass. Bolong Road was evident since 1949, initially as an unsealed road but becoming sealed at some stage in the 1960's. The sites form part of a larger parcel of land, which extends north-east and appeared to be used for agricultural purposes. Trees and/or shrubs were evident in Abernethys Creek near Bolong Road. The remaining sections of the creek appeared to have grass banks and contained little to no vegetation such as trees and shrubs, however over time, trees and/or shrubs eventually occupied the banks of the creek.

East of Abernethys Creek

In 1993, east of Abernethys Creek, ground disturbance was evident within the easement and extended east adjacent to Bolong Road, suggesting a possible underground service installation. Between 2002 and 2012, the site and surrounding areas were developed. By 2002, the carbon dioxide gas installation and natural gas installation facilities had been installed north-east of the site. By 2010, the gas station had been constructed along with demountable buildings, gravel carpark and turning lane off Bolong Road. Between 2012 and 2021, shipping containers, toilet block and additional demountable structures were progressively added to the site and surrounding area. For Site 4, the area remained a grass paddock up until June 2022 where ground disturbance was evident and an access road was under construction. Later the site was also used as a laydown area for fill material and equipment. The carpark area to the west was completed in October 2023. Quarry product was imported to the site to form the access roads, and was also placed below pedestrian walkways and the demountable buildings to support the building foundations. Other stockpiled material was excavated during installation of a water pipe (parallel to Bolong Road). No other fill has been imported to the sites.

Some filling and ground disturbance (associated with the installation of underground services) occurred within the mid section of Site 5 (i.e. north of the existing northern carparking area). The area where the Site 5 trench is proposed, east of the proposed carpark extension (Site 4), has been an undeveloped grass paddock since at least 1960s with some minor disturbances parallel to Bolong Road (underground surface installation), animal tracks (from livestock), low lying wet areas and a disturbed area near Bolong Road (associated with the installation / replacement of a wastewater pipeline to WWTP).

Previous investigations identified several AEC east of Abernethys Creek including fill of unknown quality and origin (Site 3 to Site 5), use of pesticides (Site 3 to Site 5) and potential leaks from toilet block above-ground sewerage tanks (Site 5 – western end). The associated COPCs included TRH, BTEX, PAH, OCP, OPP, faecal coliforms, pathogens, nutrients, heavy metals and/or asbestos. The likelihood of contamination to occur within the AECs was assessed as very low and low. Previous investigations did not identify soil contamination at the site, where concentrations of TPH, BTEX, OCP, OPP and / or heavy metals did not exceed human health assessment criteria for commercial / industrial land use (NEPC, 2013).

5. Site observations

A site walkover was carried out by a GHD technical director for contaminated land and a senior engineering geologist on 25 March 2025. Manildra representative, John Studdert, escorted GHD during the site walkover. Photographs have been selected to show the general site conditions observed as presented in the sections below. Relevant observations are shown on Figure 2 in Appendix B and discussed below.

5.1 Site 1: DDG Heat Exchanger

Site 1 comprises the proposed DDG#4 and DDG#5 heat exchangers. Each heat exchanger will comprise two pieces of equipment; one installed above ground level, immediately below the roof line of the building that contains DDG#4 and DDG#5, and the other installed external to the building on existing concrete slabs immediately adjacent to DDG#4 and DDG#5. The site is not accessible to the general public. The site and surrounding areas were near level with minor change in ground surface levels to direct surface water flow towards stormwater drains.

The proposed DDG#4 heat exchanger will be in an area that was previously occupied by a cooling tower. The area was concrete paved and bunded and included two concrete plinths, cable gantries and remnant pipework. The concrete and bunding appeared to be in good condition with no evidence of deterioration such as cracking or settlement. Surface rust was observed on the concrete, along with noticeable discolouration. Pooled water was also identified, originating from adjoining pipework and the condenser unit adjacent to the control room.

The proposed DDG#5 heat exchanger will be in an area currently occupied by a temporary workshop constructed of Colorbond walls and roof on a concrete slab that is bunded. The workshop comprised three sides where the fourth side was open but secured with three panels of temporary fencing. The workshop was not directly accessible; however, observations were made through the temporary fencing. The workshop comprised work benches, tools, electrical leads, water, timber, corrugated iron and timber offcuts, ladders, chairs, shovel, possible arc welder and locked cupboard. There was no evidence of contamination such as staining on the concrete or odours resulting from workshop activities. The concrete and bunding appeared to be in good condition with no evidence of deterioration such as cracking. The area between the DDG#5 building and the workshop was partly occupied by scaffolding and pipework. Water was observed on the ground surface.

Spilt DDG was observed at DDG#4 and the eastern side of the control room. Also, flecks of oil were observed adjacent to the hydrant line servicing DDG#4. The source of the oil was not apparent but appeared to be relatively recent. No other evidence of contamination such as asbestos containing materials (ACM), odours or staining was observed at or in the vicinity of Site 1.

There was no obvious visual evidence of ASS such as corrosion of concrete and steel structures used in the vicinity of Site 1.

Site features are shown in Photo 1 to Photo 7 below.



Photo 1: View looking east at the area where the DDG#4 heat exchanger is proposed (25/3/2025)



Photo 2: View looking south at the area where the DDG#4 heat exchanger is proposed. Note the concrete plinths in the background and rust stains on the concrete (25/3/2025)



Photo 3: View looking north-west at the area where the DDG#5 heat exchanger is proposed, which is currently occupied by a workshop (25/3/2025)



Photo 4: View looking south-west at DDG#4 heat exchanger is proposed. Note spilled DDG on the ground surface (25/3/2025)



Photo 5: View looking west at the area where the DDG#5 heat exchanger is proposed (25/3/2025)



Photo 6: Flecks of oil were observed adjacent to the hydrant line servicing DDG#4 (25/3/2025)



Photo 7: View looking north towards DDG#5 noting DDG spill on the ground surface near stormwater drain and sump (25/3/2025)

5.2 Site 2: Distillery Heat Recovery Evaporators

Site 2 is situated on the eastern and northern side of the beverage grade distillery. The site was accessible via a security gate off Bolong Road, and from internal areas within the main plant. The site is separated from Bolong Road by a by a steel fence. Generally, the site was near level with localised changes in surface levels directing surface water into stormwater drains.

The proposed locations for the bunded evaporators are situated in areas paved with asphalt and/or concrete, both of which appear to be in relatively good condition. There is no visual evidence of settlement at any of the proposed locations. Guard rails, fences, and other nearby structures appear straight, with no visible signs of deformation or cracking. The pavement also shows no evidence of previous repair. The eastern development area was used to store ethanol in 205L steel drums and IBCs. The storage area was not bunded. The proposed development area north of the distillery was occupied by a blue above ground storage tank (AST) which delivers compressed air to the distillery process, and a stepped accessway.

The development also requires the construction of stairs and supports for the proposed overhead gantry linking Site 2 and Site 3. These proposed structures are located adjacent to the ethanol control room and firefighting system. A second firefighting system is located approximately 25 m west of the bunded evaporator proposed on the north side of the distillery. The firefighting systems have previously used per- and polyfluoroalkyl substances (PFAS) based foams however they are no longer in use (refer to Sections 4.6.10 and 4.7.3).

The ethanol control room was a brick structure with iron clad roofing and awning, and glass and roller door frontage. Surrounding the building was concrete pavement. The roofing, awning, roller door and glass frontage appears relatively new. The ground surface in the vicinity of the ethanol control room appears near level but then falls towards the north as part of a former driveway.

No evidence of contamination such as ACM, odours or staining was observed.

There was no obvious visual evidence of ASS such as corrosion of concrete and steel structures used in the vicinity of Site 2.

Site features are shown in Photo 8 to Photo 11 below.



Photo 8: View looking south at the development area, indicated by the yellow dotted line, for the proposed bunded evaporator east of the distillery (25/3/2025)



Photo 9: View looking south at the area where a bunded evaporator is proposed (yellow dotted line). The development area was occupied by an AST (blue – compressed air tank) and a stepped access walkway (25/3/2025)

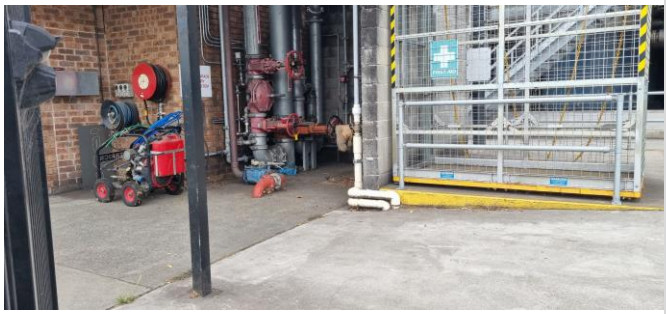


Photo 10: View looking south at the ethanol control room (25/3/2025)

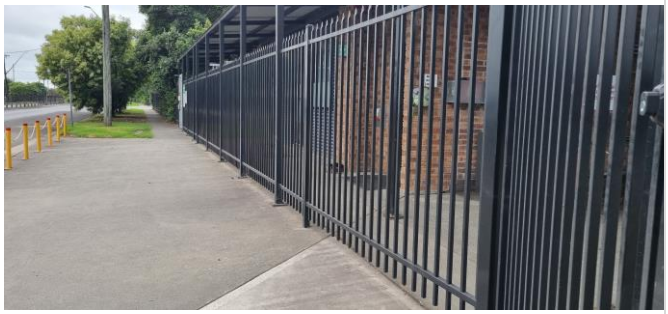


Photo 11: View looking east along the footpath adjacent to Bolong Road (left) and the ethanol control room (right) (25/3/2025)

5.3 Site 3: Distillery heat recovery building

Site 3 is situated in an area between the fire station and Bolong Road and is accessible from Bolong Road. The site was asphalt paved, near level and accessible to the general public. The asphalt pavement appears relatively new and in good condition, with no observable cracking or deformation in the visible areas. The southern portion of the site, adjacent to Bolong Road was used for carparking whilst the remaining portion was an access way for the northern carpark.

Fill, comprising grey gravel (road base) was observed beyond the extent of the asphalt pavement and where a section of the pavement had been removed in the north-eastern portion of the site. Bedding sand and concrete fragments were also noted in these areas.

No evidence of contamination such as ACM, odours or staining was observed.

There was no obvious visual evidence of ASS such as scald areas, iron leaching or jarosite staining noted in non-paved areas adjoining Site 3. No apparent corrosion of concrete and steel structures were observed in the vicinity of Site 3.

Site features are shown in Photo 12 to Photo 14 below.



Photo 12: View looking north-east towards the Site 3 development area (25/3/2025)



Photo 13: View looking south-east at the Site 3 development area. Note grey gravel (road base) in the foreground of the photo (25/3/2025)



Photo 14: Section of pavement removed in an area east of the fire station, exposing gravel (road base) and bedding sand (25/3/2025)



Photo 15: Section of pavement removed in an area east of the fire station, exposing gravel (road base) and bedding sand (25/3/2025)

5.4 Site 4: Northern carpark extension

5.4.1 Eastern end

Site 4 development area was located east of the existing northern carpark (i.e. located on the northern side of Bolong Road). The site was accessible via a gravel access road that passed through the northern portion of the site and continued beyond the eastern boundary of the site. The gravel access road also deviated to south-west into the site before terminating near the centre. The ground surface of the development area was uneven and generally falls towards the centre of the site. The elevation of the site appeared lower than surrounding areas forming a localised low point towards the centre of the site.

The site was mostly occupied by thick vegetation (i.e. grass and weeds) generally 0.5 m but up to 1 m tall in places. The centre of the site, where the gravel access road terminates, has been used for the storage of discussed steel rail (from a railway line) and concrete blocks. Manildra indicated that these items were used in the carpark to the west of the site prior to its final construction (i.e. when it was a temporary carpark). Also stored at the site were offcuts of high-density polyethylene (HDPE) water pipes. These pipes were stored on the eastern side of the access road that terminates in the centre of the site.

Limited observations were made of the ground surface beyond the access roads due to thick vegetation obscuring the ground surface.

5.4.2 North-western end

The northern carpark extension also includes a relatively small area in the north-western corner of the existing northern carpark. The proposal includes a reconfiguration of the existing carpark spaces. The area of the site is asphalt paved and currently used for carparking. This area of the site is bounded by two relatively large fire water tanks to the west, grass paddock to the north and carparking spaces to the south and east.

5.4.3 General observations

No evidence of contamination such as ACM, odours or staining was observed. However, dead vegetation was noted adjacent to the northern access road, east of the existing carpark and within the earthen drain south of the culvert located within the western end of the northern access road. The dead vegetation may be associated with localised applications of herbicides.

There was no obvious visual evidence of ASS such as scald areas, iron leaching or jarosite staining noted on the surface of Site 4. The dead vegetation appears to be more consistent with discrete herbicide application rather than scalding from the presence of actual ASS (AASS) (i.e. sulfuric material).

Localised failure of the northern access road was evident adjacent to the culvert headwall in the north-western corner of the site. Apart from the localised failure, the access roads and pavements in the adjoining carpark appeared to be in relatively good condition.

Site features are shown in Photo 16 to Photo 23 below.



Photo 16: View looking south-east towards the site. Note dead vegetation within earthen drain (foreground), adjacent to the northern access road (left) and immediately east of the existing northern carpark (right) (25/3/2025)



Photo 17: View looking south-west along the gravel access road that terminates near the centre of the site. Note dead grass on either side of the road and storage of HDPE pipes (black with blue stripes) (left) (25/3/2025)



Photo 18: View looking north from the centre of the site. Note disused steel rail stored in this area (left) (25/3/2025)



Photo 19: Concrete blocks stored near the centre of the site (25/3/2025).



Photo 20: Localised failure of the northern access road adjacent to the culvert headwall (25/3/2025)



Photo 21: View looking west towards the eastern portion of the site. In the foreground is a raised fill area that is located east of the site (25/3/2025)



Photo 22: View looking west towards the north-western portion of the site (25/3/2025)



Photo 23: A closer view, towards the west, of the proposed carpark extension in the north-western portion of the existing northern carpark (25/3/2025)

5.5 Site 5: Electrical cable

The Site 5 development area spans approximately 660 m, beginning at the existing substation located on the southern side of Bolong Road, just south of Gate 7. From the substation, the proposed cable alignment extends northward crossing Bolong Road, positioned adjacent to the eastern side of Abernethys Creek for approximately 200 m. It then turns in an easterly direction, passing north of the carbon dioxide gas installation and north of the existing carpark for approximately 320 m. The cable route then heads south-east, crossing Bolong Road again, where it will connect to the proposed substation immediately north of the former Algae Demonstration Facility.

Western end

South of Bolong Road

The western end of the development area, south of Bolong Road, consists of a near-level asphalt driveway providing access via Gate 7. Adjacent to the driveway is a concrete footpath with a railing. The visible surfaces, including the driveway and footpath appear to be in good condition, with no signs of cracking or deformation. The railing is straight and shows no evidence of deformation. No obvious evidence of contamination, such as ACM, odours, or staining, were observed in this area. Surface water will likely be captured by stormwater drainage in the area, with excess rain likely flow into Abernethys Creek.

There was no obvious visual evidence of ASS such as scald areas, iron leaching or jarosite staining noted on the surface.

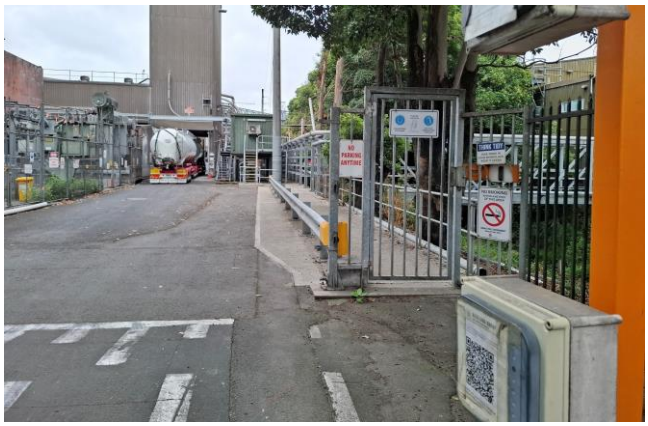


Photo 24: View looking south toward the substation (visible on the left side of the photo) and Gate 7 access into the main plant. Abernethys Creek is located to the right of the photo (25/3/2025).



Photo 25: View looking south along Abernethys Creek on the southern side of Bolong Road (25/3/2025).



Photo 26: View looking north-east across Bolong Road, note tree line visible in the photo is the path of Abernethys Creek (25/3/2025).



Photo 27: View looking in a north-east direction across Bolong Road, towards Abernethys Creek (20/12/2022).

North of Bolong Road

Direct observations of this area of the site were not carried out during the site visit as this development area was included after the site visit had been completed. GHD previously carried out a site walkover of this area of the site on 20 December 2022 for the Gas Pipeline Mod 3 (GHD, 2023a). Manildra has indicated that this area of the site has remained relatively unchanged since 20 December 2022. Earlier photographs from 24 November 2021 are considered relevant and have also been included. Relevant observations made during that visit have been included below.

Site surface conditions are shown in Photo 28 to Photo 44 below, with relevant descriptive captions.

The section of pipeline east of Abernethy's Creek passes through an area which is near level and occupied by a footbridge, concrete footpaths and grass areas. Small amounts of gravel fill (quarry product) were observed adjacent to the bridge abutment.

The creek bank adjacent to the bridge abutment appeared to contain a mixture of natural soil, fill soil, rock and concrete. The concrete had been undercut on the eastern bank, possibly caused by recurring flood events. Surface refuse (e.g. plastic wrappers, general soft plastics) was observed on the creek banks. Possible plastic sheeting or geotextile appeared to be protruding from the creek banks below and immediately north and south of the footbridge. Three existing services, one of which was a former gas pipeline, cross Abernethys Creek between the footbridge and Bolong Road.

The area north-east of the site is occupied by a gravel carpark, demountable office building, toilet block and shipping containers. Since GHD's site visit in November 2021, a black metal fence has been installed which now separates activities occurring north-east of the site from footpath and roadway areas. Limited vegetation exists between these structures and Abernethys Creek and comprises grass areas and lantana lining the eastern creek bank. North-east of the demountable office building was an existing gas facility.

No evidence of contamination such as ACM, odours or staining was observed. No potentially contaminating activities were observed.

There was no obvious visual evidence of ASS such as scald areas, iron leaching or jarosite staining noted on the surface.



Photo 28: Looking south-west towards the footbridge and the side of the bridge (20/12/2022)



Photo 29: Looking east towards the footbridge. Note undercutting of concrete on the eastern bridge abutment (20/12/2022)



Photo 30: Looking west on the southern side of the footbridge. Bolong Road is on the left-hand side of the photo (20/12/2022)



Photo 31: Looking north-east along the southern side of the footbridge. Note three existing services that cross Abernethys Creek (20/12/2022)



Photo 32: Looking west towards the footbridge that crosses Abernethys Creek. Note the newly installed black metal fence (20/12/2022)



Photo 33: Looking east along Bolong Road. The proposed electrical cable route (approximate position shown by yellow dashed line) shown (20/12/2022).

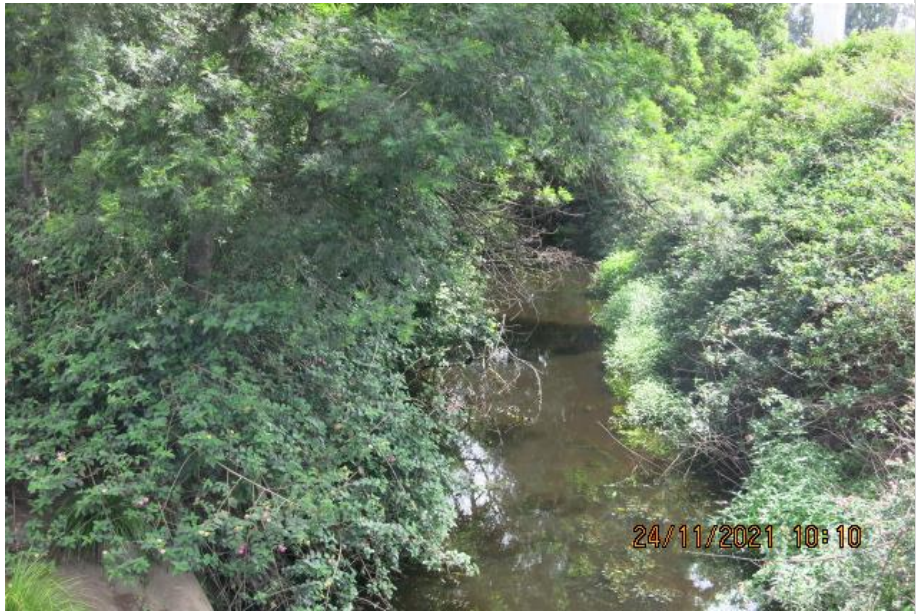


Photo 34: Looking north along Abernethys Creek (24/11/2021)



Photo 35: Looking at the western bank of Abernethys Creek (24/11/2021)



Photo 36: Looking at an area immediately north of the western footbridge abutment where refuse and plastic sheeting / geotextile was observed protruding from the creek bank (20/12/2022)



Photo 37: Examples of natural soils, fill soils and grey gravel fill in area immediately north of the western footbridge abutment (20/12/2022)



Photo 38: Examples of natural soils, fill soil and rock in area immediately north of the eastern footbridge abutment (20/12/2022)



Photo 39: Looking north towards the eastern bank of Abernethys Creek (left) and area where shipping containers and demountable buildings are located (right). Proposed electrical cable route (approximate position shown by yellow dashed line), east of Abernethys Creek (24/11/2021)



Photo 40: Area north of the site showing fill (grey gravel) imported as part of the temporary installation of demountable buildings and shipping containers (24/11/2021)



Photo 41: Looking east at the demountable buildings, noting gravel fill below and surrounding these structures (24/11/2021)



Photo 42: Looking south at Fermenter No's. 1 and 2 and approximate area where the proposed gas pipeline route is located. Note gravel fill, temporary buildings and shipping containers, which also occupy this area (24/11/2021)



Photo 43: Looking west at the demountable buildings and shipping containers, which are located east of Abernethys Creek (24/11/2021)



Photo 44: Looking north-east of the site at the existing gas facility located immediately north-east of the demountable buildings (24/11/2021)

Mid-section

Site observations of the mid-section of Site 5 were from the existing and proposed northern carpark through the chain wire fence that separates Site 4 and Site 5. The mid-section of the proposed electrical cable occurs within a grass paddock. Other forms of vegetation were present and indicative of saturated / wet soils. The vegetation was relatively thick, obscuring direct observations of the ground surface.

No evidence of contamination, such as ACM, odours, or staining were observed.

There were no obvious visual indicators of ASS, such as scalding, iron leaching, or jarosite staining, observed on the visible surface of this section of Site 5.



Photo 45: View looking north-west from the northern corner of the existing northern carpark along the proposed electrical cable route (approximate position shown by yellow dashed line). Note thick grass and hummocky ground (25/3/2025).



Photo 46: View looking north-east from the northern corner of the carpark along the proposed electrical cable route (approximate position shown by yellow dashed line). Note thick grass and hummocky ground (25/3/2025).



Photo 47: View looking south towards where the proposed electrical cable (approximate position shown by yellow dashed line) will continue south, passing below Bolong Road then into the main plant terminating at the planned substation (25/3/2025).

Eastern End

North of Bolong Road

The eastern end of the development area, north of Bolong Road, lies within a paddock area covered with grasses similar to those observed in the mid-section. Evidence of filling was noted near the proposed alignment and may extend into it in some areas; however, dense vegetation obscured direct observation of the ground surface.

There were no obvious visual indicators of ASS, such as scalding, iron leaching, or jarosite staining, observed on the visible surface of this section of Site 5.

South of Bolong Road

Direct observations of this area of the site were not carried out during the site visit as this development area was included after the site visit had been completed.

GHD has previously made observations over parts of Site 5 on 24 March 2021. These observations were not reported as the proposed development (Beverage Grade Ethanol Plant Stage 3) was placed on hold at the time. Since the March 2021 observations, this part of the site has significantly changed. Observations from March 2021, relevant to Site 5, are summarised below.

The site was occupied by a relatively large grass covered fill mound. There was no evidence of vegetation stress, however there were several bare patches on the fill mound exposing the fill material. The fill appeared to be dark brown clayey gravel. The area immediately south of the fill mound was occupied by an algae research facility and seaweed production. This portion of the facility contained two relatively large above ground ponds situated on a concrete slab. This portion of the site was not directly accessible at the time of the site walkover.

Brief observations of the site were made during a GHD site walkover carried out on 18 October 2023. The fill mound and surrounding vegetation had been removed and replaced with gravel hard stand access road and laydown areas, contractor workshop and shipping containers (refer to Section 4.7.6).

There was no evidence of contamination such as ACM, odours or staining was observed.

There was no obvious visual evidence of ASS such as scald areas, iron leaching or jarosite staining noted on the surface of this portion of Site 5.

Based on aerial photographs and interviews with Mr Studdert, apart from the asphalt paving of the gravel access road, this area of the site has remained relatively unchanged (refer to Section 4.7.6).

Site features are shown in Photo 48 and Photo 49 below.



Photo 48: Looking east towards Site 5 noting gravel access road and contractor workshops and approximate location of proposed substation in the background. Access road has since been asphalt paved in late 2024. The proposed electrical cable route (approximate position shown by yellow dashed line (18/10/2023).



Photo 49: Looking south-west towards the western portion of Site 5 noting gravel access road and contractor workshops, and grain storage area (blue shipping containers) in the background (18/10/2023).

6. Preliminary conceptual site model

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM is developed using information obtained from site history, site observations, land use and expected ground conditions. Once the contamination status is understood through the sampling and analysis process, the CSM then allows the assessor to evaluate the risk posed by the contamination to the identified receptor, and whether actions are required to manage that risk.

6.1 Potential sources

Site history information and site observations indicate a number of potentially contaminating activities that have occurred at the site. These activities have been identified as areas of environmental concern (AEC), which are shown on Figure 3 in Appendix B and are discussed below. The discussion below also provides a qualitative assessment of the likelihood of contamination being present where likelihood is the probability of contamination being present and subject to exposure during the proposed installation, categorised on a scale from high (near 100% probability of being present) to very low (near 0% probability of being present).

6.1.1 On-site sources

6.1.1.1 AEC 1: Former rural land use, including potential historical use of pesticides and herbicides across the site during farming activities, possible storage/use of fuels/other chemicals

– Former rural land use, including potential historical use of pesticides and herbicides across the site during farming activities, possible storage/use of fuels/other chemicals. Evidence of cattle dips were not identified (Coffey, 2015a, p. 12).
– Herbicide (RoundUp) has been periodically used within Site 4. RoundUp is a modern herbicide (glyphosate) and readily degrades. Depending on the soil conditions, microbial activity and moisture, glyphosate herbicides degradation timeframes can range from three days to six months[6].

6.1.1.2 AEC 2: Fill of unknown quality and origin (General fill occurrence within or close to proposed development areas)

– For the main Starches plant, Coffey (2008b) stated that extensive/significant amounts of filling were not expected based on the site history information. Some relatively shallow fill soils were anticipated in the Manildra Plant to raise site levels and for pavements, notably ripped shale was encountered near Fermenter No. 10 to a depth of 0.3 m bgl (Golder, 1994b), which may extend to areas further east. Coffey (2008b, p. 78) indicated for central and eastern parts of the main Starches Plant, which is relevant to Site 2, fill soils were typically between 0.6 m and 0.75 m thick comprising silty sands and some gravel. Coffey (2015a) indicated that fill, to depths between 0.1 m and 0.5 m bgl, was generally encountered in areas south and south-east of Site 5 (eastern end, south of Bolong Road).
– The limited sampling and analysis of fill material within the central and central eastern parts of the main Starches Plant and north of Bolong Road did not report concentrations of COPC exceeding assessment criteria for commercial / industrial land use (NEPC, 2013).
– For the south-western portion of the main Starches Plant which includes Site 1, fill comprising road base and mixed materials was encountered to depths between 0.2 m and 1.0 m. The road base fill appears to be gravel sourced from a quarry. Fill within the south-western portion of the main plant (Site 1) has not been previously assessed with respect to contamination.
– For Site 5 (western end north of Bolong Road), fill was not encountered at test locations carried out in the vicinity of Site 5 or logs were not available to confirm the presence / absence of fill. Based on site observations and anecdotal information, road base fill has been imported to Site 5 for use below pedestrian path and hardstand areas. Road base was imported from a local quarry. Site history information has

[6] **https://iere.org/how-long-does-round-up-stay-in-soil/**

identified fill of unknown quality and original within parts of Site 5 (mid-section) (e.g. horseshoe shaped berm, black fill, etc.) (refer to Section 4.2.5).

– It is noted that the fill mound (containing ACM fragments) that occupied the area where the new substation is proposed and where Site 5 (eastern end, south of Bolong Road) is located, was removed in 2021, and therefore does not form part of this AEC.

6.1.1.3 AEC 3: Miscellaneous storage of various items

– Site 5 (eastern end south of Bolong Road) is occupied by contractor workshops. Recent observations of this area have not been made as part of this investigation. However, Manildra has indicated that contractors working within the main plant use this area for storage of tools, equipment and various supplies required for installation of plant. Small quantities of greases and oils are also stored. The ground surface is gravel hardstand.

– Historically items stored included IBC [waste oil] containers, timber and metals, stored approximately 60 m south-west of Site 5 (eastern end south of Bolong Road). Localised oil staining and TRH impacts (upper 0.2 m of the soil profile at CTP11 (Coffey, 2015a)) to surrounding site soils were associated with the waste oil IBC. Since 2018, the former miscellaneous storage area has been asphalt paved and used to store shipping containers filled with grain. Manildra indicated that the TRH contamination was not remediated prior to asphalting. The remaining areas are used as accessways or for carparking. By December 2024, the accessway appears to have been asphalt paved.

– Areas on and / or in the vicinity of Sites 1, 2, 3 and 4 were and/or are currently used as laydown areas and / or storage of various items (e.g. pipes, plant, equipment, etc.).

6.1.1.4 AEC 4: Storage and use of fuels and chemicals associated with operations at the plant

– Generally, no pesticides are applied and however rodent baits are used throughout the Starches Plant. Hypochlorite is routinely applied for hygiene purposes.

– Various chemicals are stored throughout the Manildra Plant either on-site or up to 50 m from each investigation site except Site 4 (proposed carpark). No chemicals have been stored on or in the vicinity of Site 4. The volumes stored range between 0.5 m^3 and 2.9 ML. These chemicals are generally alcohol based products associated with the production of ethanol. Other chemicals stored in ASTs or IBCs include xylene, diesel, petrol, carbon dioxide, acetate, water dosing chemicals, ammonia, hypochlorite, sodium hydroxide, various acids and urea. Refer to Table 4.3 for specific chemicals and locations relative to each site.

– The chemicals are typically stored within bunded areas throughout the plant. However, a relatively small volume of chemicals is stored outside bunded areas. No major spills were reported to have occurred in the last 20 years. If a spill was to occur within the Main Plant area, the product is captured in the on-site drainage system and transferred to the WWTP. No environmental harm was caused by minor spills.

– Biocides are used in the cooling towers to control microbial activity.

6.1.1.5 AEC 5: Storage and use of PFAS based firefighting foams

– PFAS based firefighting foam, 3M Light Water ATC, was used in the foam deluge system located on or near Site 2. The foam deluge system was activated twice during its commissioning phase in 1992 using water only. Prior to 1992, no firefighting foams were used. From 2004, the 3M Light Water ATC foam was replaced with non-PFAS based foams Tridol S AR-AFFF C6 6% and Alcoseal C6 3 6 AR-FFFP.

– There has been no activation for a fire suppression system in response to an incident. However, the fire deluge system activated on two occasions in response to a false alarm, using between 20 L and 1,800 L of foam. Both foam releases occurred within paved areas and were contained and sent to Manildra's wastewater treatment plant. The foam release occurred at the ethanol loadout bay located approximately 30 m south-east of Site 2.

– The safety data sheets state that these foams contain C6 fluorosurfactants (6:2 fluorotelomer sulfonate (6:2 FTS)). C6 fluorosurfactants are produced by telomerisation and therefore do not contain or breakdown into PFOS. The shorter-chain compounds (C6 and below) have a lower potential for toxicity and bioaccumulation. However, the US EPA has indicated that some telomer-based fluorochemicals can break down in the environment into perfluorooctanoic acid (PFOA) or other perfluorocarboxylic acids (PFCAs) (Jan-Erik, 2017, pp. 2-3).

6.1.2 Off-site sources

Because the proposed development sites form part of a larger property operated by Manildra, the off-site sources are considered to be the same as those listed in Section 6.1.1 except for the following.

6.1.2.1 AEC 6: Storage coal and ash

Coal storage occurred west and north-west of Site 1, approximately 20 m from the closest point to the site. The area used for coal storage substantially reduced over the subsequent years and was gradually used for shipping container storage. Coal storage ceased by 2020.

6.1.2.2 AEC 7: Area formerly occupied by the Algae Demonstration Facility and production of bio-fuels

This area was formerly occupied by the Algae Demonstration Facility. The Algae Demonstration Facility, which researched how to convert algae into a bio-fuel, was operational between 2011 and 2014. The Algae Demonstration Facility ceased operation in 2014. Anecdotal information indicated that no bio-fuels were produced. The old infrastructure was replaced by 2015 and the algae research centre commenced operation. The algae research centre produced seaweed for human consumption. The facility used carbon dioxide and water. No evidence of contamination such as odours or staining was observed (Coffey, 2015a, p. 12).

6.1.2.3 AEC 8: Potential leaks from toilet block above ground sewerage tanks

The toilet block is not connected to septic tank or sewer and is located immediately north of Site 5 (western end north of Bolong Road). Waste is collected in an above ground tank situated below the toilet building. The tank has a volume of about 3,000 to 5,000 L and is emptied once per week by a waste contractor and disposed offsite at a licenced waste facility. No leaks from the tank have been reported.

6.1.3 Contaminants of potential concern

A broad suite of contaminants of potential concern (COPC) is potentially associated with the identified sources and is summarised in Table 6.1 below.

6.1.4 Potential contamination affecting sites

Table 6.1 summarises the AECs and COPCs that relate to a given site. The table provides the likelihood of the contamination to occur, and likely depth and extent based on experience with similar sites.

Table 6.1 Summary of potential contamination source per site

AEC	COPCs	Site 1 (DDG Heat Exchanger)	Site 2 (Distillery Heat Recovery Evaporators)	Site 3 (Distillery Heat Recovery Building)	Site 4 (Northern Carpark Extension)	Site 5 (Electrical Cable)	Likelihood*	Likely depth and extent of potential contamination including rationale for likelihood of contamination to exist
AEC 1: Former rural land use, including potential historical use of pesticides and herbicides across the site during farming activities, possible storage/use of fuels/other chemicals	OCP, OPP, arsenic Nitrogen for fertilisers TRH, BTEX, PAH for fuels	X	X	X	X	X	Very low	Contamination, if present, may have impacted the original topsoil layer than exists below the fill or where herbicides are routinely applied. RoundUp (glyphosate) is used periodically at Site 4. Glyphosate readily degrades and is unlikely to cause long-term contamination. Soil sampling and analysis reported OCP, OPP and arsenic concentrations did not exceed assessment criteria for commercial / industrial land use (NEPC, 2013). Concentrations of OCP and OPP were below the laboratory reporting limit and arsenic was relatively low (Coffey, 2008b) (Coffey, 2015a). Concentrations of TRH, BTEX and PAH did not exceed assessment criteria for commercial / industrial land use (NEPC, 2013) (excluding AEC 3 where TRH impacts were identified with sampling (Coffey, 2015a)).
AEC 2: Fill of unknown quality and origin. General fill occurrence within proposed development areas.	TRH, BTEX, PAH, OCP, OPP, PCB, heavy metals, asbestos	X	X	X	X	X	Moderate to high, south-western corner of the main plant (Site 1) and Site 5 (mid-section). Fill has not been previously assessed with respect to contamination. Low for remaining areas.	The depth of impact and extent will be governed by the thickness and distribution of fill used in a particular area of a site. Fill is expected to be relatively shallow occurring beneath pavements, however thicker fill areas may be present throughout the proposed development areas (e.g. Site 1). Thicker fill is anticipated at and the vicinity of the horseshoe berm. Based on the results of limited sampling and analysis undertaken, the likelihood for widespread contamination is assessed as low, however localised areas of contamination have been identified. These localised areas identified with asbestos and TRH contamination were relatively shallow, between surface and 0.25 m bgl (refer to AEC 3). TRH contamination was identified approximately 60 m south-west of Site 5 (eastern end south of Bolong Road) but was not inspected prior to the area being covered with gravel hardstand or asphalt pavement.
AEC 3: Miscellaneous storage of various items	TRH, BTEX, PAH, heavy metals, asbestos	X	X	X	X	X	Low	Typically, contamination associated with the storage areas (if present) would be in near surface soils. The majority of items stored are unlikely to cause impacts to surrounding soils. However, in 2014 waste oil was stored in an IBC, which caused localised oil staining and TRH impacts to the surrounding soils. Manildra indicated that the TRH impacts were not remediated, and were covered with asphalt pavement. These previously impacted areas are approximately 60 m south-west of Site 5 (eastern end south of Bolong Road) and therefore unlikely to affect the site.
AEC 4: Storage and use of fuels and chemicals associated with operations at the plant	TRH, BTEX, PAH, acetate, water dosing chemicals, hydrochloric acid, urea, etc. (refer to Table 4.3 for complete list of chemicals used throughout the main plant)	X	X	X	-	X	Moderate to high, where chemicals and petroleum products are stored in areas where bunding is not used. Low, for remaining storage areas.	Typically, contamination associated with chemical storage areas (if present) would be in near surface soils and could potentially impact groundwater, depending on depth to groundwater. The likelihood of contamination was assessed as low because of no reported major spills in the last 20 years, and the majority of chemicals are stored within bunded areas. In addition, spills, if they were to occur, would be captured by bunding surrounding the chemical being stored. However, some chemicals and petroleum products were not stored within bunded areas. These areas have a higher likelihood of contamination resulting from leaks or spills. No environmental harm was caused by minor spills.
AEC 5: Storage and use of PFAS based firefighting foams	PFAS	-	X	-	-	-	Low	Contamination (if present) would typically be located in near surface soils where the foams were initially released onto the ground. PFAS can readily mobilise to groundwater. The depth of groundwater will govern the where potential contamination may be encountered. Groundwater is expected to occur within 0.9 m and 3 m of the ground surface. Site history information indicated that no PFAS based foams were released at the site and the fire system was activated using water only during the commissioning phase. A false alarm occurred on two occasions where PFAS free foams were released. The foam releases occurred within paved areas and were contained and sent to Manildra's WWTP.
AEC 6: Storage of coal and ash	TRH, PAH, heavy metals	X	-	-	-	-	Very low	Contamination (if present) would likely impact near surface soils in the vicinity of where the coal was stored. Site 1 is located approximately 20 m south-east of the former coal stockpile storage area. Remnant coal may have been inadvertently transferred to Site 1 by plant and/or vehicles.
AEC 7: Area formerly occupied by the Algae Demonstration Facility and production of bio-fuels	TRH	-	-	X	-	X	Very low	Site history information indicated that no bio-fuel was generated during the experiment.
AEC 8: Potential leaks from toilet block above ground sewerage tanks	TRH, faecal coliforms, pathogens, nutrients, heavy metals	-	-	X	-	X	Very low	Contamination, if present, would be expected to be localised and near surface. The toilet block is a relatively new installation and therefore the likelihood for leaking sewerage tanks is low.

Table notes:
"X" = AEC applicable to a particular site
"-" = AEC does not apply to a particular site
N/A = not applicable
* Likelihood is the probability of contamination being present and subject to exposure during the proposed installation, categorised on a scale from high (near 100% probability of being present) to very low (near 0% probability of being present).

6.2 Pathways

The primary pathways by which potential receptors could be exposed to the COPC outlined above, if present, are considered to be:

– Dermal contact with contaminated soils.
– Incidental ingestion of contaminated soil or dust.
– Inhalation of dust from contaminated soils.
– Inhalation of vapours/gases generated by soil contaminated by volatiles and/or semi-volatiles.
– Leaching of contaminants from impacted soil and migration into groundwater and/or surface water.

6.3 Receptors

This assessment focuses on the proposed land use associated the construction of the proposed development areas. Accordingly, the key receptors of interest include:

– Future workers/visitors: the primary receptors are considered to be workers involved with the associated earthworks, such as those working directly working with soil. Groundwater and perched water within soil layers could be encountered during construction. Individuals may also be involved in potential future construction and maintenance of site infrastructure. Other site activities are above ground, for example, workers walking throughout the site.
– Groundwater users: groundwater bores within 500 m were registered for monitoring purposes. The Bomaderry / Bolong area uses reticulated water.
– Ecological receptor: transitory wildlife exists within trees, shrubs and grassed areas and near water bodies at or adjacent to the development areas, in particular Site 5 (western end adjacent to Abernethys Creek). The transitory wildlife that may occur at the site could include frogs, snakes and birds. Aquatic species exist in Abernethys Creek. Remaining development areas occur within the main Starches plant or existing carpark (Site 4), which is occupied by various structures, buildings and paved surfaces, and contains minimal vegetation or exposed soil.

6.4 Source-pathway-receptor (SPR) linkages

6.4.1 Future workers/visitors

For the proposed development areas, the primary receptors are considered to be workers involved with the associated earthworks, such as those working directly working with soil. Earthworks associated with proposed developments are likely to involve some excavation for the removal of topsoil, pavements and geotechnically unsuitable fill (if identified), and installation of foundations (possibly continuous flight auger (CFA) or bored piles for deeper footings) and pipelines. Based on previous investigations, groundwater is likely to be encountered within likely excavation depths, particularly following prolonged periods of rainfall. Future maintenance activities may also require minor / shallow earthworks, e.g. replacement of sleepers, underground services or repairs to pavements. Shallow excavations, less than 1 m bgl, are less likely to encounter groundwater however perched water residing in the fill could be intercepted.

This exposure scenario provides an increased likelihood that workers will be in direct contact with soil and groundwater and exposed to dust and vapours via inhalation generated during excavation or installation of piles. Therefore, the SPR linkages could be complete if contamination exists.

Remaining activities expected to be carried out by site workers/visitors do not involve direct contact with below ground structures, soil or groundwater. Ground surfaces at the majority the sites are likely to be paved post construction, thereby reducing exposure opportunities (e.g. dust, direct contact) to potential contamination. Therefore, SPR linkages are considered incomplete for this scenario.

6.4.2 Groundwater users

Twenty-one (21) groundwater bores, registered for monitoring purposes, exist within 500 m of the site. Given that groundwater does not appear to be beneficially used within 500 m of the sites and the surrounding areas use reticulated water, groundwater users have not been identified as a receptor, therefore the SPR linkages are incomplete.

6.4.3 Ecological receptors

Transitory wildlife, such as frogs, snakes and birds may have direct contact with soil, groundwater (intercepted during construction) and surface water bodies at or adjacent to the development areas, in particular Site 5 (western end). Aquatic species exist in the Abernethys Creek which are immediately east of Site 5 (western end). If contamination were present in soil, groundwater or entered the nearby waterbody (Abernethys Creek), then the SPR linkages could be complete. Additional exposure opportunities to soil and perched water may exist during the construction phase where hardstand areas may be removed, or soil exposed in resulting excavations.

The proposed cable route north of Bolong Road (Site 5) will occur in existing grass paddocks. Grass and other vegetation may support terrestrial habitats on or in the vicinity of Site 5. If contamination were present in soil within these areas, then the SPR linkages could be complete. Additional exposure opportunities to soil and perched water may exist during the construction phase during trenching for the cable installation.

Minimal to no ecological habitats (e.g. vegetation, accessible soils) exist at the remaining development sites as they occur within already developed areas. These sites occur either within the main plant area or within the proposed carpark (Site 4) north of Bolong Road and are paved or will be paved, thereby lowering the likelihood of exposure opportunities for ecological receptors to contamination (if present). SPR linkages are assessed as incomplete for Sites 1 to 4. Although soils may be exposed during construction, given the lack of suitable habitat currently available, there is a low likelihood for ecological receptors to be present within these areas during the construction phase. Therefore, the SPR linkages are assessed as incomplete during the construction phase.

6.5 CSM conclusions

Based on review of the potential source-pathway-receptor (SPR) linkages, the proposed development and future site works may provide direct contact / inhalation (i.e., vapours, dust) exposure opportunities for human receptors to contamination, if present within the AECs identified at the Sites. Groundwater users have not been identified as a receptor meaning that SPR linkages are incomplete, as groundwater does not appear to be a primary resource for the area.

The SPR linkages for ecological receptors could be complete for AEC 1, AEC 2, AEC 3 and / or AEC 4, which occur within Sites 4 and 5, if contamination exists and the exposure scenario occurred (i.e. direct contact with soil and/or groundwater or contamination entered the Abernethys Creek). For remaining sites, it was assessed that there would be a low likelihood of ecological receptors to be present due to the lack of suitable habitat; and therefore, the SPR linkages, during and post construction phase, are assessed as incomplete.

7. Discussion and conclusions

7.1 Geotechnical

GHD was commissioned to undertake a review of geotechnical information related to the proposed structures for the Mod 31 development. Based on previous geotechnical investigations across the sites, along with recent site observations by a senior GHD engineering geologist, the following conclusions are provided regarding the potential effects of the proposed structures on the stability of Bomaderry, Abernethys Creek, and the Shoalhaven River are made below. This includes a high-level review of anticipated ground conditions relevant to the proposed development works, inferred observations on likely fill and natural soil conditions for shallow footings, and approximate rock depth estimates to support concept-stage planning. Ground conditions have been interpreted based on borehole data and summary descriptions from nearby locations and may not fully represent conditions directly beneath the site.

7.1.1 Site 1 – DDG Heat Exchangers

Subsurface conditions at Site 1 are interpreted from multiple investigations in surrounding areas, including near Bomaderry Creek (see Table 3.5 for summary of subsurface conditions). These investigations indicate the presence of controlled fill up to depths of approximately 1.0 m bgl, underlain by soft to stiff alluvial clays and sands. Residual soils and extremely weathered sandstone were encountered from around 3.7 m to 5.7 m, transitioning to more competent sandstone from approximately 9.3 m depth.

These conditions suggest shallow footings may be feasible where stiff to very stiff soils are present, while deep piled footings may need to extend beyond 6 m bgl to reach suitable founding strata.

Site 1 is located approximately 110 m from the eastern bank of Bomaderry Creek and 125 m from the northern bank of the Shoalhaven River. Assuming the proposed DDG Heat Exchangers will be supported on competent alluvium or deeper pile footings within moderately weathered rock, and considering the setback from Bomaderry Creek and the Shoalhaven River, the additional loads applied to the upper soil profile are not expected to affect the current stability of the eastern creek bank or north river bank.

7.1.2 Site 2 – Distillery Heat Recovery Evaporators

The subsurface conditions at Site 2 are inferred from multiple investigations in nearby areas, see Table 3.6 for summary of subsurface conditions. Sandy and gravelly fill such as roadbase and subgrade materials are likely present between the surface and 0.8 m bgl. Beneath this, alluvial units may extend for significant depths, potentially up to 15.75 m depth (based on a nearby borehole), predominantly comprising silts and clays, including deep soft zones of sensitive fine-grained materials. Groundwater inflows have previously been recorded at approximately 2.5 m bgl, rising to approximately 1.6 m bgl. Below the alluvium, highly to slightly weathered sandstone interbedded with shale has been encountered from 16.55 m, with boreholes terminating at 22.6 m within the unit, before fully proving the thickness of the rock unit.

Shallow footings may be unsuitable at Site 2 based on available borehole data, particularly if soft soil zones within the alluvial unit are encountered. In such cases, deeper foundations extending into competent rock should be considered. Site 2 is located approximately 100 m north of the Shoalhaven River and 150 m east of Abernethys Creek. Assuming the proposed structures are supported on deep pile footings and given the setback from both Abernethys Creek and the northern bank of the Shoalhaven River, the additional loads imposed on the upper soil profile are not expected to affect the current creek or river bank stability.

7.1.3 Site 3 and 4 – Heat Recovery Building and Northern Carpark Extension

Subsurface conditions at Sites 3 and 4 are inferred from previous investigations in nearby areas, see Sections 3.6.2.3 and 3.6.2.4. Sandy and gravelly fill materials such as roadbase and subgrade are likely present at Site 3 due to its current use. Disturbed, reworked ground from past service installations is also likely and may be encountered at various locations within the footprint of both sites. Beneath the disturbed ground and fill, natural alluvial soils are expected, with variable consistencies. It is inferred that the general stratigraphy and depth to rock will likely be similar to those encountered at Site 2.

For Site 3, assuming the proposed structures are largely supported on deep pile footings, and considering the setback (approximately 115 m east) from Abernethys Creek, the additional loads that may be applied to the upper soil profile unlikely not influence the current stability of the banks of Abernethys Creek or the Shoalhaven River.

Site 4 (eastern portion) is currently occupied by thick vegetation (i.e. grass, weeds, shrubs), parts/equipment and is at least 1 m lower than the adjoining carpark, west of the site. It is anticipated that vegetation and parts/equipment will be removed, and fill (likely gravel from a quarry) will be placed to raise the ground surface to a similar level to the existing carpark. Site 4 (north-western portion) occurs within the existing northern carpark and will include a change in carpark configuration only (i.e. no civil or structural modifications proposed).

7.1.4 Site 5 – Electrical Cable

The subsurface conditions at Site 5 are inferred from previous investigations in nearby areas, see Section 3.6.2.5 for summary of subsurface conditions.

The proposed electrical cable route passes through various ground conditions. In the west, soft to very soft soils and shallow groundwater overlying deep alluvium soils; and towards the east, ground conditions are typically very stiff to hard clays, and/or friable, and medium dense sands. No previous investigations have been carried out within the mid-section of the electrical cable route (i.e. north of northern carpark). Given the elevation and areas where surface water accumulates during prolonged wet weather, it is anticipated that subsurface conditions could also include soft soils and shallow groundwater.

The western end of the proposed electrical cable is above ground parallel to Abernethys Creek. An overhead electrical bridge will be constructed over Bolong Road. The bridge has a span of 53.2 m and height of 13.6 m. The cable will be attached to this bridge to cross the road then continue north approximately 150 m above ground. The electrical bridge is anticipated to be founded on deeper pile footings within competent rock which could occur below 13.2 m (based on the nearest borehole SBH01). An appropriate offset from the banks of Abernethys Creek will need to be considered based on the size of the foundations for the overhead electrical bridge supports. Currently the offset distance between the foundations and the eastern creek bank is 6.6 m.

Once the cable is north of the carbon dioxide gas installation it will continue east then south-east below ground. The size and depth of the trench required for the cable installation has not been provided. Trenching within the mid-section and eastern section (north of Bolong Road) may encounter soft soils and shallow groundwater. Appropriate excavation supports (i.e. shoring, benching and/or battering) may be required to manage trench instability. Dewatering may also be necessary particularly following prolonged periods of rain or short intense rainfall events. Excavation and backfilling should be sequenced to minimise open trench exposure, and spoil should be kept clear of trench edges to avoid surcharge loading, particularly where ground is soft or water charged. Excavations occurring at the western end of the trenched section should consider sediment and erosion controls, and monitoring of Abernethys Creek. The drawings indicate that the western end of the trench is 6.6 m east of the eastern creek bank. Given the presence of soft soils, risk of slope instability of the creek banks will need to be appropriately managed at this section of the cable trench.

The eastern end of the electrical cable terminates at the proposed substation south of Bolong Road, within the main plant. Previous investigations (Coffey, 2014b) in nearby boreholes (CBH02 and CBH03) indicate sandy gravel fill (DGB20) to 0.6 m overlying stiff to very stiff alluvium clays and medium dense clayey silty sands are likely to be encountered in this area of the site. Groundwater was encountered at depths below 2.7 m from the ground surface. It is anticipated that better trench stability will be encountered within this area of the site. Depending on the depth of the trench groundwater inflows may require management.

7.2 Contamination

GHD was commissioned to carry out a PSI for contamination within the five proposed development areas (Site 1 to 5) as part of the Mod 31 upgrade to the Manildra Plant infrastructure.

Site history information indicated that the areas where the developments are proposed were previously agricultural land with minimal development. The sites and surrounding areas were progressively developed from the early 1950s starting with the Horlicks Factory (milk processing plant) which occupied an area west and south-west of the current investigation sites and immediately east of Abernethys Creek. Shoalhaven Starches was established at the Horlicks Factory site in 1970s and produced wheat, starch and gluten products. Between 1993 and 2025, more facilities were installed across the main plant area (proposed development Site 1, Site 2 and Site 5 (south of Bolong Road) to accommodate the increase in ethanol production. Facilities included silos, tanks, distillery, dryers, evaporation plants, electrical substations, workshops, incinerator, boiler house and coal storage, cooling towers, fermenters, biofilters, forklift maintenance area, chemical (i.e. petroleum hydrocarbons, acids, alkalis, biocides, etc.) storage areas, maintenance workshops, buildings, railway lines and carparks.

Sites 3, 4 and 5, located north of Bolong Road, were also used for agricultural purposes. These Sites and immediate surrounds remained generally undeveloped until 2002 after which a gas facility, shipping containers, toilet block, carpark and additional demountable structures were constructed east of Abernethys Creek. The area west of Site 4 was a grass paddock until late 2022 after which a gravel carpark was constructed.

Several site investigations for geotechnical, contamination and ASS, have been carried out over the past 30 years. The investigations identified several AECs where potentially contaminating activities were carried out within or close to the proposed development areas. Limited soil and groundwater sampling and analysis have been carried out across the main plant assessing some of the AECs identified that also affected the sites. Typically, COPCs in soil samples did not exceed adopted human health assessment criteria for industrial / commercial land use (NEPC, 2013). In groundwater, concentrations of anthracene marginally exceeded adopted ecological assessment criteria (ANZECC/ARMCANZ, 2000) reported in one well within the eastern portion of the main plant. The reports generally concluded that there was a low likelihood of widespread contamination that would adversely affect the proposed development, however localised contamination could exist. Localised areas of contamination in the form of ACM fragments and TRH were identified in the eastern part of the main plant however are unlikely to affect Site 5 (eastern end south of Bolong Road).

Based on investigation results, potential for contamination was identified in eight AECs potentially impacting soil, surface water and groundwater. The occurrence of contamination (if present) is expected to be localised. The likelihood for contamination to exist within the identified AECs was assessed as very low to moderate-high, which is further discussed in Table 7.1 below along with associated COPCs. Potential SPR linkages were assessed and could be complete, if contamination were present, for:

– Human receptors:
    - Construction workers/visitors that have direct contact with soil and groundwater may be exposed to contamination via dust and vapours (via inhalation) generated during excavation or installation of piles.
– Ecological receptors:
    - During construction, in the vicinity of Abernethys Creek, potential impacts to aquatic species are possible from the mobilisation of contaminants from soil and / or groundwater.
    - Additional exposure to soil and perched groundwater may occur during the construction phase where hardstand areas may be removed, or soil exposed in resulting excavations, in areas north of Bolong Road.

Based on the results of this PSI for contamination, a Targeted Site Investigation (TSI) is recommended for AECs where the likelihood of contamination to exist is assessed as moderate to high, to assess if SPR linkages are complete. AECs where the likelihood of contamination was assessed as moderate, low and very low can be managed at the time of construction should contamination be encountered.

It is recommended that a Construction Environmental Management Plan (CEMP) be prepared to manage the potential contaminant exposure risks during construction activities, and manage potential unexpected finds (e.g. buried waste, demolition waste, ACM, etc.) that could be encountered. Therefore, the CEMP should also include an Unexpected Finds Protocol (UFP) and site-specific Work Health Safety and Environment (WHSE) plan. A site-specific WHSE plan should be prepared, to ensure appropriate safety and workplace hygiene practices are implemented to minimise potential risks from exposure to contamination. The WHSE plan must address all relevant regulatory requirements and as a minimum, should consider incorporating the relevant practices set out in CRC Care (2018) National Remediation Framework: Guideline on health and safety, Version 0.1: August 2018.

Site workers should be advised of the potential contamination risks at the sites and have appropriate personal protective equipment (PPE) available should contamination be encountered and should have also read and understood management documents that apply to the construction sites.

GHD further recommends:

– Soils excavated as part of the development should be assessed for waste classification to allow off-site disposal of surplus materials to an appropriately licenced waste facility.
– For general contamination risk management, a contamination register should be prepared which clearly documents where contamination has been identified at the site or likely to be encountered based on previous investigation results.
– Prepare and implement an Environmental Management Plan (EMP) which focuses on improving site practices and minimisation of future contamination.

Table 7.1 Summary of conclusions and recommendations for identified AECs for Mod 31 Sites 1 to 5

AEC	COPCs	Site 1 (DDG Heat Exchanger)	Site 2 (Distillery Heat Recovery Evaporators)	Site 3 (Distillery Heat Recovery Building)	Site 4 (Northern Carpark Extension)	Site 5 (Electrical Cable)	Likelihood*	Summary of recommendations
AEC 1: Former rural land use, including potential historical use of pesticides and herbicides across the site during farming activities, possible storage/use of fuels/other chemicals	OCP, OPP, arsenic Nitrogen for fertilisers TRH, BTEX, PAH for fuels	X	X	X	X	X	Very low	Manage during construction with CEMP, UFP, WHSE plan.
AEC 2: Fill of unknown quality and origin. General fill occurrence within proposed development areas.	TRH, BTEX, PAH, OCP, OPP, PCB, heavy metals, asbestos	X	X	X	X	X	Moderate to high, south-western corner of the main plant (Site 1) and Site 5 (mid-section). Fill has not been previously assessed with respect to contamination. Low for remaining areas.	TSI for areas where moderate to high likelihood of contamination has been identified. Manage remaining areas during construction with CEMP, UFP, WHSE plan.
AEC 3: Miscellaneous storage of various items	TRH, BTEX, PAH, heavy metals, asbestos	X	X	X	X	X	Low	Manage during construction with CEMP, UFP, WHSE plan.
AEC 4: Storage and use of fuels and chemicals associated with operations at the plant	TRH, BTEX, PAH, acetate, water dosing chemicals, hydrochloric acid, urea, etc. (refer to Table 4.3 for complete list of chemicals used throughout the main plant)	X	X	X	-	X	Moderate to high, where chemicals and petroleum products are stored in areas where bunding is not used. Low, for remaining storage areas.	TSI for areas where moderate to high likelihood of contamination has been identified. Manage remaining areas during construction with CEMP, UFP, WHSE plan.
AEC 5: Storage and use of PFAS based firefighting foams.	PFAS	-	X	-	-	-	Low	Manage during construction with CEMP, UFP, WHSE plan.

AEC	COPCs	Site 1 (DDG Heat Exchanger)	Site 2 (Distillery Heat Recovery Evaporators)	Site 3 (Distillery Heat Recovery Building)	Site 4 (Northern Carpark Extension)	Site 5 (Electrical Cable)	Likelihood*	Summary of recommendations
AEC 6: Storage of coal and ash.	TRH, PAH, heavy metals	X	-	-	-	-	Very low	Manage during construction with CEMP, UFP, WHSE plan.
AEC 7: Area formerly occupied by the Algae Demonstration Facility and production of bio-fuels.	TRH	-	-	X	-	X	Very low	Manage during construction with CEMP, UFP, WHSE plan.
AEC 8: Potential leaks from toilet block above ground sewerage tanks	TRH, faecal coliforms, pathogens, nutrients, heavy metals	-	-	X	-	X	Very low	Manage during construction with CEMP, UFP, WHSE plan.

Table notes:

"X" = AEC applicable to a particular site

"-" = AEC does not apply to a particular site

N/A = not applicable

* Likelihood is the probability of contamination being present and subject to exposure during the proposed installation, categorised on a scale from high (near 100% probability of being present) to very low (near 0% probability of being present).

7.3 Acid sulfate soil

Based on the results of previous investigations, ASS may be encountered at variable depths within the proposed development areas where deep footing systems such as bored or CFA piles or trenching/excavations deeper than 1 m are required. Soft dark grey to black clays and loose grey sands were encountered at test locations within or in the vicinity of the development areas, particularly in the main plant area and adjacent to Abernethys Creek and north of the existing northern carpark, which are indicative of coastal ASS. Limited ASS investigations have been carried out to assess the presence of ASS. ASS occurrence at each site is summarised in Table 3.3 in Section 3.4.2.

Therefore, it is recommended that an acid sulfate soil management plan (ASSMP) be developed and actioned where excavations associated with the proposed development will disturb ASS and/or require dewatering which could result in the lowering of the water table. It is understood that ASSMPs already exist for some areas of the Main Plant. Existing ASSMPs should be reviewed and updated to reflect changes in ground disturbance activities, quantities and guidelines. Further investigations could be considered to assess the absence or presence of ASS to better inform ASS management options during soil disturbance.

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Appendices

Appendix A

General Notes

GENERAL NOTES

GHD
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The report contains the results of a geotechnical investigation or study conducted for a specific purpose and client. The results may not be used or relied on by other parties, or used for other purposes, as they may contain neither adequate nor appropriate information. In particular, the investigation does not cover contamination issues unless specifically required to do so by the client.

To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by GHD and the report are excluded unless they are expressly stated to apply in the report.

TEST HOLE LOGGING

The information on the test hole logs (boreholes, test pits, exposures etc.) is based on a visual and tactile assessment, except at the discrete locations where test information is available (field and/or laboratory results). The test hole logs include both factual data and inferred information. Moreover, the location of test holes should be considered approximate, unless noted otherwise (refer report). Reference should also be made to the relevant standard sheets for the explanation of logging procedures (Soil and Rock Descriptions, Core Log Sheet Notes etc.).

GROUNDWATER

Unless otherwise indicated, the water depths presented on the test hole logs are the depths of free water or seepage in the test hole recorded at the given time of measuring. The actual groundwater depth may differ from this recorded depth depending on material permeabilities (i.e. depending on response time of the measuring instrument). Further, variations of this depth could occur with time due to such effects as seasonal, environmental and tidal fluctuations or construction activities such as a change is ground surface level. Confirmation of groundwater levels, phreatic surfaces or piezometric pressures can only be made by appropriate surveys, instrumentation techniques and monitoring programmes.

INTERPRETATION OF RESULTS

The discussion or recommendations contained within this report normally are based on a site evaluation from discrete test hole data, often with only approximate locations (e.g. GPS). Generalised, idealised or inferred subsurface conditions (including any geotechnical cross-sections) have been assumed or prepared by interpolation and/or extrapolation of these data. As such these conditions are an interpretation and must be considered as a guide only.

CHANGE IN CONDITIONS

Local variations or anomalies in ground conditions do occur in the natural environment, particularly between discrete test hole locations or available observation sites. Additionally, certain design or construction procedures may have been assumed in assessing the soil-structure interaction behaviour of the site. Furthermore, conditions may change at the site from those encountered at the time of the geotechnical investigation through construction activities and constantly changing natural processes.

Any change in design, in construction methods, or in ground conditions as noted during construction, from those assumed or reported should be referred to GHD for appropriate assessment and comment.

GEOTECHNICAL VERIFICATION

Verification of the geotechnical assumptions and/or model is an integral part of the design process - investigation, construction verification, and performance monitoring. Variability is a feature of the natural environment and, in many instances, verification of soil or rock quality, or foundation levels, is required. There may be a requirement to extend foundation depths, to modify a foundation system and/or to conduct monitoring as a result of this natural variability. Allowance for verification by appropriate geotechnical personnel must be recognised and programmed for construction.

FOUNDATIONS

Where referred to in the report, the soil or rock quality, or the recommended depth of any foundation (piles, caissons, footings etc.) is an engineering estimate. The estimate is influenced, and perhaps limited, by the fieldwork method and testing carried out in connection with the site investigation, and other pertinent information as has been made available. The material quality and/or foundation depth remains, however, an estimate and therefore liable to variation. Foundation drawings, designs and specifications should provide for variations in the final depth, depending upon the ground conditions at each point of support, and allow for geotechnical verification.

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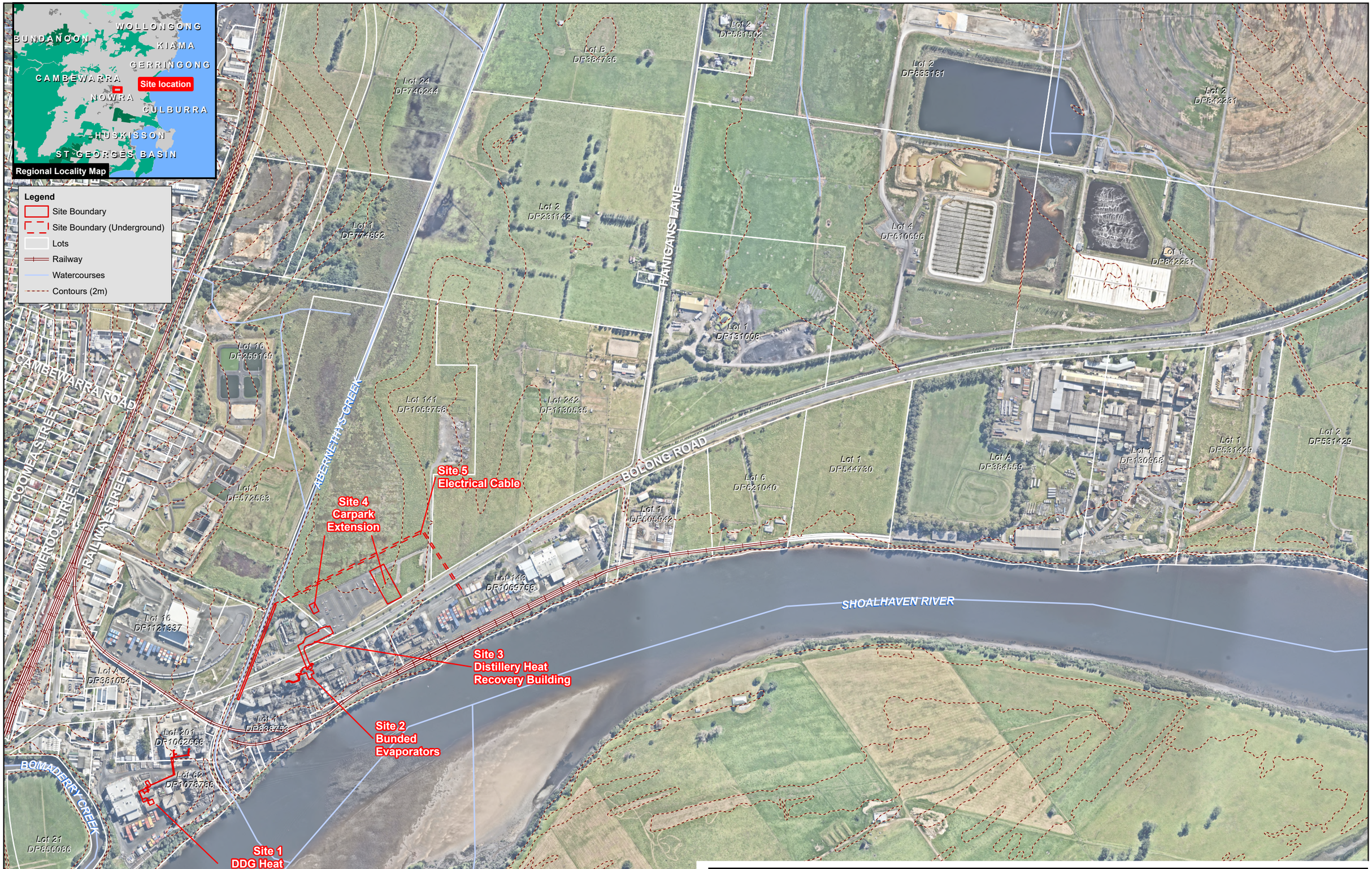
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Ref: DS5.5.1 Issue 0 Date: 05/10/2018

Appendix B

Figures



Paper Size ISO A3 at 1:7,000

0 110 220

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Manildra Group

Proposed Distillery Heat Recovery and associated works (Mod 31)
Geotechnical, Contamination and Acid Sulfate Soil Assessment

Site locality plan

Project No. **12662565**
Revision No. **A**
Date **17/07/2025**

FIGURE 1

\\ghdnet\ghd\AU\Wollongong\Projects\21\12662565\GIS\Maps\Deliverables\12662565_Mod31.aprx
Print date: 17 Jul 2025 - 16:24

Data source: General Topo - NSW LPI DTDB 2020. Cadastre - NSW LPI DCDB 2020. Inset map - Geoscience Australia. Aerial Imagery - Metromap 2023. Created by: dbbanatin

Legend

- Site Boundary
- Site Boundary (Underground)
- Contours

Existing Investigation Locations (Approximately located)

- Boreholes (SMEC, 2020)
- Boreholes (Coffey, 1992)
- Boreholes (Coffey, 2002)
- Boreholes (Coffey, 2003)
- Boreholes (Coffey, 2008)
- Boreholes (Coffey, 2010)
- Boreholes,(Coffey, 2009)
- Boreholes (Coffey, 2012)
- Boreholes (Coffey, 2014)
- Boreholes (Coffey, 2015)
- Boreholes (Golder, 1994)
- Piezocones (Coffey, 1992)
- Piezocones (Coffey, 2008)
- Surface sample,(Coffey, 2002)
- Surface sample,(Coffey, 2003)
- Surface sample (Coffey, 2007)
- Surface sample (Coffey, 2015)
- Test pit,(Coffey, 2002)
- Test pit (Coffey, 2003)
- Test pit (Coffey, 2007)
- Test pit (Coffey, 2008)
- Test pit (Coffey, 2014)
- Test pit (Coffey, 2015)
- Test pit (Network, 2010)
- Test pit (No reference available)
- CPT (SMEC, 2020)
- Hand auger (Coffey, 2008)
- Monitoring well (Coffey, 2008)
- Boreholes (GHD, 2022)
- DCP (GHD, 2022)

Storage Method

- Above-ground tank
- 20Lt containers in cabinet
- Roofed store IBCs
- Tank (IBC)
- In-process
- Ethanol storage area
- SupaGas facility
- Chemicals in dangerous goods licence search

Site 1
Site 2
Site 3
Site 4
Site 4
Site 5
ABERNETHYS CREEK
BOMADERRY CREEK
SHOALHAVEN RIVER

Paper Size ISO A3 at 1:3,278

0 20 40 60 80

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Manildra Group

Proposed Distillery Heat Recovery and associated works (Mod 31)
Geotechnical, Contamination and Acid Sulfate Soil Assessment

Site layout plan showing previous sampling locations relative to proposed development areas (Sites 1 to 5)

Project No. **12662565**
Revision No. **A**
Date **17/07/2025**

FIGURE 2

\\ghdnet\ghd\AU\Wollongong\Projects\21\12662565\GIS\Maps\Deliverables\12662565_Mod31.aprx
Print date: 17 Jul 2025 - 16:10

Data source: Aerial Map: Nearmap 2023, General Topo data, NSW LPI 2022 . Created by: dbbanatin

Areas of Environmental Concern (AEC)

- AEC 1: Former rural land use, including potential historical use of pesticides and herbicides across the site during farming activities, possible storage/use of fuels/other chemicals (entire site)
- AEC 2: Fill of unknown quality and origin (entire site)
- AEC 3: Miscellaneous storage of various items
- AEC 4: Storage and use of fuels and chemicals associated with operations at the plant
- AEC 5: Storage and use of PFAS based firefighting foams
- AEC 6: Storage and use of coal.
- AEC 7: Algae Demonstration Facility and production of bio-fuels
- AEC 8: Potential for leaks from above ground sewerage tanks

Other Potential Contaminating Activities

- Potential weathering of hazardous materials from previous site structures that once occupied the site including poor demolition practices
- Railway corridor
- Maintenance workshops

Abernethys Creek

Natural gas installation (AEC 4)

Carbon Dioxide gas installation (AEC 4)

Packing Plant

AEC 8

Site 1: Overhead Section

Site 1

Site 2

Site 3

Site 4

Site 5

Former coal stockpiling area (AEC 6)

Boiler House (AEC 6)

Coal stockpiling area (AEC 6)

Forklift maintenance area

Tractor / front end loader manufature

Waste oil was stored in an IBC, which caused localised oil staining and TRH impacts to the surrounding soils

Location of Fill Mound removed 2021

Possible fill mound (AEC 2)

SupaGas

Former Dairy Farmers Building

Fabrication and electrical workshops

Former effluent pond backfilled (AEC 2)

Former structures c1960s to c1984

Bomaderry Creek

Shoalhaven River

Legend

- Site Boundary
- Site Boundary (Underground)

Existing Investigation Locations (Approximately located)

- Boreholes
- Piezocones / DCP / CTP
- Surface sample
- Hand augers
- Test pits
- Chemical storage areas

Paper Size ISO A3 at 1:3,278

0 20 40 60 80

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Manildra Group

Proposed Distillery Heat Recovery and associated works (Mod 31)
Geotechnical, Contamination and Acid Sulfate Soil Assessment

Areas of Environmental Concern (AEC) relative to proposed development areas (Sites 1 to 5)

Project No. **12548413**
Revision No. **A**
Date **17/07/2025**

FIGURE 3

\\ghdnet\ghd\AU\Wollongong\Projects\21\12662565\GIS\Maps\Deliverables\12662565_Mod31.aprx
Print date: 17 Jul 2025 - 16:10

Data source: Aerial Map: Nearmap 2023, General Topo data, NSW LPI 2022 . Created by: dbbanatin

Appendix C

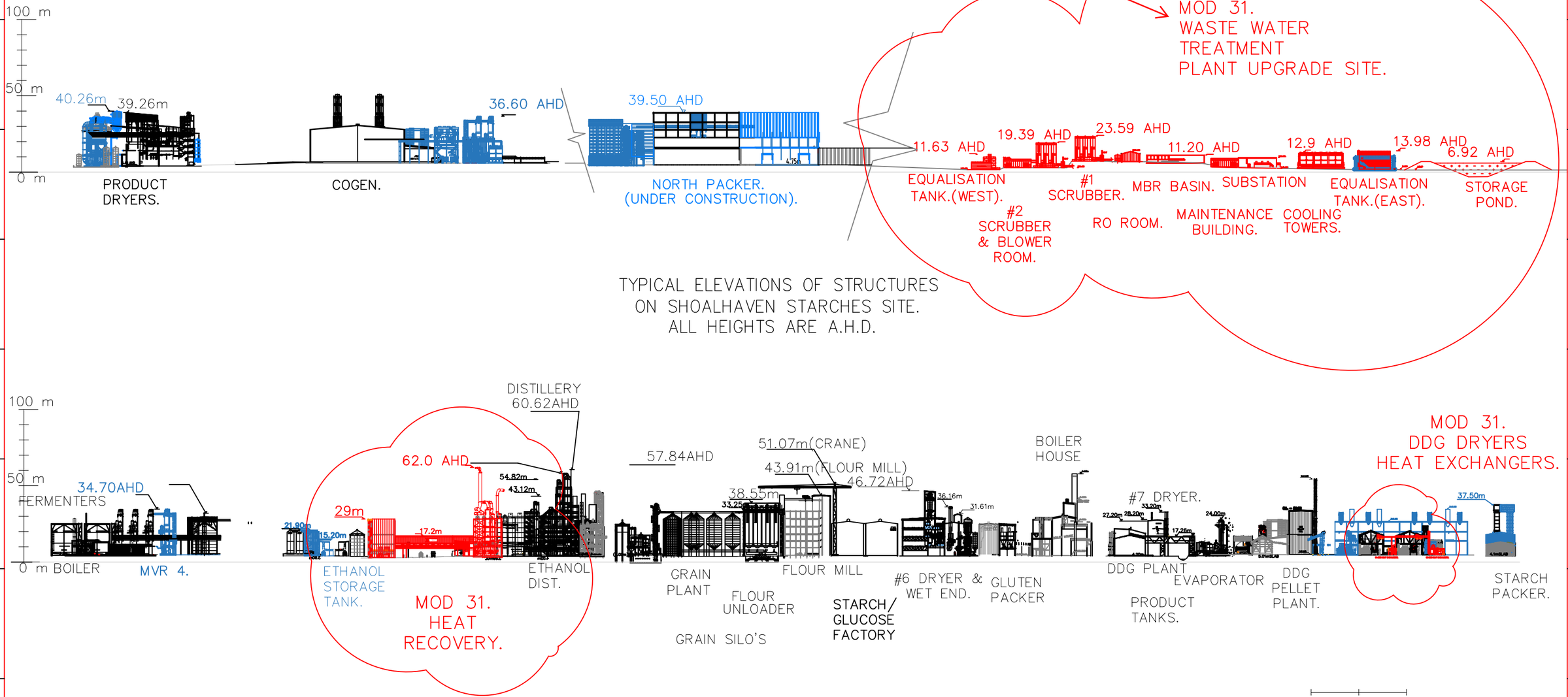
Proposed Development Drawings

EXISTING APPROVED PLAN.

APPROVED PLANT YET TO BE CONSTRUCTED OR UNDER CONSTRUCTION.

MOD 31.

Is this now part of Mod 31? No drawings provided



TYPICAL ELEVATIONS OF STRUCTURES ON SHOALHAVEN STARCHES SITE. ALL HEIGHTS ARE A.H.D.

REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P06	All	Changed to match engineers design.	B.M.	28-05-25	All	JS
P05	All	Was Mod 30.	P.C.	07-05-25	All	JS
P04	All	Changed to match engineers design.	P.C.	25-11-24	All	JS
P03	All	Starch dryers ect removed.	P.C.	15-11-24	All	JS
P01	All	Latest revision.	P.C.	05-09-24	All	B.H.

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PC Drafting 0439 436508

DRAWN P.C.	DATE 05/09/24	JOB TITLE	SHT SIZE A3
CHKD JS	DATE	DWG TITLE	
APPD	DATE	MOD 31. SITE ELEVATIONS GA.	REV. P06
	SCALE 1:2500	PROJECT No. 7462-000	DWG No. MN7462-000

SHOALHAVEN STARCHES.BOMADERRY. NSW

EXISTING APPROVED PLANT.

MOD 31.

APPROVED PLANT YET TO BE CONSTRUCTED OR UNDER CONSTRUCTION.

MOD 26 CAR PARK .

MOD 25 PENDING APPROVAL.

OVERHEAD ELECTRICAL BRIDGE. Drw-MN7994-007.

OVERHEAD ELECTRICAL ROUTE.

UNDERGROUND ELECTRICAL ROUTE.

HEAT RECOVERY WORKS. Drws-MN7994-001 to MN7994-005.

RELOCATE 78 CAR PARKING SPACES.

DDG HEAT EXCHANGERS. Drw-MN7462-017 & MN7462-025.

MANILDRA LAND

MANILDRA COMPLEX

RAILWAY STREET

APPROVED EXIT.

SWALE

TRUCK BYPASS LANE

CONTAINER STORAGE AREA.

PRIVATE

BOLONG ROAD

GATE 13

GATE 11

GATE 9

GATE 7

GATE 4

GATE

GATE 5

GATE 3

GATE 1

NEW ENTRY.

LOT 200 DP1062868

ACF LAND

LOT 21 DP1000268

CAR PARKING

LOT 143 DP 1069758

FORMER DAIRY FARMERS FACTORY.

(DP 638246)

APPROVED CONSTRUCTED WEIGHBRIDGE

APPROVED & CONSTRUCTED BIOFILTERS.

CONTAINER STORAGE.

Shoalhaven River

REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P08	E4	Electrical Bridge Amended	P.C.	23-05-25	MP	
P07	E5	Electrical route adjacent to creek above ground.	P.C.	21-05-25	DJ	
P06	All	Was mod 30,car park mods,electrical route added.	P.C.	08-05-25	MP	
P04	All	To match engineers.	P.C.	25-11-24	MP	
P03	All	Starch dryers ect. & packer extension removed.DDG heat exch. relocated.	P.C.	11-11-24	CJ	
P01	All	First issue.	P.C.	12-07-24	J.S.	

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PC Drafting. 0439 436508

DRAWN PC	DATE 25-06-24	SITE MANILDRA-SHOALHAVEN STARCHES PTY LTD.	SHT SIZE A3
DESIGNED. AT	DATE	JOB TITLE NOWRA PLANT.	SHEET
CHKD SR	DATE	DWG TITLE MOD 31. OVER ALL SITE PLAN.	OF
APPD BH	DATE		REV. P08
	SCALE 1:3000	PROJECT No. 7462-001	DWG No. MN7462-001

EXISTING APPROVED PLANT.

MOD 31.

APPROVED PLANT YET TO BE CONSTRUCTED OR UNDER CONSTRUCTION.

COGEN PLANT.

DDG HEAT EXCHANGERS.

DDG DRYER 5.

DDG DRYER 6.

ACCESS ROAD

Site Office & 1st Aid

ACCESS ROAD

DDG STORAGE

DDG LOADOUT

DDG STORAGE

SUB/STN

EVAPORATOR

SUB/STN S/ROOM ELEC.

EVAPORATORS

ELECT S/ROOM

EVAPORATORS

COOLING TOWERS

PIT

SERVICES BRIDGE

SUBSTATION OVER.

MAINTENANCE ACCESS ROAD

FINISHED

REV	ZONE		DRN	DATE	CHKD	APPD
P04	ALL	Mod 29 now approved,Mod 22 removed.	P.C.	22-01-25	AT	
P03	ALL	Cooling towers/stack ect removed.Ht/ex relocated.	P.C.	12-11-24	AT	
P01	ALL	Conceptual plan.	P.C.	16-8-24	AT	

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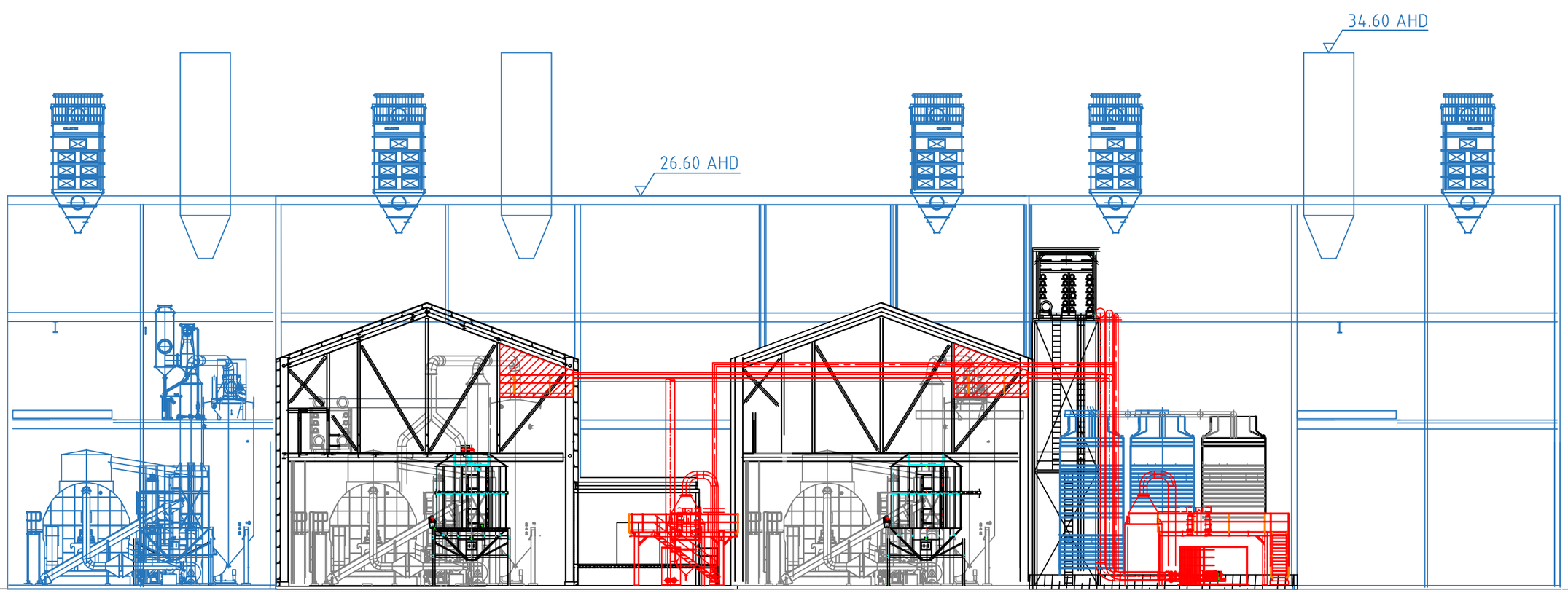
PC Drafting 0439 436508

P.C.	15-1-24	SHOALHAVEN STARCHES.BOMADERRY. NSW	A3
CHKD	DATE	DWG TITLE: DDG HEAT EXCHANGERS. SITE PLAN.	REV. P04
APPD	DATE		
SCALE 1:500		PROJECT No. 7462-019	DWG No. MN7462-017

EXISTING APPROVED PLANT.

MOD 31.

APPROVED PLANT YET TO BE CONSTRUCTED OR UNDER CONSTRUCTION.



#4 DDG HEAT EXCHANGERS.

#5 DDG HEAT EXCHANGERS.

EASTERN ELEVATION.

REV	ZONE		DRN	DATE	CHKD	APPD
P02	ALL	Mod 29 now approved,Mod 22 removed.	P.C.	22-01-25	AT	
P01	ALL	First issue.	P.C.	12-11-24	AT	

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P.C.	15-1-24	SHOALHAVEN STARCHES.BOMADERRY. NSW	A3
CHKD	DATE	DWG TITLE	
APPD	DATE	DDG HEAT EXCHANGERS. SITE ELEVATION.	REV.
	SCALE 1:250	PROJECT No. 7462-019 / DWG No. MN7462-025	P02

EXISTING APPROVED PLANT.

MOD 31.

MOD 26 APPROVAL CAR PARK.

APPROVED PLANT YET TO BE CONSTRUCTED OR UNDER CONSTRUCTION.

TOTAL CAR PARKING SPACES- 434.
Existing- 64.
Mod 26- 276.
Mod 31- 94.

6.6M SETBACK

UNDERGROUND ELECTRICAL CABLES.

EXISTING FENCE

ABOVEGROUND ELECTRICAL CABLES.

Abernathys Drain

BRIDGE

141.37

METAL TANK

METAL TANK

PUMP HOUSE

GAS FACILITY
MANILDRA GAS STATION

INTEGRAL ENERGY GAS NATURAL GAS INSTALLATION

MANILDRA LAND

CO2 GAS INSTALLATION

APPROVED CAR PARK

DISTILLERY HEAT RECOVERY BUILDING.

15.5M

GATE 2

NEW ENTRY.

MINIMUM WIDTH OF 90° ANGLE PARKING IS 2.4M x 5.4M LONG. MINIMUM WIDTH OF ROAD IS 6.2M. (AS/NZS 2890.1:2004). AREAS USED FOR CAR PARKS.

LIGHT TOWERS~~(12)~~ AHD 16M.

UNDERGROUND ELECTRICAL CABLES.

WALKWAY

NEW EXIT.

ACCELERATION LANE.

5.7M MINIMUM SETBACK

DECELERATION LANE.

PEDESTRIAN REFUGE ISLAND. OPENING IN CENTRE FENCE.

OVERHEAD ELECTRICAL BRIDGE.

GATE 7

BOLONG ROAD

8.2M

10.5M MIN. SETBACK

BUNDED EVAPORATORS.

GATE 5

GATE 3

ETHANOL DRIVEWAY

LOADING BAY

DENATURANT STORE

ETHANOL RECOVERY AREA

COOLING TOWERS

No.1 FERMENTER

No.2 FERMENTER

No.3 FERMENTER

STAGE 3 ETHANOL

DISTILLERY

LABORATORY

FERMENTATION AREA

DRYER #6

No.13 FERMENTER

No.12 FERMENTER

No.16 FERMENTER

MVR #4

Evaporator

Substation

Cooling Towers

REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P09	ALL	Electrical Bridge Amended	P.C.	23-05-25	MPoole	DJ
P08	ALL	Electrical route adjacent to creek now above ground.	P.C.	1-05-25	DJ	
P07	ALL	Layout mods to engineers design.Car park extension.Electrical route.	P.C.	2-05-25	DJ	
P06	ALL	Car park now included in mod 26.	P.C.	6-02-25	DJ	
P05	ALL	Car park now included in mod 30.	P.C.	22-01-25	DJ	
P04	ALL	Changes to match engineers design.	P.C.	22-11-24	MPoole	
P01	ALL	Construction layout.	P.C.	16-05-24	D.J.	

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P.C.

CHKD DATE

APPD DATE

SCALE 1:1000

SHOALHAVEN STARCHES.BOMADERRY. NSW

DWG TITLE
MOD 31.BG1 & BG2 HEAT RECOVERY.
O/A SITE PLAN.

PROJECT No. 7994-001

DWG No. MN7994-001

SHT SIZE A3

REV. P09

EXISTING APPROVED PLANT.

MOD 31.

62.0 AHD

DISTILLERY HEAT
RECOVERY BUILDING.

29.0m

BGD1

BGD2

SWITCH ROOM

SWITCH ROOM EVCAV.

OVERHEAD GANTRY.

17.2m

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EXISTING
CONTROL
ROOM

3.33m

3.74m

5M(Nom)

2.96m

2.67m

5.7M

16.05M

Min. SETBACK

BOLONG ROAD

DISTILLERY HEAT
RECOVERY EVAPORATORS.

EASTERN ELEVATION.

REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P06	ALL	Changes to match engineers design.	B.M.	28.05.25	MPoole	
P05	ALL	Changes to match engineers design.Fan build/bridge width & height increased.	P.C.	05-05-25	MPoole	
P04	ALL	Changes to match engineers design.	P.C.	22-11-24	MPoole	
P01	ALL	Construction layout.	P.C.	16-05-24	D.J.	

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P.C. Graham
0439 436508

P.C.

CHKD DATE

APPD DATE

SCALE 1:250

SHOALHAVEN STARCHES.BOMADERRY. NSW

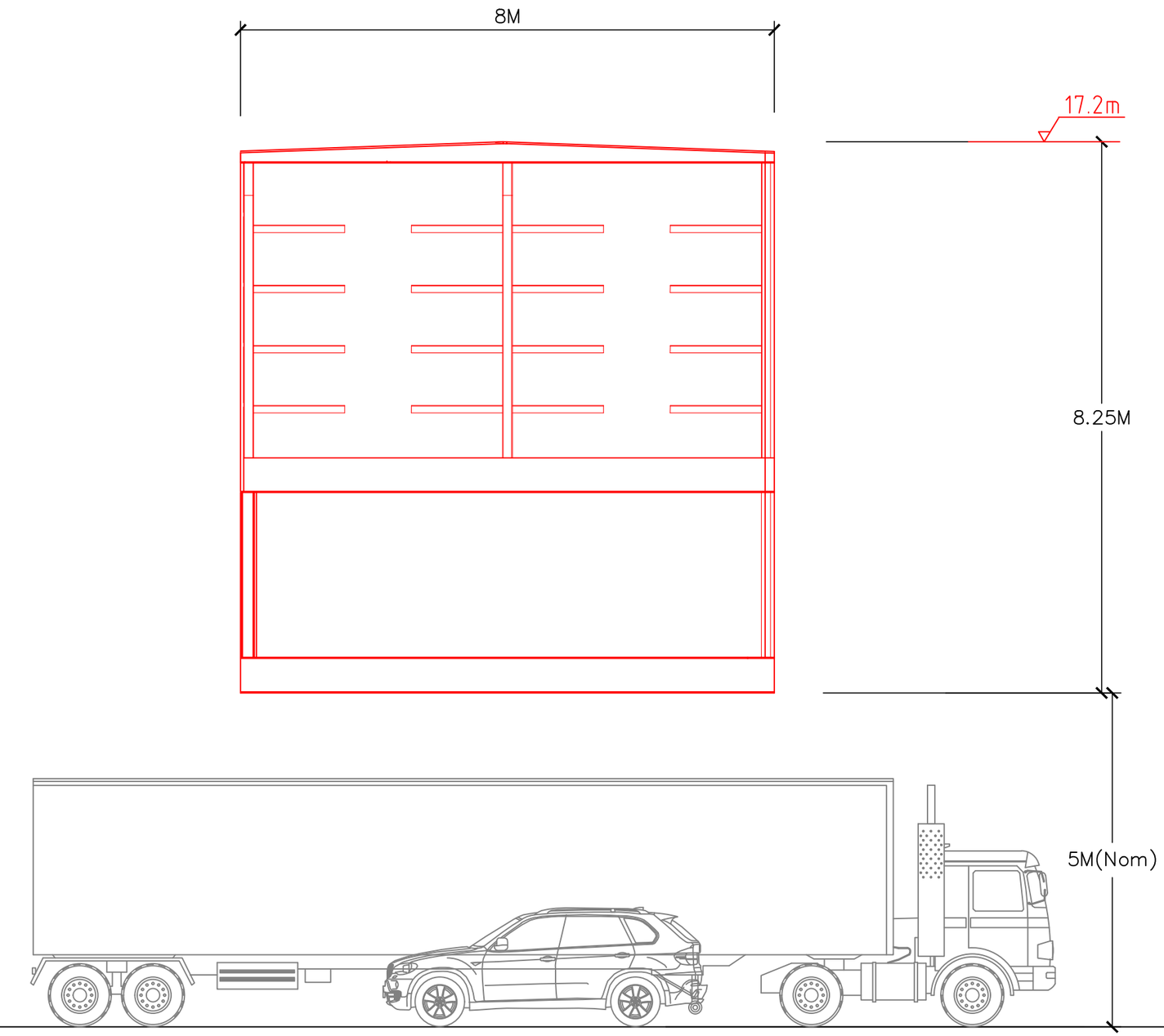
DWG TITLE
MOD 31.BG1 & BG2 HEAT RECOVERY.
SITE ELEVATION.

PROJECT No. 7994 WAE

DWG No. MN7994-002

SHT SIZE A3

REV. P06



Should this be P05?

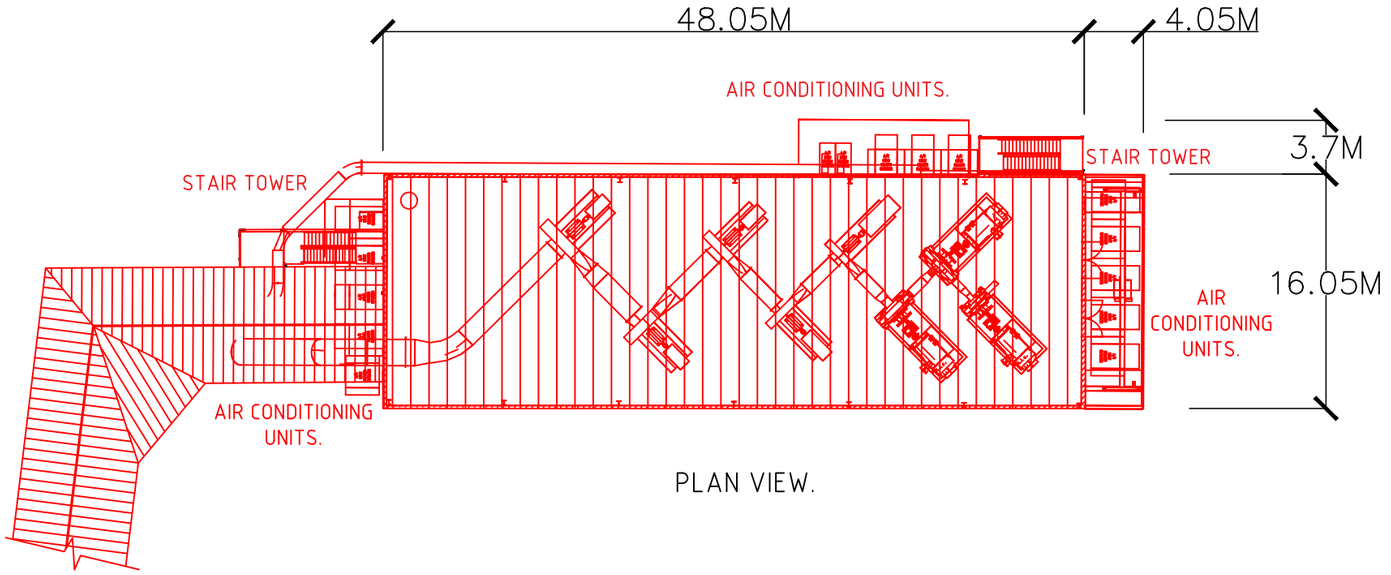
REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P04	ALL	Changes to match engineers design.Width & height increased.	P.C.	05-05-25	MPoole	
P04	ALL	Changes to match engineers design.	P.C.	22-11-24	MPoole	
P01	ALL	Construction layout.	P.C.	16-05-24	D.J.	

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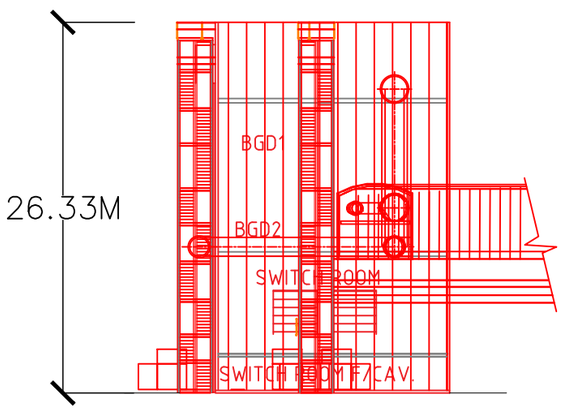
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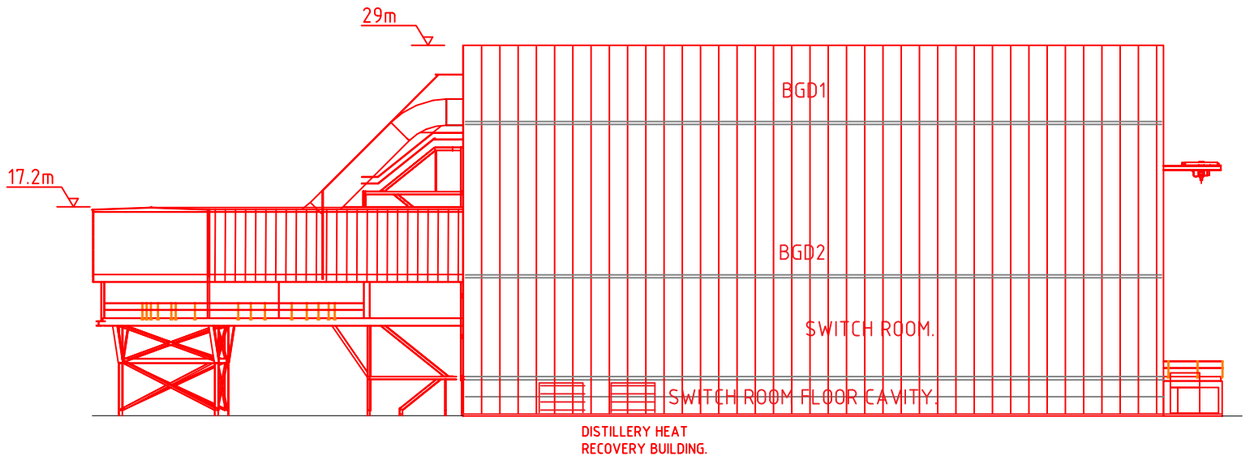
P.C.		SHOALHAVEN STARCHES.BOMADERRY. NSW	SHT SIZE A3
CHKD	DATE	DWG TITLE MOD 31.BG1 & BG2 HEAT RECOVERY. GANTRY SECTIONAL ELEVATION.	
APPD	DATE		REV. P05
	SCALE 1:75	PROJECT No. 7994 WAE	DWG No. MN7994-003



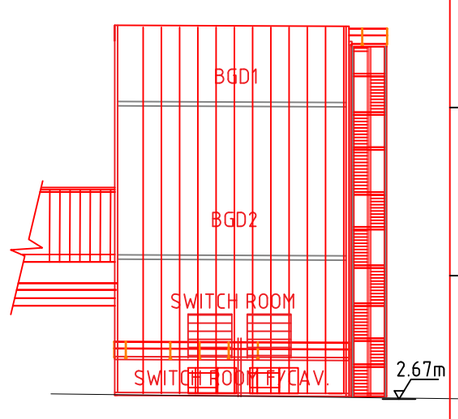
PLAN VIEW.



BACK ELEVATION.



SIDE ELEVATION.



FRONT ELEVATION.

REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P05	ALL	Changes to match engineers design.Width & height increased.	P.C.	05-05-25	MPoole	
P04	ALL	Changes to match engineers design.	P.C.	22-11-24	MPoole	
P01	ALL	Construction layout.	P.C.	16-05-24	D.J.	

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GEM OF THE WEST

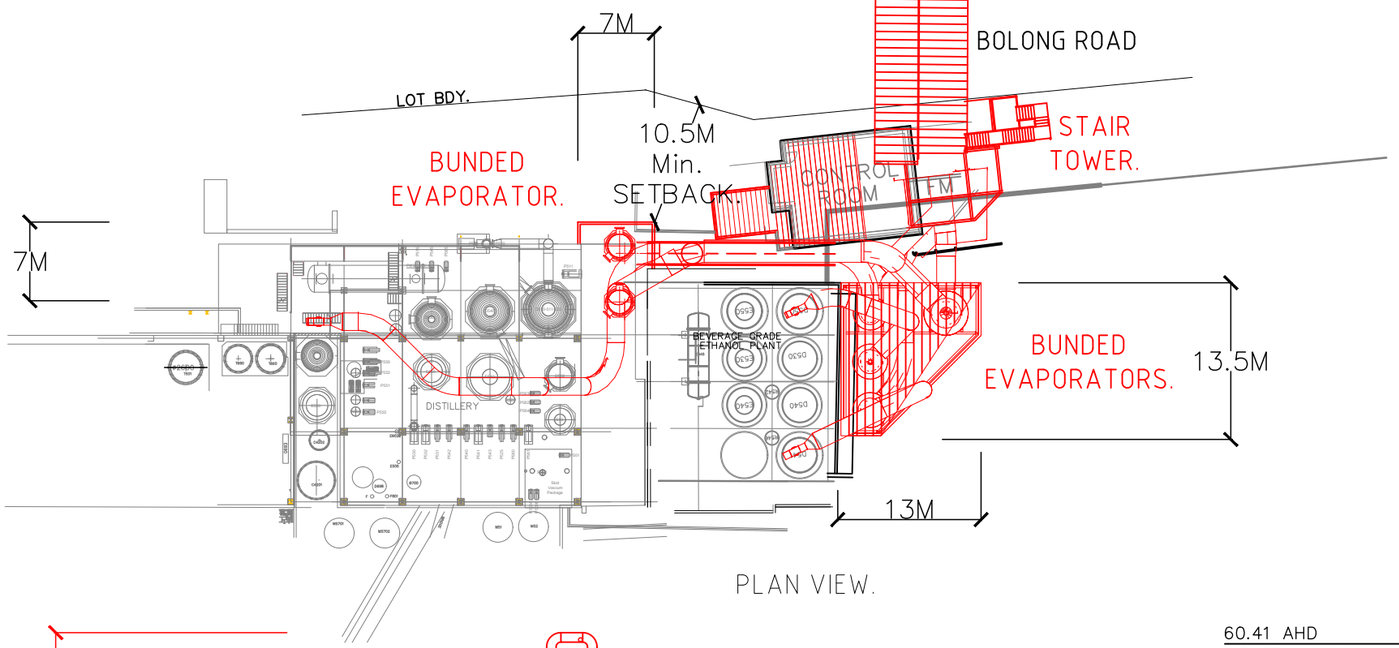
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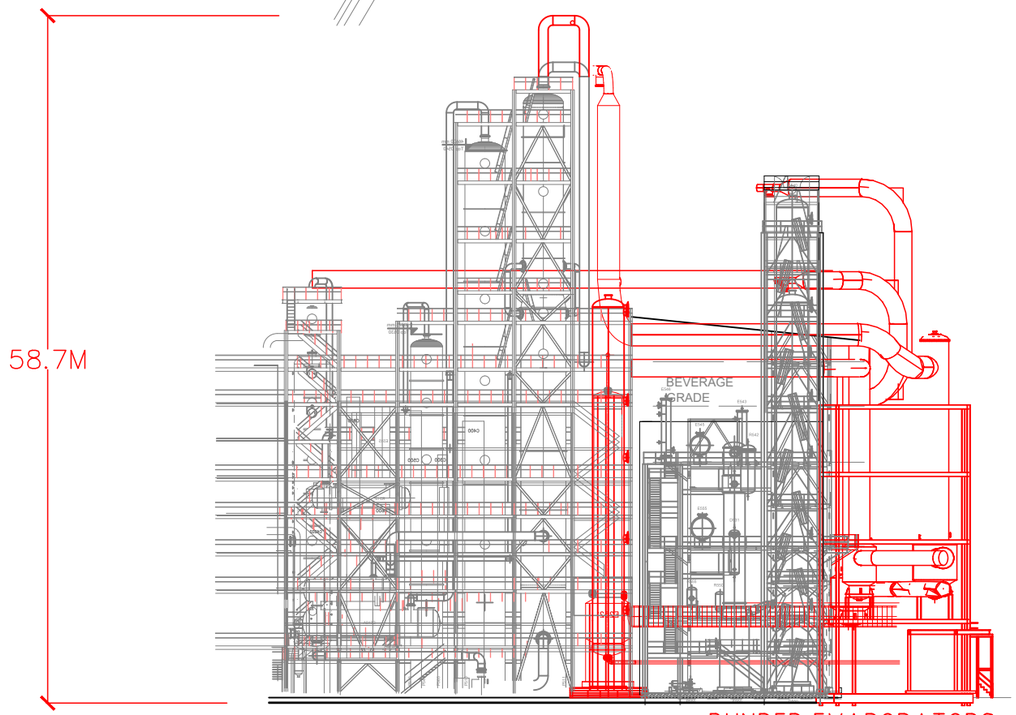
P.C.		SHOALHAVEN STARCHES.BOMADERRY. NSW	SHT SIZE A3
CHKD	DATE	DWG TITLE MOD 31.BG1 & BG2 HEAT RECOVERY. DISTILLERY HEAT RECOVERY BUILDING.	
APPD	DATE		REV. P05
	SCALE 1:400	PROJECT No. 7994 WAE	DWG No. MN7994-004

EXISTING APPROVED PLANT.

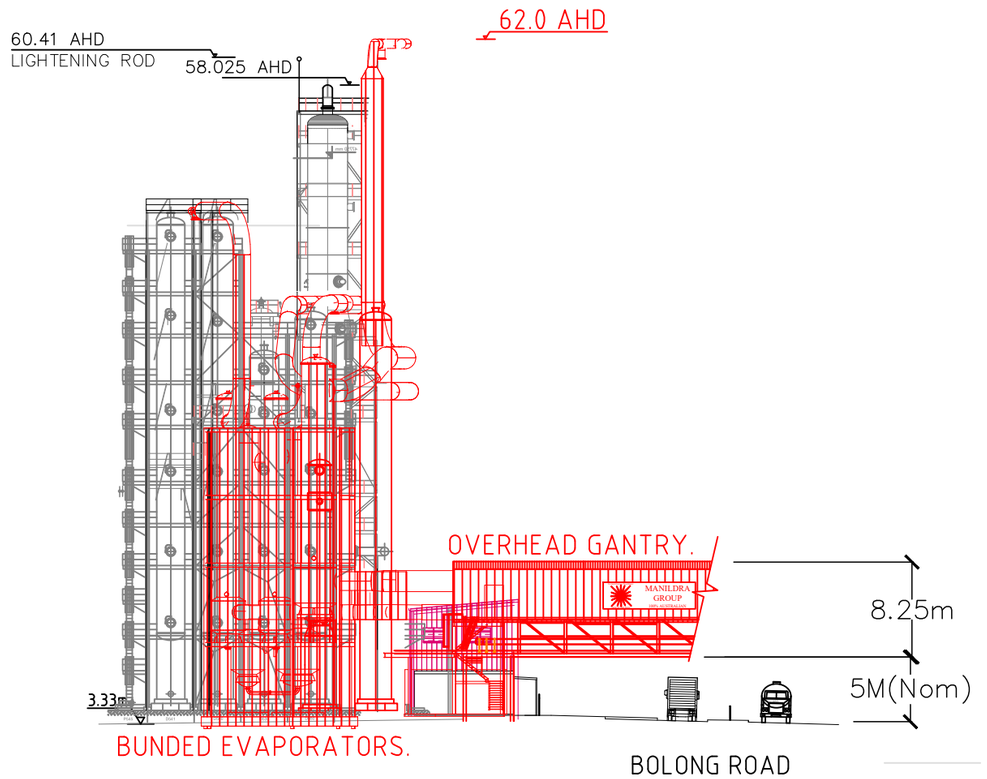
MOD 31.



PLAN VIEW.



SOUTHERN ELEVATION.



EASTERN ELEVATION.

REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P06	ALL	Changes to match engineers design.	B.M.	28-05-25	MPoole	
P05	ALL	Changes to match engineers design.	P.C.	06-05-25	MPoole	
P04	ALL	Changes to match engineers design.	P.C.	22-11-24	MPoole	
P01	ALL	Construction layout.	P.C.	16-05-24	D.J.	

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0439 436508

P.C.

CHKD | DATE

APPD | DATE

SCALE 1:500

SHOALHAVEN STARCHES.BOMADERRY. NSW

DWG TITLE
MOD 31.BG1 & BG2 HEAT RECOVERY.
DISTILLERY HEAT RECOVERY EVAPORATORS.

PROJECT No. 7994 WAE

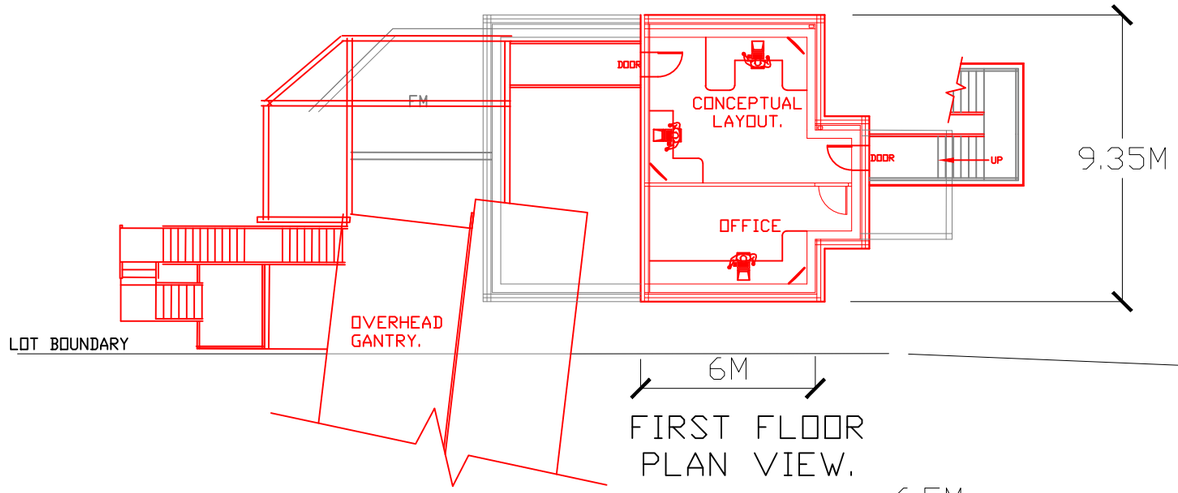
DWG No. MN7994-005

SHT SIZE A3

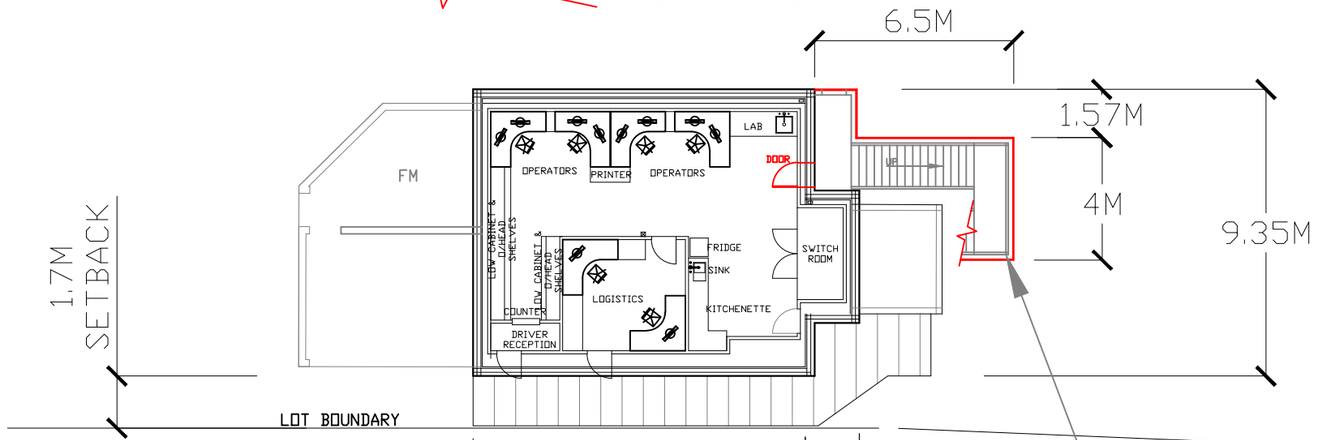
REV. P06

EXISTING APPROVED PLANT.

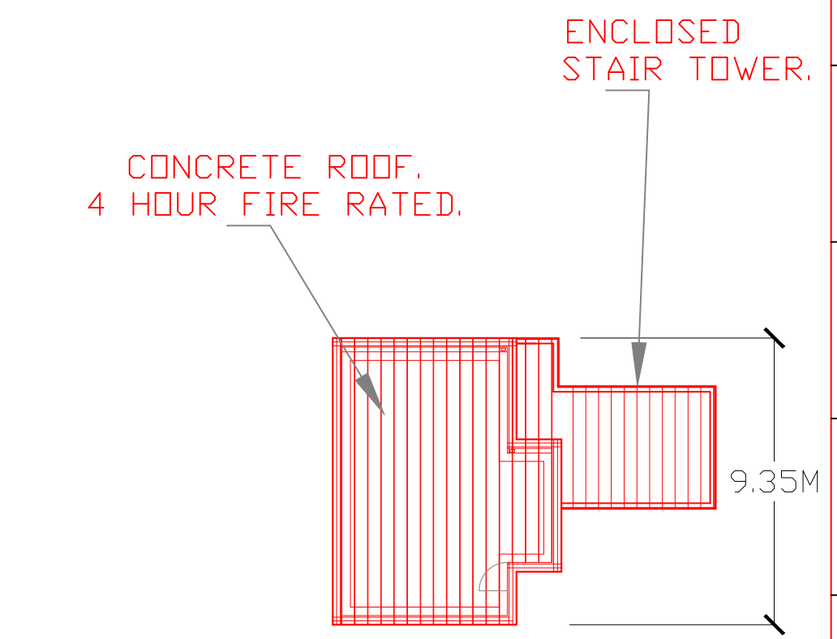
MOD 31.



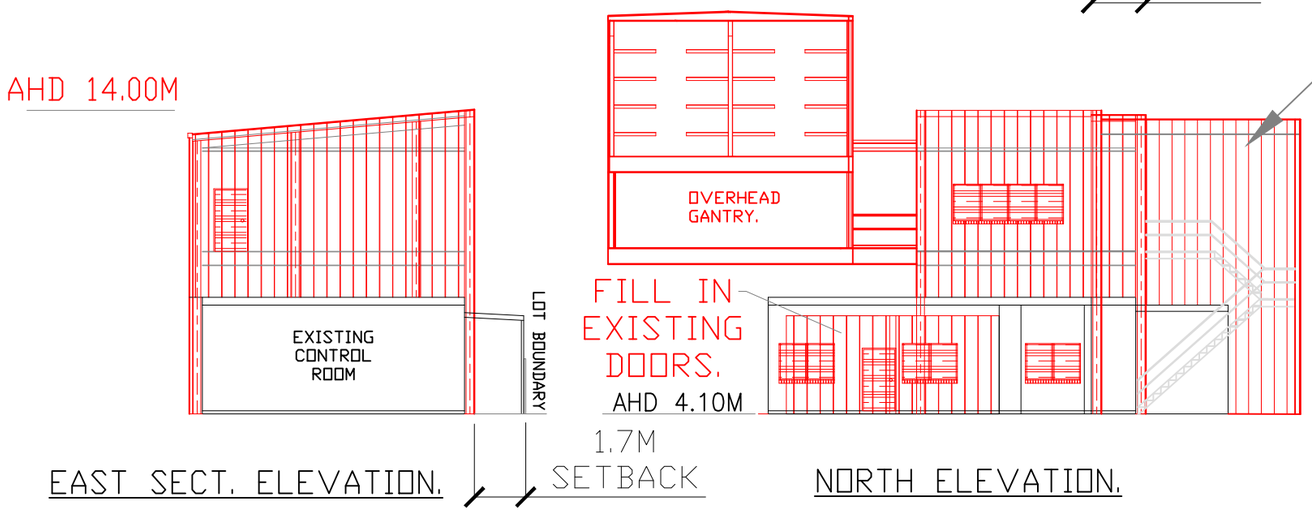
FIRST FLOOR PLAN VIEW.



GROUND FLOOR.



ROOF PLAN.



EAST SECT. ELEVATION.

NORTH ELEVATION.

WEST ELEVATION.

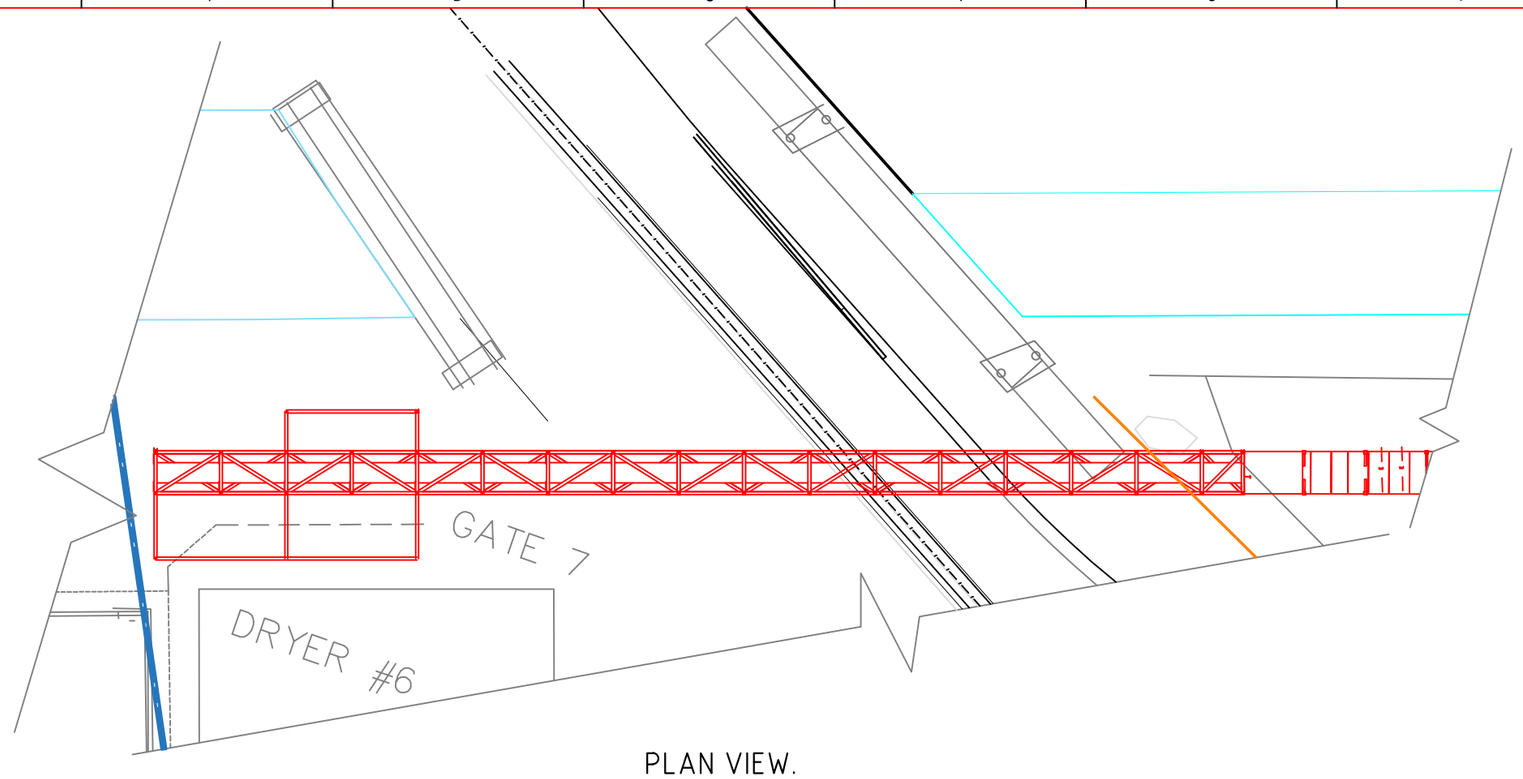
REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P16	ALL	Southern door removed.Egress to gantry shown in plan view.	P.C.	07-05-25	J.S.	
P15	ALL	Was Mod 22, was full length.	P.C.	07-05-25	J.S.	
P14	I7	Western window removed.	P.C.	20-09-23	A.T.	
P13	ALL	Some building details added for fire rating.	P.C.	06-09-23	A.T.	
P12	ALL	Existing veranda shown.	P.C.	01-8-22	BH	
P11	ALL	Was Mod 23.	P.C.	04-5-21	BH	
P10	ALL	Now Mod 23.	P.C.	25-03-21	BH	

Commitment to Excellence
GEM OF THE WEST

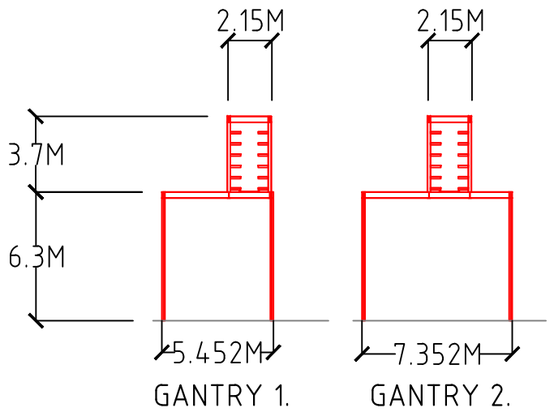
MANILDRA GROUP
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P.C Drafting 0439 436508

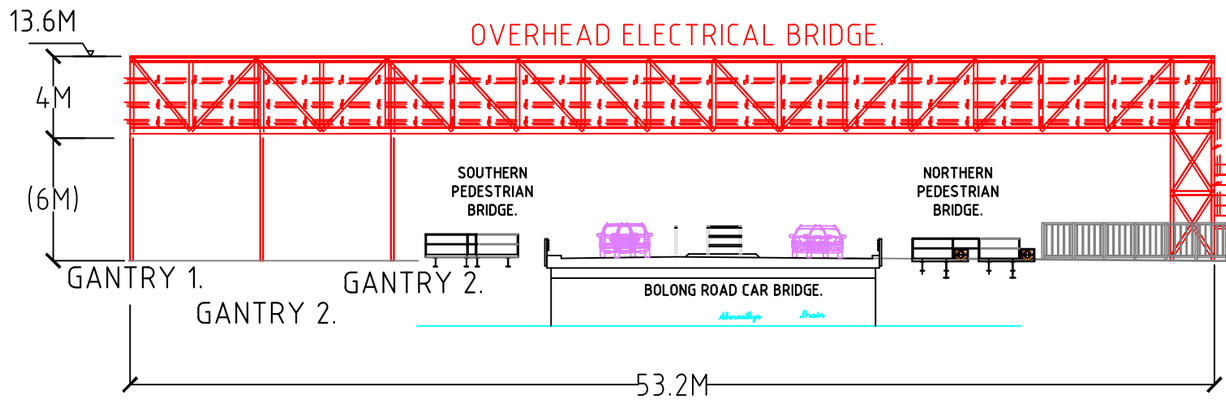
DRAWN P.C.	DATE 25/06/19	JOB TITLE SHOALHAVEN STARCHES.BOMADERRY. NSW	SHT SIZE A3
CHKD T.J.	DATE	DWG TITLE MOD 31. CONTROL ROOM ADDITIONS.	REV. P16
APPD	DATE		
	SCALE 1:200	PROJECT No. 7193WAE	DWG No. MN7994-006



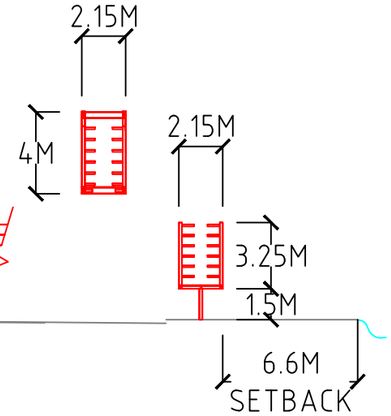
PLAN VIEW.



END ELEVATION.



EASTERN ELEVATION.



END ELEVATION.

REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P03	ALL	Bridge design changed by MP.	P.C.	23/05/25	MP	DJ
P02	ALL	Electrical now above ground.End els added.	P.C.	21/05/25	DJ	
P01	ALL	First issue.	P.C.	09/05/25	MP	

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P.C.
CHKD DATE
APPD DATE
SCALES 1:300

EASTERN ELEVATION.

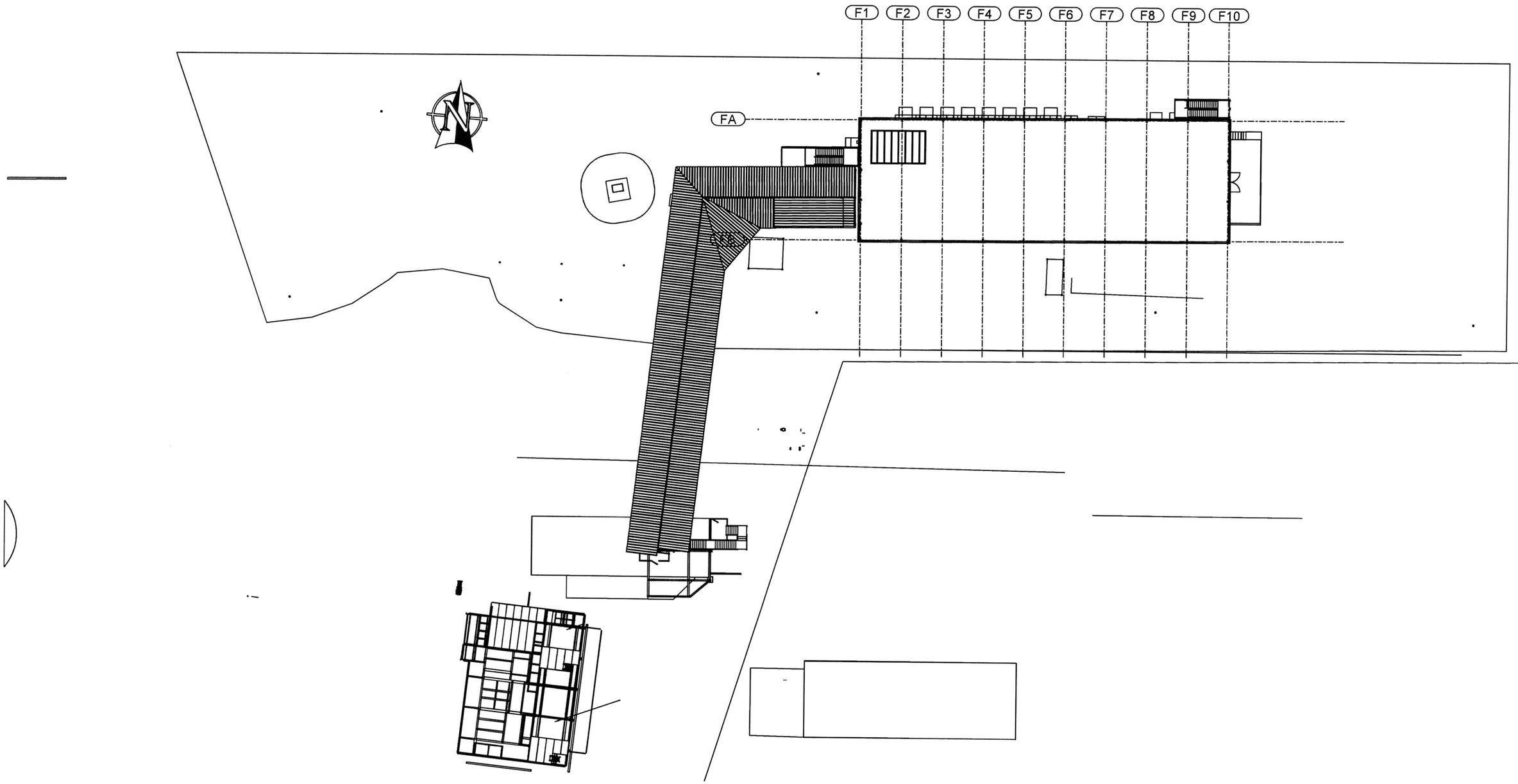
SHOALHAVEN STARCHES.BOMADERRY.NSW.

DWG TITLE
MOD 31.ELECTRICAL ROUTE.
OVERHEAD ELECTRICAL BRIDGE.

PROJECT No. MN7994-007
DWG No. MN7994-007

SHT SIZE A3
REV. P03

A1



REV	REVISION DETAILS	DATE	DRG BY	DRG CH'K	DESIGN CH'K	DESIGN APPROVAL
P2	FOR INFORMATION ONLY	11/04/25	P.L.	D.P.		
P1	FOR INFORMATION ONLY	20/11/24	P.L.	D.P.		

ERECTION NOTES:
1) ▽ INDICATES MARKED END OF MEMBER TO BE ERECTED AT THIS LOCATION.
2) COLUMNS HAVE ASSEMBLY MARK STAMPED ON NORTH OR WEST FACING FLANGE NEAR BASE OF SHAFT U.N.O.

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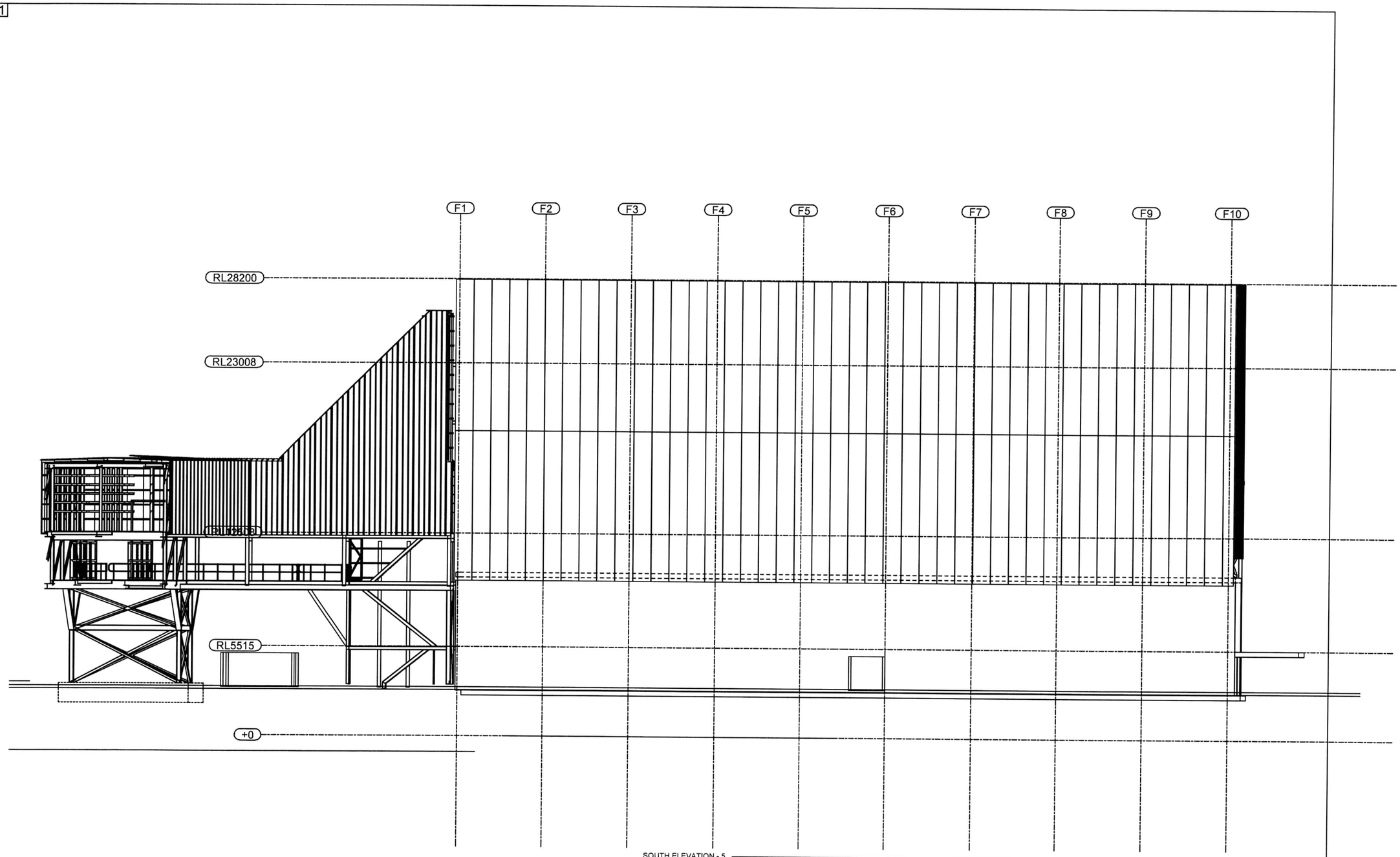
ALL DRAWINGS ARE IN ACCORDANCE WITH AS1100

TITLE:
PLAN VIEW
.

SCALE	JOB No.	DRAWING No.	REV.
1:250	1208	SK01	P2

DRAWN P.L.

A1



SOUTH ELEVATION - 5

ERECTION NOTES:
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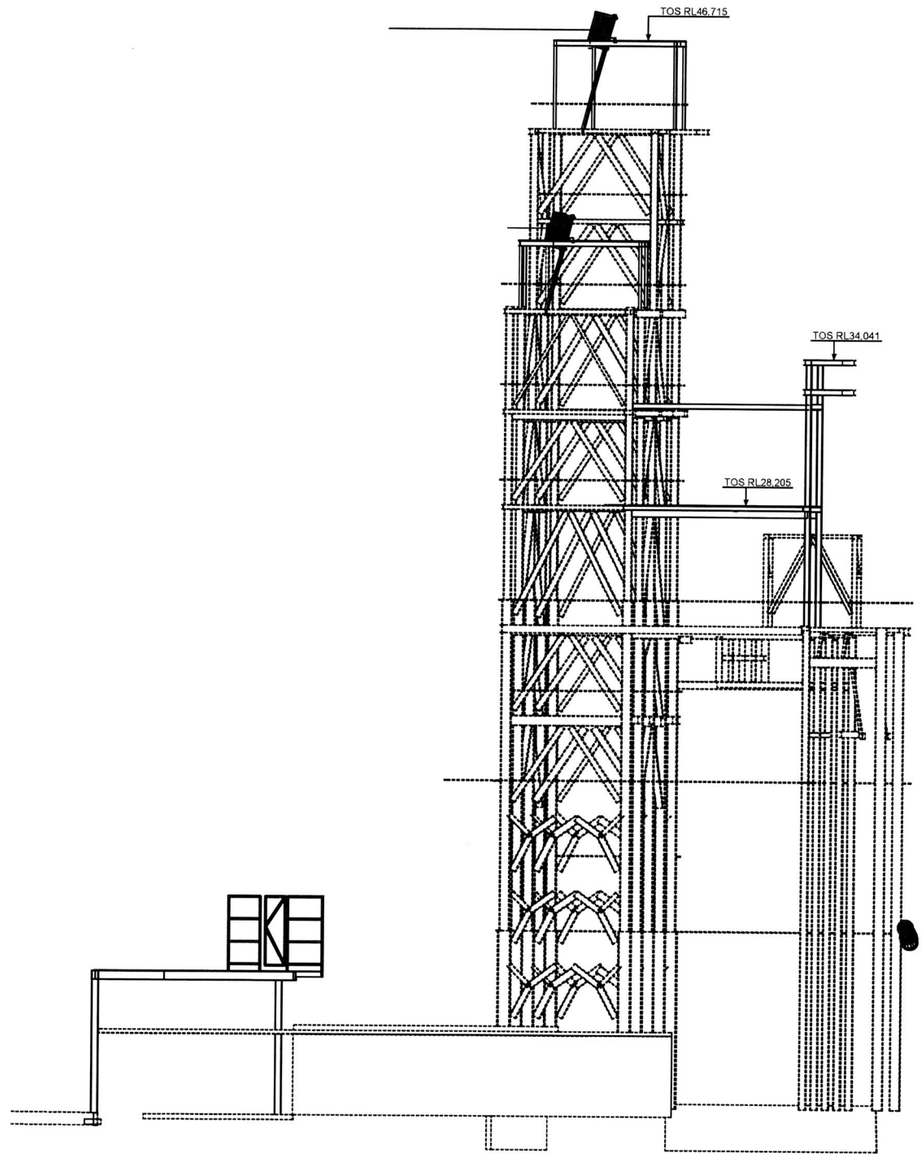
TITLE:
SOUTH ELEVATION
.

SCALE	JOB No.	DRAWING No.	REV.
1:100	1208	SK02	P2

DRAWN P.L.

REV	REVISION DETAILS	DATE	DRG BY	DRG CHK	DESIGN CHK	DESIGN APPROVAL
P2	FOR INFORMATION ONLY	11/04/25	P.L.	D.P.		
P1	FOR INFORMATION ONLY	20/11/24	P.L.	D.P.		

A1



EAST ELEVATION AT EVAPORATORS

REV	REVISION DETAILS	DATE	DRG BY	DRG CHK	DESIGN CHK	DESIGN APPROVAL
P2	FOR INFORMATION ONLY	11/04/25	P.L.	D.P.		
P1	FOR INFORMATION ONLY	20/11/24	P.L.	D.P.		

ERECTION NOTES:
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PROJECT: DHR PROJECT

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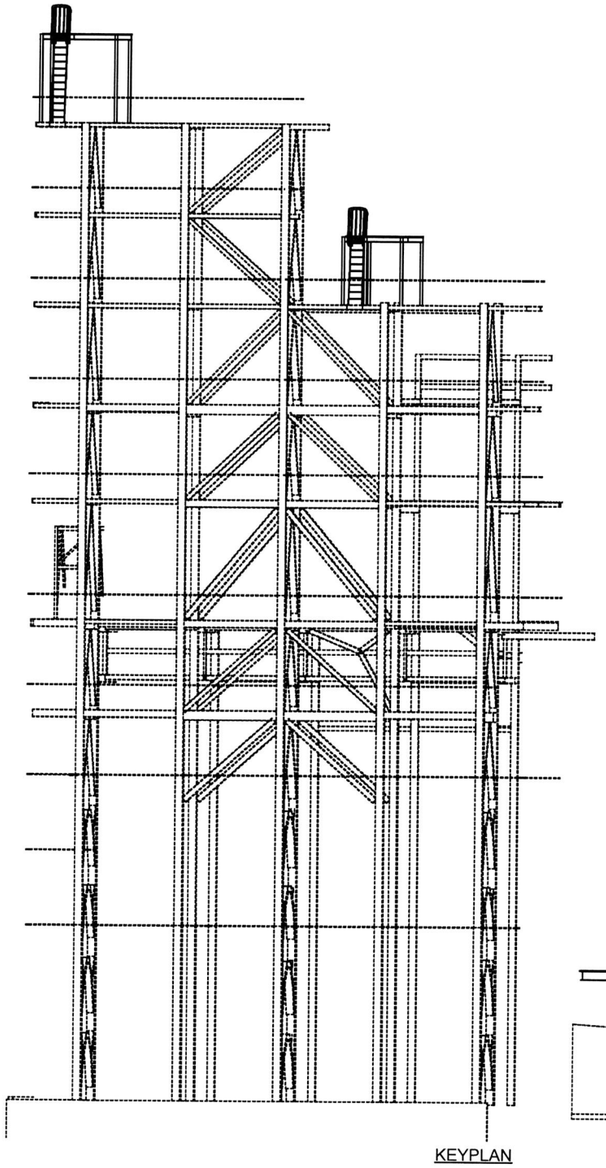
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TITLE:
EAST ELEVATION AT EVAPORATORS

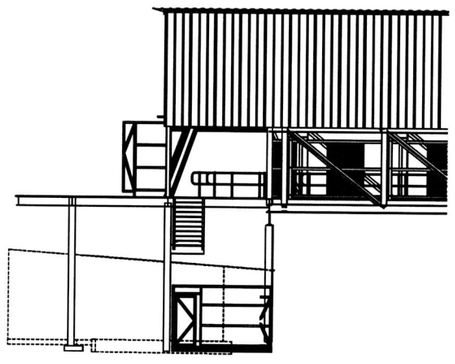
SCALE	JOB No.	DRAWING No.	REV.
1:100	1208	SK03	P2

DRAWN P.L.

A1



KEYPLAN



REV	REVISION DETAILS	DATE	DRG BY	DRG CH'K	DESIGN CH'K	DESIGN APPROVAL
P2	FOR INFORMATION ONLY	11/04/25	P.L.	D.P.		
P1	FOR INFORMATION ONLY	20/11/24	P.L.	D.P.		

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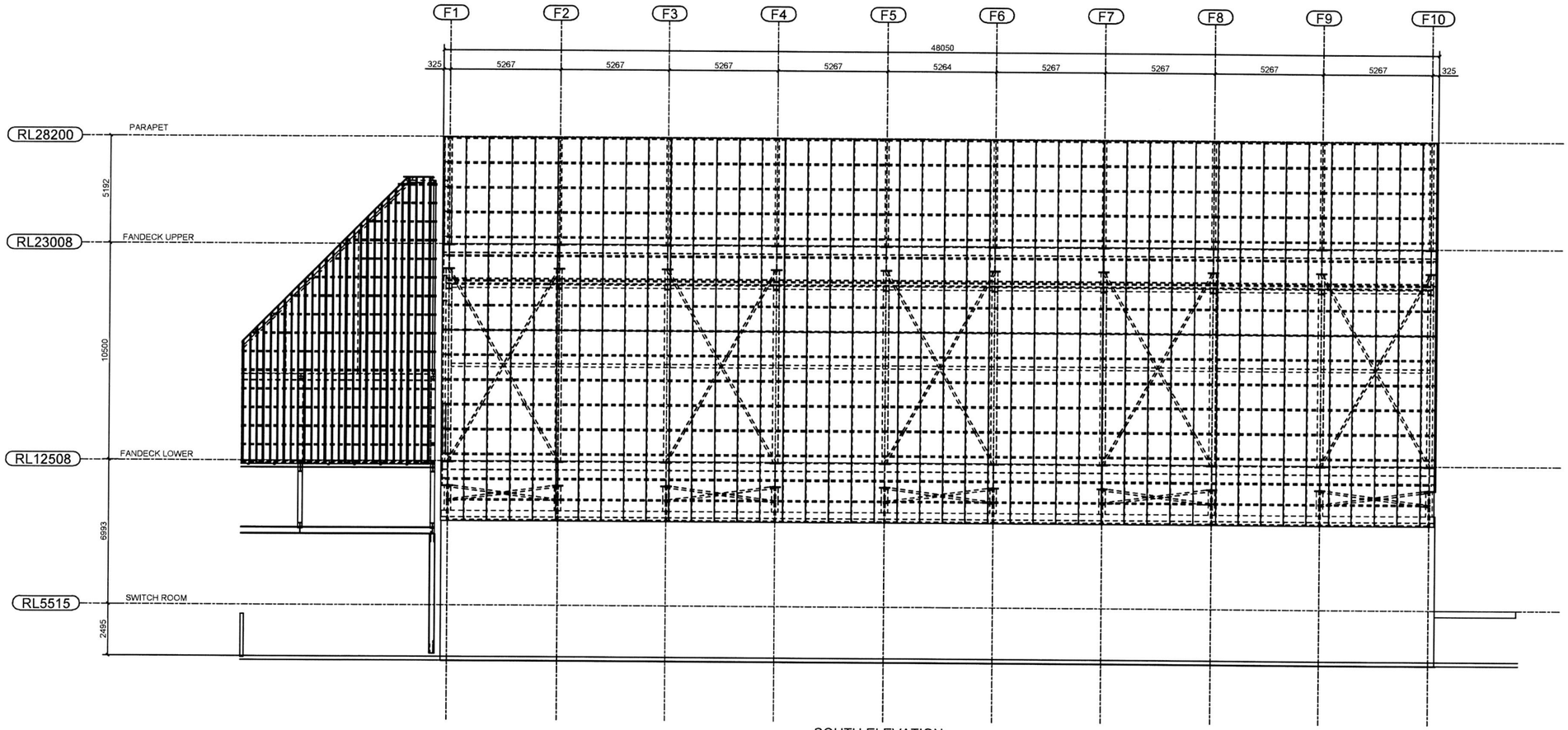
ALL DRAWINGS ARE IN ACCORDANCE WITH AS1100

TITLE:
NORTH ELEVATION
.

SCALE	JOB No.	DRAWING No.	REV.
1:100	1208	SK04	P2

DRAWN P.L.

A1



SOUTH ELEVATION

Is this the correct direction? Could this be west?

REV	REVISION DETAILS	DATE	DRG BY	DRG CHK	DESIGN CHK	DESIGN APPROVAL
P2	FOR INFORMATION ONLY	11/04/25	P.L.	D.P.		
P1	FOR INFORMATION ONLY	28/03/25	P.L.	D.P.		

ERECTION NOTES:
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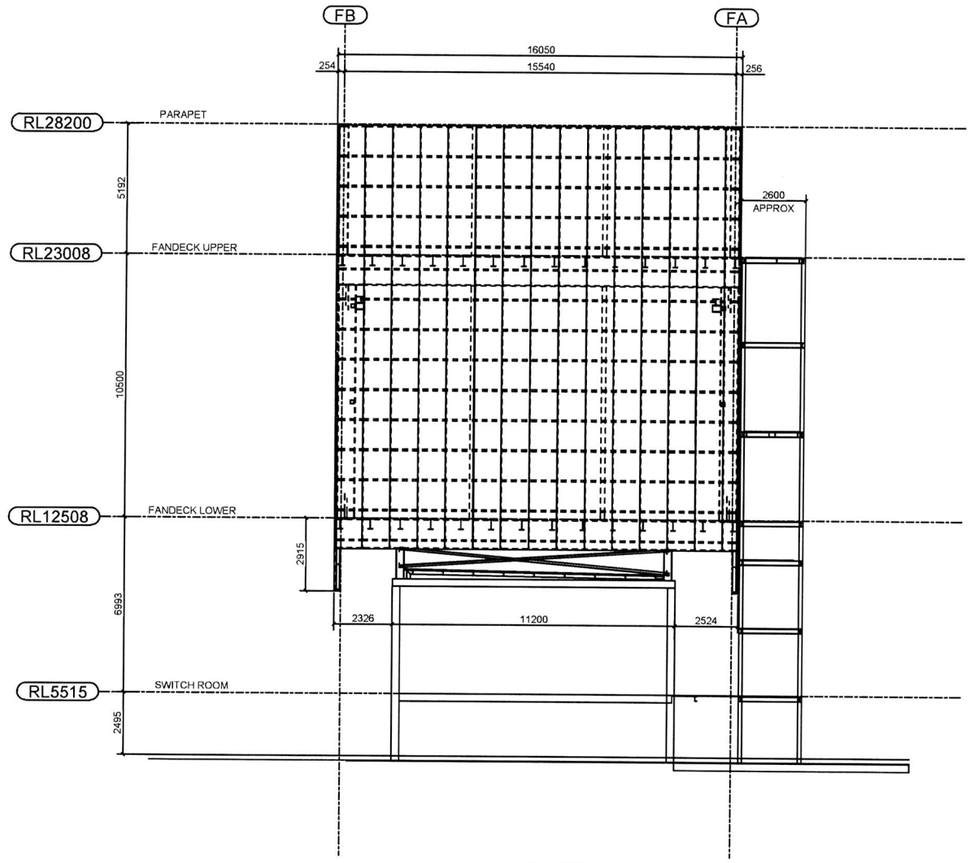
ALL DRAWINGS ARE IN ACCORDANCE WITH AS1100

TITLE:
FAN BUILDING
SOUTH ELEVATION

SCALE	JOB No.	DRAWING No.	REV.
1:100	1208	SK05	P2

DRAWN P.L.

A1



EAST ELEVATION

REV	REVISION DETAILS	DATE	DRG BY	DRG CH'K	DESIGN CH'K	DESIGN APPROVAL
P2	FOR INFORMATION ONLY	11/04/25	P.L.	D.P.		
P1	FOR INFORMATION ONLY	28/03/25	P.L.	D.P.		

ERECTION NOTES:
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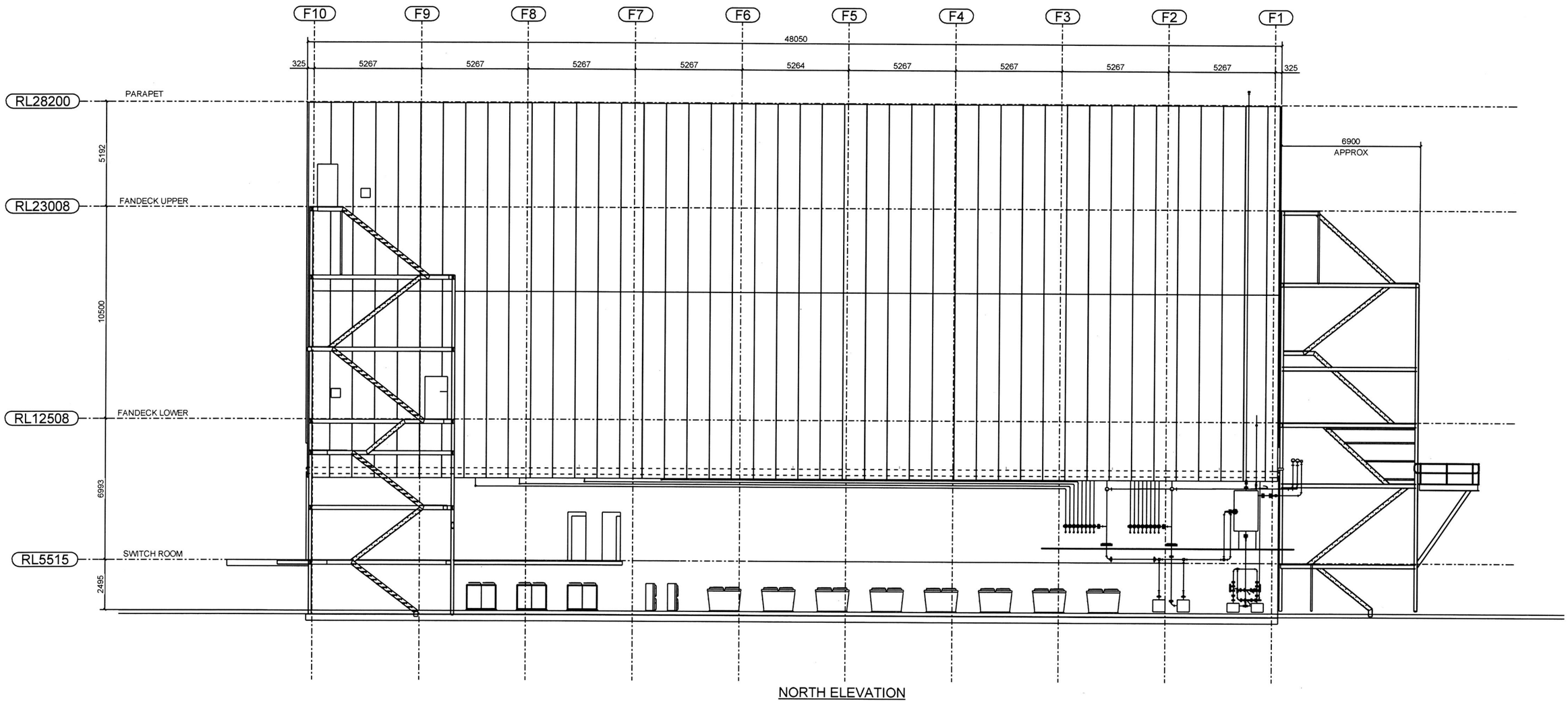
ALL DRAWINGS ARE IN ACCORDANCE WITH AS1100

TITLE:
FAN BUILDING
EAST ELEVATION

SCALE	JOB No.	DRAWING No.	REV.
1:100	1208	SK06	P2

DRAWN P.L.

A1



NORTH ELEVATION

REV	REVISION DETAILS	DATE	DRG BY	DRG CH'K	DESIGN CH'K	DESIGN APPROVAL
P2	FOR INFORMATION ONLY	11/04/25	P.L.	D.P.		
P1	FOR INFORMATION ONLY	28/03/25	P.L.	D.P.		

ERECTION NOTES:
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2) COLUMNS HAVE ASSEMBLY MARK STAMPED ON NORTH OR WEST FACING FLANGE NEAR BASE OF SHAFT U.N.O.

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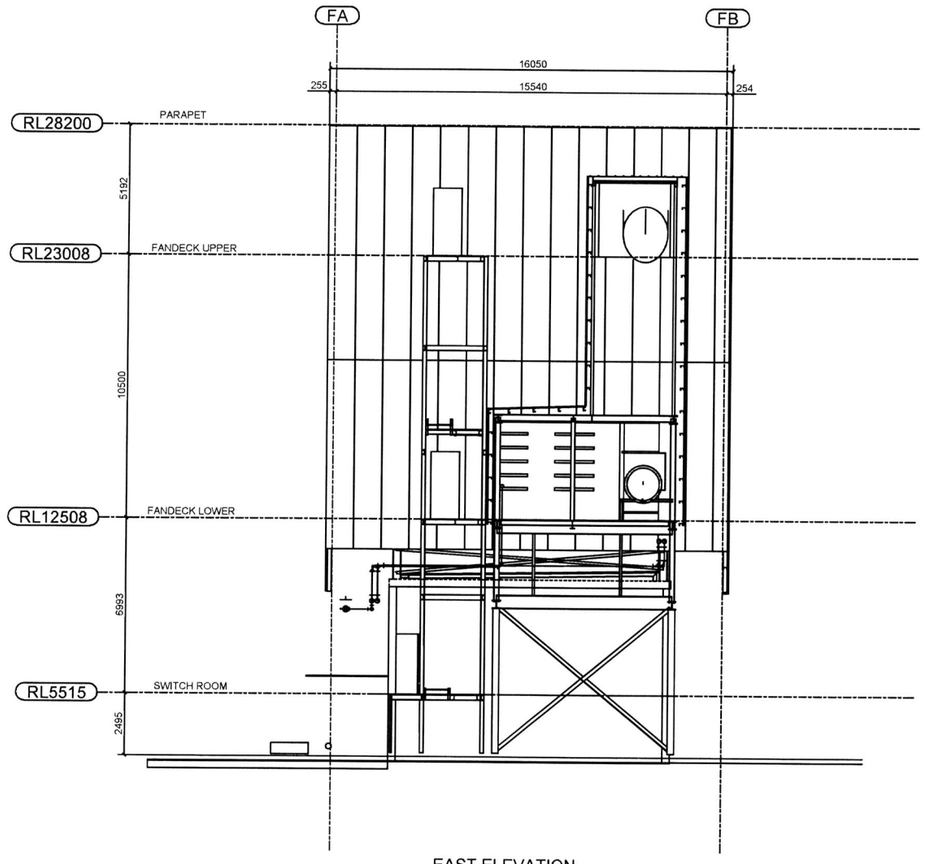
ALL DRAWINGS ARE IN ACCORDANCE WITH AS1100

TITLE:
FAN BUILDING
NORTH ELEVATION

SCALE	JOB No.	DRAWING No.	REV.
1:100	1208	SK07	P2

DRAWN P.L.

A1



EAST ELEVATION

Is this correct?
Should this be west?

REV	REVISION DETAILS	DATE	DRG BY	DRG CHK	DESIGN CHK	DESIGN APPROVAL
P2	FOR INFORMATION ONLY	11/04/25	P.L.	D.P.		
P1	FOR INFORMATION ONLY	28/03/25	P.L.	D.P.		

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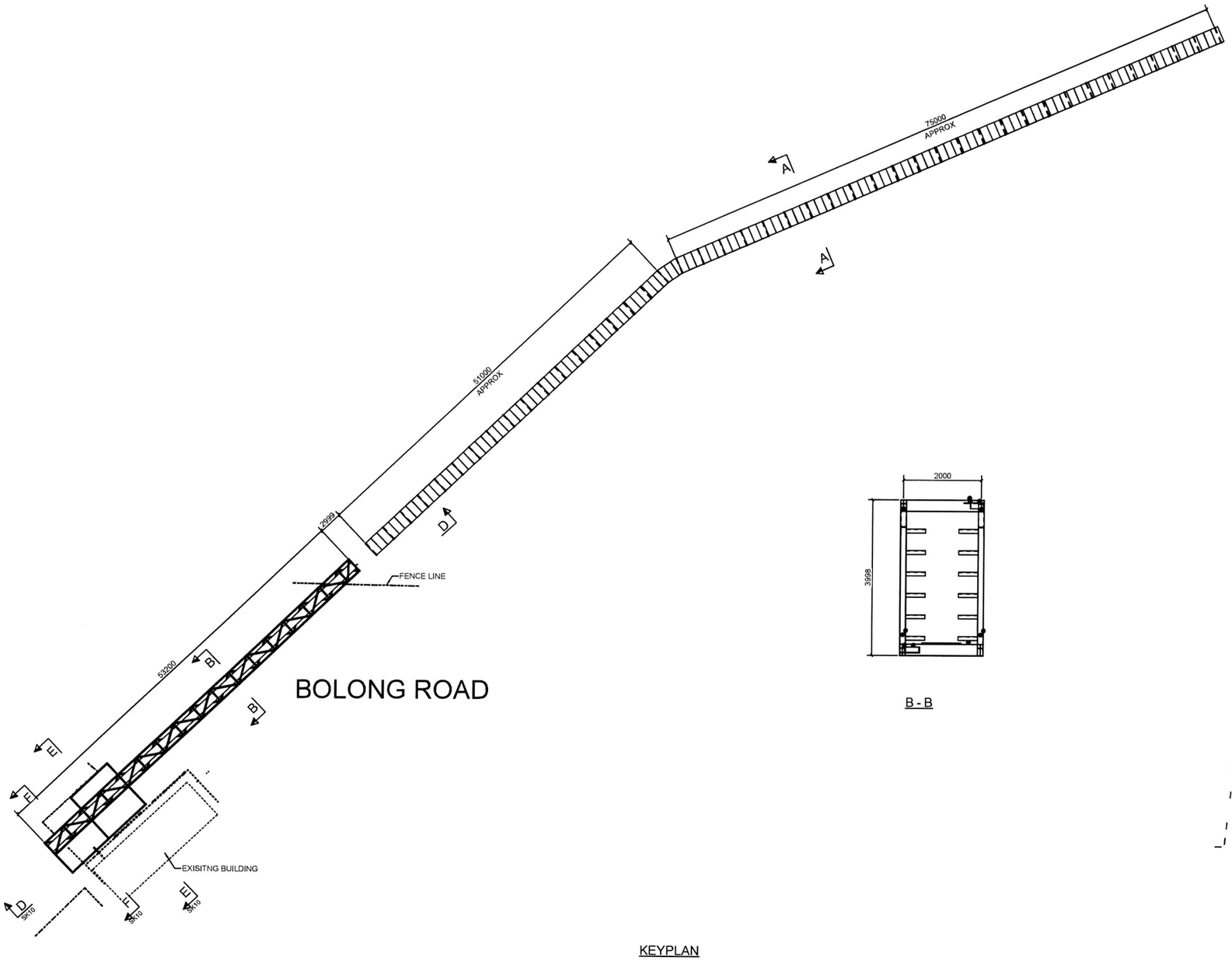
ALL DRAWINGS ARE IN ACCORDANCE WITH AS1100

TITLE:
FAN BUILDING
EAST ELEVATION

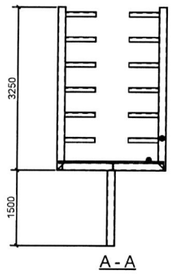
SCALE	JOB No.	DRAWING No.	REV.
1:100	1208	SK08	P2

DRAWN P.L.

A1



BOLONG ROAD



A - A

B - B



KEYPLAN

REV	REVISION DETAILS	DATE	DRG BY	DRG CH'K	DESIGN CH'K	DESIGN APPROVAL
P2	FOR INFORMATION ONLY	11/04/25	P.L.	D.P.		

ERECTION NOTES:
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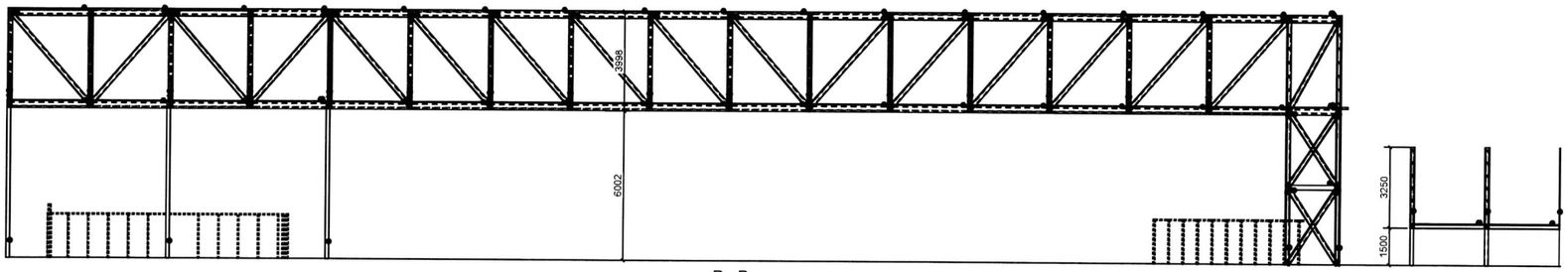
ALL DRAWINGS ARE IN ACCORDANCE WITH AS1100

TITLE:
ELEC BRIDGE PLAN

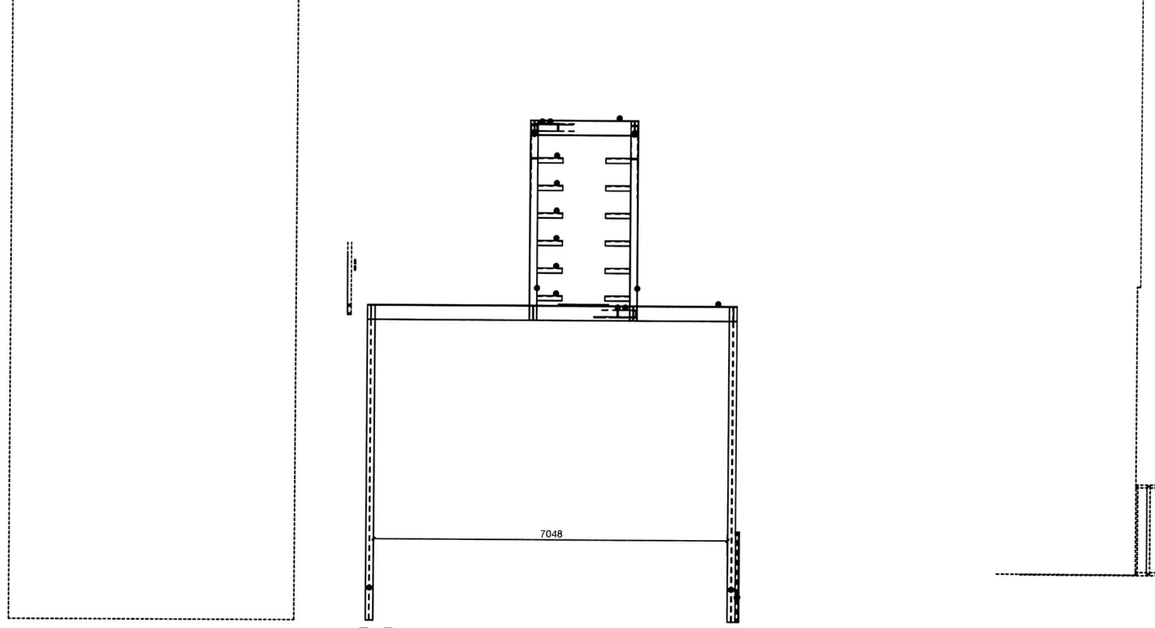
SCALE	JOB No.	DRAWING No.	REV.
1:50	1208	SK09	P2

DRAWN P.L.

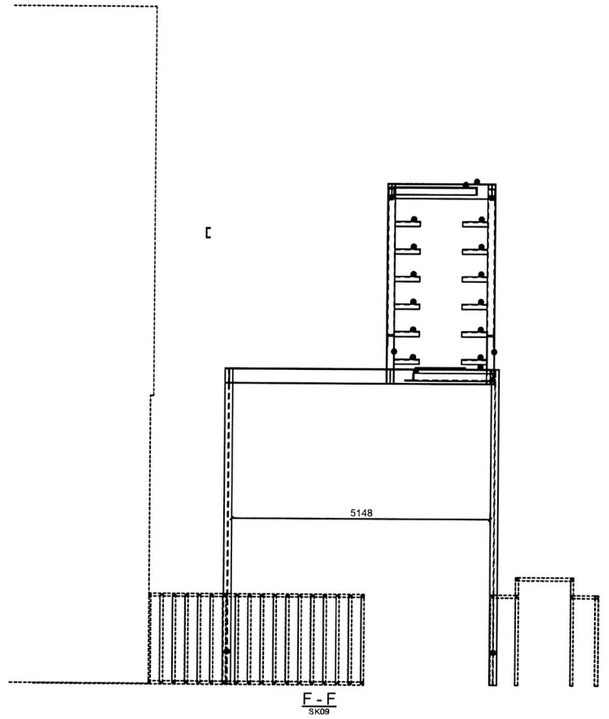
A1



D - D
SK09



E - E
SK09



F - F
SK09

ERECTION NOTES:
1) ⓜ INDICATES MARKED END OF MEMBER TO BE ERECTED AT THIS LOCATION.
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TITLE:
ELEC BRIDGE SECTIONS

SCALE	JOB No.	DRAWING No.	REV.
1:50	1208	SK10	P2

DRAWN P.L.

REV.	REVISION DETAILS	DATE	DRG BY	DRG CH'K	DESIGN CH'K	DESIGN APPROVAL
P2	FOR INFORMATION ONLY	11/04/25	P.L.	D.P.		

MOD 31.
HEAT EXCHANGES.

PROJECT No.7462WAE.A.
23/05/25

Drawing No.	REV.	
MN7462-000	P06	SITE ELEVATION.
MN7462-001	P08	O/A SITE PLAN.
MN7462-017	P04	DDG DRYERS HEAT EXCHANGERS SITE ELEVATION.
MN7462-025	P02	DDG DRYERS HEAT EXCHANGERS SITE PLAN.

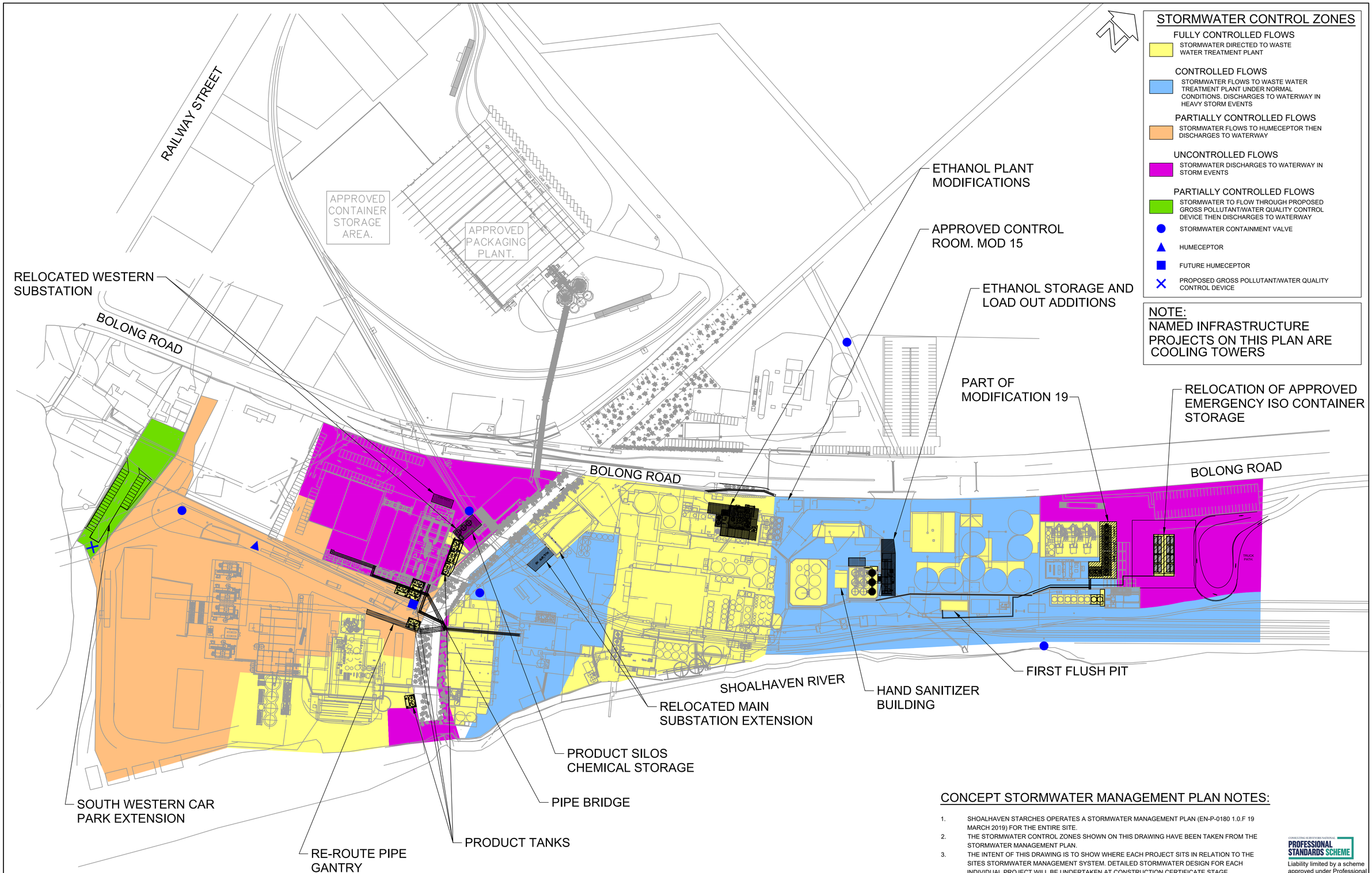
MOD 31.
BG1 & BG2 HEAT RECOVERY.

PROJECT No.7994

MN7994-001	P09	SITE PLAN.
MN7994-002	P06	SITE ELEVATION.
MN7994-003	P05	GANTRY SECTIONAL ELEVATION.
MN7994-004	P05	DISTILLERY HEAT RECOVERY BUILDING.
MN7994-005	P05	DISTILLERY HEAT RECOVERY EVAPORATORS.
MN7994-006	P16	CONTROL ROOM ADDITIONS.
MN7994-007	P03	OVERHEAD ELECTRICAL BRIDGE.
8122	P01	STRUCTURAL DETAILS.

Appendix D

Manildra Plant Drainage Drawings



STORMWATER CONTROL ZONES

FULLY CONTROLLED FLOWS
STORMWATER DIRECTED TO WASTE WATER TREATMENT PLANT

CONTROLLED FLOWS
STORMWATER FLOWS TO WASTE WATER TREATMENT PLANT UNDER NORMAL CONDITIONS. DISCHARGES TO WATERWAY IN HEAVY STORM EVENTS

PARTIALLY CONTROLLED FLOWS
STORMWATER FLOWS TO HUMECEPTOR THEN DISCHARGES TO WATERWAY

UNCONTROLLED FLOWS
STORMWATER DISCHARGES TO WATERWAY IN STORM EVENTS

PARTIALLY CONTROLLED FLOWS
STORMWATER TO FLOW THROUGH PROPOSED GROSS POLLUTANT/WATER QUALITY CONTROL DEVICE THEN DISCHARGES TO WATERWAY

- STORMWATER CONTAINMENT VALVE
- HUMECEPTOR
- FUTURE HUMECEPTOR
- PROPOSED GROSS POLLUTANT/WATER QUALITY CONTROL DEVICE

NOTE:
NAMED INFRASTRUCTURE PROJECTS ON THIS PLAN ARE COOLING TOWERS

CONCEPT STORMWATER MANAGEMENT PLAN NOTES:

1. SHOALHAVEN STARCHES OPERATES A STORMWATER MANAGEMENT PLAN (EN-P-0180 1.0.F 19 MARCH 2019) FOR THE ENTIRE SITE.
2. THE STORMWATER CONTROL ZONES SHOWN ON THIS DRAWING HAVE BEEN TAKEN FROM THE STORMWATER MANAGEMENT PLAN.
3. THE INTENT OF THIS DRAWING IS TO SHOW WHERE EACH PROJECT SITS IN RELATION TO THE SITES STORMWATER MANAGEMENT SYSTEM. DETAILED STORMWATER DESIGN FOR EACH INDIVIDUAL PROJECT WILL BE UNDERTAKEN AT CONSTRUCTION CERTIFICATE STAGE.

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BEWARE!
THE CONTRACTOR IS TO VERIFY THE LOCATION OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL BE RESPONSIBLE, AT THE CONTRACTOR'S EXPENSE, FOR ANY REPAIRS TO DAMAGE CAUSED DURING CONSTRUCTION.

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0 10 20 30 40 50
SCALE:- 1:1250

RATIO: 1:1250 (AT A1 ORIGINAL)

DATUM: AUSTRALIAN HEIGHT DATUM
ORIGIN: SSM RL
DATE OF PLAN: NOVEMBER 2020

	SURVEY	APS
DESIGN	CJG	
DRAWN	CJG	
CHECK'D	MAK	

REV	DESCRIPTION	BY	DATE
1	PROPOSED TREATMENTS ADDED	CJG	17/12/2020

allen price & scarratts pty ltd
land and development consultants
Nowra Office: 75 Plunkett Street, Nowra NSW 2541
Kiama Office: 1/28 Bong Bong Street, Kiama NSW 2533
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CONCEPT STORMWATER MANAGEMENT PLAN
MOD 19 PROPOSED PROJECTS

MANILDRA FACTORY COMPLEX, BOMADERRY
FOR SHOALHAVEN STARCHES PTY LTD

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: N23132_101
SHEET 1 OF 1
REVISION 1

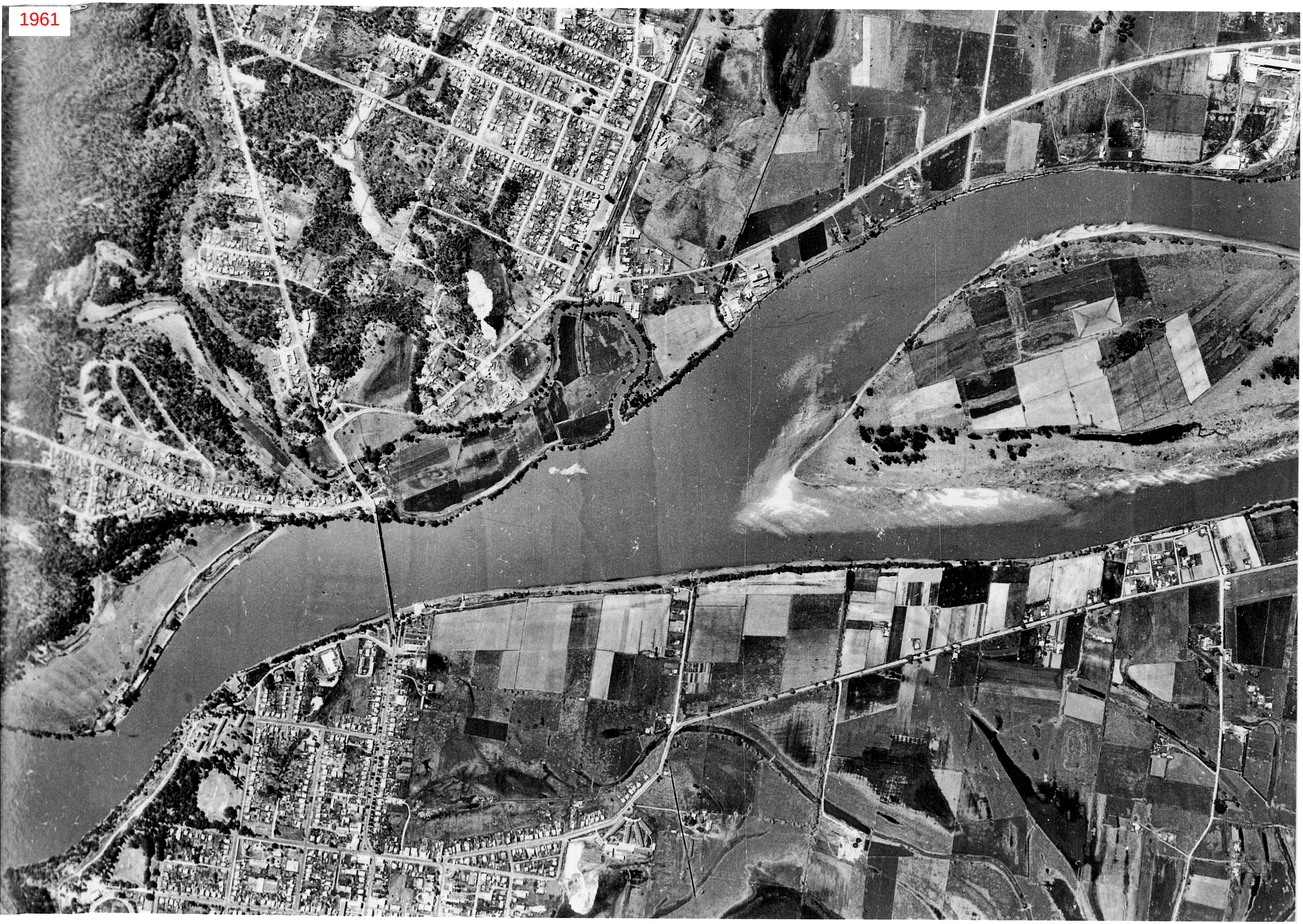
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Appendix E

Aerial Photographs

1960's

1961



1974



1979



1984



1984



1993



2002




1969


1970


1980


1984


1993


1997


2001


2002


2006

LOTSEARCH

LOTSEARCH AERIALS

Date: 30 Jun 2020

Reference: LS013205 EA

Address: 160 Bolong Road, Bomaderry, NSW 2541

Aerial Imagery 2019

160 Bolong Road, Bomaderry, NSW 2541



Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 30 June 2020
0 40 80 120 160 Meters	© Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community	GDA 1994 MGA Zone 56	

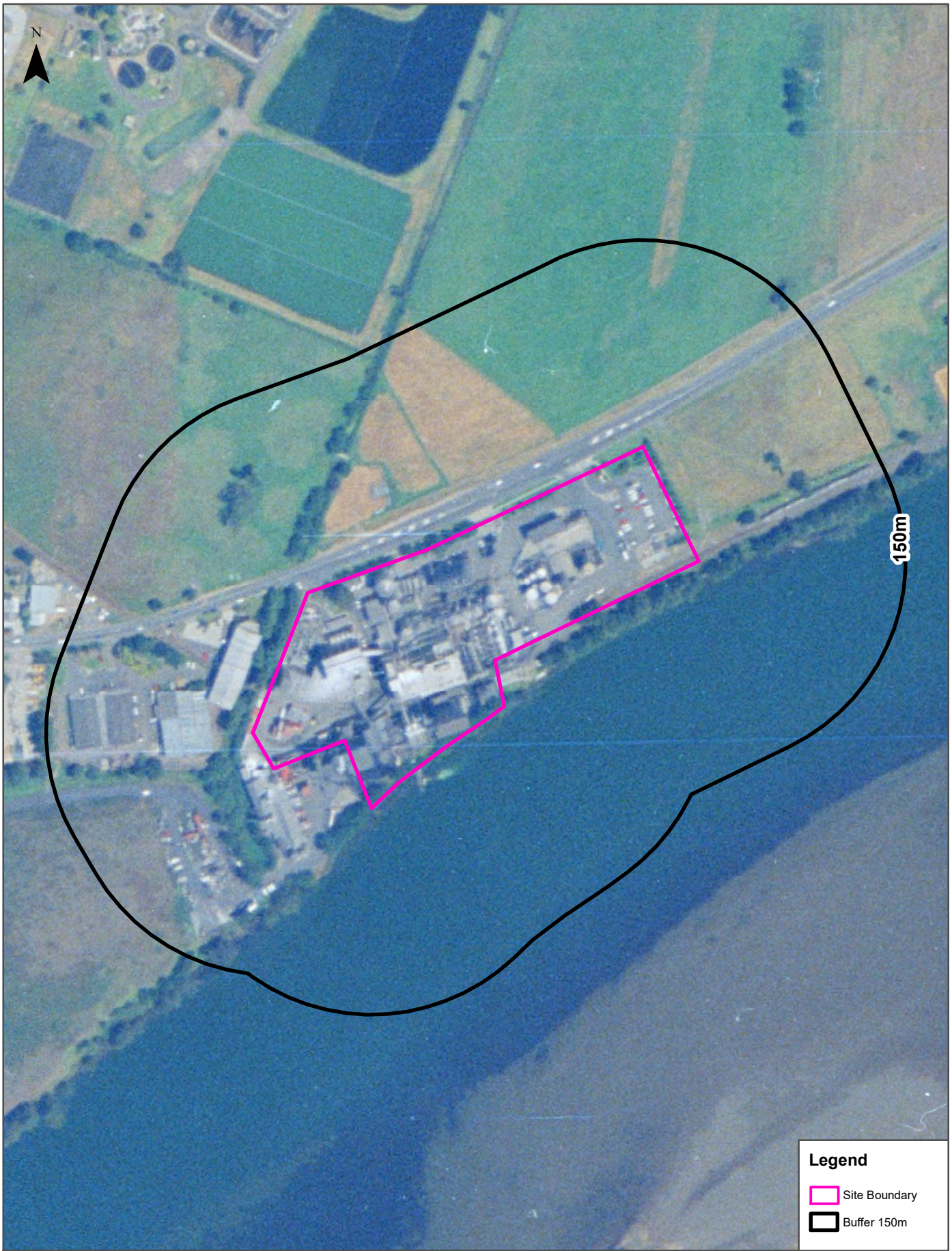
Aerial Imagery 2012

160 Bolong Road, Bomaderry, NSW 2541



Aerial Imagery 1997

160 Bolong Road, Bomaderry, NSW 2541



Aerial Imagery 1993

160 Bolong Road, Bomaderry, NSW 2541



Aerial Imagery 1984

160 Bolong Road, Bomaderry, NSW 2541



Aerial Imagery 1981

160 Bolong Road, Bomaderry, NSW 2541



Aerial Imagery 1974

160 Bolong Road, Bomaderry, NSW 2541



Aerial Imagery 1969

160 Bolong Road, Bomaderry, NSW 2541



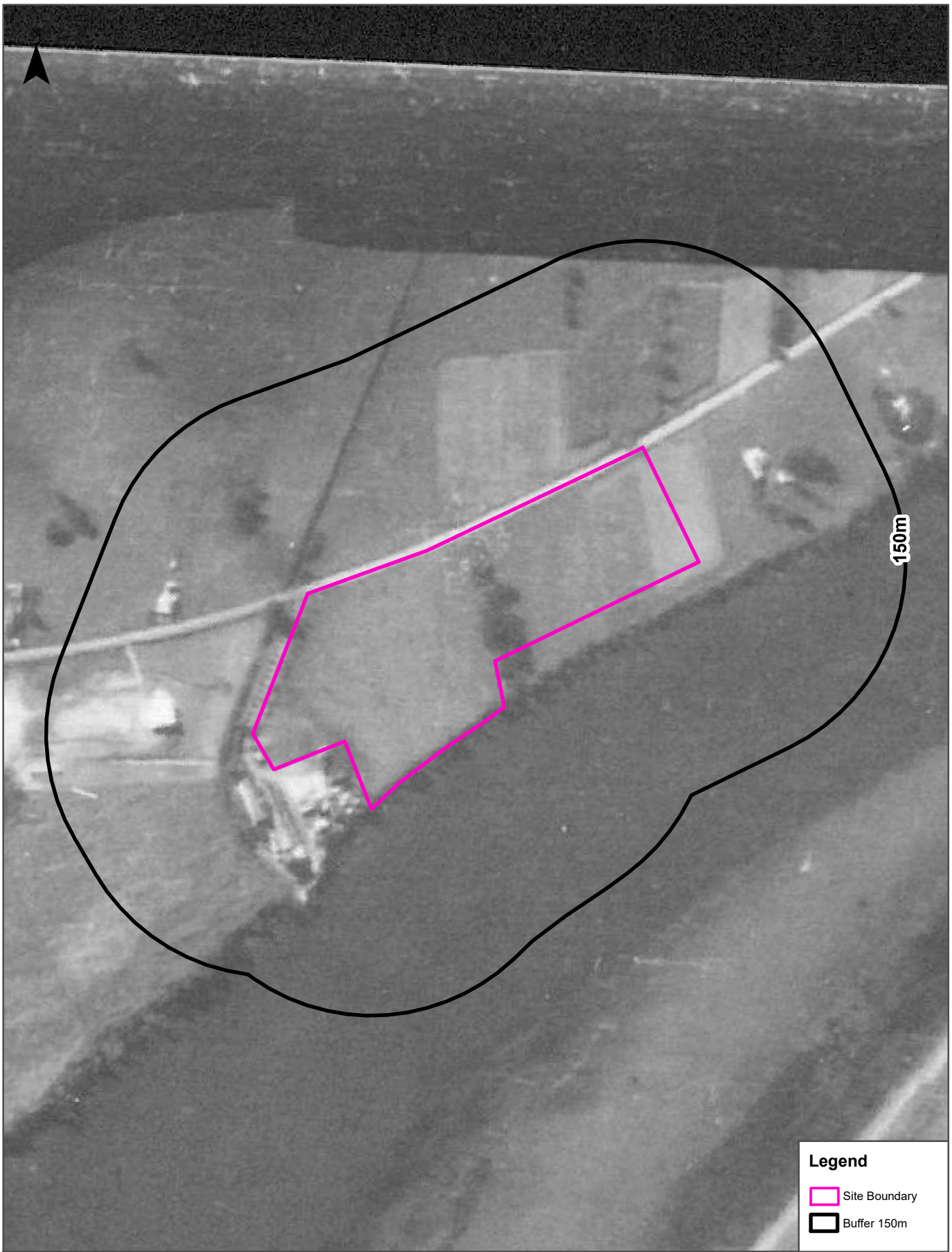
Aerial Imagery 1961

160 Bolong Road, Bomaderry, NSW 2541



Aerial Imagery 1949

160 Bolong Road, Bomaderry, NSW 2541



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Appendix F

NSW EPA Registers

Home Public registers Contaminated land record of notices

Search results

Your search for:LGA: SHOALHAVEN CITY COUNCIL

Matched 18 notices relating to 3 sites.

Search Again

Refine Search

Suburb	Address	Site Name	Notices related to this site
BOMADERRY	320 Princes HIGHWAY	Commercial Land	1 current and 4 former
NOWRA	Lamonds LANE	Former gasworks	1 current and 6 former
NOWRA EAST	Lot 3 Kalandar STREET	Mobil Service Station	6 former

Page 1 of 1

28 March 2025

Background

A strategy to systematically prioritise, assess and respond to notifications under Section 60 of the ***Contaminated Land Management Act 1997*** (CLM Act) has been developed by the EPA. This strategy acknowledges the EPA's obligations to make information available to the public under ***Government Information (Public Access) Act 2009***.

When a site is notified to the EPA, it may be accompanied by detailed site reports where the owner has been proactive in addressing the contamination and its source. However, often there is minimal information on the nature or extent of the contamination.

After receiving a report, the first step is to confirm that the report does not relate to a pollution incident. The Protection of the Environment Operations Act 1997 (POEO Act) deals with pollution incidents, waste stockpiling or dumping. The EPA also has an incident management process to manage significant incidents (https://www.epa.nsw.gov.au/reporting-and-incidents/incident-management).

In many cases, the information indicates the contamination is securely immobilised within the site, such as under a building or carpark, and is not currently causing any significant risks for the community or environment. Such sites may still need to be cleaned up, but this can be done in conjunction with any subsequent building or redevelopment of the land. These sites do not require intervention under the CLM Act, and are dealt with through the planning and development consent process. In these cases, the EPA informs the local council or other planning authority, so that the information can be recorded and considered at the appropriate time (https://www.epa.nsw.gov.au/your-environment/contaminated-land/managing-contaminated-land/role-of-planning-authorities).

Where indications are that the contamination could cause actual harm to the environment or an unacceptable offsite impact (i.e. the land is 'significantly contaminated'), the EPA would apply the regulatory provisions of the CLM Act to have the responsible polluter and/or landowner investigate and remediate the site. If the reported contamination could present an immediate or long-term threat to human health NSW Health will be consulted. SafeWork NSW and Water NSW can also be consulted if there appear to be occupational health and safety risks or an impact on groundwater quality.

As such, the sites notified to the EPA and presented in the list of contaminated sites notified to the EPA are at various stages of the assessment and remediation process. Understanding the nature of the underlying contamination, its implications and implementing a remediation program where required, can take a considerable period of time. The list provides an indication, in relation to each nominated site, as to the management status of that particular site. Further detailed information may be available from the EPA or the person who notified the site.

The following questions and answers may assist those interested in this issue.

Frequently asked questions

Why does my land appear on the list of notified sites?

Your land may appear on the list because:

- the site owner and/or the polluter has notified the EPA under section 60 of the CLM Act
- the EPA has been notified via other means and is satisfied that the site is or was contaminated.

If a site is on the list, it does not necessarily mean the contamination is significant enough to regulate under the CLM Act.

Does the list contain all contaminated sites in NSW?

No. The list only contains contaminated sites that EPA is aware of. If a site is not on the list, it does not necessarily mean the site is not contaminated.

The EPA relies on responsible parties and the public to notify contaminated sites.

How are notified contaminated sites managed by the EPA?

There are different ways the EPA can manage notified contaminated sites. Options include:

• regulation under the CLM Act, POEO Act, or both
• notifying the relevant planning authority for management under the planning and development process
• managing the site under the Protection of the Environment Operation (Underground Petroleum Storage Systems) Regulation 2014.

There are specific cases where contamination is managed under a tailored program operated by another agency (for example, the Resources & Geoscience's Legacy Mines Program).

What should I do if I am a potential buyer of a site that appears on the list?

You should seek advice from the seller to understand the contamination issue. You may need to seek independent contamination or legal advice.

The information provided in the list is indicative only and a starting point for your own assessment. Land contamination from past site uses is common, mainly in urban environments. If the site is properly remediated or managed, it may not affect the intended future use of the site.

Who can I contact if I need more information about a site?

You can contact the Environment Line at any time by calling 131 555 or by emailing info@environment.nsw.gov.au.

List of NSW Contaminated Sites Notified to the EPA

Disclaimer

The EPA has taken all reasonable care to ensure that the information in the list of contaminated sites notified to the EPA (the list) is complete and correct. The EPA does not, however, warrant or represent that the list is free from errors or omissions or that it is exhaustive.

The EPA may, without notice, change any or all of the information in the list at any time.

You should obtain independent advice before you make any decision based on the information in the list.

The list is made available on the understanding that the EPA, its servants and agents, to the extent permitted by law, accept no responsibility for any damage, cost, loss or expense incurred by you as a result of:

1. any information in the list; or
2. any error, omission or misrepresentation in the list; or
3. any malfunction or failure to function of the list;
4. without limiting (2) or (3) above, any delay, failure or error in recording, displaying or updating information.

Site Status	Explanation
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or *Protection of the Environment Operations Act 1997*.
Under Preliminary Investigation Order	The EPA has issued a Preliminary Investigation Order under s10 of the *Contaminated Land Management Act 1997*, to obtain additional information needed to complete the assessment.
Regulation under CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the *Contaminated Land Management Act 1997* is not required.

Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the *Contaminated Land Management Act 1997*. A regulatory approach is being finalised.
Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record.
Contamination currently regulated under POEO Act	Contamination is currently regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA as the appropriate regulatory authority reasonably suspects that a pollution incident is occurring/ has occurred and that it requires regulation under the POEO Act. The EPA may use environment protection notices, such as clean up notices, to require clean up action to be taken. Such regulatory notices are available on the POEO public register.
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the *Environmental Planning and Assessment Act 1979* (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the *Contaminated Land Management Act 1997* (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the *Protection of the Environment Operations Act 1997* (POEO Act).

Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the *Environmental Planning and Assessment Act 1979* (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record.

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
BLACKTOWN	Harpers Bush (Reserve 752)	Reservoir ROAD	Unclassified	Regulation under CLM Act not required	-33.79119448	150.8967838
BLACKTOWN	7-Eleven Service Station	60 Walters ROAD	Service Station	Regulation under CLM Act not required	-33.77599783	150.8948926
BLAKEHURST	Woolworths Service Station Blakehurst	390 Princes HIGHWAY	Service Station	Contamination currently regulated under CLM Act	-33.99019694	151.1135663
BLAKEHURST	The Bay Nursing Home	392 & 394 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-33.99030465	151.1140293
BLAXLAND	7-Eleven (former Mobil) Service Station	137 Great Western HIGHWAY	Service Station	Regulation under CLM Act not required	-33.74627	150.6137669
BOAMBEE	Lindsay Bros transport depot site	542 Pacific HIGHWAY	Other Petroleum	Regulation under CLM Act not required	-30.33106848	153.0802985
BOAMBEE	BP-branded (former Mobil) Boambee Service Station	601 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-30.33544287	153.0817266
BOBS FARM	Bob's Farm	15 Fenningham Island ROAD	Other Industry	Regulation under CLM Act not required	-32.74867207	152.0316217
BOGGABILLA	Former Caltex Service Station	90 Simpson Street, corner Newell HIGHWAY	Service Station	Regulation under CLM Act not required	-28.60654029	150.3571056
BOGGABILLA	Lowes (Former Mobil) Depot	Newell HIGHWAY	Other Petroleum	Regulation under CLM Act not required	-28.61023985	150.3529156
BOMADERRY	Ampol Bomaderry Fuel Depot (formerly Caltex Bomaderry)	1 Cambewarra ROAD	Other Petroleum	Under assessment	-34.849096	150.611699
BOMADERRY	Caltex Service Station	341 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-34.84561952	150.5946978
BOMADERRY	Caltex Service Station Bomaderry	246 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-34.83833824	150.5958799
BOMADERRY	Former Mobil Emoleum Depot	7 Victa WAY	Other Petroleum	Regulation under CLM Act not required	-34.84454618	150.6139462
BOMADERRY	Former Shell Depot	44 Railway STREET	Other Petroleum	Regulation under CLM Act not required	-34.85193621	150.6117038
BOMADERRY	SRA Land	Lot 2 Meroo STREET	Unclassified	Regulation under CLM Act not required	-34.85314813	150.6099573

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
BOMADERRY	Bomaderry Works Depot	10 McIntyre WAY	Other Petroleum	Regulation under CLM Act not required	-34.84576748	150.6131411
BOMADERRY	Commercial Land	320 Princes HIGHWAY	Other Industry	Contamination formerly regulated under the CLM Act	-34.84424073	150.5958149
BOMBALA	Caltex Service Station Bombala	159-161 Maybe STREET	Service Station	Regulation under CLM Act not required	-36.91234945	149.2374622
BOMBALA	Former Bright Street Timber Mill	Bright STREET	Other Industry	Regulation under CLM Act not required	-36.91547645	149.2302454
BOMBALA	Ampol Bombala Fuel Depot - Site 23465 (formerly Caltex Bombala Service Station)	Corner High Street and Monaro Highway STREET	Other Petroleum	Under assessment	-36.90447935	149.241292
BOMBALA	Prime Pine site	Sandy LANE	Other Industry	Regulation under CLM Act not required	-36.9315425	149.2110959
BOMBALA	Bombala former Sleeper Yard	Mahratta STREET	Landfill	Under assessment	-36.906938	149.239809
BOMBALA	Former Incitec Facility Bombala	Mahratta STREET	Landfill	Under assessment	36.906197	149.240223
BOMBO	Lot 3 DP 1285251	Riverside DRIVE	Landfill	Under assessment	-34.65217444	150.8552846
BOMEN	Caltex Terminal	34 Lewington STREET	Other Petroleum	Regulation under CLM Act not required	-35.0700202	147.4121955
BOMEN	Enirgi Power Storage Recycling	509 Byrnes ROAD	Other Industry	Regulation under CLM Act not required	-35.05985094	147.4283765
BONDI	BP-branded Service Station	185 Bondi ROAD	Service Station	Regulation under CLM Act not required	-33.89432208	151.2647671
BONDI	Caltex Service Station Bondi	51 Bondi ROAD	Service Station	Regulation under CLM Act not required	-33.8936307	151.260001
BONDI	Woolworths Metro Bondi	137-149 Bondi ROAD	Other Industry	Regulation under CLM Act not required	-33.893966	151.263073
BONDI JUNCTION	Waverley Bus Depot	1-15 Oxford STREET	Other Industry	Regulation under CLM Act not required	-33.89165341	151.2421246
BONNY HILLS	Bonny View Store	923 Ocean DRIVE	Service Station	Regulation under CLM Act not required	-31.59075636	152.8392935

Environmental Protection Licences (EPLs) - Bomaderry

Date: 28/3/2025

EPL Number	Name	Location	Type	Status	Issued date
1587374		PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	7-Nov-19
1590386		PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	20-Feb-20
1598968		11 VICTA WAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	22-Oct-20
1602470		PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	18-Nov-20
1606327		PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	4-Mar-21
1614613		PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	8-Dec-21
1618786		11 VICTA WAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	10-Jun-22
1628370		PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.80 Surrender of a Licence	Issued	28-Apr-23
1628405		11 VICTA WAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	15-Jun-23
2534	AUSTRALIAN CO-OPERATIVE FOODS LIMITED	220 BOLONG ROAD, BOMADERRY, NSW 2541	POEO licence	Surrendered	9-Oct-00
1003065	AUSTRALIAN CO-OPERATIVE FOODS LIMITED	220 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	4-Jan-01
1012594	AUSTRALIAN CO-OPERATIVE FOODS LIMITED	220 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	21-Jul-03
1035240	AUSTRALIAN CO-OPERATIVE FOODS LIMITED	220 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	17-May-04
1043465	AUSTRALIAN CO-OPERATIVE FOODS LIMITED	220 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	10-Feb-05
1059795	AUSTRALIAN CO-OPERATIVE FOODS LIMITED	220 BOLONG ROAD, BOMADERRY, NSW 2541	s.80 Surrender of a Licence	Issued	3-May-06
11164	BOC LIMITED	LOT 241 BOLONG ROAD, BOMADERRY, NSW 2541	POEO licence	Issued	12-Dec-00
1035676	BOC LIMITED	LOT 241 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	25-Jun-04
1048156	BOC LIMITED	LOT 241 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	17-Jun-05
1513148	BOC LIMITED	LOT 241 BOLONG ROAD, BOMADERRY, NSW 2541	Compliance Audit	Complete	2-Apr-13
1516480	BOC LIMITED	LOT 241 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	26-Aug-13
1514411	BOC LIMITED	LOT 241 BOLONG ROAD, BOMADERRY, NSW 2541	Compliance Audit	Complete	26-Aug-13
1529674	BOC LIMITED	LOT 241 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	8-Apr-15
1580777	BOC LIMITED	LOT 241 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	25-Jun-19
58	CLEARY BROS (BOMBO) PTY LTD	LOT 3 BOLONG ROAD, BOMADERRY, NSW 2541	POEO licence	No longer in force	19-Nov-99
1009284	CLEARY BROS (BOMBO) PTY LTD	LOT 3 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	6-Aug-01
21029	DOWNER EDI WORKS PTY LTD	PRINCES HIGHWAY, BOMADERRY, NSW 2541	POEO licence	Surrendered	25-May-18
1567284	DOWNER EDI WORKS PTY LTD	PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	18-Sep-18
1572434	DOWNER EDI WORKS PTY LTD	PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	30-Nov-18
1577345	DOWNER EDI WORKS PTY LTD	PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	19-Mar-19
1618130	DOWNER EDI WORKS PTY LTD	PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	4-May-22
1620062	DOWNER EDI WORKS PTY LTD	PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	4-Jul-22
1623970	DOWNER EDI WORKS PTY LTD	PRINCES HIGHWAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	28-Oct-22
566	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	POEO licence	Surrendered	15-Feb-00
1004205	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	27-Feb-01
1010261	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	10-Jan-02
1035034	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	5-Mar-04
1044586	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	14-Mar-05
1071922	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	3-Apr-07
1084599	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	2-May-08
1085840	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	27-Jun-08
1516476	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	23-Aug-13
1513902	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	Compliance Audit	Complete	10-Sep-13
1517150	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	17-Sep-13
1531909	PAPER AUSTRALIA PTY LTD	340 BOLONG ROAD, BOMADERRY, NSW 2541	s.80 Surrender of a Licence	Issued	16-Sep-15
3173531763	QSSR PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	Penalty Notice	Withdrawn	
20759	QSSR PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	POEO licence	Issued	7-Oct-16
3173528912	QSSR PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	Penalty Notice	Issued	9-Apr-20
3173540022	QSSR PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	Penalty Notice	Issued	7-Mar-22
3173531800	QSSR PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	Penalty Notice	Issued	22-Mar-23
1634961	QSSR PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	30-Jan-24
1638655	QSSR PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	8-May-24
1735	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	POEO licence	Issued	5-Jan-01
1013003	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	4-Apr-02
1029195	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	14-Aug-03
1048456	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	21-Jun-05
1060655	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	26-Jun-06
1085947	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	16-May-08
1514246	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	Compliance Audit	Complete	25-Jul-14
1526880	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	10-Dec-14
1531920	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	7-Jul-15
1539716	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	11-May-16
1548579	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	19-Jan-17
1573990	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	19-Dec-18
1575832	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	17-Apr-19
1588625	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	13-May-20
1617161	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	1-Jun-22
1628202	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	16-May-23
1645355	SHOALHAVEN CITY COUNCIL	RAILWAY STREET, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	6-Jan-25
883	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	POEO licence	Issued	24-Oct-00
1004267	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	4-Apr-01
1007313	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	11-May-01
1015342	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	26-Feb-02
1019838	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	15-Aug-02
1024268	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	11-Feb-03
1026281	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	17-Apr-03
1027489	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	26-Nov-03
1033645	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	1-Mar-04
1036799	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	29-Jun-04
1039275	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	20-May-05
1048817	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	28-Jul-05
1051704	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	31-Oct-05
1054751	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	21-Feb-06
1080589	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	31-Mar-08
1091373	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.96 Prevention Notice	Issued	4-Sep-08
1093973	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	27-Nov-08
1097588	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	10-Feb-09
1098548	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	9-Apr-09
1104957	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	14-Aug-09
1113256	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.91 Clean Up Notice	Issued	3-May-10
1500684	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	4-Aug-11
1501899	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	30-Sep-11
1513143	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	Compliance Audit	Complete	28-Mar-13
1505439	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	8-Nov-13
1521553	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	28-Apr-14
1522954	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	27-Jun-14
1513905	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	Compliance Audit	Complete	25-Jul-14
1523522	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	30-Jul-14
1525338	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	8-Oct-14
1530188	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	23-Jul-15
1536447	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	18-Dec-15
1546622	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	15-Nov-16
3173525621	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	Penalty Notice	Issued	18-May-18
1564529	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	20-Jun-18
1571114	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	23-Oct-18
1599081	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	Compliance Audit	Complete	21-Aug-20
1609025	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	1-Jun-21
1613002	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	9-Nov-21
1615856	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	17-Jan-22
1617751	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	22-Apr-22
1619775	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	27-Jul-22
1622790	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	1-Nov-22
1627077	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	28-Feb-23
1627204	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	3-Mar-23

Environmental Protection Licences (EPLs) - Bomaderry

Date: 28/3/2025

EPL Number	Name	Location	Type	Status	Issued date
1628720	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	5-May-23
1629891	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	20-Jun-23
1635654	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	19-Dec-23
1637135	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	6-Mar-24
1640247	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	5-Jul-24
1642066	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	Compliance Audit	Complete	5-Aug-24
1641269	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	23-Sep-24
3510650	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.91 Clean Up Notice	Issued	18-Oct-24
3510708	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.91 Clean Up Notice	Issued	29-Oct-24
3511029	SHOALHAVEN STARCHES PTY LTD	160 BOLONG ROAD, BOMADERRY, NSW 2541	s.110 Variation of Clean Up Notice	Issued	27-Nov-24
1559940	SOUTH COAST PLANT HIRE PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	s.91 Clean Up Notice	Issued	22-Dec-17
3173525310	SOUTH COAST PLANT HIRE PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	Penalty Notice	Issued	19-Apr-18
3173525704	SOUTH COAST PLANT HIRE PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	Penalty Notice	Issued	24-May-18
3173525740	SOUTH COAST PLANT HIRE PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	Penalty Notice	Issued	24-May-18
1576498	SOUTH COAST PLANT HIRE PTY LTD	11 VICTA WAY, BOMADERRY, NSW 2541	s.58 Licence Variation	Issued	8-May-19
21178	SUPAGAS PTY LIMITED	220 Bolong Road, BOMADERRY, NSW 2541	POEO licence	Issued	23-Oct-18

Section 110 Protection of the Environment Operations Act 1997

Variation of Clean-Up Notice

Licence - 883

SHOALHAVEN STARCHES PTY LTD
94 000 045 045
PO BOX 2456
BOMADERRY NSW 2541

Attention:

Notice Number	3511029
Reference Number	VN-1471
Date	27-11-2024

VARIATION OF NOTICE OF CLEAN-UP ACTION

BACKGROUND

A. The Environment Protection Authority (EPA) issued Notice of Clean-up Action No. 3510708 to SHOALHAVEN STARCHES PTY LTD ("the licensee") on 29-10-2024.
B. The Licensee previously provided a document titled "Water Quality Monitoring Plan – Shoalhaven River" (Plan).
C. This amended Notice varies the directions to take clean-up actions as detailed below. The updated directions require changes to the existing Plan and monitoring as outlined below.
D. The aims of this updated program are to;
   i. monitor water quality while grain remains in the water and during the cleanup and recovery;
   ii. help ascertain the nature and extent of the pollution incident; and
   iii. inform practices and responses to protect waters during cleanup and recovery.

VARIATION OF NOTICE OF CLEAN-UP ACTION

By this notice the EPA varies Notice of Clean-up Action No. 3510708 ("the previous notice") in the following manner:

Condition 2 of the notice which states that:

2. By 31 October 2024

   a) The licensee must submit a proposed Water Quality Monitoring Plan (Plan) to monitor water quality in the vicinity of the spilled grain in the Shoalhaven River. The aims of this program are to;
   i. monitor ongoing water quality for any changes while grain remains in the water;

ii. help ascertain the nature and extent of the pollution incident; and
iii. inform practices and responses to protect waters during cleanup.

Note: This document may sit within a broader Clean Up Protocol.

b) The Plan must be prepared by a suitably qualified and experienced professional with experience in water quality monitoring.
c) The Plan must include but may not be limited to the following elements.
i. A program that commences on 1 November 2024;
ii. Water quality monitoring using a probe or other method;
iii. Four locations up-river and four locations down-river (8 locations total), or continuous monitors (preferably telemetered) located at two locations on, or in the vicinity the current exclusion zone buoys;
iv. Monitoring at 2 depths (surface and 2 metres);
v. 1 sampling event per day taken 1 hour before an incoming tide and 1 sampling event per day taken 1 hour before an outgoing tide;
vi. Monitoring of dissolved oxygen (saturation %), turbidity, and pH;
vii. Comparison against ANZECC criteria;
viii. Data listed within 48 hours on a public facing web site;
ix. A water sample taken once a week from a point upstream of the grain spill and at a point in the river where grain is located underwater (2 samples total). These samples must be analysed for the following parameters: nutrients, BOD, TOC, and Heterotrophic plate count, and
x. A program which continues until EPA approval to cease monitoring.

is replaced by:

2. By 29 November 2024

Update Water Quality Monitoring Plan

A. Unless otherwise agreed in writing by the EPA, the licensee must vary the existing Water Quality Monitoring Plan (the Plan) and commence the water quality monitoring program set out below.
B. The Plan must be prepared, updated, and implemented by a suitably qualified and experienced professional with experience in water quality monitoring; and
C. The Plan must include but may not be limited to the following elements:

Monitoring of dissolved oxygen (saturation %), turbidity, pH

i. Water quality monitoring in the Shoalhaven River using a probe or other method;
ii. One location up-river and one location down-river, or continuous monitors (preferably telemetered) located at the existing monitoring points W50 and E50 as defined in the Plan;
iii. Monitoring at 2 depths (surface and 2 metres);
iv. One sampling event per day taken at slack tide (i.e. either slack low tide or slack high tide); and
v. Monitoring of dissolved oxygen (saturation %), turbidity, and pH. For the purposes of this direction, ‘slack tide’ means when the state of the river flow is zero or nearly so, typically when the flow changes direction in-between tidal changes.

Monitoring of total and dissolved nutrients (full nutrient suite) and chlorophyll A

vi. A water sample taken twice weekly from the four points in the Shoalhaven River as marked in **Figure 1** below (W4000, W2000, W400 and E2000);
vii. Collected from the top 40cm of the water column at approximately the mid-point across the width of the river; and
viii. Be analysed at a NATA accredited laboratory for the following parameters: total and dissolved nutrients (full nutrient suite i.e. total and dissolved compounds of nitrogen (including total nitrogen, ammonia, total Kjeldahl nitrogen, nitrate/nitrite) and phosphorus) and chlorophyll A.

Reporting

ix. Monitoring data is to be listed on a public facing website within 48 hours after being obtained by the licensee;
x. The licensee must make the data available immediately to the EPA upon request;
xi. Provide fortnightly reports to the EPA at info@epa.nsw.gov.au. The reports must include:
    i Collated sample results (including water quality and laboratory analytical reporting), including in Excel spreadsheet format.
    ii Comparison to relevant guidance levels.
    iii Graphical representation of trends
xii. Should the licensee note exceedances of relevant adopted criteria, or an increase in water quality parameter concentrations, the EPA must be notified by email (at info@epa.nsw.gov.au) within 24 hours of the licensee becoming aware of the monitoring results).

The addition of conditions 3 and 4 as below:

3. The licensee must implement the water quality monitoring at outlined in the Updated Water Quality Monitoring Plan (taking into account directions in this revised clean up notice) no later than 5pm **Friday 29 November 2024.**
4. Water Quality Monitoring, as required by the Updated Water Quality Monitoring Plan, must continue at the frequency and methodology required in this revised Notice unless otherwise agreed in writing by the EPA.

Variation of Clean-Up Notice



Figure 1: total and dissolved nutrients (full nutrient suite) and chlorophyll A monitoring locations.

James Boyle
Unit Head
(by Delegation)

Variation of Clean-Up Notice

INFORMATION ABOUT THIS NOTICE

- This notice is issued under section 110 of the Protection of the Environment Operations Act 1997.
- Details provided in this notice will be available on the EPA's Public Register (http://www.environment.nsw.gov.au/prpoeo/index.htm) in accordance with section 308 of the Act.
- This notice operates from the date of issue of this notice unless a later date is specified in this notice.

Appendix G

Section 10.7 Planning Certificate

Shoalhaven City Council

Bridge Rd, Nowra NSW 2541 | 02 4429 3111
Deering St, Ulladulla NSW 2539 | 02 4429 8999

Address all correspondence to
The General Manager, PO Box 42, Nowra NSW 2541 Australia
council@shoalhaven.nsw.gov.au | DX5323 Nowra | Fax 02 4422 1816

shoalhaven.nsw.gov.au

PLANNING CERTIFICATE UNDER SECTION 10.7
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2025/01374

Applicant: Ghd Pty Ltd
Level 11, 200 Crown St
WOLLONGONG NSW 2500

Receipt No.: Ext: 193206
Date: 31/03/2025
Fee: $174
Urgency Fee: $0.00

Applicant reference: 12662565

The land to which this Certificate relates is:
Lot 243 DP 1309744, Bolong Rd, BOMADERRY
Parish of BUNBERRA, County of CAMDEN

The above information is as recorded by Council.

DISCLAIMER AND CAUTION:

1. The information on zones, controls etc given below relates to the land for which the certificate was sought. If enquirers wish to know what zones, other controls, etc apply or are proposed on nearby land then they should make enquiries in person at Council's offices.

2. The information contained in this certificate is accurate as at the date of this certificate.

3. In providing this certificate Council has in good faith relied upon information provided to it or sourced from third parties. Where Council has obtained the information from third parties, either exclusively or in conjunction with information held by Council, the Certificate details the source of that third party information. Council cautions persons against relying upon information in the Certificate sourced from third parties as to its accuracy, applicability to specific lands and its currency without verification from the specified third party and, where appropriate, professional advice and the adoption of prudent land acquisition measures and appropriate professional advice. To the full extent permitted by law Council disclaims liability with respect to any information in this Certificate sourced from third parties.

The information contained in this certificate is prepared in accordance with the Environmental Planning and Assessment Act 1979 (as amended) and the Environmental Planning Assessment Regulation 2021 (as amended).

RESPECT | INTEGRITY | ADAPTABILITY | COLLABORATION

PLANNING CERTIFICATE UNDER SECTION 10.7
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2025/01374

This is a Planning Certificate issued by Shoalhaven City Council under Section 10.7(2) of the *Environmental Planning and Assessment Act 1979* on the application of the person described above in respect of the land described above.

1 Names of relevant planning instruments and development control plans

(1) The name of each environmental planning instrument and development control plan that applies to the carrying out of development on the land:

State Environmental Planning Policies

State Environmental Planning Policy (Resilience and Hazards) 2021
State Environmental Planning Policy (Biodiversity and Conservation) 2021
State Environmental Planning Policy (Industry and Employment) 2021
State Environmental Planning Policy (Precincts - Regional) 2021
State Environmental Planning Policy (Transport and Infrastructure) 2021
State Environmental Planning Policy (Resources and Energy) 2021
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy (Planning Systems) 2021
State Environmental Planning Policy (Primary Production) 2021
State Environmental Planning Policy (Housing) 2021
State Environmental Planning Policy (Sustainable Buildings) 2022

Local Environmental Plans

Shoalhaven Local Environmental Plan 2014 (as amended)

Development Control Plans

Shoalhaven Development Control Plan 2014 (as amended)

Note: a copy of Shoalhaven Development Control Plan 2014 is available on the internet at www.dcp2014.shoalhaven.nsw.gov.au or can be inspected at Council's Nowra office during normal business hours.

(2) The name of each proposed environmental planning instrument and draft development control plan, which is or has been subject to community consultation or public exhibition under the Act, that will apply to the carrying out of development on the land.

Proposed State Environmental Planning Policies and other Environmental Planning Instruments

Explanation of Intended Effect - Proposed amendments to the in-fill affordable housing, group homes, supportive accommodation and social housing provisions of the State Environmental Planning Policy (Housing) 2021 - exhibition 22/11/2022 to 13/01/2023.

Explanation of Intended Effect - Proposed reforms to outdoor dining on private land and live music venues - exhibition 19/10/2023 to 16/11/2023.

Consultation draft - Amendments to the Local Government (Caravan Parks, Manufactured Home Estates, Camping Ground and Moveable Dwellings) Regulation 2021 and State Environmental Planning Policy (Housing) 2021 - exhibition 17/11/2023 to 15/12/2023.

Explanation of Intended Effect - Improving planning processes to deliver infrastructure faster - exhibition 06/03/2024 to 16/04/2024

Explanation of Intended Effect - Proposed changes to complying development for farm buildings, rural sheds and earthworks - exhibition 15/05/2024 to 14/06/2024

Explanation of Intended Effect - Cultural State Environmental Planning Policy - exhibition 15/11/2024 to 13/12/2024

Planning Proposals for Local Environmental Plans

Amendment to Shoalhaven Local Environmental Plan 2014 - PP073 - Local Character - Exhibition 26/06/2024 to 08/07/2024.

Amendment to Shoalhaven Local Environmental Plan 2014 - PP076 - 131 St Vincent St, Ulladulla - Exhibition 25/11/2024 to 15/01/2025.

Amendment to Shoalhaven Local Environmental Plan 2014 - PP078 - 17 Prince Alfred Street, Berry (The Berry Inn) - Exhibition 12/02/2025 to 14/03/2025.

Note: In this section - **proposed environmental planning instrument** means a draft environmental planning instrument and includes a planning proposal for a local environmental plan.

Draft Development Control Plans

Draft Amendment 56 to Shoalhaven Development Control Plan 2014 - Chapter NB4: Moss Vale Road North Urban Release Area - Exhibition 26/08/2024 to 23/09/2024.

2 **Zoning and land use under relevant planning instruments**

For Shoalhaven Local Environmental Plan 2014 (as amended)

a. **The identity of the zone in which the land is included under Shoalhaven Local Environmental Plan 2014:**

Zone RU1 Primary Production

Zone RU2 Rural Landscape

b. **The purposes for which development in the RU1 Primary Production zone**

i. **may be carried out without development consent:**

Extensive agriculture; Forestry; Home occupations.

ii. **may not be carried out except with development consent:**

Agriculture; Air transport facilities; Airstrips; Animal boarding or training establishments; Aquaculture; Artisan food and drink industries; Boat building and repair facilities; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Cellar door premises; Cemeteries; Charter and tourism boating facilities; Community facilities; Crematoria; Depots; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities; Educational establishments; Environmental facilities; Environmental protection works; Extractive industries; Farm buildings; Flood mitigation works; Food and drink premises; Group homes; Helipads; Home-based child care; Home businesses; Home industries; Information and education facilities; Intensive livestock agriculture; Intensive plant agriculture; Marinas; Markets; Mooring pens; Moorings; Offensive industries; Open cut mining; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Roads; Roadside stalls; Rural industries; Rural workers' dwellings; Tourist and visitor accommodation; Veterinary hospitals; Water recreation structures; Water supply systems.

iii. **is prohibited:**

Hotel or motel accommodation; Pubs; Serviced apartments; Any other development not specified in item i or ii.

The purposes for which development in the RU2 Rural Landscape zone

i. **may be carried out without development consent:**

Extensive agriculture; Forestry; Home occupations

ii. **may not be carried out except with development consent:**

Agriculture; Air transport facilities; Airstrips; Animal boarding or training establishments; Aquaculture; Artisan food and drink industries; Boat building and repair facilities; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Caravan parks; Cellar door premises; Cemeteries; Charter and tourism boating facilities; Community facilities; Crematoria; Depots; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities; Environmental facilities; Environmental protection works; Extractive industries; Farm buildings; Flood mitigation works; Food and drink premises; Freight transport facilities; Funeral homes; Group homes; Hazardous industries; Helipads; Home-based child care; Home businesses; Home industries; Information and education facilities; Marinas; Markets; Mooring pens; Moorings; Offensive industries; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Roads; Roadside stalls; Rural industries; Tourist and visitor accommodation; Veterinary hospitals; Water recreation structures; Water supply systems.

iii. **is prohibited:**

Hotel or motel accommodation; Pubs; Serviced apartments; Any other development not specified in item i or ii.

c. Additional permitted uses **DO NOT** apply to the land

d. Development standards applying to the land **DO** fix minimum land dimensions for the erection of a dwelling-house on the land and the minimum land dimensions so fixed are:

40 Ha

Note: Refer to clause 4.2D in Shoalhaven Local Environmental Plan 2014

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e. The land **IS NOT** in an area of outstanding biodiversity value under the *Biodiversity Conservation Act* 2016.

f. The land **IS NOT** in a conservation area (however described) under Shoalhaven Local Environmental Plan 2014.

Note: this item relates to "heritage conservation areas" as defined in the LEP.

g. An item of environmental heritage (however described) under Shoalhaven Local Environmental Plan 2014 **IS NOT** located on the land.

Note: "environmental heritage" relates to matters/items of cultural heritage, for example, items listed on the State Register, items specifically listed in the LEP or matters subject to an "interim heritage order" under the *Heritage Act 1977*.

Other provisions under Shoalhaven Local Environmental Plan 2014 may also apply to the development of this land. You can view the Shoalhaven Local Environmental Plan 2014 at the website www.legislation.nsw.gov.au or at Council's offices.

3 Contributions

1) The name of each contributions plan under the Act, Division 7.1 applying to the land, including draft contributions plans:

Shoalhaven Contributions Plan 2019 (as amended)

2) The subject land is within Illawarra-Shoalhaven to which the *Environmental Planning and Assessment (Housing and Productivity Contribution) Order 2023* applies.

4 Complying development

Qualifying Statement on Council Data Affecting this Item
Shoalhaven City Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, however specific land restrictions may not apply to all of the land. The information included in this Planning Certificate is provided in accordance with the Environmental Planning & Assessment Regulation 2021 (as amended). It is strongly suggested that you review the State Environmental Planning Policy (Exempt and Complying Developments Codes) 2008 and supporting information before proceeding with the lodgement of a Complying Development Certificate application to either Council or a private certifier. The NSW Department of Planning, Industry and Environment has provided a series of information sheets on its website
http://www.planning.nsw.gov.au/exemptandcomplying

Note: There are other provisions in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 that must be complied with in order for development on the land to be complying development. Refer to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 to identify if a Code applies to your land.

Whether the extent to which the land is land on which complying development may be carried out under the following codes for complying development of State Environmental Planning Policy (Exempt Complying Development Codes) 2008 is restricted by the following provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008:

Housing Code, Rural Housing Code, Agritourism and Farm Stay Accommodation Code and Greenfield Housing Code: **IS RESTRICTED**

Under the Housing Code , Rural Housing Code, Agritourism and Farm Stay Accommodation Code and Greenfield Housing Code the land is affected by specific land exemptions -

Clause 1.19(1)(c) or Clause 1.19(5)(c) because the land is identified on an Acid Sulfate Soils Map as being Class 1 or Class 2.

Clause 1.19(1)(e)(i) or Clause 1.19(5)(f)(i) because the land is identified by an environmental planning instrument as being: within a buffer area.

Housing Alterations Code and General Development Code: **IS NOT RESTRICTED**

Industrial and Business Buildings Code: **IS RESTRICTED**

Under the Industrial and Business Buildings Code the land is affected by specific land exemptions -

Clause 1.19(1)(c) or Clause 1.19(5)(c) because the land is identified on an Acid Sulfate Soils Map as being Class 1 or Class 2.

Clause 1.19(1)(e)(i) or Clause 1.19(5)(f)(i) because the land is identified by an environmental planning instrument as being: within a buffer area.

Low Rise Housing Diversity Code: **IS RESTRICTED**

Under the Low Rise Housing Diversity Code the land is affected by specific land exemptions -

Clause 1.19(1)(c) or Clause 1.19(5)(c) because the land is identified on an Acid Sulfate Soils Map as being Class 1 or Class 2.

Clause 1.19(1)(e)(i) or Clause 1.19(5)(f)(i) because the land is identified by an environmental planning instrument as being: within a buffer area.

The complying development codes **ARE NOT** varied, under that Policy, clause 1.12, in relation to the land.

5 **Exempt Development**

Qualifying Statement on Council Data Affecting this Item

Shoalhaven City Council does not have sufficient information to ascertain the extent to which exempt development may or may not be carried out on the land, however specific land restrictions may not apply to all of the land. The information included in this Planning Certificate is provided in accordance with the Environmental Planning & Assessment Regulation 2021 (as amended). It is strongly suggested that you review the State Environmental Planning Policy (Exempt and Complying Developments Codes) 2008 and supporting information before proceeding with exempt development. The NSW Department of Planning and Environment has provided a series of information sheets on its website http://www.planning.nsw.gov.au/exemptandcomplying

Note: There are other provisions in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 that must be complied with in order for development on the land to be exempt development. Refer to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 to identify if a Code applies to your land.

Whether the extent to which the land is land on which exempt development may be carried out under each of the exempt development codes under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 is restricted by the following provisions of that Policy, clause 1.16(1)(b1)–(d) or 1.16A of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008:

General Exempt Development Code, Advertising and Signage Exempt Development Code and Temporary Uses and Structures Exempt Development Code: **IS NOT RESTRICTED**

The exempt development codes **ARE NOT** varied, under that Policy, clause 1.12, in relation to the land.

6 **Affected building notices and building product rectification orders**

a) Council **IS NOT** aware that an affected building notice is in force in relation to the land.

b) Council **IS NOT** aware that a building product rectification order is in force in relation to the land that has not been fully complied with.

c) Council **IS NOT** aware that a notice of intention to make a building product rectification order given in relation to the land is outstanding.

Note: In this section, **affected building notice** has the same meaning as in the *Building Products (Safety) Act 2017*, Part 4. **building product rectification order** has the same meaning as in the *Building Products (Safety) Act 2017*.

7 **Land reserved for acquisition**

The land **IS NOT** reserved for acquisition by an authority of the State, as referred to in section 3.15 of the Act under any environmental planning instrument, or proposed environmental planning instrument referred to in Section 1.

8 **Road widening and road realignment**

a) The land **IS NOT** affected by any road widening or road realignment under the *Roads Act 1993*, Part 3, Division 2.

b) The land **IS NOT** affected by road widening or road realignment under an environmental planning instrument.

c) The land **IS NOT** affected by any road widening or road realignment under a resolution of Council.

Note: Information in item 8 relates only to proposed plans by the Council for the widening of a public road that would affect the land and have been submitted to the Minister by the Council and any road widening orders affecting the land that the Council has caused to be published in the NSW Government Gazette under section 25 of the *Roads Act 1993*. Other authorities e.g. Transport for NSW, may have proposals not set out herein.

9 **Flood related development controls**

(1) Council's adopted flood information **DOES** identify the land or part of the land as being within the flood planning area and subject to flood related development controls. Note that not all areas within the Shoalhaven LGA are covered by an adopted flood investigation.

(2) Council's adopted flood information **DOES NOT** identify the land or part of the land as being between the flood planning area and the probable maximum flood and subject to flood related development controls. Note that not all areas within the Shoalhaven LGA are covered by an adopted flood investigation.

Flood Planning Area has the same meaning as in the Flood Risk Management Manual.
Floodplain Development Manual Means the Flood Risk Management Manual (ISBN 978-1-923076-17-4) published by the NSW Government in June 2023.
Probable Maximum Flood has the same meaning as in the Flood Risk Management Manual.
Note: The Flood Risk Management Manual replaces the Floodplain Development Manual (2005).

Note: In relation to sub clause (1) and (2) above, if the land or part of the land is within 40 metres of a creek; or is within 10 metres of a major drainage system, local overland flow path or drainage easement; or has a history of flooding then a flood assessment report may need to be submitted with any development application under the requirements of the Shoalhaven Development Control Plan 2014. The flood assessment report is to identify whether or not the land or part of the land is flood prone and determine, if flood prone, the probable maximum flood extent and the flood planning level.

For further information or to request a flood certificate, please contact Council.

10 **Council and other public authority policies on hazard risk restrictions**

The land **IS** affected by the following adopted policy or policies that restrict the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils, contamination, aircraft noise, salinity, coastal hazards, sea level rise or any other risk (other than flooding).

Shoalhaven Development Control Plan 2014

Shoalhaven City Council - Contaminated Land Policy

Shoalhaven Coastal Zone Management Plan 2018

Planning for Bush Fire Protection 2019

Note: The policies above apply across the City. If certain specific hazards are known to apply to the land, those hazards may be noted below .

Note: In this section **adopted policy** means a policy adopted
(a) by the council, or
(b) by another public authority, if the public authority has notified the council that the policy will be included in a planning certificate issued by the council.

11 **Bush fire prone land**

The land **IS** bushfire prone land, either in whole or in part (as designated by the Commissioner of the NSW Rural Fire Service under the Act, section 10.3).

12 **Loose-fill asbestos insulation**

The land **DOES NOT** include any residential premises (within the meaning of the *Home Building Act 1989*, Part 8, Division 1A) that are listed on the Register kept under that Division.

13 **Mine subsidence**

The land **IS NOT** declared to be a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*.

14 **Paper subdivision information**

1) The land **IS NOT** affected by a development plan adopted by a relevant authority that applies to the land or is proposed to be subject to a ballot.

2) The land **IS NOT** affected by a subdivision order.

Note: Words and expressions used in this section have the same meaning as in the Regulation, Part 10 and the Act, Schedule 7.

15 **Property vegetation plans**

The Council **HAS NOT** been notified that the land is land to which a property vegetation plan is approved and in force under the *Native Vegetation Act 2003*, Part 4.

16 **Biobanking stewardship sites**

The Council **HAS NOT** been notified by the Biodiversity Conservation Trust that the land is a biodiversity stewardship site under a biodiversity stewardship agreement under the *Biodiversity Conservation Act 2016*, Part 5.

Note: Biodiversity stewardship agreements include biobanking agreements under the *Threatened Species Conservation Act 1995*, Part 7A that are taken to be biodiversity stewardship agreements under the *Biodiversity Conservation Act 2016*, Part 5.

17 **Biodiversity certified land**

The land **IS NOT** biodiversity certified land under the *Biodiversity Conservation Act 2016*, Part 8.

Note: Biodiversity certified land includes land certified under the *Threatened Species Conservation Act 1995*, Part 7AA that is taken to be certified under the *Biodiversity Conservation Act*, Part 8.

18 **Orders under Trees (Disputes Between Neighbours) Act 2006**

The Council **HAS NOT** been notified that an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land.

19 **Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works**

The owner (or any previous owner) of the land **HAS NOT** given written consent to the land being subject to annual charges under the *Local Government Act 1993*, section 496B, for coastal protection services that relate to existing coastal protection works.

Note: In this section - **existing coastal protection works** has the same meaning as in the *Local Government Act 1993*, section 553B.

Note: Existing coastal protection works are works to reduce the impact of coastal hazards on land such as seawalls, revetments, groynes and beach nourishment, that existed before 1 January 2011.

20 **Western Sydney Aerotropolis**

State Environmental Planning Policy (Precincts – Western Parkland City) 2021 **DOES NOT** apply to this land.

21 **Development consent conditions for seniors housing**

The Council **IS NOT** aware of any terms of a kind referred to in clause 88(2) of State Environmental Planning Policy (Housing) 2021 that have been imposed as a condition of development consent granted after 11 October 2007 in relation to the land.

22 **Site compatibility certificates and development consent conditions for affordable rental housing**

(1) The Council **IS NOT** aware of a current site compatibility certificate under State Environmental Planning Policy (Housing) 2021, or a former site compatibility certificate, in relation to proposed development on the land.

(2) The Council **IS NOT** aware of any conditions of development consent in relation to the land that are of a kind referred to in State Environmental Planning Policy (Housing) 2021, section 21(1) or 40(1).

(3) The Council **IS NOT** aware of any conditions of a development consent in relation to the land that are of a kind referred to in State Environmental Planning Policy (Affordable Rental Housing) 2009, clause 17(1) or 38(1).

Note: in this section -
former site compatibility certificate means a site compatibility certificate issued under State Environmental Planning Policy (Affordable Rental Housing) 2009.

Note: Contaminated Land Management Act 1997: The following matters are prescribed by Section 59(2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

a) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is significantly contaminated land within the meaning of the *Contaminated Land Management Act 1997*.

b) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject to a management order within the meaning of the *Contaminated Land Management Act 1997*.

c) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject of an approved voluntary management proposal within the meaning of the *Contaminated Land Management Act 1997*.

d) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject of an ongoing maintenance order within the meaning of the *Contaminated Land Management Act 1997*.

e) The land **IS NOT** the subject of a site audit statement within the meaning of the *Contaminated Land Management Act 1997* that has been provided to the Council.

23 Water or sewerage services under the *Water Industry Competition Act 2006* **DO NOT** apply to this land.

Note: Water and sewerage services in Shoalhaven LGA are provided by Shoalhaven Water. However, not all sites are connected to these services. Further enquiries should be directed to Shoalhaven Water **http://www.shoalwater.nsw.gov.au**.

Information under Section 10.7(5)

As at the date of this certificate, the abovementioned land is also affected as follows:
(**NOTE:** SECTION 10.7(6) STATES THAT A COUNCIL SHALL NOT INCUR ANY LIABILITY IN RESPECT OF ANY ADVICE PROVIDED IN GOOD FAITH PURSUANT TO SECTION 10.7(5))

Matters Affecting This Land

HMAS ALBATROSS MILITARY AIRCRAFT OPERATING AREA
Advice to Council on 3 November 2006 confirms information previously provided by The Department of Defence, that the subject land is within HMAS Albatross Military Aircraft Operating Area. Specific heights can be obtained by contacting HMAS Albatross at Nowra.

HMAS ALBATROSS MILITARY AIRCRAFT OPERATING AREA - HELO NORTH
Advice to Council on 3 November 2006 confirms information previously provided by The Department of Defence, that the subject land is within HMAS Albatross Military Aircraft Operating Area. Specifically, the subject land is within an area known as Helo North and information provided to Council advises:
"Helo North
Helicopter Training Area
Operating heights - Surface to 3000ft
Military helicopters conduct training evolutions in this area. The area is available for this type of operation 24 hours per day. However operations are generally weekdays between 8.00am and 5.00pm. Occasionally night flying is conducted in this area. This activity is normally completed by 11.00pm."
Further information is available by contacting HMAS Albatross at Nowra.

NOWRA BOMADERRY STRUCTURE PLAN
This property is located in the area covered by the Nowra Bomaderry Structure Plan (NBSP). The NBSP was adopted by Council in 2006 and endorsed by State Government in 2008. The NBSP is not a legal document but rather one that provides strategic direction and guidance. The NBSP provides the planning framework for growth, development opportunities and conservation measures in the Nowra Bomaderry area for the next 20 years. It identifies potential areas for new living areas and industrial expansion as well as a future western bypass and the preferred road network required to support long-term growth. Landowners and prospective buyers are encouraged to view the Adopted and Endorsed Strategic Direction and Structure Plan Map.

Further information can be found on Council's website Shoalhaven City Council Planning Register or by contacting Council's on (02) 4429 3111.

DRAFT STRATEGIC GROWTH PRINCIPLES - CITYWIDE-INCLUSION WITHIN LOCAL STRATEGIC PLANNING STATEMENT-PUBLIC EXHIBITION 12 JUNE 2024 TO 12 JULY 2024 (58417E)(MIN24.274)
On 20 May 2024, Council resolved to support public exhibition of the draft Strategic Growth Principles. The draft principles have been developed to guide Council's preparation of a new land use planning scheme, and its consideration of strategic land use planning decisions and rezoning proposals. The principles will be embedded in Council's adopted Local Strategic Planning Statement (LSPS), a high-level strategic land use planning document setting out the work Council will do to identify and meet the communities land use needs over the next 15 - 20 years.

SEA LEVEL RISE PROJECTIONS
Council has adopted new sea level rise projections that may affect the flood affection of this land into the future. For more information, contact Council's City Development Directorate (MIN24.211).

Matters Affecting The Whole Of The City

ACID SULFATE SOILS - Large areas of the coastal zone of NSW have the potential to be affected by acid sulfate soils which become problematic if exposed during excavations or similar activities. The Dept of Land & Water Conservation have maps which indicate the potential occurrence of acid sulfate soils. Prior to undertaking work which involves substantial soil disturbance, you should ascertain the possibility of acid sulfate soils existing on your property. Enquiries to NSW Department of Planning and Environment.

INTERIM POLICY - DEVELOPMENT ADJOINING NARROW LANEWAYS
Council resolved on 6 November 2018 to adopt an interim policy position regarding development adjoining narrow laneways. The Interim Policy provides direction regarding access, servicing, design and use of narrow laneways as a primary frontage. Contact Council's - Strategic Planning for further information. (MIN18.891) (Reaffirmed 1 August 2022 - MIN22.502) (57914E)

POLICY - PROVISION OF WATER AND SEWERAGE INFRASTRUCTURE - DEVELOPMENT NOT INCLUDED IN DEVELOPMENT SERVICING PLANS
This Policy shall apply to all lands which have not been included in water supply and/or sewerage services development servicing plans.

POLICY - COMPANION ANIMALS (IMPACTS ON NATIVE FAUNA) - CONDITIONS OF DEVELOPMENT CONSENT
Council resolved on 21 February 2017, in order to protect populations of native fauna, including threatened species, from impacts associated with the keeping of domestic cats and dogs within certain development, that appropriate restrictions on title or conditions of consent for the management of companion animals may be applied in sensitive environmental locations (23139E) (MIN17.95) (Reaffirmed 14 November 2022 - MIN22.869) (23139E)

INFORMATION REGARDING LOOSE-FILLED ASBESTOS INSULATON
Some residential homes located in NSW have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.
You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, Council recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

Contact NSW Fair Trading for further information.

INFORMATION REGARDING FOSSICKING DISTRICT 68.
Pursuant to section 369A of the Mining Act 1992, the NSW Department of Planning and Environment have declared all land within the Shoalhaven City Council Local Government Area to be a Fossicking District (Fossicking District 68). Contact the NSW Department of Planning and Environment for further information.

for the CHIEF EXECUTIVE OFFICER

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Shoalhaven City Council

Bridge Rd, Nowra NSW 2541 | 02 4429 3111
Deering St, Ulladulla NSW 2539 | 02 4429 8999

Address all correspondence to
The General Manager, PO Box 42, Nowra NSW 2541 Australia
council@shoalhaven.nsw.gov.au | DX5323 Nowra | Fax 02 4422 1816

shoalhaven.nsw.gov.au

PLANNING CERTIFICATE UNDER SECTION 10.7
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2025/01377

Applicant: Ghd Pty Ltd
Level 11, 200 Crown St
WOLLONGONG NSW 2500

Receipt No.: Ext: 193205
Date: 31/03/2025
Fee: $174
Urgency Fee: $0.00

Applicant reference: 12662565

The land to which this Certificate relates is:
Lot 241 DP 1130535, 171 Bolong Rd, BOMADERRY
Parish of BUNBERRA, County of CAMDEN

The above information is as recorded by Council.

DISCLAIMER AND CAUTION:

1. The information on zones, controls etc given below relates to the land for which the certificate was sought. If enquirers wish to know what zones, other controls, etc apply or are proposed on nearby land then they should make enquiries in person at Council's offices.

2. The information contained in this certificate is accurate as at the date of this certificate.

3. In providing this certificate Council has in good faith relied upon information provided to it or sourced from third parties. Where Council has obtained the information from third parties, either exclusively or in conjunction with information held by Council, the Certificate details the source of that third party information. Council cautions persons against relying upon information in the Certificate sourced from third parties as to its accuracy, applicability to specific lands and its currency without verification from the specified third party and, where appropriate, professional advice and the adoption of prudent land acquisition measures and appropriate professional advice. To the full extent permitted by law Council disclaims liability with respect to any information in this Certificate sourced from third parties.

The information contained in this certificate is prepared in accordance with the Environmental Planning and Assessment Act 1979 (as amended) and the Environmental Planning Assessment Regulation 2021 (as amended).

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PLANNING CERTIFICATE UNDER SECTION 10.7
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2025/01377

This is a Planning Certificate issued by Shoalhaven City Council under Section 10.7(2) of the *Environmental Planning and Assessment Act 1979* on the application of the person described above in respect of the land described above.

1 Names of relevant planning instruments and development control plans

(1) The name of each environmental planning instrument and development control plan that applies to the carrying out of development on the land:

State Environmental Planning Policies

State Environmental Planning Policy (Resilience and Hazards) 2021
State Environmental Planning Policy (Biodiversity and Conservation) 2021
State Environmental Planning Policy (Industry and Employment) 2021
State Environmental Planning Policy (Precincts - Regional) 2021
State Environmental Planning Policy (Transport and Infrastructure) 2021
State Environmental Planning Policy (Resources and Energy) 2021
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy (Planning Systems) 2021
State Environmental Planning Policy (Primary Production) 2021
State Environmental Planning Policy (Housing) 2021
State Environmental Planning Policy (Sustainable Buildings) 2022

Local Environmental Plans

Shoalhaven Local Environmental Plan 2014 (as amended)

Development Control Plans

Shoalhaven Development Control Plan 2014 (as amended)

Note: a copy of Shoalhaven Development Control Plan 2014 is available on the internet at www.dcp2014.shoalhaven.nsw.gov.au or can be inspected at Council's Nowra office during normal business hours.

(2) The name of each proposed environmental planning instrument and draft development control plan, which is or has been subject to community consultation or public exhibition under the Act, that will apply to the carrying out of development on the land.

Proposed State Environmental Planning Policies and other Environmental Planning Instruments

Explanation of Intended Effect - Proposed amendments to the in-fill affordable housing, group homes, supportive accommodation and social housing provisions of the State Environmental Planning Policy (Housing) 2021 - exhibition 22/11/2022 to 13/01/2023.

Explanation of Intended Effect - Proposed reforms to outdoor dining on private land and live music venues - exhibition 19/10/2023 to 16/11/2023.

Consultation draft - Amendments to the Local Government (Caravan Parks, Manufactured Home Estates, Camping Ground and Moveable Dwellings) Regulation 2021 and State Environmental Planning Policy (Housing) 2021 - exhibition 17/11/2023 to 15/12/2023.

Explanation of Intended Effect - Improving planning processes to deliver infrastructure faster - exhibition 06/03/2024 to 16/04/2024

Explanation of Intended Effect - Proposed changes to complying development for farm buildings, rural sheds and earthworks - exhibition 15/05/2024 to 14/06/2024

Explanation of Intended Effect - Cultural State Environmental Planning Policy - exhibition 15/11/2024 to 13/12/2024

Planning Proposals for Local Environmental Plans

Amendment to Shoalhaven Local Environmental Plan 2014 - PP073 - Local Character - Exhibition 26/06/2024 to 08/07/2024.

Amendment to Shoalhaven Local Environmental Plan 2014 - PP076 - 131 St Vincent St, Ulladulla - Exhibition 25/11/2024 to 15/01/2025.

Amendment to Shoalhaven Local Environmental Plan 2014 - PP078 - 17 Prince Alfred Street, Berry (The Berry Inn) - Exhibition 12/02/2025 to 14/03/2025.

Note: In this section - **proposed environmental planning instrument** means a draft environmental planning instrument and includes a planning proposal for a local environmental plan.

Draft Development Control Plans

Draft Amendment 56 to Shoalhaven Development Control Plan 2014 - Chapter NB4: Moss Vale Road North Urban Release Area - Exhibition 26/08/2024 to 23/09/2024.

2 **Zoning and land use under relevant planning instruments**

For Shoalhaven Local Environmental Plan 2014 (as amended)

a. **The identity of the zone in which the land is included under Shoalhaven Local Environmental Plan 2014:**

Zone E4 General Industrial

b. **The purposes for which development in the zone**

i. **may be carried out without development consent:**

Nil

ii. **may not be carried out except with development consent:**

Depots; Freight transport facilities; Garden centres; General industries; Goods repair and reuse premises; Hardware and building supplies; Industrial retail outlets; Industrial training facilities; Kiosks; Landscaping material supplies; Light industries; Local distribution premises; Markets; Neighbourhood shops; Oyster aquaculture; Plant nurseries; Specialised retail premises; Take away food and drink premises; Tank-based aquaculture; Timber yards; Warehouse or distribution centres; Any other development not specified in item i or iii.

iii. **is prohibited:**

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Camping grounds; Caravan parks; Cemeteries; Centre-based child care facilities; Charter and tourism boating facilities; Correctional centres; Crematoria; Eco-tourist facilities; Educational establishments; Environmental facilities; Exhibition villages; Extractive industries; Farm buildings; Forestry; Function centres; Health services facilities; Heavy industries; Highway service centres; Home businesses; Home occupations; Home occupations (sex services); Home-based child care; Information and education facilities; Marinas; Mooring pens; Moorings; Office premises; Open cut mining; Registered clubs; Residential accommodation; Respite day care centres; Restricted premises; Retail premises; Sex services premises; Tourist and visitor accommodation; Water recreation structures; Wharf or boating facilities.

c. Additional permitted uses **DO** apply to the land

Sch 1.29 - Additional Permitted Uses
Development for the purposes of heavy industries is permitted with development consent.

d. Development standards applying to the land under Shoalhaven Local Environmental Plan 2014 **DO NOT** fix minimum land dimensions for the erection of a dwelling-house on the land.

e. The land **IS NOT** in an area of outstanding biodiversity value under the *Biodiversity Conservation Act* 2016.

f. The land **IS NOT** in a conservation area (however described) under Shoalhaven Local Environmental Plan 2014.

Note: this item relates to "heritage conservation areas" as defined in the LEP.

g. An item of environmental heritage (however described) under Shoalhaven Local Environmental Plan 2014 **IS NOT** located on the land.

Note: "environmental heritage" relates to matters/items of cultural heritage, for example, items listed on the State Register, items specifically listed in the LEP or matters subject to an "interim heritage order" under the *Heritage Act 1977*.

Other provisions under Shoalhaven Local Environmental Plan 2014 may also apply to the development of this land. You can view the Shoalhaven Local Environmental Plan 2014 at the website www.legislation.nsw.gov.au or at Council's offices.

3 **Contributions**

1) The name of each contributions plan under the Act, Division 7.1 applying to the land, including draft contributions plans:

Shoalhaven Contributions Plan 2019 (as amended)

2) The subject land is within Illawarra-Shoalhaven to which the *Environmental Planning and Assessment (Housing and Productivity Contribution) Order 2023* applies.

4 **Complying development**

Qualifying Statement on Council Data Affecting this Item
Shoalhaven City Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, however specific land restrictions may not apply to all of the land. The information included in this Planning Certificate is provided in accordance with the Environmental Planning & Assessment Regulation 2021 (as amended). It is strongly suggested that you review the State Environmental Planning Policy (Exempt and Complying Developments Codes) 2008 and supporting information before proceeding with the lodgement of a Complying Development Certificate application to either Council or a private certifier. The NSW Department of Planning, Industry and Environment has provided a series of information sheets on its website
http://www.planning.nsw.gov.au/exemptandcomplying

Note: There are other provisions in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 that must be complied with in order for development on the land to be complying development. Refer to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 to identify if a Code applies to your land.

Whether the extent to which the land is land on which complying development may be carried out under the following codes for complying development of State Environmental Planning Policy (Exempt Complying Development Codes) 2008 is restricted by the following provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008:

Housing Code, Rural Housing Code, Agritourism and Farm Stay Accommodation Code and Greenfield Housing Code: **IS RESTRICTED**

Under the Housing Code , Rural Housing Code, Agritourism and Farm Stay Accommodation Code and Greenfield Housing Code the land is affected by specific land exemptions -

Clause 1.19(1)(e)(i) or Clause 1.19(5)(f)(i) because the land is identified by an environmental planning instrument as being: within a buffer area.

Housing Alterations Code and General Development Code: **IS NOT RESTRICTED**

Industrial and Business Buildings Code: **IS RESTRICTED**

Under the Industrial and Business Buildings Code the land is affected by specific land exemptions -

Clause 1.19(1)(e)(i) or Clause 1.19(5)(f)(i) because the land is identified by an environmental planning instrument as being: within a buffer area.

Low Rise Housing Diversity Code: **IS RESTRICTED**

Under the Low Rise Housing Diversity Code the land is affected by specific land exemptions -

Clause 1.19(1)(e)(i) or Clause 1.19(5)(f)(i) because the land is identified by an environmental planning instrument as being: within a buffer area.

The complying development codes **ARE NOT** varied, under that Policy, clause 1.12, in relation to the land.

5 **Exempt Development**

Qualifying Statement on Council Data Affecting this Item
Shoalhaven City Council does not have sufficient information to ascertain the extent to which exempt development may or may not be carried out on the land, however specific land restrictions may not apply to all of the land. The information included in this Planning Certificate is provided in accordance with the Environmental Planning & Assessment Regulation 2021 (as amended). It is strongly suggested that you review the State Environmental Planning Policy (Exempt and Complying Developments Codes) 2008 and supporting information before proceeding with exempt development. The NSW Department of Planning and Environment has provided a series of information sheets on its website
http://www.planning.nsw.gov.au/exemptandcomplying

Note: There are other provisions in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 that must be complied with in order for development on the land to be exempt development. Refer to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 to identify if a Code applies to your land.

Whether the extent to which the land is land on which exempt development may be carried out under each of the exempt development codes under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 is restricted by the following provisions of that Policy, clause 1.16(1)(b1)–(d) or 1.16A of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008:

General Exempt Development Code, Advertising and Signage Exempt Development Code and Temporary Uses and Structures Exempt Development Code: **IS NOT RESTRICTED**

The exempt development codes **ARE NOT** varied, under that Policy, clause 1.12, in relation to the land.

6 **Affected building notices and building product rectification orders**

a) Council **IS NOT** aware that an affected building notice is in force in relation to the land.

b) Council **IS NOT** aware that a building product rectification order is in force in relation to the land that has not been fully complied with.

c) Council **IS NOT** aware that a notice of intention to make a building product rectification order given in relation to the land is outstanding.

Note: In this section, **affected building notice** has the same meaning as in the *Building Products (Safety) Act 2017*, Part 4. **building product rectification order** has the same meaning as in the *Building Products (Safety) Act 2017*.

7 **Land reserved for acquisition**

The land **IS NOT** reserved for acquisition by an authority of the State, as referred to in section 3.15 of the Act under any environmental planning instrument, or proposed environmental planning instrument referred to in Section 1.

8 **Road widening and road realignment**

a) The land **IS NOT** affected by any road widening or road realignment under the *Roads Act 1993*, Part 3, Division 2.

b) The land **IS NOT** affected by road widening or road realignment under an environmental planning instrument.

c) The land **IS NOT** affected by any road widening or road realignment under a resolution of Council.

Note: Information in item 8 relates only to proposed plans by the Council for the widening of a public road that would affect the land and have been submitted to the Minister by the Council and any road widening orders affecting the land that the Council has caused to be published in the NSW Government Gazette under section 25 of the *Roads Act 1993*. Other authorities e.g. Transport for NSW, may have proposals not set out herein.

9 **Flood related development controls**

(1) Council's adopted flood information **DOES** identify the land or part of the land as being within the flood planning area and subject to flood related development controls. Note that not all areas within the Shoalhaven LGA are covered by an adopted flood investigation.

(2) Council's adopted flood information **DOES NOT** identify the land or part of the land as being between the flood planning area and the probable maximum flood and subject to flood related development controls. Note that not all areas within the Shoalhaven LGA are covered by an adopted flood investigation.

Flood Planning Area has the same meaning as in the Flood Risk Management Manual.
Floodplain Development Manual Means the Flood Risk Management Manual (ISBN 978-1-923076-17-4) published by the NSW Government in June 2023.
Probable Maximum Flood has the same meaning as in the Flood Risk Management Manual.
Note: The Flood Risk Management Manual replaces the Floodplain Development Manual (2005).

Note: In relation to sub clause (1) and (2) above, if the land or part of the land is within 40 metres of a creek; or is within 10 metres of a major drainage system, local overland flow path or drainage easement; or has a history of flooding then a flood assessment report may need to be submitted with any development application under the requirements of the Shoalhaven Development Control Plan 2014. The flood assessment report is to identify whether or not the land or part of the land is flood prone and determine, if flood prone, the probable maximum flood extent and the flood planning level.

For further information or to request a flood certificate, please contact Council.

10 **Council and other public authority policies on hazard risk restrictions**

The land **IS** affected by the following adopted policy or policies that restrict the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils, contamination, aircraft noise, salinity, coastal hazards, sea level rise or any other risk (other than flooding).

Shoalhaven Development Control Plan 2014

Shoalhaven City Council - Contaminated Land Policy

Shoalhaven Coastal Zone Management Plan 2018

Planning for Bush Fire Protection 2019

Note: The policies above apply across the City. If certain specific hazards are known to apply to the land, those hazards may be noted below .

HAZARD RISK RESTRICTION

This property is identified as "sensitive area" on Shoalhaven LEP 2014 - Natural Resources Sensitivity Land map and is affected by Clause 7.7 Landslide risk and other land degradation. Clause 7.7 applies to land comprising steep slopes and susceptible to other forms of land degradation.

Note: In this section **adopted policy** means a policy adopted
(a) by the council, or
(b) by another public authority, if the public authority has notified the council that the policy will be included in a planning certificate issued by the council.

11 **Bush fire prone land**

The land **IS** bushfire prone land, either in whole or in part (as designated by the Commissioner of the NSW Rural Fire Service under the Act, section 10.3).

12 **Loose-fill asbestos insulation**

The land **DOES NOT** include any residential premises (within the meaning of the *Home Building Act 1989*, Part 8, Division 1A) that are listed on the Register kept under that Division.

13 **Mine subsidence**

The land **IS NOT** declared to be a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*.

14 **Paper subdivision information**

1) The land **IS NOT** affected by a development plan adopted by a relevant authority that applies to the land or is proposed to be subject to a ballot.

2) The land **IS NOT** affected by a subdivision order.

Note: Words and expressions used in this section have the same meaning as in the Regulation, Part 10 and the Act, Schedule 7.

15 **Property vegetation plans**

The Council **HAS NOT** been notified that the land is land to which a property vegetation plan is approved and in force under the *Native Vegetation Act 2003*, Part 4.

16 **Biobanking stewardship sites**

The Council **HAS NOT** been notified by the Biodiversity Conservation Trust that the land is a biodiversity stewardship site under a biodiversity stewardship agreement under the *Biodiversity Conservation Act 2016*, Part 5.

Note: Biodiversity stewardship agreements include biobanking agreements under the *Threatened Species Conservation Act 1995*, Part 7A that are taken to be biodiversity stewardship agreements under the *Biodiversity Conservation Act 2016*, Part 5.

17 **Biodiversity certified land**

The land **IS NOT** biodiversity certified land under the *Biodiversity Conservation Act 2016*, Part 8.

Note: Biodiversity certified land includes land certified under the *Threatened Species Conservation Act 1995*, Part 7AA that is taken to be certified under the *Biodiversity Conservation Act*, Part 8.

18 **Orders under Trees (Disputes Between Neighbours) Act 2006**

The Council **HAS NOT** been notified that an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land.

19 **Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works**

The owner (or any previous owner) of the land **HAS NOT** given written consent to the land being subject to annual charges under the *Local Government Act 1993*, section 496B, for coastal protection services that relate to existing coastal protection works.

Note: In this section - **existing coastal protection works** has the same meaning as in the *Local Government Act 1993*, section 553B.

Note: Existing coastal protection works are works to reduce the impact of coastal hazards on land such as seawalls, revetments, groynes and beach nourishment, that existed before 1 January 2011.

20 **Western Sydney Aerotropolis**

State Environmental Planning Policy (Precincts – Western Parkland City) 2021 **DOES NOT** apply to this land.

21 **Development consent conditions for seniors housing**

The Council **IS NOT** aware of any terms of a kind referred to in clause 88(2) of State Environmental Planning Policy (Housing) 2021 that have been imposed as a condition of development consent granted after 11 October 2007 in relation to the land.

22 **Site compatibility certificates and development consent conditions for affordable rental housing**

(1) The Council **IS NOT** aware of a current site compatibility certificate under State Environmental Planning Policy (Housing) 2021, or a former site compatibility certificate, in relation to proposed development on the land.

(2) The Council **IS NOT** aware of any conditions of development consent in relation to the land that are of a kind referred to in State Environmental Planning Policy (Housing) 2021, section 21(1) or 40(1).

(3) The Council **IS NOT** aware of any conditions of a development consent in relation to the land that are of a kind referred to in State Environmental Planning Policy (Affordable Rental Housing) 2009, clause 17(1) or 38(1).

Note: in this section -
former site compatibility certificate means a site compatibility certificate issued under State Environmental Planning Policy (Affordable Rental Housing) 2009.

Note: Contaminated Land Management Act 1997: The following matters are prescribed by Section 59(2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

a) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is significantly contaminated land within the meaning of the *Contaminated Land Management Act 1997*.

b) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject to a management order within the meaning of the *Contaminated Land Management Act 1997*.

c) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject of an approved voluntary management proposal within the meaning of the *Contaminated Land Management Act 1997*.

d) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject of an ongoing maintenance order within the meaning of the *Contaminated Land Management Act 1997*.

e) The land **IS NOT** the subject of a site audit statement within the meaning of the *Contaminated Land Management Act 1997* that has been provided to the Council.

23 Water or sewerage services under the *Water Industry Competition Act 2006* **DO NOT** apply to this land.

Note: Water and sewerage services in Shoalhaven LGA are provided by Shoalhaven Water. However, not all sites are connected to these services. Further enquiries should be directed to Shoalhaven Water **http://www.shoalwater.nsw.gov.au**.

Information under Section 10.7(5)

As at the date of this certificate, the abovementioned land is also affected as follows:
(**NOTE:** SECTION 10.7(6) STATES THAT A COUNCIL SHALL NOT INCUR ANY LIABILITY IN RESPECT OF ANY ADVICE PROVIDED IN GOOD FAITH PURSUANT TO SECTION 10.7(5))

Matters Affecting This Land

HMAS ALBATROSS MILITARY AIRCRAFT OPERATING AREA
Advice to Council on 3 November 2006 confirms information previously provided by The Department of Defence, that the subject land is within HMAS Albatross Military Aircraft Operating Area. Specific heights can be obtained by contacting HMAS Albatross at Nowra.

NOWRA BOMADERRY STRUCTURE PLAN
This property is located in the area covered by the Nowra Bomaderry Structure Plan (NBSP). The NBSP was adopted by Council in 2006 and endorsed by State Government in 2008. The NBSP is not a legal document but rather one that provides strategic direction and guidance. The NBSP provides the planning framework for growth, development opportunities and conservation measures in the Nowra Bomaderry area for the next 20 years. It identifies potential areas for new living areas and industrial expansion as well as a future western bypass and the preferred road network required to support long-term growth. Landowners and prospective buyers are encouraged to view the Adopted and Endorsed Strategic Direction and Structure Plan Map.

Further information can be found on Council's website Shoalhaven City Council Planning Register or by contacting Council's on (02) 4429 3111.

DRAFT STRATEGIC GROWTH PRINCIPLES - CITYWIDE-INCLUSION WITHIN LOCAL STRATEGIC PLANNING STATEMENT-PUBLIC EXHIBITION 12 JUNE 2024 TO 12 JULY 2024 (58417E)(MIN24.274)
On 20 May 2024, Council resolved to support public exhibition of the draft Strategic Growth Principles. The draft principles have been developed to guide Council's preparation of a new land use planning scheme, and its consideration of strategic land use planning decisions and rezoning proposals. The principles will be embedded in Council's adopted Local Strategic Planning Statement (LSPS), a high-level strategic land use planning document setting out the work Council will do to identify and meet the communities land use needs over the next 15 - 20 years.

SEA LEVEL RISE PROJECTIONS
Council has adopted new sea level rise projections that may affect the flood affection of this land into the future. For more information, contact Council's City Development Directorate (MIN24.211).

Matters Affecting The Whole Of The City

ACID SULFATE SOILS - Large areas of the coastal zone of NSW have the potential to be affected by acid sulfate soils which become problematic if exposed during excavations or similar activities. The Dept of Land & Water Conservation have maps which indicate the potential occurrence of acid sulfate soils. Prior to undertaking work which involves substantial soil disturbance, you should ascertain the possibility of acid sulfate soils existing on your property. Enquiries to NSW Department of Planning and Environment.

INTERIM POLICY - DEVELOPMENT ADJOINING NARROW LANEWAYS
Council resolved on 6 November 2018 to adopt an interim policy position regarding development adjoining narrow laneways. The Interim Policy provides direction regarding access, servicing, design and use of narrow laneways as a primary frontage. Contact Council's - Strategic Planning for further information. (MIN18.891) (Reaffirmed 1 August 2022 - MIN22.502) (57914E)

POLICY - PROVISION OF WATER AND SEWERAGE INFRASTRUCTURE - DEVELOPMENT NOT INCLUDED IN DEVELOPMENT SERVICING PLANS
This Policy shall apply to all lands which have not been included in water supply and/or sewerage services development servicing plans.

POLICY - COMPANION ANIMALS (IMPACTS ON NATIVE FAUNA) - CONDITIONS OF DEVELOPMENT CONSENT
Council resolved on 21 February 2017, in order to protect populations of native fauna, including threatened species, from impacts associated with the keeping of domestic cats and dogs within certain development, that appropriate restrictions on title or conditions of consent for the management of companion animals may be applied in sensitive environmental locations (23139E) (MIN17.95) (Reaffirmed 14 November 2022 - MIN22.869) (23139E)

INFORMATION REGARDING LOOSE-FILLED ASBESTOS INSULATON
Some residential homes located in NSW have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.
You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, Council recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

Contact NSW Fair Trading for further information.

INFORMATION REGARDING FOSSICKING DISTRICT 68.
Pursuant to section 369A of the Mining Act 1992, the NSW Department of Planning and Environment have declared all land within the Shoalhaven City Council Local Government Area to be a Fossicking District (Fossicking District 68). Contact the NSW Department of Planning and Environment for further information.

for the CHIEF EXECUTIVE OFFICER

RESPECT | INTEGRITY | ADAPTABILITY | COLLABORATION

Shoalhaven City Council

Bridge Rd, Nowra NSW 2541 | 02 4429 3111
Deering St, Ulladulla NSW 2539 | 02 4429 8999

Address all correspondence to
The General Manager, PO Box 42, Nowra NSW 2541 Australia
council@shoalhaven.nsw.gov.au | DX5323 Nowra | Fax 02 4422 1816

shoalhaven.nsw.gov.au

PLANNING CERTIFICATE UNDER SECTION 10.7
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2021/01675

Applicant: Colee Colette Quayle
4/39 McKenzie Avenue
Wollongong NSW 2500

Receipt No.: Ext: 120476
Date: 07/04/2021
Fee: $133
Urgency Fee: $0.00

Applicant reference: 12548413

The land to which this Certificate relates is:
Lot 143 DP 1069758, 220 Bolong Rd, BOMADERRY
Parish of BUNBERRA, County of CAMDEN

The above information is as recorded by Council.

DISCLAIMER AND CAUTION:

1. The information on zones, controls etc given below relates to the land for which the certificate was sought. If enquirers wish to know what zones, other controls, etc apply or are proposed on nearby land then they should make enquiries in person at Council's offices.

2. The information contained in this certificate is accurate as at the date of this certificate.

3. In providing this certificate Council has in good faith relied upon information provided to it or sourced from third parties. Where Council has obtained the information from third parties, either exclusively or in conjunction with information held by Council, the Certificate details the source of that third party information. Council cautions persons against relying upon information in the Certificate sourced from third parties as to its accuracy, applicability to specific lands and its currency without verification from the specified third party and, where appropriate, professional advice and the adoption of prudent land acquisition measures and appropriate professional advice. To the full extent permitted by law Council disclaims liability with respect to any information in this Certificate sourced from third parties.

The information contained in this certificate is prepared in accordance with the Environmental Planning and Assessment Act 1979 (as amended) and the Environmental Planning Assessment Regulation 2000 (as amended).

RESPECT | INTEGRITY | ADAPTABILITY | COLLABORATION

PLANNING CERTIFICATE UNDER SECTION 10.7
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2021/01675

This is a Planning Certificate issued by Shoalhaven City Council under Section 10.7(2) of the Environmental Planning and Assessment Act 1979 on the application of the person described above in respect of the land described above.

1 **Names of relevant planning instruments and DCPs**

(1) The name of each environmental planning instrument that applies to the carrying out of development on the land:

Shoalhaven Local Environmental Plan 2014 (as amended)

State Environmental Planning Policies

Coastal Management 2018. Gazetted 3 April 2018
The policy applies to land within the "coastal zone" and identifies land within the coastal zone as one of four coastal management areas being the coastal wetlands and littoral rainforests area, the coastal vulnerability area, the coastal environment area, and the coastal use area. The policy also sets out matters to be considered when undertaking development in each of the coastal management areas.

Vegetation in Non-Rural Areas. Gazetted 25 August 2017 (& as amended)
Is to protect the biodiversity values of trees and other vegetation in non-rural areas of the State and to preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation.

State Environmental Planning Policies affecting the City

State Environmental Planning Policy No. 21 – Caravan Parks
State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
State Environmental Planning Policy No. 36 – Manufactured Home Estates
State Environmental Planning Policy No. 50 – Canal Estate Development
State Environmental Planning Policy No. 55 – Remediation of Land
State Environmental Planning Policy No. 64 - Advertising and Signage
State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development
State Environmental Planning Policy No. 70 - Affordable Housing (Revised Schemes)
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004
State Environmental Planning Policy (Building Sustainability Index: Basix) 2004
State Environmental Planning Policy (State Significant Precincts) 2005
State Environmental Planning Policy (Infrastructure) 2007
State Environmental Planning Policy (Mining Petroleum Production and Extractive Industries) 2007
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy (Affordable Rental Housing) 2009
State Environmental Planning Policy (State and Regional Development) 2011
State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017
State Environmental Planning Policy (Coastal Management) 2018
State Environmental Planning Policy (Primary Production and Rural Development) 2019
State Environmental Planning Policy (Koala Habitat Protection) 2020
State Environmental Planning Policy (Koala Habitat Protection) 2021

(2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (not including any proposed instrument where the Secretary has notified the Council that the making of the proposed instrument has been deferred indefinitely or has not been approved) is:

Draft State Environmental Planning Policies

Draft State Environmental Planning Policy (Environment) 2017

Draft State Environmental Planning Policy (Remediation of Land)

Draft State Environmental Planning Policy (Short-term Rental Accommodation)

Explanation of Intended Effect - State Environmental Planning Policies

Explanation of Intended Effect - Proposed Housekeeping Amendment to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

Explanation of Intended Effect - Proposed Activation Precincts SEPP

Explanation of Intended Effect - Amendment to Infrastructure SEPP

Explanation of Intended Effects - Housing Diversity State Environmental Planning Policy

Explanation of Intended Effects - Design and Place SEPP

Explanation of Intended Effect - Agritourism and small-scale agriculture development. Includes proposed amendments to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

Explanation of Intended Effect - Building Business Back Better (proposed changes to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008).

Explanation of Intended Effect - Review of clause 4.6 of the Standard Instrument LEP

Draft Local Environmental Plans and planning proposals for Local Environmental Plans

PLANNING PROPOSAL - PP026 TO AMEND SHOALHAVEN LOCAL ENVIRONMENTAL PLAN 2014 COASTAL HAZARDS REVIEW - PUBLIC EXHIBITION 6 FEBRUARY 2019 TO 8 MARCH 2019 (55961E) (MIN18.609)

This Planning Proposal (PP) seeks to remove the Coastal Risk Planning Map from Shoalhaven LEP 2014 and rely on Council's Coastal Hazard Interactive Mapping to identify areas at risk of coastal hazards. The PP will also amend Clause 7.4 Coastal risk planning to apply to all land at risk of coastal hazards instead of land identified in the Coastal Risk Planning Map, to allow for better identification and management of areas at risk of coastal hazards.

PLANNING PROPOSAL - PP029 TO AMEND SHOALHAVEN LOCAL ENVIRONMENTAL PLAN 2014 - HITCHCOCKS LANE BERRY RESIDENTIAL INVESTIGATION AREA - PUBLIC EXHIBITION 28 OCTOBER 2020 TO 8 JANUARY 2021 (56367E) (MIN20.619)

This Planning Proposal (PP) seeks to amend the land use zone, minimum lot size for subdivision and height of buildings provisions within Shoalhaven Local Environmental Plan 2014 to enable low density residential development on certain land located south of Hitchcocks Lane in Berry.

PLANNING PROPOSAL - PP035 TO AMEND SHOALHAVEN LOCAL ENVIRONMENTAL PLAN 2014 - 48 JERVIS BAY ROAD FALLS CREEK - COMMUNITY TITLE SUBDIVISION - PUBLIC EXHIBITION 6 JANUARY 2021 TO 5 FEBRUARY 2021 (57076E) (MIN20.253)

This Planning Proposal (PP) seeks to amend the land use zones, minimum lot size for subdivision and terrestrial biodiversity provisions as well as introduce a site-specific legal mechanism within Shoalhaven Local Environmental Plan 2014 to enable a community title subdivision (consisting of 13 housing lots and one neighbourhood environmental conservation lot) on the subject land.

PLANNING PROPOSAL - PP052 TO AMEND SHOALHAVEN LOCAL ENVIRONMENTAL PLAN 2014 - THE ARBOUR RETIREMENT VILLAGE BERRY - PUBLIC EXHIBITION 4 NOVEMBER 2020 TO 18 DECEMBER 2020 (63199E) (MIN20.161)

The Planning Proposal intends to rezone an area of approximately 7,665 m2 at the north-eastern corner of Lot 6, DP 1204186 from RU1 - Primary Production to R2 - Low Density Residential to allow low-density residential use of the land for seniors housing. The Arbour Retirement Village is centrally located on the property. The PP seeks to also amend (reduce) minimum lot size and height of building controls currently applying to the land.

PLANNING PROPOSAL - PP054 TO AMEND SHOALHAVEN LOCAL ENVIRONMENTAL PLAN 2014 - REZONING OF RIPARIAN LAND AT TAYLORS LANE CAMBEWARRA - PUBLIC EXHIBITION 24 MARCH 2021 TO 23 APRIL 2021 (60737E) (MIN20.387)

The Planning Proposal seeks to amend Shoalhaven Local Environmental Plan (LEP) 2014 to rezone part of Lot 1 DP 949932 from E2 Environmental Conservation to R1 General Residential to enable residential development. The PP also seeks to make corresponding changes to lot size controls, the riparian lands and watercourses map and the urban release area (URA) boundary within the LEP to enable the rezoned land to be included within the Moss Vale Road South URA. The subject land is currently identified as a watercourse and riparian corridor. An independent assessment of the identified watercourse and riparian area was undertaken and supports the changes sought by the PP.

(3) The name of each development control plan that applies to the carrying out of development on the land is:

Shoalhaven Development Control Plan 2014 (as amended)

(Note: a copy of Shoalhaven Development Control Plan 2014 is available on the internet at www.dcp2014.shoalhaven.nsw.gov.au or can be inspected at Council's Nowra office during normal business hours.)

2 **Zoning and land use under relevant LEPs**

For Shoalhaven Local Environmental Plan 2014 (as amended)

a. **The identity of the zone in which the land is included under Shoalhaven Local Environmental Plan 2014:**

Zone IN1 General Industrial

b. **The purposes for which Shoalhaven Local Environmental Plan 2014 provides that development may be carried out within the zone without the need for development consent:**

Nil

c. **The purposes for which Shoalhaven Local Environmental Plan 2014 provides that development may not be carried out within the zone except with development consent:**

Specialised retail premises; Depots; Freight transport facilities; Garden Centres; General industries; Hardware and Building Supplies; Industrial training facilities; Kiosks; Landscaping material supplies; Light industries; Markets; Neighbourhood shops; Oyster aquaculture; Places of Public Worship; Roads; Take away food and drink premises; Tank-based aquaculture; Timber yards; Warehouse or distribution centres;
Any other development not specified in item b or d.

d. **The purposes for which Shoalhaven Local Environmental Plan 2014 provides that development is prohibited within the zone:**

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Centre-based child care facilities; Correctional centres; Crematoria; Eco-tourist facilities; Educational establishments; Environmental facilities; Exhibition villages; Extractive industries; Farm buildings; Forestry; Function centres; Health services facilities; Highway service centres; Home-based childcare; Home businesses; Home occupations; Home occupations (sex services); Information and education facilities; Marinas; Mooring pens; Moorings; Office premises; Open cut mining; Pond-based aquaculture; Registered clubs; Residential accommodation; Respite day care centres; Restricted premises; Retail premises; Sex services premises; Tourist and visitor accommodation; Water recreation structures; Wharf or boating facilities.

e. Development standards applying to the land under Shoalhaven Local Environmental Plan 2014 **DO NOT** fix minimum land dimensions for the erection of a dwelling-house on the land.

f. The land **DOES NOT** include or comprise critical habitat under Shoalhaven Local Environmental Plan 2014.
(Note: Shoalhaven Local Environmental Plan 2014 does not identify areas of "critical habitat" as defined in Part 7A of the Fisheries Management Act 1994 (subject to section 5AA of the Environmental Planning and Assessment Act 1979). Enquiries about whether the land is "critical habitat" Part 7A of the Fisheries Management Act 1994 should be directed to the NSW Office of Environment and Heritage).

g. The land **IS NOT** in a conservation area (however described) under Shoalhaven Local Environmental Plan 2014.
(Note: this item relates to "heritage conservation areas" as defined in the LEP).

h. An item of environmental heritage (however described) under Shoalhaven Local Environmental Plan 2014 **IS NOT** situated on the land.

(Note: "environmental heritage" relates to matters/items of cultural heritage, for example, items listed on the State Register, items specifically listed in the LEP or matters subject to an "interim heritage order" under the Heritage Act 1977).

Other provisions under Shoalhaven Local Environmental Plan 2014 may also apply to the development of this land. You can view the Shoalhaven Local Environmental Plan 2014 at the website www.legislation.nsw.gov.au or at Council's offices.

2A **Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006**

(a) The land **IS NOT** within any zone (however described) under Part 3 of the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (the 2006 SEPP), or

(b) The land **IS NOT** within any Precinct Plan (within the meaning of the 2006 SEPP), or

(c) The land **IS NOT** within a proposed Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act.

3 **Complying development**

Qualifying Statement on Council Data Affecting this Item
Shoalhaven City Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, however specific land restrictions may not apply to all of the land. The information included in this Planning Certificate is provided in accordance with the Environmental Planning & Assessment Regulation 2000 (as amended). It is strongly suggested that you review the State Environmental Planning Policy (Exempt and Complying Developments Codes) 2008 and supporting information before proceeding with the lodgement of a Complying Development Certificate application to either Council or a private certifier. The NSW Department of Planning and Environment has provided a series of information sheets on its website
http://www.planning.nsw.gov.au/exemptandcomplying

Note: There are other provisions in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 that must be complied with in order for development on the land to be complying development.

Specific land exemptions for Housing Code, Rural Housing and Greenfield Housing Code

The extent to which the land is land on which complying development may be carried out under the codes of State Environmental Planning Policy (Exempt Complying Development Codes) 2008 **IS RESTRICTED** by the following provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 but the restriction may not apply to all of the land and Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

Under the Housing Code and the Rural Housing Code the land is affected by specific land exemptions -

Clause 1.19(1)(e)(i) & Clause 1.19(5)(f)(i) because the land is identified by an environmental planning instrument as being: within a buffer area.

Specific land exemptions for Housing Alterations Code and General Development Code

The extent to which the land is land on which complying development may be carried out under the codes of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 **IS NOT RESTRICTED** by the following provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 but the restriction may not apply to all of the land, and Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

Specific land exemptions for Commercial and Industrial (New Buildings and Additions) Code

The extent to which the land is land on which complying development may be carried out under the codes of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 **IS RESTRICTED** by the following provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 but the restriction may not apply to all of the land and Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

Under the General Commercial and Industrial Code the land is affected by specific land exemptions -

Clause 1.19(1)(e)(i) & Clause 1.19(5)(f)(i) because the land is identified by an environmental planning instrument as being: within a buffer area.

Specific land exemptions for Low Rise Housing Diversity Code

The extent to which the land is land on which complying development may be carried out under the codes of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 **IS RESTRICTED** by the following provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 but the restriction may not apply to all of the land and Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

Under the Low Rise Housing Diversity Code the land is affected by specific land exemptions -

Clause 1.19(1)(e)(i) & Clause 1.19(5)(f)(i) because the land is identified by an environmental planning instrument as being: within a buffer area.

4B **Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works**

The owner (or any previous owner) of the land **HAS NOT** consented in writing to the land being subject to annual charges under section 496B of the Local Government Act 1993 for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act).

5 **Mine subsidence**

The land **HAS NOT** been proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

6 **Road widening and road alignment**

(a) The land **IS NOT** affected by any road widening or road realignment under Division 2 of Part 3 of the Roads Act 1993

(b) If the land is affected by any road widening or road realignment under any environmental planning instrument it will be listed below.

(c) The land **IS NOT** affected by any road widening or road realignment under any resolution of Council.

Note: Information in item 6, relates to Council's road proposals; other authorities e.g. NSW Roads and Maritime Services, may have proposals not set out herein.

7 **Council and other public authority policies on hazard risk restrictions**
(a) The land **IS** affected by the following policy or policies adopted by the Council that restrict the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding).

Shoalhaven Development Control Plan 2014

Contaminated Land Policy 2013

Shoalhaven Coastal Zone Management Plan 2018

HAZARD RISK RESTRICTION

This property is identified as "sensitive area" on Shoalhaven LEP 2014 - Natural Resources Sensitivity land map and is affected by Clause 7.7 Landslide risk and other land degradation. Clause 7.7 applies to land comprising steep slopes and susceptible to other forms of land degradation.

(b) The land **IS NOT** affected by a policy adopted by a public authority (other than the Council) and notified to the Council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the Council, that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding).

7A **Flood related development controls information**

(1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

(2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.

(3) Words and expressions in this clause have the same meanings as in the Standard Instrument.

(1) Development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) **IS** subject to flood related development controls as contained in Clause 7.3 of Shoalhaven Local Environmental Plan 2014; and/or Chapter G9 of Shoalhaven Development Control Plan 2014.

(2) Development on the land or part of the land for any other purpose **IS** subject to flood related development controls as contained in Clause 7.2A and Clause 7.3 of Shoalhaven Local Environmental Plan 2014; and/or Chapter G9, G10 of Shoalhaven Development Control Plan 2014.

For further information or to request a flood certificate, please contact Council's - City Development.

8 **Land reserved for acquisition**

The land **IS NOT** reserved for acquisition by a public authority, as referred to in section 3.15 of the Act under any environmental planning instrument, or proposed environmental planning instrument referred to in clause 1.

9 **Contributions plans**

The name of the contributions plan applying to the land is:

Shoalhaven Contributions Plan 2019 (as amended)

9a **Biodiversity certified land**

The land **IS NOT** biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016.

Note: Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016.

10 **Biobanking stewardship sites**
The council **HAS NOT** been notified by the Chief Executive of the Office of Environment and Heritage whether or not the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act 2016.

Note: Biodiversity stewardship agreements include biobanking agreements under Part 7A of the Threatened Species Conservation Act 1995 that are taken to be biodiversity stewardship agreements under Part 5 of the Biodiversity Conservation Act 2016.

10a **Native vegetation clearing set asides**
The land **DOES NOT** contain a set aside area under section 60ZC of the Local Land Services Act 2013.

11 **Bush fire prone land**
The land **IS NOT** bushfire prone (as defined in the Environmental Planning and Assessment Act 1979).

12 **Property vegetation plans**
The Council **HAS NOT** been notified that the land is land to which a property vegetation plan approved under Part 4 of the Native Vegetation Act 2003 (and that continues in force) applies.

13 **Orders under Trees (Disputes Between Neighbours) Act 2006**
The Council **HAS NOT** been notified that an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land.

14 **Directions under Part 3A**
There is no direction by the Minister in force under section 75P (2) (c1) of the 'Environmental Planning and Assessment Act 1979' that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect.

15 **Site compatibility certificates and conditions for seniors housing**
The Council **IS NOT** aware of any current site compatibility certificate (seniors housing) in respect of proposed development on the land.

16 **Site compatibility certificates for infrastructure, schools or TAFE establishments**
The Council **IS NOT** aware of a current site compatibility certificate (Infrastructure) or site compatibility certificate (schools or TAFE establishments), in respect of proposed development on the land.

17 **Site compatibility certificates and conditions for affordable rental housing**
The Council **IS NOT** aware of a current site compatibility certificate (affordable rental housing), in respect of proposed development on the land.

18 **Paper subdivision information**
The land **IS NOT** affected by a development plan (proposed or adopted) or subdivision order as defined under Part 16C of the Environmental Planning & Assessment Regulation 2000

19 **Site verification certificates**

The Council **IS NOT** aware of a current site verification certificate (mining, petroleum production and extractive industries), in respect of this land.

20 **Loose-filled asbestos insulation**

The land **DOES NOT** include any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division.

21 **Affected building notices and building product rectification orders**

(1) The Council **IS NOT** aware of any affected building notice as defined under the Building Products (Safety) Act 2017 that is in force in respect of the land.

(2)(a) The Council **IS NOT** aware of any building product rectification order as defined under the Building Products (Safety) Act 2017 that is in force in respect of the land and has not been fully complied with, and

(2)(b) The Council **IS NOT** aware of any notice of intention to make a building product rectification order as defined under the Building Products (Safety) Act 2017 given in respect of the land and is outstanding.

Note: Contaminated Land Management Act 1997: The following matters are prescribed by Section 59(2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate:

(a) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is significantly contaminated land within the meaning of the Contaminated Land Management Act 1997.

(b) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject to a management order within the meaning of the Contaminated Land Management Act 1997.

(c) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject of an approved voluntary management proposal within the meaning of the Contaminated Land Management Act 1997.

(d) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject of an ongoing maintenance order within the meaning of the Contaminated Land Management Act 1997.

(e) The land **IS NOT** the subject of a site audit statement within the meaning of the Contaminated Land Act 1997 that has been provided to the Council.

Information under Section 10.7(5)

As at the date of this certificate, the abovementioned land is also affected as follows:
(**NOTE:** SECTION 10.7(6) STATES THAT A COUNCIL SHALL NOT INCUR ANY LIABILITY IN RESPECT OF ANY ADVICE PROVIDED IN GOOD FAITH PURSUANT TO SECTION 10.7(5)

DCPs, Contribution Plans & Planning Agreements

SHOALHAVEN CONTRIBUTIONS PLAN 2019 - DRAFT AMENDMENT NO 7 - MOSS VALE ROAD SOUTH URBAN RELEASE AREA PROJECT - PUBLIC EXHIBITION 24 MARCH 2021 to 23 APRIL 2021 (64284E) (MIN20.387)
The draft amendment to Shoalhaven Contributions Plan (CP) 2019 supports Planning Proposal PP054 which seeks to amend Shoalhaven LEP 2014 to rezone land at Taylors Lane, Cambewarra, from E2 Environmental Conservation to R1 General Residential to enable residential development. The PP seeks to make corresponding changes to lot size controls, the urban release area (URA) boundary and the riparian lands and watercourses map within the LEP to enable the rezoned land to be included in the Moss Vale Road South URA. The draft amendment to the CP 2019 has been prepared to include the subject land in the catchment area for roads, drainage and public open space projects in Moss Vale Road South URA.

SHOALHAVEN DEVELOPMENT CONTROL PLAN 2014 - DRAFT AMENDMENT NO 44 - CHAPTER N3 BERRY RESIDENTIAL SUBDIVISION - PUBLIC EXHIBITION 28 OCTOBER 2020 to 8 JANUARY 2021 (64037E) (MIN20.619)
Draft Chapter N3 Berry Residential Subdivision supports a proposed amendment to Shoalhaven Local Environmental Plan 2014 (PP029) to rezone land south of Hitchcocks Lane to enable residential development. The draft DCP Chapter N3 contains provisions to guide future subdivision and housing development on the land subject to PP029 and an updated Masterplan for land west of the Princes Highway at Berry.

SHOALHAVEN DEVELOPMENT CONTROL PLAN 2014 - DRAFT AMENDMENT NO 46 - CHAPTER NB3 MOSS VALE ROAD SOUTH URBAN RELEASE AREA - PUBLIC EXHIBITION 24 MARCH 2021 to 23 APRIL 2021 (64283E) (MIN20.387)
The draft DCP amendment supports Planning Proposal PP054 which seeks to amend Shoalhaven LEP 2014 to rezone part of Lot 1 DP 949932, Taylors Lane, Cambewarra, from E2 Environmental Conservation to R1 General Residential to enable residential development. The PP seeks to make corresponding changes to lot size controls, the urban release area (URA) boundary and the riparian lands and watercourses map within the LEP to enable the rezoned land to be included in the Moss Vale Road South URA. The draft DCP amendment includes the subject land in the indicative layout plan, staging plan and other relevant maps/figures of Chapter NB3.

Matters Affecting This Land

HMAS ALBATROSS MILITARY AIRCRAFT OPERATING AREA - HELO NORTH
Advice to Council on 3 November 2006 confirms information previously provided by The Department of Defence, that the subject land is within HMAS Albatross Military Aircraft Operating Area. Specifically, the subject land is within an area known as Helo North and information provided to Council advises:
"Helo North
Helicopter Training Area
Operating heights - Surface to 3000ft
Military helicopters conduct training evolutions in this area. The area is available for this type of operation 24 hours per day. However operations are generally weekdays between 8.00am and 5.00pm. Occasionally night flying is conducted in this area. This activity is normally completed by 11.00pm."
Further information is available by contacting HMAS Albatross at Nowra.

NOWRA BOMADERRY STRUCTURE PLAN
This property is located in the area covered by the Nowra Bomaderry Structure Plan (NBSP). The NBSP was adopted by Council in 2006 and endorsed by State Government in 2008. The NBSP is not a legal document but rather one that provides strategic direction and guidance. The NBSP provides the planning framework for growth, development opportunities and conservation measures in the Nowra Bomaderry area for the next 20 years. It identifies potential areas for new living areas and industrial expansion as well as a future western bypass and the preferred road network required to support long-term growth. Landowners and prospective buyers are encouraged to view the Adopted and Endorsed Strategic Direction and Structure Plan Map.

Further information can be found on Council's website Shoalhaven City Council Planning Register or by contacting Council's Strategic Planning team on (02) 4429 5377.

Matters Affecting The Whole Of The City

ACID SULFATE SOILS - Large areas of the coastal zone of NSW have the potential to be affected by acid sulfate soils which become problematic if exposed during excavations or similar activities. The Dept of Land & Water Conservation have maps which indicate the potential occurrence of acid sulfate soils. Prior to undertaking work which involves substantial soil disturbance, you should ascertain the possibility of acid sulfate soils existing on your property. Enquiries to NSW Department of Planning, Industry and Environment.

INTERIM POLICY - DEVELOPMENT ADJOINING NARROW LANEWAYS
Council resolved on 6 November 2018 to adopt an interim policy position regarding development adjoining narrow laneways. The Interim Policy provides direction regarding access, servicing, design and use of narrow laneways as a primary frontage. Contact Council's - Strategic Planning for further information. (MIN18.891) (57914E)

POLICY - PROVISION OF WATER AND SEWERAGE INFRASTRUCTURE - DEVELOPMENT NOT INCLUDED IN DEVELOPMENT SERVICING PLANS
This Policy shall apply to all lands which have not been included in water supply and/or sewerage services development servicing plans.

POLICY - COMPANION ANIMALS (IMPACTS ON NATIVE FAUNA) - CONDITIONS OF DEVELOPMENT CONSENT
Council resolved on 21 February 2017, in order to protect populations of native fauna, including threatened species, from impacts associated with the keeping of domestic cats and dogs within certain development, that appropriate restrictions on title or conditions of consent for the management of companion animals may be applied in sensitive environmental locations (23139E)(MIN17.95)(MIN17.95)

INFORMATION REGARDING LOOSE-FILLED ASBESTOS INSULATON
Some residential homes located in NSW have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.

You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, Council recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

Contact NSW Fair Trading for further information.

INFORMATION REGARDING FOSSICKING DISTRICT 68.
Pursuant to section 369A of the Mining Act 1992, the NSW Department of Planning, Industry and Environment have declared all land within the Shoalhaven City Council Local Government Area to be a Fossicking District (Fossicking District 68). Contact the NSW Department of Planning, Industry and Environment for further information.

for the CHIEF EXECUTIVE OFFICER

RESPECT | INTEGRITY | ADAPTABILITY | COLLABORATION

Shoalhaven City Council

Bridge Rd, Nowra NSW 2541 | 02 4429 3111
Deering St, Ulladulla NSW 2539 | 02 4429 8999

Address all correspondence to
The General Manager, PO Box 42, Nowra NSW 2541 Australia
council@shoalhaven.nsw.gov.au | DX5323 Nowra | Fax 02 4422 1816

shoalhaven.nsw.gov.au

PLANNING CERTIFICATE UNDER SECTION 10.7
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2025/01372

Applicant: Ghd Pty Ltd
Level 11, 200 Crown St
WOLLONGONG NSW 2500

Receipt No.: Ext: 193203
Date: 31/03/2025
Fee: $174
Urgency Fee: $0.00

Applicant reference: 12662565

The land to which this Certificate relates is:
Lot 34 DP 1222627, 32 Bolong Rd, BOMADERRY
Parish of BUNBERRA, County of CAMDEN

The above information is as recorded by Council.

DISCLAIMER AND CAUTION:

1. The information on zones, controls etc given below relates to the land for which the certificate was sought. If enquirers wish to know what zones, other controls, etc apply or are proposed on nearby land then they should make enquiries in person at Council's offices.

2. The information contained in this certificate is accurate as at the date of this certificate.

3. In providing this certificate Council has in good faith relied upon information provided to it or sourced from third parties. Where Council has obtained the information from third parties, either exclusively or in conjunction with information held by Council, the Certificate details the source of that third party information. Council cautions persons against relying upon information in the Certificate sourced from third parties as to its accuracy, applicability to specific lands and its currency without verification from the specified third party and, where appropriate, professional advice and the adoption of prudent land acquisition measures and appropriate professional advice. To the full extent permitted by law Council disclaims liability with respect to any information in this Certificate sourced from third parties.

The information contained in this certificate is prepared in accordance with the Environmental Planning and Assessment Act 1979 (as amended) and the Environmental Planning Assessment Regulation 2021 (as amended).

RESPECT | INTEGRITY | ADAPTABILITY | COLLABORATION

PLANNING CERTIFICATE UNDER SECTION 10.7
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2025/01372

This is a Planning Certificate issued by Shoalhaven City Council under Section 10.7(2) of the *Environmental Planning and Assessment Act 1979* on the application of the person described above in respect of the land described above.

1 Names of relevant planning instruments and development control plans

(1) The name of each environmental planning instrument and development control plan that applies to the carrying out of development on the land:

State Environmental Planning Policies

State Environmental Planning Policy (Resilience and Hazards) 2021
State Environmental Planning Policy (Biodiversity and Conservation) 2021
State Environmental Planning Policy (Industry and Employment) 2021
State Environmental Planning Policy (Precincts - Regional) 2021
State Environmental Planning Policy (Transport and Infrastructure) 2021
State Environmental Planning Policy (Resources and Energy) 2021
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy (Planning Systems) 2021
State Environmental Planning Policy (Primary Production) 2021
State Environmental Planning Policy (Housing) 2021
State Environmental Planning Policy (Sustainable Buildings) 2022

Local Environmental Plans

Shoalhaven Local Environmental Plan 2014 (as amended)

Development Control Plans

Shoalhaven Development Control Plan 2014 (as amended)

Note: a copy of Shoalhaven Development Control Plan 2014 is available on the internet at www.dcp2014.shoalhaven.nsw.gov.au or can be inspected at Council's Nowra office during normal business hours.

(2) The name of each proposed environmental planning instrument and draft development control plan, which is or has been subject to community consultation or public exhibition under the Act, that will apply to the carrying out of development on the land.

Proposed State Environmental Planning Policies and other Environmental Planning Instruments

Explanation of Intended Effect - Proposed amendments to the in-fill affordable housing, group homes, supportive accommodation and social housing provisions of the State Environmental Planning Policy (Housing) 2021 - exhibition 22/11/2022 to 13/01/2023.

Explanation of Intended Effect - Proposed reforms to outdoor dining on private land and live music venues - exhibition 19/10/2023 to 16/11/2023.

Consultation draft - Amendments to the Local Government (Caravan Parks, Manufactured Home Estates, Camping Ground and Moveable Dwellings) Regulation 2021 and State Environmental Planning Policy (Housing) 2021 - exhibition 17/11/2023 to 15/12/2023.

Explanation of Intended Effect - Improving planning processes to deliver infrastructure faster - exhibition 06/03/2024 to 16/04/2024

Explanation of Intended Effect - Proposed changes to complying development for farm buildings, rural sheds and earthworks - exhibition 15/05/2024 to 14/06/2024

Explanation of Intended Effect - Cultural State Environmental Planning Policy - exhibition 15/11/2024 to 13/12/2024

Planning Proposals for Local Environmental Plans

Amendment to Shoalhaven Local Environmental Plan 2014 - PP073 - Local Character - Exhibition 26/06/2024 to 08/07/2024.

Amendment to Shoalhaven Local Environmental Plan 2014 - PP076 - 131 St Vincent St, Ulladulla - Exhibition 25/11/2024 to 15/01/2025.

Amendment to Shoalhaven Local Environmental Plan 2014 - PP078 - 17 Prince Alfred Street, Berry (The Berry Inn) - Exhibition 12/02/2025 to 14/03/2025.

Note: In this section - **proposed environmental planning instrument** means a draft environmental planning instrument and includes a planning proposal for a local environmental plan.

Draft Development Control Plans

Draft Amendment 56 to Shoalhaven Development Control Plan 2014 - Chapter NB4: Moss Vale Road North Urban Release Area - Exhibition 26/08/2024 to 23/09/2024.

2 **Zoning and land use under relevant planning instruments**

For Shoalhaven Local Environmental Plan 2014 (as amended)

a. **The identity of the zone in which the land is included under Shoalhaven Local Environmental Plan 2014:**

Zone C2 Environmental Conservation

Zone E4 General Industrial

b. **The purposes for which development in the C2 Environmental Conservation zone**

i. **may be carried out without development consent:**

Nil

ii. **may not be carried out except with development consent:**

Bed and breakfast accommodation; Boat sheds; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities; Emergency services facilities; Environmental facilities; Environmental protection works; Home businesses; Oyster aquaculture; Recreation areas; Research stations; Roads; Sewerage systems; Water recreation structures; Water supply systems.

iii. **is prohibited:**

Business premises; Hotel or motel accommodation; Industries; Local distribution premises; Multi dwelling housing; Pond-based aquaculture; Recreation facilities (major); Residential flat buildings; Restricted premises; Retail premises; Seniors housing; Service stations; Tank-based aquaculture; Warehouse or distribution centres; Any other development not specified in item i or ii.

The purposes for which development in the E4 General Industrial zone

i. **may be carried out without development consent:**

Nil

ii. **may not be carried out except with development consent:**

Depots; Freight transport facilities; Garden centres; General industries; Goods repair and reuse premises; Hardware and building supplies; Industrial retail outlets; Industrial training facilities; Kiosks; Landscaping material supplies; Light industries; Local distribution premises; Markets; Neighbourhood shops; Oyster aquaculture; Plant nurseries; Specialised retail premises; Take away food and drink premises; Tank-based aquaculture; Timber yards; Warehouse or distribution centres; Any other development not specified in item i or iii.

iii. **is prohibited:**

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Camping grounds; Caravan parks; Cemeteries; Centre-based child care facilities; Charter and tourism boating facilities; Correctional centres; Crematoria; Eco-tourist facilities; Educational establishments; Environmental facilities; Exhibition villages; Extractive industries; Farm buildings; Forestry; Function centres; Health services facilities; Heavy industries; Highway service centres; Home businesses; Home occupations; Home occupations (sex services); Home-based child care; Information and education facilities; Marinas; Mooring pens; Moorings; Office premises; Open cut mining; Registered clubs; Residential accommodation; Respite day care centres; Restricted premises; Retail premises; Sex services premises; Tourist and visitor accommodation; Water recreation structures; Wharf or boating facilities.

c. Additional permitted uses **DO** apply to the land

Sch 1.29 - Additional Permitted Uses
Development for the purposes of heavy industries is permitted with development consent.

d. Development standards applying to the land **DO** fix minimum land dimensions for the erection of a dwelling-house on the land and the minimum land dimensions so fixed are:

PART 40 Ha

Note: Refer to clause 4.2D in Shoalhaven Local Environmental Plan 2014

e. The land **IS NOT** in an area of outstanding biodiversity value under the *Biodiversity Conservation Act* 2016.

f. The land **IS NOT** in a conservation area (however described) under Shoalhaven Local Environmental Plan 2014.

Note: this item relates to "heritage conservation areas" as defined in the LEP.

g. An item of environmental heritage (however described) under Shoalhaven Local Environmental Plan 2014 **IS NOT** located on the land.

Note: "environmental heritage" relates to matters/items of cultural heritage, for example, items listed on the State Register, items specifically listed in the LEP or matters subject to an "interim heritage order" under the *Heritage Act 1977*.

Other provisions under Shoalhaven Local Environmental Plan 2014 may also apply to the development of this land. You can view the Shoalhaven Local Environmental Plan 2014 at the website www.legislation.nsw.gov.au or at Council's offices.

3 **Contributions**

1) The name of each contributions plan under the Act, Division 7.1 applying to the land, including draft contributions plans:

Shoalhaven Contributions Plan 2019 (as amended)

2) The subject land is within Illawarra-Shoalhaven to which the *Environmental Planning and Assessment (Housing and Productivity Contribution) Order 2023* applies.

4 **Complying development**

Qualifying Statement on Council Data Affecting this Item
Shoalhaven City Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, however specific land restrictions may not apply to all of the land. The information included in this Planning Certificate is provided in accordance with the Environmental Planning & Assessment Regulation 2021 (as amended). It is strongly suggested that you review the State Environmental Planning Policy (Exempt and Complying Developments Codes) 2008 and supporting information before proceeding with the lodgement of a Complying Development Certificate application to either Council or a private certifier. The NSW Department of Planning, Industry and Environment has provided a series of information sheets on its website
http://www.planning.nsw.gov.au/exemptandcomplying

Note: There are other provisions in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 that must be complied with in order for development on the land to be complying development. Refer to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 to identify if a Code applies to your land.

Whether the extent to which the land is land on which complying development may be carried out under the following codes for complying development of State Environmental Planning Policy (Exempt Complying Development Codes) 2008 is restricted by the following provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008:

Housing Code, Rural Housing Code, Agritourism and Farm Stay Accommodation Code and Greenfield Housing Code: **IS RESTRICTED**

Under the Housing Code , Rural Housing Code, Agritourism and Farm Stay Accommodation Code and Greenfield Housing Code the land is affected by specific land exemptions -

Clause 1.17A(1)(e) because the land is an environmentally sensitive area, being:
land identified in this or any other environmental planning instrument as being of high Aboriginal cultural significance or high biodiversity significance.

Clause 1.19(1)(c) or Clause 1.19(5)(c) because the land is identified on an Acid Sulfate Soils Map as being Class 1 or Class 2.

Housing Alterations Code and General Development Code: **IS RESTRICTED**

Under the Housing Alterations Code and the General Development Code the land is affected by specific land exemptions -

Clause 1.17A(1)(e) because the land is an environmentally sensitive area, being:
land identified in this or any other environmental planning instrument as being of high Aboriginal cultural significance or high biodiversity significance.

Industrial and Business Buildings Code: **IS RESTRICTED**

Under the Industrial and Business Buildings Code the land is affected by specific land exemptions -

Clause 1.17A(1)(e) because the land is an environmentally sensitive area, being: land identified in this or any other environmental planning instrument as being of high Aboriginal cultural significance or high biodiversity significance.

Clause 1.19(1)(c) or Clause 1.19(5)(c) because the land is identified on an Acid Sulfate Soils Map as being Class 1 or Class 2.

Low Rise Housing Diversity Code: **IS RESTRICTED**

Under the Low Rise Housing Diversity Code the land is affected by specific land exemptions -

Clause 1.17A(1)(e) because the land is an environmentally sensitive area, being: land identified in this or any other environmental planning instrument as being of high Aboriginal cultural significance or high biodiversity significance.

Clause 1.19(1)(c) or Clause 1.19(5)(c) because the land is identified on an Acid Sulfate Soils Map as being Class 1 or Class 2.

The complying development codes **ARE NOT** varied, under that Policy, clause 1.12, in relation to the land.

5 Exempt Development

Qualifying Statement on Council Data Affecting this Item

Shoalhaven City Council does not have sufficient information to ascertain the extent to which exempt development may or may not be carried out on the land, however specific land restrictions may not apply to all of the land. The information included in this Planning Certificate is provided in accordance with the Environmental Planning & Assessment Regulation 2021 (as amended). It is strongly suggested that you review the State Environmental Planning Policy (Exempt and Complying Developments Codes) 2008 and supporting information before proceeding with exempt development. The NSW Department of Planning and Environment has provided a series of information sheets on its website http://www.planning.nsw.gov.au/exemptandcomplying

Note: There are other provisions in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 that must be complied with in order for development on the land to be exempt development. Refer to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 to identify if a Code applies to your land.

Whether the extent to which the land is land on which exempt development may be carried out under each of the exempt development codes under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 is restricted by the following provisions of that Policy, clause 1.16(1)(b1)–(d) or 1.16A of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008:

General Exempt Development Code, Advertising and Signage Exempt Development Code and Temporary Uses and Structures Exempt Development Code: **IS NOT RESTRICTED**

The exempt development codes **ARE NOT** varied, under that Policy, clause 1.12, in relation to the land.

6 **Affected building notices and building product rectification orders**

a) Council **IS NOT** aware that an affected building notice is in force in relation to the land.

b) Council **IS NOT** aware that a building product rectification order is in force in relation to the land that has not been fully complied with.

c) Council **IS NOT** aware that a notice of intention to make a building product rectification order given in relation to the land is outstanding.

Note: In this section, **affected building notice** has the same meaning as in the *Building Products (Safety) Act 2017*, Part 4. **building product rectification order** has the same meaning as in the *Building Products (Safety) Act 2017*.

7 **Land reserved for acquisition**

The land **IS NOT** reserved for acquisition by an authority of the State, as referred to in section 3.15 of the Act under any environmental planning instrument, or proposed environmental planning instrument referred to in Section 1.

8 **Road widening and road realignment**

a) The land **IS NOT** affected by any road widening or road realignment under the *Roads Act 1993*, Part 3, Division 2.

b) The land **IS NOT** affected by road widening or road realignment under an environmental planning instrument.

c) The land **IS NOT** affected by any road widening or road realignment under a resolution of Council.

Note: Information in item 8 relates only to proposed plans by the Council for the widening of a public road that would affect the land and have been submitted to the Minister by the Council and any road widening orders affecting the land that the Council has caused to be published in the NSW Government Gazette under section 25 of the *Roads Act 1993*. Other authorities e.g. Transport for NSW, may have proposals not set out herein.

9 **Flood related development controls**

(1) Council's adopted flood information **DOES** identify the land or part of the land as being within the flood planning area and subject to flood related development controls. Note that not all areas within the Shoalhaven LGA are covered by an adopted flood investigation.

(2) Council's adopted flood information **DOES** identify the land or part of the land as being between the flood planning area and the probable maximum flood and subject to flood related development controls. Note that not all areas within the Shoalhaven LGA are covered by an adopted flood investigation.

Flood Planning Area has the same meaning as in the Flood Risk Management Manual.
Floodplain Development Manual Means the Flood Risk Management Manual (ISBN 978-1-923076-17-4) published by the NSW Government in June 2023.
Probable Maximum Flood has the same meaning as in the Flood Risk Management Manual.
Note: The Flood Risk Management Manual replaces the Floodplain Development Manual (2005).

Note: In relation to sub clause (1) and (2) above, if the land or part of the land is within 40 metres of a creek; or is within 10 metres of a major drainage system, local overland flow path or drainage easement; or has a history of flooding then a flood assessment report may need to be submitted with any development application under the requirements of the Shoalhaven Development Control Plan 2014. The flood assessment report is to identify whether or not the land or part of the land is flood prone and determine, if flood prone, the probable maximum flood extent and the flood planning level.

For further information or to request a flood certificate, please contact Council.

10 **Council and other public authority policies on hazard risk restrictions**

The land **IS** affected by the following adopted policy or policies that restrict the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils, contamination, aircraft noise, salinity, coastal hazards, sea level rise or any other risk (other than flooding).

Shoalhaven Development Control Plan 2014

Shoalhaven City Council - Contaminated Land Policy

Shoalhaven Coastal Zone Management Plan 2018

Planning for Bush Fire Protection 2019

Note: The policies above apply across the City. If certain specific hazards are known to apply to the land, those hazards may be noted below .

HAZARD RISK RESTRICTION

This property is identified as "sensitive area" on Shoalhaven LEP 2014 - Natural Resources Sensitivity Land map and is affected by Clause 7.7 Landslide risk and other land degradation. Clause 7.7 applies to land comprising steep slopes and susceptible to other forms of land degradation.

Note: In this section **adopted policy** means a policy adopted
(a) by the council, or
(b) by another public authority, if the public authority has notified the council that the policy will be included in a planning certificate issued by the council.

11 **Bush fire prone land**

The land **IS** bushfire prone land, either in whole or in part (as designated by the Commissioner of the NSW Rural Fire Service under the Act, section 10.3).

12 **Loose-fill asbestos insulation**

The land **DOES NOT** include any residential premises (within the meaning of the *Home Building Act 1989*, Part 8, Division 1A) that are listed on the Register kept under that Division.

13 **Mine subsidence**

The land **IS NOT** declared to be a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*.

14 **Paper subdivision information**

1) The land **IS NOT** affected by a development plan adopted by a relevant authority that applies to the land or is proposed to be subject to a ballot.

2) The land **IS NOT** affected by a subdivision order.

Note: Words and expressions used in this section have the same meaning as in the Regulation, Part 10 and the Act, Schedule 7.

15 **Property vegetation plans**

The Council **HAS NOT** been notified that the land is land to which a property vegetation plan is approved and in force under the *Native Vegetation Act 2003*, Part 4.

16 **Biobanking stewardship sites**

The Council **HAS NOT** been notified by the Biodiversity Conservation Trust that the land is a biodiversity stewardship site under a biodiversity stewardship agreement under the *Biodiversity Conservation Act 2016*, Part 5.

Note: Biodiversity stewardship agreements include biobanking agreements under the *Threatened Species Conservation Act 1995*, Part 7A that are taken to be biodiversity stewardship agreements under the *Biodiversity Conservation Act 2016*, Part 5.

17 **Biodiversity certified land**

The land **IS NOT** biodiversity certified land under the *Biodiversity Conservation Act 2016*, Part 8.

Note: Biodiversity certified land includes land certified under the *Threatened Species Conservation Act 1995*, Part 7AA that is taken to be certified under the *Biodiversity Conservation Act*, Part 8.

18 **Orders under Trees (Disputes Between Neighbours) Act 2006**

The Council **HAS NOT** been notified that an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land.

19 **Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works**

The owner (or any previous owner) of the land **HAS NOT** given written consent to the land being subject to annual charges under the *Local Government Act 1993*, section 496B, for coastal protection services that relate to existing coastal protection works.

Note: In this section - **existing coastal protection works** has the same meaning as in the *Local Government Act 1993*, section 553B.

Note: Existing coastal protection works are works to reduce the impact of coastal hazards on land such as seawalls, revetments, groynes and beach nourishment, that existed before 1 January 2011.

20 **Western Sydney Aerotropolis**

State Environmental Planning Policy (Precincts – Western Parkland City) 2021 **DOES NOT** apply to this land.

21 **Development consent conditions for seniors housing**

The Council **IS NOT** aware of any terms of a kind referred to in clause 88(2) of State Environmental Planning Policy (Housing) 2021 that have been imposed as a condition of development consent granted after 11 October 2007 in relation to the land.

22 **Site compatibility certificates and development consent conditions for affordable rental housing**

(1) The Council **IS NOT** aware of a current site compatibility certificate under State Environmental Planning Policy (Housing) 2021, or a former site compatibility certificate, in relation to proposed development on the land.

(2) The Council **IS NOT** aware of any conditions of development consent in relation to the land that are of a kind referred to in State Environmental Planning Policy (Housing) 2021, section 21(1) or 40(1).

(3) The Council **IS NOT** aware of any conditions of a development consent in relation to the land that are of a kind referred to in State Environmental Planning Policy (Affordable Rental Housing) 2009, clause 17(1) or 38(1).

Note: in this section -
former site compatibility certificate means a site compatibility certificate issued under State Environmental Planning Policy (Affordable Rental Housing) 2009.

Note: Contaminated Land Management Act 1997: The following matters are prescribed by Section 59(2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

a) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is significantly contaminated land within the meaning of the *Contaminated Land Management Act 1997*.

b) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject to a management order within the meaning of the *Contaminated Land Management Act 1997*.

c) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject of an approved voluntary management proposal within the meaning of the *Contaminated Land Management Act 1997*.

d) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject of an ongoing maintenance order within the meaning of the *Contaminated Land Management Act 1997*.

e) The land **IS NOT** the subject of a site audit statement within the meaning of the *Contaminated Land Management Act 1997* that has been provided to the Council.

23 Water or sewerage services under the *Water Industry Competition Act 2006* **DO NOT** apply to this land.

Note: Water and sewerage services in Shoalhaven LGA are provided by Shoalhaven Water. However, not all sites are connected to these services. Further enquiries should be directed to Shoalhaven Water **http://www.shoalwater.nsw.gov.au**.

Information under Section 10.7(5)

As at the date of this certificate, the abovementioned land is also affected as follows:
(**NOTE:** SECTION 10.7(6) STATES THAT A COUNCIL SHALL NOT INCUR ANY LIABILITY IN RESPECT OF ANY ADVICE PROVIDED IN GOOD FAITH PURSUANT TO SECTION 10.7(5))

Matters Affecting This Land

HMAS ALBATROSS MILITARY AIRCRAFT OPERATING AREA
Advice to Council on 3 November 2006 confirms information previously provided by The Department of Defence, that the subject land is within HMAS Albatross Military Aircraft Operating Area. Specific heights can be obtained by contacting HMAS Albatross at Nowra.

NOWRA BOMADERRY STRUCTURE PLAN
This property is located in the area covered by the Nowra Bomaderry Structure Plan (NBSP). The NBSP was adopted by Council in 2006 and endorsed by State Government in 2008. The NBSP is not a legal document but rather one that provides strategic direction and guidance. The NBSP provides the planning framework for growth, development opportunities and conservation measures in the Nowra Bomaderry area for the next 20 years. It identifies potential areas for new living areas and industrial expansion as well as a future western bypass and the preferred road network required to support long-term growth. Landowners and prospective buyers are encouraged to view the Adopted and Endorsed Strategic Direction and Structure Plan Map.

Further information can be found on Council's website Shoalhaven City Council Planning Register or by contacting Council's on (02) 4429 3111.

DRAFT STRATEGIC GROWTH PRINCIPLES - CITYWIDE-INCLUSION WITHIN LOCAL STRATEGIC PLANNING STATEMENT-PUBLIC EXHIBITION 12 JUNE 2024 TO 12 JULY 2024 (58417E)(MIN24.274)
On 20 May 2024, Council resolved to support public exhibition of the draft Strategic Growth Principles. The draft principles have been developed to guide Council's preparation of a new land use planning scheme, and its consideration of strategic land use planning decisions and rezoning proposals. The principles will be embedded in Council's adopted Local Strategic Planning Statement (LSPS), a high-level strategic land use planning document setting out the work Council will do to identify and meet the communities land use needs over the next 15 - 20 years.

SEA LEVEL RISE PROJECTIONS
Council has adopted new sea level rise projections that may affect the flood affection of this land into the future. For more information, contact Council's City Development Directorate (MIN24.211).

Matters Affecting The Whole Of The City

ACID SULFATE SOILS - Large areas of the coastal zone of NSW have the potential to be affected by acid sulfate soils which become problematic if exposed during excavations or similar activities. The Dept of Land & Water Conservation have maps which indicate the potential occurrence of acid sulfate soils. Prior to undertaking work which involves substantial soil disturbance, you should ascertain the possibility of acid sulfate soils existing on your property. Enquiries to NSW Department of Planning and Environment.

INTERIM POLICY - DEVELOPMENT ADJOINING NARROW LANEWAYS
Council resolved on 6 November 2018 to adopt an interim policy position regarding development adjoining narrow laneways. The Interim Policy provides direction regarding access, servicing, design and use of narrow laneways as a primary frontage. Contact Council's - Strategic Planning for further information. (MIN18.891) (Reaffirmed 1 August 2022 - MIN22.502) (57914E)

POLICY - PROVISION OF WATER AND SEWERAGE INFRASTRUCTURE - DEVELOPMENT NOT INCLUDED IN DEVELOPMENT SERVICING PLANS
This Policy shall apply to all lands which have not been included in water supply and/or sewerage services development servicing plans.

POLICY - COMPANION ANIMALS (IMPACTS ON NATIVE FAUNA) - CONDITIONS OF DEVELOPMENT CONSENT
Council resolved on 21 February 2017, in order to protect populations of native fauna, including threatened species, from impacts associated with the keeping of domestic cats and dogs within certain development, that appropriate restrictions on title or conditions of consent for the management of companion animals may be applied in sensitive environmental locations (23139E) (MIN17.95) (Reaffirmed 14 November 2022 - MIN22.869) (23139E)

INFORMATION REGARDING LOOSE-FILLED ASBESTOS INSULATON
Some residential homes located in NSW have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.
You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, Council recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

Contact NSW Fair Trading for further information.

INFORMATION REGARDING FOSSICKING DISTRICT 68.
Pursuant to section 369A of the Mining Act 1992, the NSW Department of Planning and Environment have declared all land within the Shoalhaven City Council Local Government Area to be a Fossicking District (Fossicking District 68). Contact the NSW Department of Planning and Environment for further information.

for the CHIEF EXECUTIVE OFFICER

RESPECT | INTEGRITY | ADAPTABILITY | COLLABORATION

Shoalhaven City Council

Bridge Rd, Nowra NSW 2541 | 02 4429 3111
Deering St, Ulladulla NSW 2539 | 02 4429 8999

Address all correspondence to
The General Manager, PO Box 42, Nowra NSW 2541 Australia
council@shoalhaven.nsw.gov.au | DX5323 Nowra | Fax 02 4422 1816

shoalhaven.nsw.gov.au

PLANNING CERTIFICATE UNDER SECTION 10.7
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2025/01373

Applicant: Ghd Pty Ltd
Level 11, 200 Crown Street
WOLLONGONG NSW 2500

Receipt No.: Ext: 193204
Date: 31/03/2025
Fee: $174
Urgency Fee: $0.00

Applicant reference: 12662565

The land to which this Certificate relates is:
Lot 1 DP 1305953, 160 Bolong Rd, BOMADERRY
Parish of BUNBERRA, County of CAMDEN

The above information is as recorded by Council.

DISCLAIMER AND CAUTION:

1. The information on zones, controls etc given below relates to the land for which the certificate was sought. If enquirers wish to know what zones, other controls, etc apply or are proposed on nearby land then they should make enquiries in person at Council's offices.

2. The information contained in this certificate is accurate as at the date of this certificate.

3. In providing this certificate Council has in good faith relied upon information provided to it or sourced from third parties. Where Council has obtained the information from third parties, either exclusively or in conjunction with information held by Council, the Certificate details the source of that third party information. Council cautions persons against relying upon information in the Certificate sourced from third parties as to its accuracy, applicability to specific lands and its currency without verification from the specified third party and, where appropriate, professional advice and the adoption of prudent land acquisition measures and appropriate professional advice. To the full extent permitted by law Council disclaims liability with respect to any information in this Certificate sourced from third parties.

The information contained in this certificate is prepared in accordance with the Environmental Planning and Assessment Act 1979 (as amended) and the Environmental Planning Assessment Regulation 2021 (as amended).

RESPECT | INTEGRITY | ADAPTABILITY | COLLABORATION

PLANNING CERTIFICATE UNDER SECTION 10.7
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2025/01373

This is a Planning Certificate issued by Shoalhaven City Council under Section 10.7(2) of the *Environmental Planning and Assessment Act 1979* on the application of the person described above in respect of the land described above.

1 Names of relevant planning instruments and development control plans

(1) The name of each environmental planning instrument and development control plan that applies to the carrying out of development on the land:

State Environmental Planning Policies

State Environmental Planning Policy (Resilience and Hazards) 2021
State Environmental Planning Policy (Biodiversity and Conservation) 2021
State Environmental Planning Policy (Industry and Employment) 2021
State Environmental Planning Policy (Precincts - Regional) 2021
State Environmental Planning Policy (Transport and Infrastructure) 2021
State Environmental Planning Policy (Resources and Energy) 2021
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy (Planning Systems) 2021
State Environmental Planning Policy (Primary Production) 2021
State Environmental Planning Policy (Housing) 2021
State Environmental Planning Policy (Sustainable Buildings) 2022

Local Environmental Plans

Shoalhaven Local Environmental Plan 2014 (as amended)

Development Control Plans

Shoalhaven Development Control Plan 2014 (as amended)

Note: a copy of Shoalhaven Development Control Plan 2014 is available on the internet at www.dcp2014.shoalhaven.nsw.gov.au or can be inspected at Council's Nowra office during normal business hours.

(2) The name of each proposed environmental planning instrument and draft development control plan, which is or has been subject to community consultation or public exhibition under the Act, that will apply to the carrying out of development on the land.

Proposed State Environmental Planning Policies and other Environmental Planning Instruments

Explanation of Intended Effect - Proposed amendments to the in-fill affordable housing, group homes, supportive accommodation and social housing provisions of the State Environmental Planning Policy (Housing) 2021 - exhibition 22/11/2022 to 13/01/2023.

Explanation of Intended Effect - Proposed reforms to outdoor dining on private land and live music venues - exhibition 19/10/2023 to 16/11/2023.

Consultation draft - Amendments to the Local Government (Caravan Parks, Manufactured Home Estates, Camping Ground and Moveable Dwellings) Regulation 2021 and State Environmental Planning Policy (Housing) 2021 - exhibition 17/11/2023 to 15/12/2023.

Explanation of Intended Effect - Improving planning processes to deliver infrastructure faster - exhibition 06/03/2024 to 16/04/2024

Explanation of Intended Effect - Proposed changes to complying development for farm buildings, rural sheds and earthworks - exhibition 15/05/2024 to 14/06/2024

Explanation of Intended Effect - Cultural State Environmental Planning Policy - exhibition 15/11/2024 to 13/12/2024

Planning Proposals for Local Environmental Plans

Amendment to Shoalhaven Local Environmental Plan 2014 - PP073 - Local Character - Exhibition 26/06/2024 to 08/07/2024.

Amendment to Shoalhaven Local Environmental Plan 2014 - PP076 - 131 St Vincent St, Ulladulla - Exhibition 25/11/2024 to 15/01/2025.

Amendment to Shoalhaven Local Environmental Plan 2014 - PP078 - 17 Prince Alfred Street, Berry (The Berry Inn) - Exhibition 12/02/2025 to 14/03/2025.

Note: In this section - **proposed environmental planning instrument** means a draft environmental planning instrument and includes a planning proposal for a local environmental plan.

Draft Development Control Plans

Draft Amendment 56 to Shoalhaven Development Control Plan 2014 - Chapter NB4: Moss Vale Road North Urban Release Area - Exhibition 26/08/2024 to 23/09/2024.

2 **Zoning and land use under relevant planning instruments**

For Shoalhaven Local Environmental Plan 2014 (as amended)

a. **The identity of the zone in which the land is included under Shoalhaven Local Environmental Plan 2014:**

Zone E4 General Industrial

Zone SP2 Infrastructure

b. **The purposes for which development in the E4 General Industrial zone**

i. **may be carried out without development consent:**

Nil

ii. **may not be carried out except with development consent:**

Depots; Freight transport facilities; Garden centres; General industries; Goods repair and reuse premises; Hardware and building supplies; Industrial retail outlets; Industrial training facilities; Kiosks; Landscaping material supplies; Light industries; Local distribution premises; Markets; Neighbourhood shops; Oyster aquaculture; Plant nurseries; Specialised retail premises; Take away food and drink premises; Tank-based aquaculture; Timber yards; Warehouse or distribution centres; Any other development not specified in item i or iii.

iii. **is prohibited:**

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Camping grounds; Caravan parks; Cemeteries; Centre-based child care facilities; Charter and tourism boating facilities; Correctional centres; Crematoria; Eco-tourist facilities; Educational establishments; Environmental facilities; Exhibition villages; Extractive industries; Farm buildings; Forestry; Function centres; Health services facilities; Heavy industries; Highway service centres; Home businesses; Home occupations; Home occupations (sex services); Home-based child care; Information and education facilities; Marinas; Mooring pens; Moorings; Office premises; Open cut mining; Registered clubs; Residential accommodation; Respite day care centres; Restricted premises; Retail premises; Sex services premises; Tourist and visitor accommodation; Water recreation structures; Wharf or boating facilities.

The purposes for which development in the SP2 Infrastructure zone

i. **may be carried out without development consent:**

Nil

ii. **may not be carried out except with development consent:**

Aquaculture; Roads; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose.

iii. **is prohibited:**

Any development not specified in item i or ii.

c. Additional permitted uses **DO** apply to the land

Sch 1.29 - Additional Permitted Uses
Development for the purposes of heavy industries is permitted with development consent.

d. Development standards applying to the land under Shoalhaven Local Environmental Plan 2014 **DO NOT** fix minimum land dimensions for the erection of a dwelling-house on the land.

e. The land **IS NOT** in an area of outstanding biodiversity value under the *Biodiversity Conservation Act* 2016.

f. The land **IS NOT** in a conservation area (however described) under Shoalhaven Local Environmental Plan 2014.

Note: this item relates to "heritage conservation areas" as defined in the LEP.

g. An item of environmental heritage (however described) under Shoalhaven Local Environmental Plan 2014 **IS NOT** located on the land.

Note: "environmental heritage" relates to matters/items of cultural heritage, for example, items listed on the State Register, items specifically listed in the LEP or matters subject to an "interim heritage order" under the *Heritage Act 1977*.

Other provisions under Shoalhaven Local Environmental Plan 2014 may also apply to the development of this land. You can view the Shoalhaven Local Environmental Plan 2014 at the website www.legislation.nsw.gov.au or at Council's offices.

3 Contributions

1) The name of each contributions plan under the Act, Division 7.1 applying to the land, including draft contributions plans:

Shoalhaven Contributions Plan 2019 (as amended)

2) The subject land is within Illawarra-Shoalhaven to which the *Environmental Planning and Assessment (Housing and Productivity Contribution) Order 2023* applies.

4 Complying development

Qualifying Statement on Council Data Affecting this Item
Shoalhaven City Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, however specific land restrictions may not apply to all of the land. The information included in this Planning Certificate is provided in accordance with the Environmental Planning & Assessment Regulation 2021 (as amended). It is strongly suggested that you review the State Environmental Planning Policy (Exempt and Complying Developments Codes) 2008 and supporting information before proceeding with the lodgement of a Complying Development Certificate application to either Council or a private certifier. The NSW Department of Planning, Industry and Environment has provided a series of information sheets on its website
http://www.planning.nsw.gov.au/exemptandcomplying

Note: There are other provisions in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 that must be complied with in order for development on the land to be complying development. Refer to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 to identify if a Code applies to your land.

Whether the extent to which the land is land on which complying development may be carried out under the following codes for complying development of State Environmental Planning Policy (Exempt Complying Development Codes) 2008 is restricted by the following provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008:

Housing Code, Rural Housing Code, Agritourism and Farm Stay Accommodation Code and Greenfield Housing Code: **IS NOT RESTRICTED**

Housing Alterations Code and General Development Code: **IS NOT RESTRICTED**

Industrial and Business Buildings Code: **IS NOT RESTRICTED**

Low Rise Housing Diversity Code: **IS NOT RESTRICTED**

The complying development codes **ARE NOT** varied, under that Policy, clause 1.12, in relation to the land.

5 **Exempt Development**

Qualifying Statement on Council Data Affecting this Item
Shoalhaven City Council does not have sufficient information to ascertain the extent to which exempt development may or may not be carried out on the land, however specific land restrictions may not apply to all of the land. The information included in this Planning Certificate is provided in accordance with the Environmental Planning & Assessment Regulation 2021 (as amended). It is strongly suggested that you review the State Environmental Planning Policy (Exempt and Complying Developments Codes) 2008 and supporting information before proceeding with exempt development. The NSW Department of Planning and Environment has provided a series of information sheets on its website
http://www.planning.nsw.gov.au/exemptandcomplying

Note: There are other provisions in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 that must be complied with in order for development on the land to be exempt development. Refer to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 to identify if a Code applies to your land.

Whether the extent to which the land is land on which exempt development may be carried out under each of the exempt development codes under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 is restricted by the following provisions of that Policy, clause 1.16(1)(b1)–(d) or 1.16A of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008:

General Exempt Development Code, Advertising and Signage Exempt Development Code and Temporary Uses and Structures Exempt Development Code: **IS NOT RESTRICTED**

The exempt development codes **ARE NOT** varied, under that Policy, clause 1.12, in relation to the land.

6 **Affected building notices and building product rectification orders**

a) Council **IS NOT** aware that an affected building notice is in force in relation to the land.

b) Council **IS NOT** aware that a building product rectification order is in force in relation to the land that has not been fully complied with.

c) Council **IS NOT** aware that a notice of intention to make a building product rectification order given in relation to the land is outstanding.

Note: In this section, **affected building notice** has the same meaning as in the *Building Products (Safety) Act 2017*, Part 4. **building product rectification order** has the same meaning as in the *Building Products (Safety) Act 2017*.

7 **Land reserved for acquisition**

The land **IS NOT** reserved for acquisition by an authority of the State, as referred to in section 3.15 of the Act under any environmental planning instrument, or proposed environmental planning instrument referred to in Section 1.

8 **Road widening and road realignment**

a) The land **IS NOT** affected by any road widening or road realignment under the *Roads Act 1993*, Part 3, Division 2.

b) The land **IS NOT** affected by road widening or road realignment under an environmental planning instrument.

c) The land **IS NOT** affected by any road widening or road realignment under a resolution of Council.

Note: Information in item 8 relates only to proposed plans by the Council for the widening of a public road that would affect the land and have been submitted to the Minister by the Council and any road widening orders affecting the land that the Council has caused to be published in the NSW Government Gazette under section 25 of the *Roads Act 1993*. Other authorities e.g. Transport for NSW, may have proposals not set out herein.

9 **Flood related development controls**

(1) Council's adopted flood information **DOES** identify the land or part of the land as being within the flood planning area and subject to flood related development controls. Note that not all areas within the Shoalhaven LGA are covered by an adopted flood investigation.

(2) Council's adopted flood information **DOES NOT** identify the land or part of the land as being between the flood planning area and the probable maximum flood and subject to flood related development controls. Note that not all areas within the Shoalhaven LGA are covered by an adopted flood investigation.

Flood Planning Area has the same meaning as in the Flood Risk Management Manual.
Floodplain Development Manual Means the Flood Risk Management Manual (ISBN 978-1-923076-17-4) published by the NSW Government in June 2023.
Probable Maximum Flood has the same meaning as in the Flood Risk Management Manual.
Note: The Flood Risk Management Manual replaces the Floodplain Development Manual (2005).

Note: In relation to sub clause (1) and (2) above, if the land or part of the land is within 40 metres of a creek; or is within 10 metres of a major drainage system, local overland flow path or drainage easement; or has a history of flooding then a flood assessment report may need to be submitted with any development application under the requirements of the Shoalhaven Development Control Plan 2014. The flood assessment report is to identify whether or not the land or part of the land is flood prone and determine, if flood prone, the probable maximum flood extent and the flood planning level.

For further information or to request a flood certificate, please contact Council.

10 **Council and other public authority policies on hazard risk restrictions**

The land **IS** affected by the following adopted policy or policies that restrict the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils, contamination, aircraft noise, salinity, coastal hazards, sea level rise or any other risk (other than flooding).

Shoalhaven Development Control Plan 2014

Shoalhaven City Council - Contaminated Land Policy

Shoalhaven Coastal Zone Management Plan 2018

Planning for Bush Fire Protection 2019

Note: The policies above apply across the City. If certain specific hazards are known to apply to the land, those hazards may be noted below .

HAZARD RISK RESTRICTION

This property is identified as "sensitive area" on Shoalhaven LEP 2014 - Natural Resources Sensitivity Land map and is affected by Clause 7.7 Landslide risk and other land degradation. Clause 7.7 applies to land comprising steep slopes and susceptible to other forms of land degradation.

Note: In this section **adopted policy** means a policy adopted
(a) by the council, or
(b) by another public authority, if the public authority has notified the council that the policy will be included in a planning certificate issued by the council.

11 **Bush fire prone land**

The land **IS NOT** bushfire prone, either in whole or in part (as designated by the Commissioner of the NSW Rural Fire Service under the Act, section 10.3)..

12 **Loose-fill asbestos insulation**

The land **DOES NOT** include any residential premises (within the meaning of the *Home Building Act 1989*, Part 8, Division 1A) that are listed on the Register kept under that Division.

13 **Mine subsidence**

The land **IS NOT** declared to be a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*.

14 **Paper subdivision information**

1) The land **IS NOT** affected by a development plan adopted by a relevant authority that applies to the land or is proposed to be subject to a ballot.

2) The land **IS NOT** affected by a subdivision order.

Note: Words and expressions used in this section have the same meaning as in the Regulation, Part 10 and the Act, Schedule 7.

15 **Property vegetation plans**

The Council **HAS NOT** been notified that the land is land to which a property vegetation plan is approved and in force under the *Native Vegetation Act 2003*, Part 4.

16 **Biobanking stewardship sites**

The Council **HAS NOT** been notified by the Biodiversity Conservation Trust that the land is a biodiversity stewardship site under a biodiversity stewardship agreement under the *Biodiversity Conservation Act 2016*, Part 5.

Note: Biodiversity stewardship agreements include biobanking agreements under the *Threatened Species Conservation Act 1995*, Part 7A that are taken to be biodiversity stewardship agreements under the *Biodiversity Conservation Act 2016*, Part 5.

17 **Biodiversity certified land**

The land **IS NOT** biodiversity certified land under the *Biodiversity Conservation Act 2016*, Part 8.

Note: Biodiversity certified land includes land certified under the *Threatened Species Conservation Act 1995*, Part 7AA that is taken to be certified under the *Biodiversity Conservation Act*, Part 8.

18 **Orders under Trees (Disputes Between Neighbours) Act 2006**

The Council **HAS NOT** been notified that an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land.

19 **Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works**

The owner (or any previous owner) of the land **HAS NOT** given written consent to the land being subject to annual charges under the *Local Government Act 1993*, section 496B, for coastal protection services that relate to existing coastal protection works.

Note: In this section - **existing coastal protection works** has the same meaning as in the *Local Government Act 1993*, section 553B.

Note: Existing coastal protection works are works to reduce the impact of coastal hazards on land such as seawalls, revetments, groynes and beach nourishment, that existed before 1 January 2011.

20 **Western Sydney Aerotropolis**

State Environmental Planning Policy (Precincts – Western Parkland City) 2021 **DOES NOT** apply to this land.

21 **Development consent conditions for seniors housing**

The Council **IS NOT** aware of any terms of a kind referred to in clause 88(2) of State Environmental Planning Policy (Housing) 2021 that have been imposed as a condition of development consent granted after 11 October 2007 in relation to the land.

22 **Site compatibility certificates and development consent conditions for affordable rental housing**

(1) The Council **IS NOT** aware of a current site compatibility certificate under State Environmental Planning Policy (Housing) 2021, or a former site compatibility certificate, in relation to proposed development on the land.

(2) The Council **IS NOT** aware of any conditions of development consent in relation to the land that are of a kind referred to in State Environmental Planning Policy (Housing) 2021, section 21(1) or 40(1).

(3) The Council **IS NOT** aware of any conditions of a development consent in relation to the land that are of a kind referred to in State Environmental Planning Policy (Affordable Rental Housing) 2009, clause 17(1) or 38(1).

Note: in this section -
former site compatibility certificate means a site compatibility certificate issued under State Environmental Planning Policy (Affordable Rental Housing) 2009.

Note: Contaminated Land Management Act 1997: The following matters are prescribed by Section 59(2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

a) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is significantly contaminated land within the meaning of the *Contaminated Land Management Act 1997*.

b) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject to a management order within the meaning of the *Contaminated Land Management Act 1997*.

c) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject of an approved voluntary management proposal within the meaning of the *Contaminated Land Management Act 1997*.

d) The Council **HAS NOT** been informed by the Environment Protection Authority that the land is subject of an ongoing maintenance order within the meaning of the *Contaminated Land Management Act 1997*.

e) The land **IS NOT** the subject of a site audit statement within the meaning of the *Contaminated Land Management Act 1997* that has been provided to the Council.

23 Water or sewerage services under the *Water Industry Competition Act 2006* **DO NOT** apply to this land.

Note: Water and sewerage services in Shoalhaven LGA are provided by Shoalhaven Water. However, not all sites are connected to these services. Further enquiries should be directed to Shoalhaven Water **http://www.shoalwater.nsw.gov.au**.

Information under Section 10.7(5)

As at the date of this certificate, the abovementioned land is also affected as follows:
(**NOTE:** SECTION 10.7(6) STATES THAT A COUNCIL SHALL NOT INCUR ANY LIABILITY IN RESPECT OF ANY ADVICE PROVIDED IN GOOD FAITH PURSUANT TO SECTION 10.7(5))

Matters Affecting This Land

HMAS ALBATROSS MILITARY AIRCRAFT OPERATING AREA
Advice to Council on 3 November 2006 confirms information previously provided by The Department of Defence, that the subject land is within HMAS Albatross Military Aircraft Operating Area. Specific heights can be obtained by contacting HMAS Albatross at Nowra.

NOWRA BOMADERRY STRUCTURE PLAN
This property is located in the area covered by the Nowra Bomaderry Structure Plan (NBSP). The NBSP was adopted by Council in 2006 and endorsed by State Government in 2008. The NBSP is not a legal document but rather one that provides strategic direction and guidance. The NBSP provides the planning framework for growth, development opportunities and conservation measures in the Nowra Bomaderry area for the next 20 years. It identifies potential areas for new living areas and industrial expansion as well as a future western bypass and the preferred road network required to support long-term growth. Landowners and prospective buyers are encouraged to view the Adopted and Endorsed Strategic Direction and Structure Plan Map.

Further information can be found on Council's website Shoalhaven City Council Planning Register or by contacting Council's on (02) 4429 3111.

DRAFT STRATEGIC GROWTH PRINCIPLES - CITYWIDE-INCLUSION WITHIN LOCAL STRATEGIC PLANNING STATEMENT-PUBLIC EXHIBITION 12 JUNE 2024 TO 12 JULY 2024 (58417E)(MIN24.274)
On 20 May 2024, Council resolved to support public exhibition of the draft Strategic Growth Principles. The draft principles have been developed to guide Council's preparation of a new land use planning scheme, and its consideration of strategic land use planning decisions and rezoning proposals. The principles will be embedded in Council's adopted Local Strategic Planning Statement (LSPS), a high-level strategic land use planning document setting out the work Council will do to identify and meet the communities land use needs over the next 15 - 20 years.

SEA LEVEL RISE PROJECTIONS
Council has adopted new sea level rise projections that may affect the flood affection of this land into the future. For more information, contact Council's City Development Directorate (MIN24.211).

Matters Affecting The Whole Of The City

ACID SULFATE SOILS - Large areas of the coastal zone of NSW have the potential to be affected by acid sulfate soils which become problematic if exposed during excavations or similar activities. The Dept of Land & Water Conservation have maps which indicate the potential occurrence of acid sulfate soils. Prior to undertaking work which involves substantial soil disturbance, you should ascertain the possibility of acid sulfate soils existing on your property. Enquiries to NSW Department of Planning and Environment.

INTERIM POLICY - DEVELOPMENT ADJOINING NARROW LANEWAYS
Council resolved on 6 November 2018 to adopt an interim policy position regarding development adjoining narrow laneways. The Interim Policy provides direction regarding access, servicing, design and use of narrow laneways as a primary frontage. Contact Council's - Strategic Planning for further information. (MIN18.891) (Reaffirmed 1 August 2022 - MIN22.502) (57914E)

POLICY - PROVISION OF WATER AND SEWERAGE INFRASTRUCTURE - DEVELOPMENT NOT INCLUDED IN DEVELOPMENT SERVICING PLANS
This Policy shall apply to all lands which have not been included in water supply and/or sewerage services development servicing plans.

POLICY - COMPANION ANIMALS (IMPACTS ON NATIVE FAUNA) - CONDITIONS OF DEVELOPMENT CONSENT
Council resolved on 21 February 2017, in order to protect populations of native fauna, including threatened species, from impacts associated with the keeping of domestic cats and dogs within certain development, that appropriate restrictions on title or conditions of consent for the management of companion animals may be applied in sensitive environmental locations (23139E) (MIN17.95) (Reaffirmed 14 November 2022 - MIN22.869) (23139E)

INFORMATION REGARDING LOOSE-FILLED ASBESTOS INSULATON
Some residential homes located in NSW have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.
You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, Council recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

Contact NSW Fair Trading for further information.

INFORMATION REGARDING FOSSICKING DISTRICT 68.
Pursuant to section 369A of the Mining Act 1992, the NSW Department of Planning and Environment have declared all land within the Shoalhaven City Council Local Government Area to be a Fossicking District (Fossicking District 68). Contact the NSW Department of Planning and Environment for further information.

Former Land Use Identification

Council's records indicate that this is or may have been a Distillery site and may therefore have implications for development on this land. Further enquiries should therefore be undertaken by any prospective purchaser on this issue. Refer to Council. (90/3034)

for the CHIEF EXECUTIVE OFFICER

RESPECT | INTEGRITY | ADAPTABILITY | COLLABORATION

Appendix H

Chemical Register

Hazardous Chemicals Manifest

Name of person conducting the business:	SHOALHAVEN STARCHES PTY LTD
Address of Workplace:	160 BOLONG ROAD, BOMADERRY, NSW 2541
Date Manifest was last amended:	13-Mar-2025
Business hours:	24 hrs 7 days per week
After hours telephone numbers for at least 2 persons who may be contacted if there is a notifiable incident.	Kane Livingstone 0407 220 175 Tertius Jones 0427 280 337

REVISION HISTORY – FMSA283

Rev	Date	Description	Prepared By	Authorised By
1.0A	May 2023	Hazardous Chemicals Manifest and Site DG Depot maps combined and made available on Fasttrack	G. Dostal	J. Studdert
1.0B	Oct 2023	New Chemical Depots added	G. Dostal	J. Studdert
1.0C	Oct 2023	New Chemicals added to existing depots after audit	G. Dostal	J. Studdert
1.0D	July 2024	Update of maps and added new storage depots	G. Dostal	J. Studdert
1.0E	Mar 2025	Update of maps and updated storage depots	G. Dostal	J. Studdert

Table 1: Hazardous Substances Storage Depots (Manifest Quantities)

Map Ref. No.	Plant Location	Map Zone	Substance	Maximum Storage Quantity (L)	UN Number	DG Class	PG	Storage Method
1	Ethanol	2	Ethanol	230,000	1170	3. Flammable	II	Above-Ground Tank
2	Ethanol	2	Ethanol	560,000	1170	3. Flammable	II	Above-Ground Tank
3	Ethanol	2	Ethanol	560,000	1170	3. Flammable	II	Above-Ground Tank
4	Ethanol	2	Ethanol	118,000	1170	3. Flammable	II	Above-Ground Tank
5	Ethanol	2	Ethanol `	98,000	1170	3. Flammable	II	Above-Ground Tank
6	Ethanol	2	Ethanol	123,000	1170	3. Flammable	II	Above-Ground Tank
7	Ethanol	2	Ethanol	441,000	1170	3. Flammable	II	Above-Ground Tank
8	Ethanol	2	Ethanol	770,000	1170	3. Flammable	II	Above-Ground Tank
9	Starch	6	Sulphuric Acid 50%	5,000	2796	8. Corrosive	II	Above-Ground Tank
10	Ethanol	2	Methanol	5,000	1230	3. Flammable 6.1 Toxic	II	Above-Ground Tank
11	Ethanol	2	Methyl Isobutyl Ketone	5,000	1245	3. Flammable	II	Above-Ground Tank
12	Ethanol	2	Unleaded Petrol	5,000	1203	3. Flammable	II	Above-Ground Tank
13	Ethanol	2	Tert Butyl Alcohol	5,000	1120	3. Flammable	III	Above-Ground Tank
14	Ethanol	2	Unleaded Petrol	5,000	1203	3. Flammable	II	Above-Ground Tank
15	Ethanol	2	Unleaded Petrol	5,000	1203	3. Flammable	II	Above-Ground Tank
16	Ethanol	2	Ethanol	1,920,000	1170	3. Flammable	II	Above-Ground Tanks
17A	Ethanol (Cooling Towers)	2	Ammonium Bromide (Biosperse XD3899)	2500	N/A	Health Hazard	II	Tank Tank (IBC)
17B		2	Sulfuric Acid 60%	1000	1830	8. Corrosive	II	Tank
17C		2	5-Chloro-2-Methyl-4-Isothiazolin-3-one (Biosperse CN7539)	1000	3265	8. Corrosive	II	Tank
17E		2	Sodium Chlorite 25% (Biosperse CX7250)	1000	1908	8. Corrosive	II	Tank (IBC)
17F		2	Sodium Hypochlorite 12.5%	2000	1791	8. Corrosive	III	Tank (IBC)
17G		2	Alcohol Ethoxylate (Ausperse 47)	1000	N/A	Skin Irritant	N/A	Tank (IBC)
17H		2	Mixed Phosphoric Acid, Zinc Sulphate, Etidonic Acid (Performax PM3607)	1000	3264	8. Corrosive	III	Tank (IBC)
17I		2	Phosphonic Acid Sodium Salt (Performax TK2272)	1000	N/A	N/A	N/A	Tank (IBC)
17J		2	Sulphuric Acid <2.5% (Biosperse CX9400A)	1000	N/A	N/A	N/A	Tank (IBC)
17K		2	Ammonium Bromide (Biosperse XD3899)	1000	N/A	Enzyme	N/A	Tank (IBC)
18A	Ethanol (Cooling Towers - BGA1)	2	Sodium Hypochlorite 12.5%	1000	1791	8. Corrosive	III	Tank (IBC)
18B		2	Sulfuric Acid 60%	1000	1830	8. Corrosive	II	Tank (IBC)
18C		2	5-Chloro-2-Methyl-4-Isothiazolin-3-one (Biosperse CN7539)	300	3265	8. Corrosive	II	Tank
18D		2	Sodium Chlorite 25% (Biosperse CX7250)	1000	1908	8. Corrosive	II	Tank (IBC)
19A	Ethanol (Cooling Tower Cell 5)	2	Sodium Hypochlorite 12.5%	1000	1791	8. Corrosive	III	Tank (IBC)
19B		2	5-Chloro-2-Methyl-4-Isothiazolin-3-one (Biosperse CN7539)	250	3265	8. Corrosive	II	Tank
19C		2	Mixed Dialkyl (C8-C10) Dimethyl Ammonium Chloride, Ethanol (Biosperse CN6501-AP)	250	2920	8. Corrosive 3. Flammable	II	Tank

19D		2	Sulfuric Acid 60%	250	1830	8. Corrosive	II	Tank
20A	Ethanol	2	Sodium Hypochlorite 12.5%	4000	1791	8. Corrosive	III	Tank (IBC)
20B		2	Sodium Chlorite Solution 31%	4000	1908	8. Corrosive	II	Tank (IBC)
21	Ethanol	2	Sodium Borohydride & Sodium Hydroxide Solution	3000	3320	8. Corrosive	II	Tank (IBC)
22	Glucose	3	Sodium Hydroxide Solution	52,000	1824	8. Corrosive	II	Above-Ground Tank
23	Ethanol	2	Xylene (DCI-11) N-Propyl Acetate Ethyl Acetate	6,000 6,000 6,000	Various	3. Flammable 3. Flammable 3. Flammable	II	Roofed Store IBCs
24A	Glucose (cooling towers)	2	Sulfuric Acid 60%	300	1830	8. Corrosive	II	Tank
24B		2	5-Chloro-2-Methyl-4-Isothiazolin-3-one (Biosperse CN7539)	300	3265	8. Corrosive	II	Tank
24C		2	Mixed Dialkyl (C8-C10) Dimethyl Ammonium Chloride, Ethanol (Biosperse CN6501-AP)	300	2920	8. Corrosive 3. Flammable	II	Tank
24D		2	Sodium Hypochlorite 12.5%	1500	1791	8. Corrosive	III	Tank (IBC)
24E		2	Sodium Chlorite 25% (Biosperse CX7250)	1500	1908	8. Corrosive	II	Tank (IBC)
25	Glucose	3	Nitric Acid 50%	1000	2031	8. Corrosive	II	Tank (IBC)
26B		4	Hydrogen Peroxide, Acetic Acid, Peracetic Acid (Bioxysan 20)	2000	3098	5.1 Oxidising 8. Corrosive	II	Tank (IBC)
27A	Boilerhouse	5	Sodium Hydrogensulphite 50% (Bisulfites Solution)	1000	2693	8. Corrosive	III	Tank (IBC)
27B		5	Cyclohexylamine, 2-diethylaminoethanol Solution (Amines, Liquid)	1000	2735	8. Corrosive	II	Tank (IBC)
27C		5	Sodium Hydroxide 5% (Corrosive Liquid, Basic, Inorganic)	1000	3266	8. Corrosive	II OR III	Tank (IBC)
27D		5	Poly(Ethylene-Propylene) Glycol, Butoxy (Antispumin)	1,000	N/A	N/A	N/A	Tank (IBC)
28	Starch (Main Driveway)	4	Hydrochloric Acid 32%	2000	1789	8. Corrosive	II	Tank
29	Starch Dryer 5	9	Sodium Hydroxide 50%	2000	1824	8. Corrosive	II	Tank
30	DDG Dryers	7	Sodium Hydroxide 50%	5000	1824	8. Corrosive	II	Tank
31A	DDG Dryer 4 (Cooling Tower)	8	5-Chloro-2-Methyl-4-Isothiazolin-3-one (Biosperse CN7539)	300	3265	8. Corrosive	II	Tank
31B		8	Mixed Dialkyl (C8-C10) Dimethyl Ammonium Chloride, Ethanol (Biosperse CN6501-AP)	300	2920	8. Corrosive 3. Flammable	II	Tank
31C		8	Sodium Hypochlorite 12.5%	300	1791	8. Corrosive	III	Tank (IBC)
32A	Laboratory	4	Hydrogen Gas	54kg (8.8 m3)	1049	2. Flammable Gas		Gas Bottle
32B		4	Oxygen gas	54 kg (8.8 m3)	1072	2. Oxidising Gas		Gas Bottle
35	Starch	2	Acetic Anhydride	3,000	1715	8. Corrosive & 3. Flammable	II	Above-Ground Tank
36	Stillage	8	Sodium Hypochlorite	36,000	1791	8. Corrosive	II	Above-Ground Tank
37	Ethanol Distillery	2	Ethanol	150,000	1170	3. Flammable	II	In-process
38	Ethanol Load-out	2	Ethanol	43,000	1170	3. Flammable	II	In-process (tanker)
48	DDG	7	Sodium Hydroxide	36,000	1824	8. Corrosive	II	Above-Ground Tank
49	Glucose	3	Hydrochloric Acid	32,000	1789	8. Corrosive	II	Above-Ground Tank
51	Ethanol	2	Methyl Isobutyl Ketone Methanol	50,000	1245 1230	3. Flammable	II & III	Tank (IBC)

			N-Propanol Ethanol Ethyl Acetate Isopropanol Toluene Acetone Methoxy Propanol Propyl Alcohol N Propyl Acetate Xylene (DCI-11) Petrol		1274 1170 1173 1219 1294 1090 3062 1274 1276 1307 1203			
53	Farm	MN000-002	Ferric Chloride Solution	20,000	2582	8. Corrosive	III	Above-Ground Tank
54A	Farm	MN000-002	Ammonia Solution	2,000	2672	8. Corrosive	III	Above-Ground Tank
54B		MN000-002	Sodium Hydroxide Solution	2,000	1824	8. Corrosive	II	Above-Ground Tank
54C		MN000-002	Hypochlorite Solution	10,000	1791	8. Corrosive	II	Above-Ground Tank
54D		MN000-002	Citric Acid	1,000	N/A	N/A	N/A	Above-Ground Tank
54E		MN000-002	Phosphonate Salt Solution (Antiscalant)	2,000	N/A	N/A	N/A	Above-Ground Tank
56	Farm	MN000-002	L.P.G	2,800	1075	2.1. Flammable gas		Above-Ground Tank
57	DDG	8	Nitric Acid	4,000	2031	8. Corrosive & 5.1 Oxidising agent	II	Tank (IBC)
58	Starch	4	Phosphorus Oxychloride	500	1810	8. Corrosive	I	20Lt containers in cabinet
59A	DDG (Cooling Towers)	8	Propionic Acid/ Formic Acid Solution	2,000	1848 1779	8. Corrosive & 3. Flammable	II	Tank (IBC)
59B		8	Sodium Hydrogensulphite 50% (Bisulfites Solution)	1000	2693	8. Corrosive	III	Tank (IBC)
59C		8	Cyclohexylamine, 2-diethylaminoethanol Solution (Amines, Liquid)	1000	2735	8. Corrosive	II or III	Tank (IBC)
59D		8	Sodium Hypochlorite 12.5%	3000	1791	8. Corrosive	III	Tank (IBC)
59E		8	Mixed Dialkyl (C8-C10) Dimethyl Ammonium Chloride, Ethanol (Biosperse CN6501-AP)	300	2920	8. Corrosive 3. Flammable	II	Tank
59F		8	5-Chloro-2-Methyl-4-Isothiazolin-3-one (Biosperse CN7539)	1300	3265	8. Corrosive	II	Dosing Tank & Tank (IBC)
59G		8	Sodium Chlorite Solution	1,000	1496	8. Corrosive	II	Tank (IBC)
59H		8	Phosphonic Acid Sodium Salt (Performax TK2272)	1000	N/A	Skin Irritant	N/A	Tank (IBC)
59I		8	Sulphuric Acid <2.5% (Biosperse CX9400A)	2000	N/A	N/A	N/A	Tank (IBC)
59J		2	Sodium Hydroxide 5% (Corrosive Liquid, Basic, Inorganic)	1000	3266	8. Corrosive	II OR III	Tank (IBC)
60	Starch	4,6	Sodium Chlorite Solution	3,000	1496	8. Corrosive	II	Above-Ground Tank
61A	Boiler 8	2	Cyclohexylamine, 2-diethylaminoethanol Solution (Amines, Liquid)	1,000	2735	8. Corrosive	II	Tank (IBC)
61B		2	Sodium Hydrogensulphite 50% (Bisulfites Solution)	1,000	2693	8. Corrosive	III	Tank (IBC)

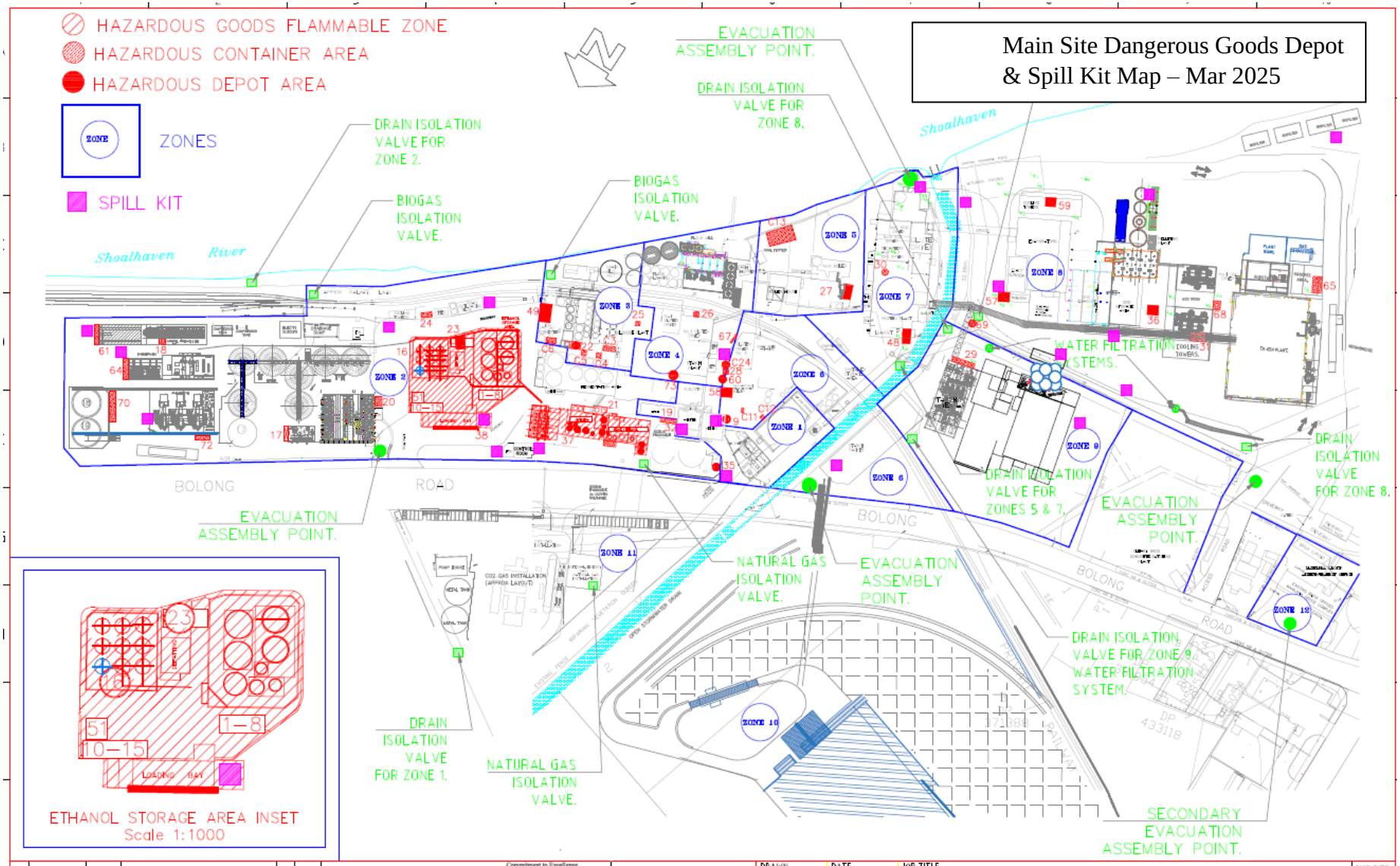
61C		2	Sodium Hydroxide 5% (Corrosive Liquid, Basic, Inorganic)	1,000	3266	8. Corrosive	II	Tank (IBC)
62A	Cationic Starch Plant	9	Quat 188 Cationic Reagent 69% Active	50,000	N/A	N/A	I or II	Above-Ground Tank
62B		9	Sodium Hydroxide	100,000	1824	8. Corrosive	II	Above-Ground Tank
62C		9	Hydrochloric Acid	50,000	1789	8. Corrosive	II	Above-Ground Tank
63	Farm	MN000-002	Sulphuric Acid 50%	10,000	2796	8. Corrosive	II	Above-Ground Tank
64A	Fermentation (Cooling Towers)	2	Sodium Hypochlorite 12.5%	1,000	1791	8. Corrosive	III	Tank (IBC)
64B		2	5-Chloro-2-Methyl-4-Isothiazolin-3-one (Operion CB1010)	1,000	2922	8. Corrosive		Tank (IBC)
64C		2	Sulphuric Acid 50%	1,000	2796	8. Corrosive	II	Tank (IBC)
64D		2	Corrosive Liquid, Basic, Inorganic	1,000	3266	8. Corrosive	II OR III	Tank (IBC)
64E		2	Corrosive Liquid, zinc chloride 10%, hydrochloric acid 10%	1,000	1760	8. Corrosive	II	Tank (IBC)
65A	CoGen	8	Sodium Hydrogensulphite 50% (Bisulfites Solution)	1,000	2693	8. Corrosive	III	Tank (IBC)
65B		8	Sodium Hydroxide Solution 10%	1,000	1824	8. Corrosive	II	Tank (IBC)
65C		8	Cyclohexylamine, 2-diethylaminoethanol Solution (Amercor 8548)	1000	2735	8. Corrosive	II	Tank (IBC)
65D		8	Sodium Hydroxide (Amertrol HT3530)	1,000	3266	8. Corrosive	II	Tank (IBC)
65E		8	Poly(Ethylene-Propylene) Glycol, Butoxy (Antispumin)	1,000	N/A	N/A	N/A	Tank (IBC)
66A	Farm	MN000-002	Sulphuric Acid 50%	5,000	2796	8. Corrosive	II	Tank (IBC)
66B		MN000-002	Ammonia Solution	2,000	2672	8. Corrosive	III	Tank (IBC)
66C		MN000-002	Phosphonate Salt Solution (Antiscalant)	1,000	N/A	N/A	N/A	Tank (IBC)
66D		MN000-002	Citric Acid	2,000	N/A	N/A	N/A	Tank (IBC)
67	Starch	4	Hydrogen Peroxide, Acetic Acid, Peracetic Acid (Bioxysan 20)	8,000	3098	5.1 Oxidising 8. Corrosive	II	Corrosive Cabinet Tank (IBC)
68A	CoGen (Cooling Towers)	8	Sulphuric Acid 60%	1,000	2796	8. Corrosive	II	Corrosive Cabinet Tank (IBC)
68B		8	Sulphuric Acid <2.5% (Biosperse CX9400A)	1,000	N/A	N/A	N/A	Corrosive Cabinet Tank (IBC)
68C		8	Sodium Hydrogensulphite (Amersite 2P)	1,000	N/A	N/A	N/A	Corrosive Cabinet Tank (IBC)
68D		8	5-Chloro-2-Methyl-4-Isothiazolin-3-one (Biosperse CN7539)	1000	3265	8. Corrosive	II	Corrosive Cabinet Tank (IBC)
68E		8	Sodium Hydroxide (Amertrol HT3530)	1,000	3266	8. Corrosive	II	Corrosive Cabinet Tank (IBC)
68F		8	Cyclohexylamine, 2-diethylaminoethanol Solution (Amercor 8548)	1000	2735	8. Corrosive	II	Corrosive Cabinet Tank (IBC)

68G		8	Sodium Hydroxide Solution 25%	1,000	1824	8. Corrosive	II	Corrosive Cabinet Tank (IBC)
68H		8	Phosphonic Acid Sodium Salt (Performax TK2272)	1,000	N/A	N/A	N/A	Corrosive Cabinet Tank (IBC)
69	SD5 Southern Reaction Tanks	8	Sulphuric Acid 50%	10,000	2796	8. Corrosive	II	Above-Ground Tank
70	Ethanol	2	Sodium Chlorite Solution 31% (Fermasure)	10,000	1908	8. Corrosive	II	Corrosive Cabinet Tank (IBC)
72	Ethanol	2	Sodium Borohydride & Sodium Hydroxide Solution	3000	3320	8. Corrosive	II	Tank (IBC)
73	Starch Plant	4	5-Chloro-2-Methyl-4-Isothiazolin-3-one (Operion CB1010)	1000	2922	8. Corrosive	II	Tank (IBC)

Table 2: Hazardous Substances & Other Pollutants (Smaller Quantities)

Map Ref. No.	Plant Location	Map Zone	Substance	Estimated Storage Quantity	UN Number	DG Class / Hazard	Storage Method
C2	Laboratory	4	Benzene	200mL	1114	Flammable/ Carcinogen	200mL containers
C3	Glucose	3	Enzymes	3,000 L	N/A	Irritant / Sensitiser	Tank (IBC)
C4	Glucose	3	Sodium Metabisulphite	300 kg	N/A	Irritant / Sensitiser	Tank (IBC)
C5	Glucose	3	Pearlite	1000 kg	N/A	Irritant / Sensitiser	25kg bags
C6	Glucose / Ethanol	3	Enzymes & Yeast	1000 L	N/A	Irritant / Sensitiser	Tanks IBC
C24	Starch	4	Chlorine Dioxide Solution (0.3%)	2,500 L	N/A	Non-hazardous at < 1% solution	Above-Ground Tank
C13	Boilerhouse	5	Coal	500 T	N/A	Combustible	Stockpile

Main Site Dangerous Goods Depot & Spill Kit Map – Mar 2025

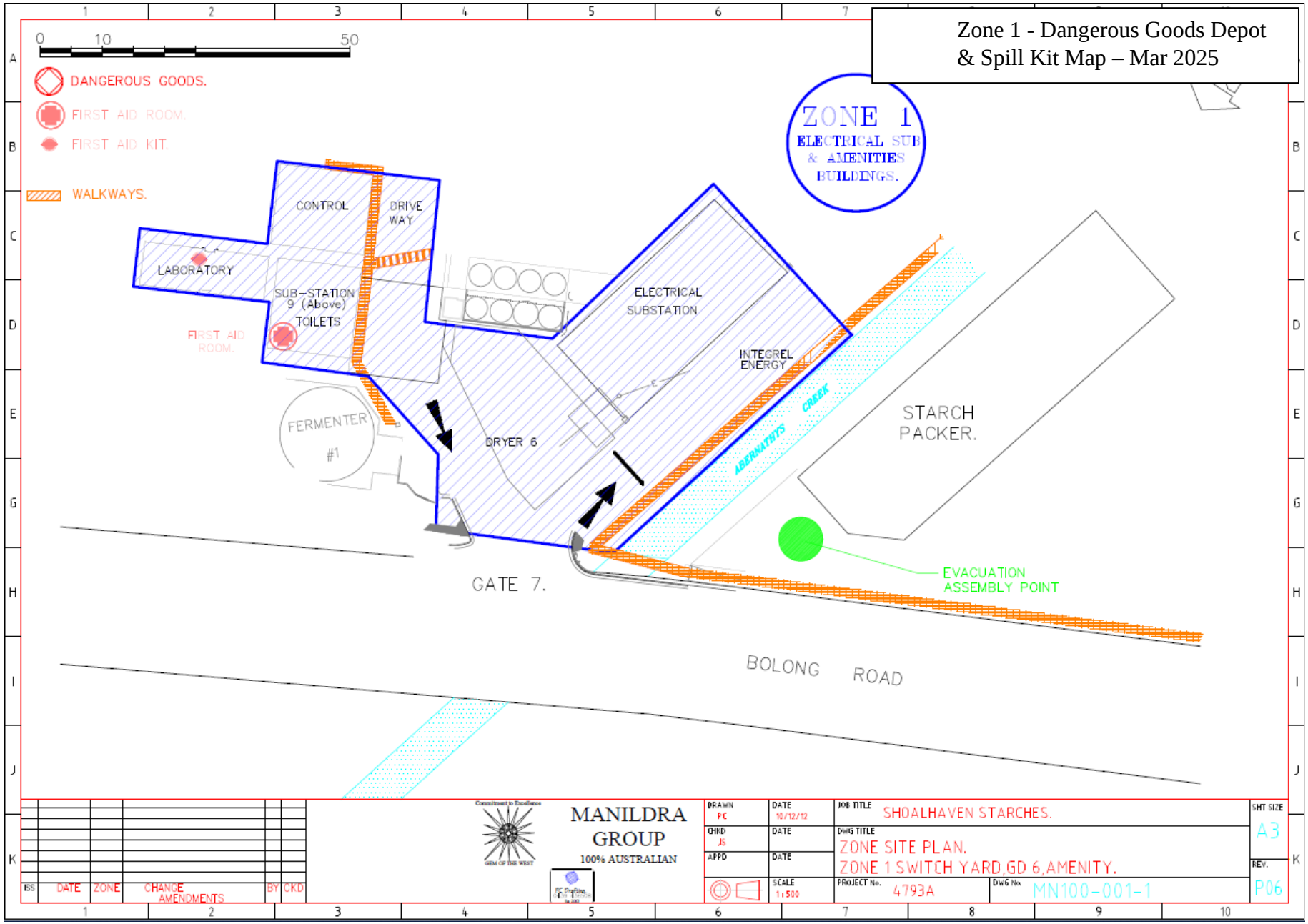


ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
X	15-05-25	All	Tank 73 added/Tank 40 removed.	P.C.	Gen.
W	2-01-25	All	Updated.	P.C.	Gen.
V	29-08-24	All	Tank 26 relocated.	P.C.	Gen.
U	17-06-24	All	Tank 60 added/Tank 51 relocated.	P.C.	Gen.
T	16-05-24	DP	Tank 67 added.	P.C.	Gen.
S	16-05-25	All	Tank 64 & 65 added.	P.C.	Gen.
R	06-05-25	All	Spill kits added.	P.C.	Gen.

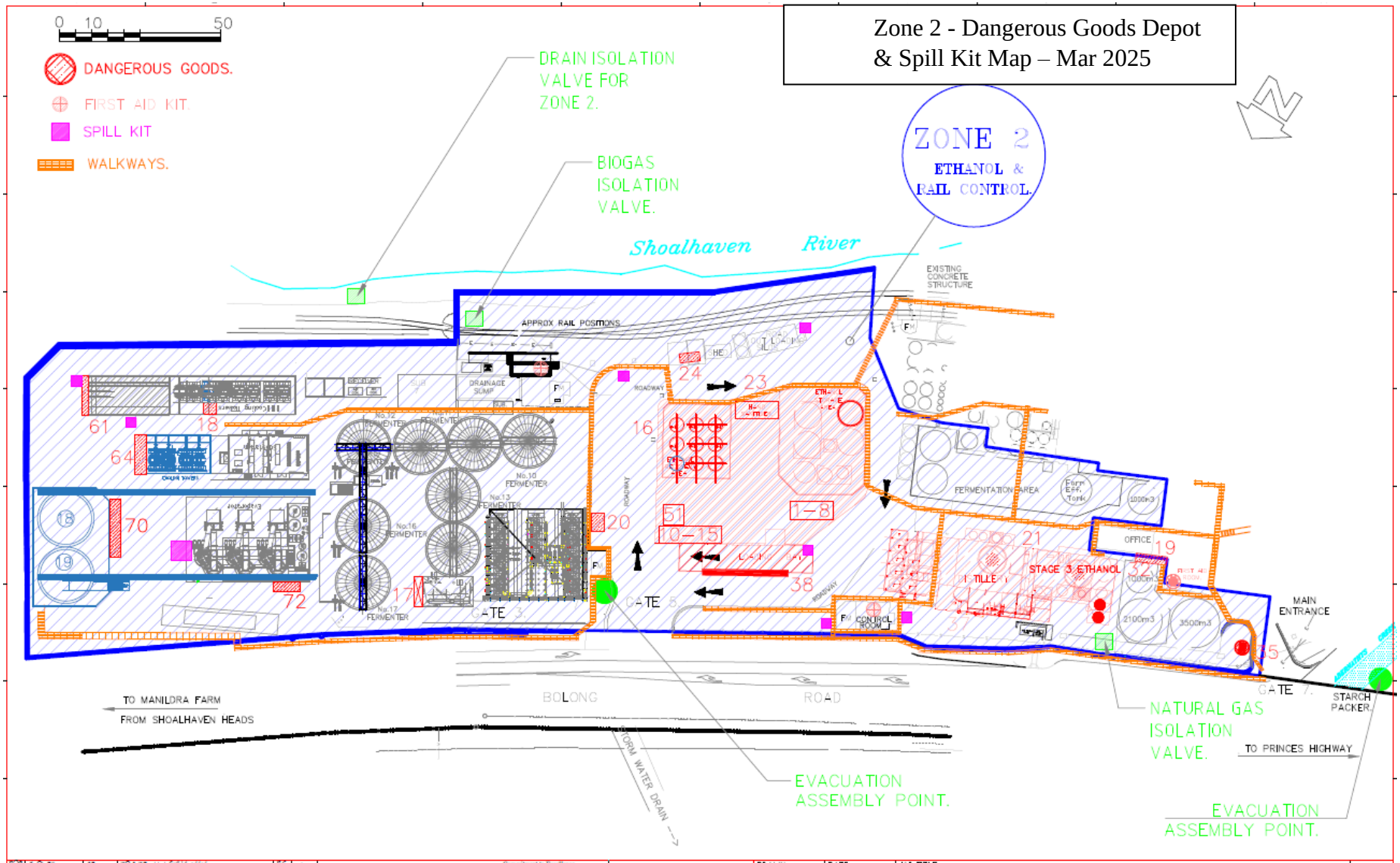
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DRAWN PC	DATE 10/12/12	JOB TITLE SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD JS	DATE	DWG TITLE OVERALL SITE PLAN. DANGEROUS GOODS AREAS.	REV. X
APPD	DATE		
	SCALE 1 : 2000	PROJECT No. 7550	DWG No. MN100-001

Zone 1 - Dangerous Goods Depot
& Spill Kit Map – Mar 2025



Zone 2 - Dangerous Goods Depot & Spill Kit Map – Mar 2025



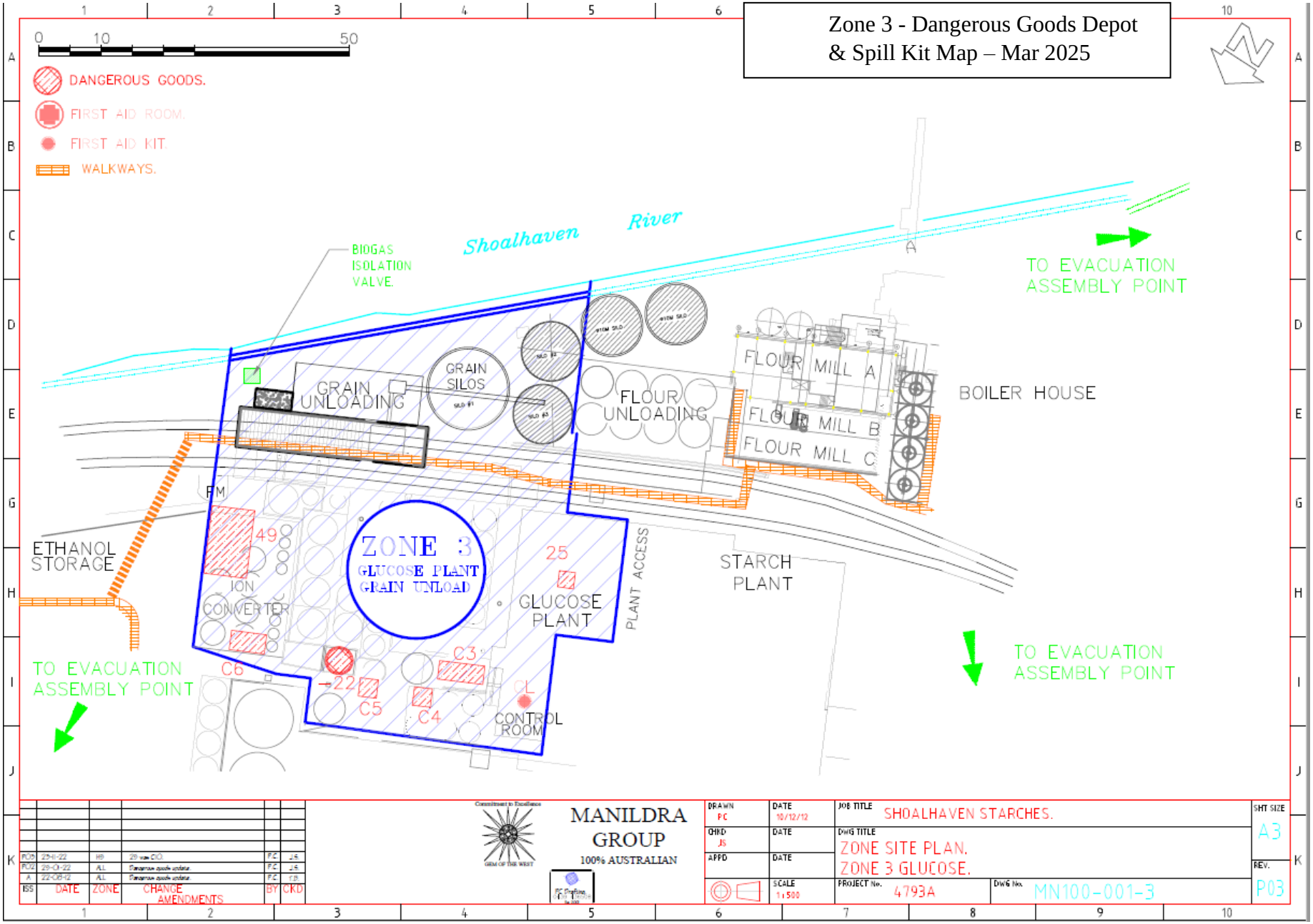
ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
P08	5-01-25	G2	TO & T2 added. Spill kit added.	PC	Gm
P06	18-08-23	ALL	64 added.	PC	Gm
P07	28-06-23	ALL	Spill kits added.	PC	Gm
P06	05-01-23	G8	52 Added.	PC	JS
P05	14-12-22	El	Cooling towers & fermenters added.	PC	JS
P04	14-11-22	El	Block 61 added.	PC	JS
P05	01-02-22	ALL	Fire& aid room rele.	PC	TB
P02	29-01-22	ALL	Dangerous goods update.	PC	JS

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DRAWN PC	DATE 10/12/12	JOB TITLE SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD JS	DATE	DWG TITLE ZONE SITE PLAN. ZONE 2 ETHANOL.	
APPD	DATE		REV. P09
	SCALE 1 : 1000	PROJECT No. 4793A	DWG No. MN100-001-2

Zone 3 - Dangerous Goods Depot & Spill Kit Map – Mar 2025

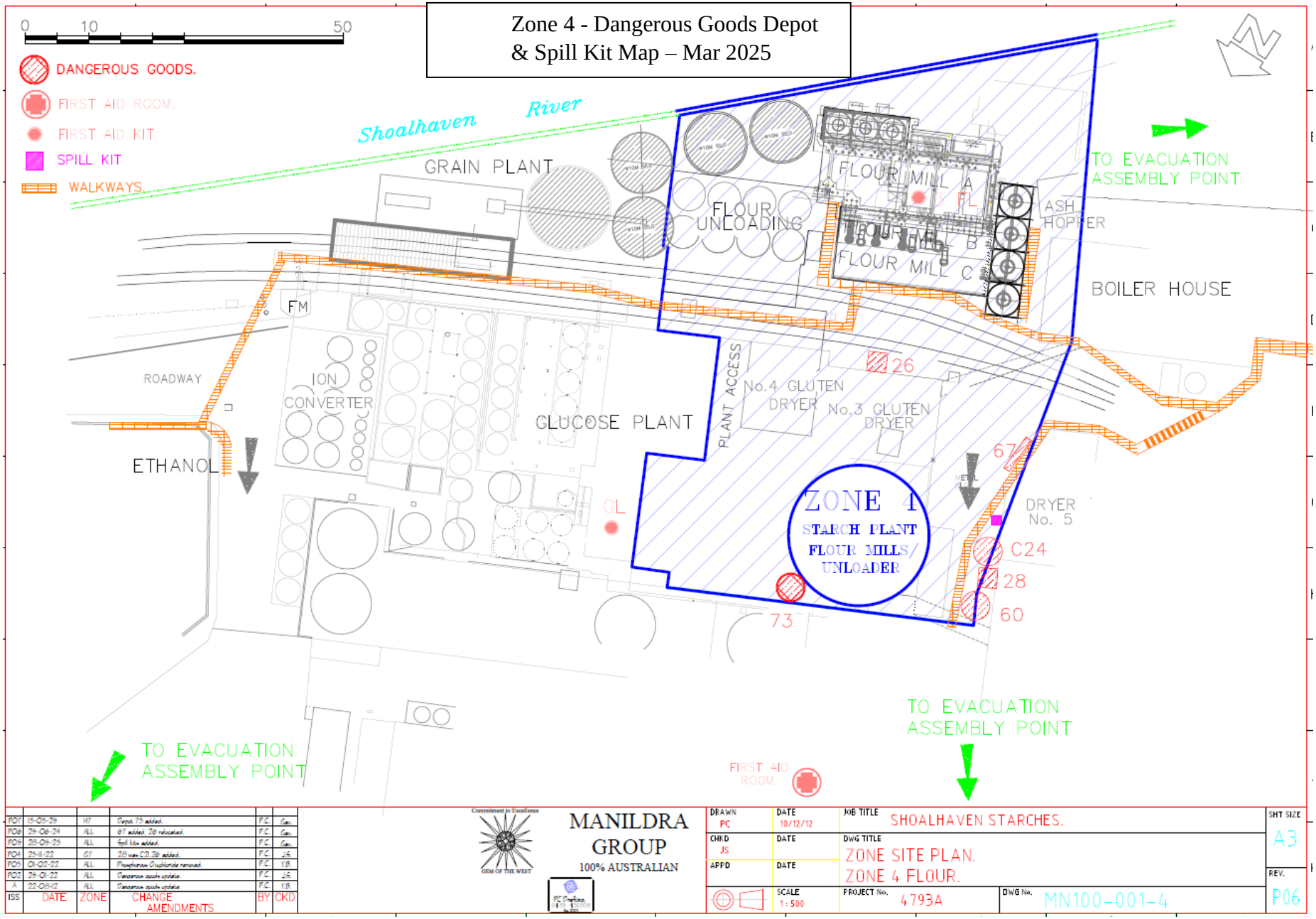


ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
P03	25-11-22	H9	29 van CIO	P.C	J.S.
P02	28-10-22	ALL	Dangerous goods update	P.C	J.S.
A	22-08-12	ALL	Dangerous goods update	P.C	T.B.

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DRAWN PC	DATE 10/12/12	JOB TITLE SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD JS	DATE	DWG TITLE ZONE SITE PLAN. ZONE 3 GLUCOSE.	REV. P03
APPD	DATE		
	SCALE 1:500	PROJECT No. 4793A	DWG No. MN100-001-3

Zone 4 - Dangerous Goods Depot & Spill Kit Map – Mar 2025

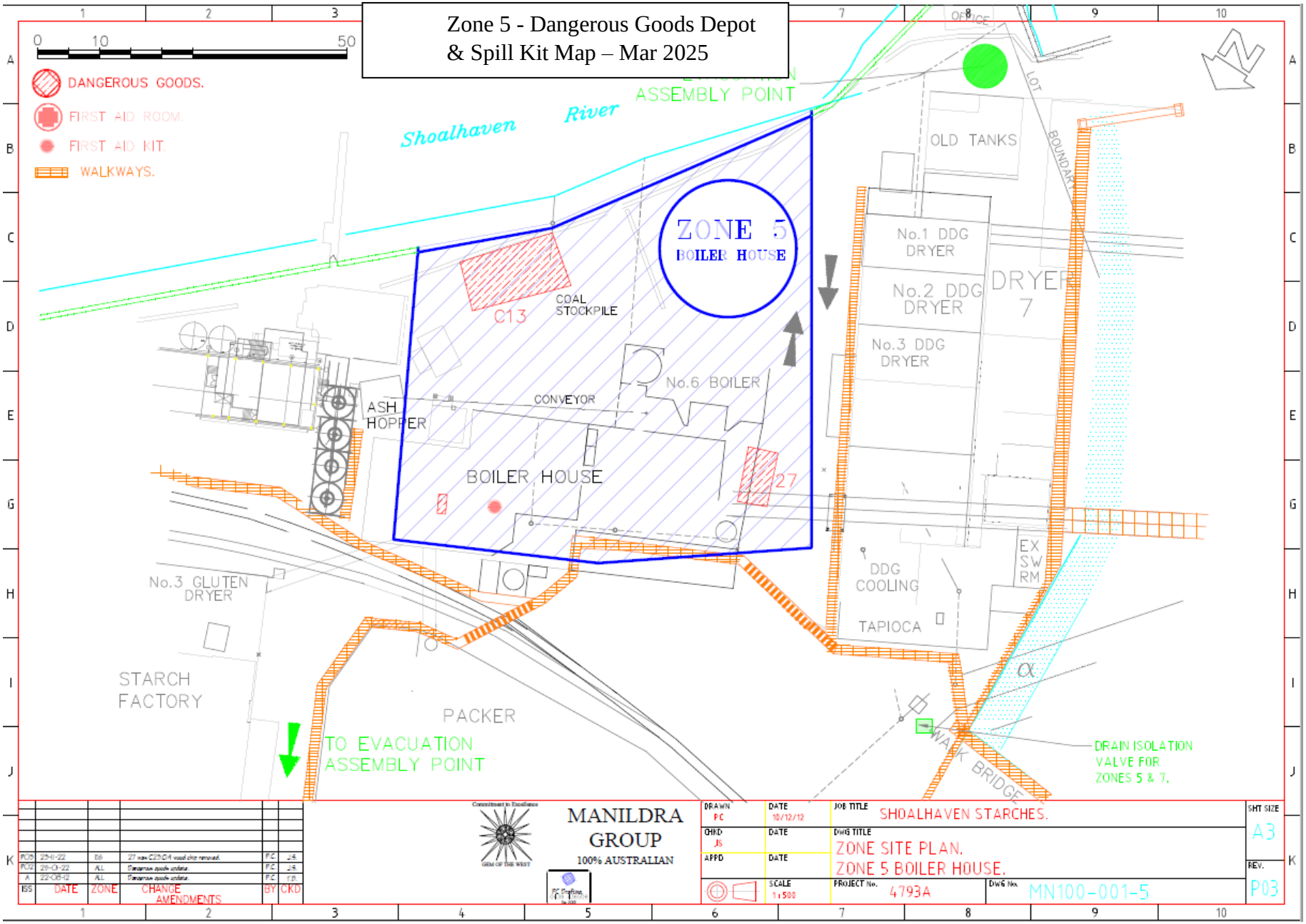


ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
P07	15-06-23	HT	Depot T5 added.	P.C.	Gen.
P06	28-06-24	ALL	67 added, 28 relocated.	P.C.	Gen.
P05	28-06-23	ALL	Spill kits added.	P.C.	Gen.
P04	23-11-22	GT	28 was C2, 28 added.	P.C.	J.S.
P03	01-02-22	ALL	Phosphorous Oxychloride removed.	P.C.	T.B.
P02	29-01-22	ALL	Dangerous goods update.	P.C.	J.S.
A	22-06-12	ALL	Dangerous goods update.	P.C.	T.B.

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DRAWN PC	DATE 10/12/12	JOB TITLE SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD JS	DATE	DWG TITLE ZONE SITE PLAN. ZONE 4 FLOUR.	
APPD	DATE		REV. P06
	SCALE 1 : 500	PROJECT No. 4793A	DWG No. MN100-001-4

Zone 5 - Dangerous Goods Depot & Spill Kit Map – Mar 2025

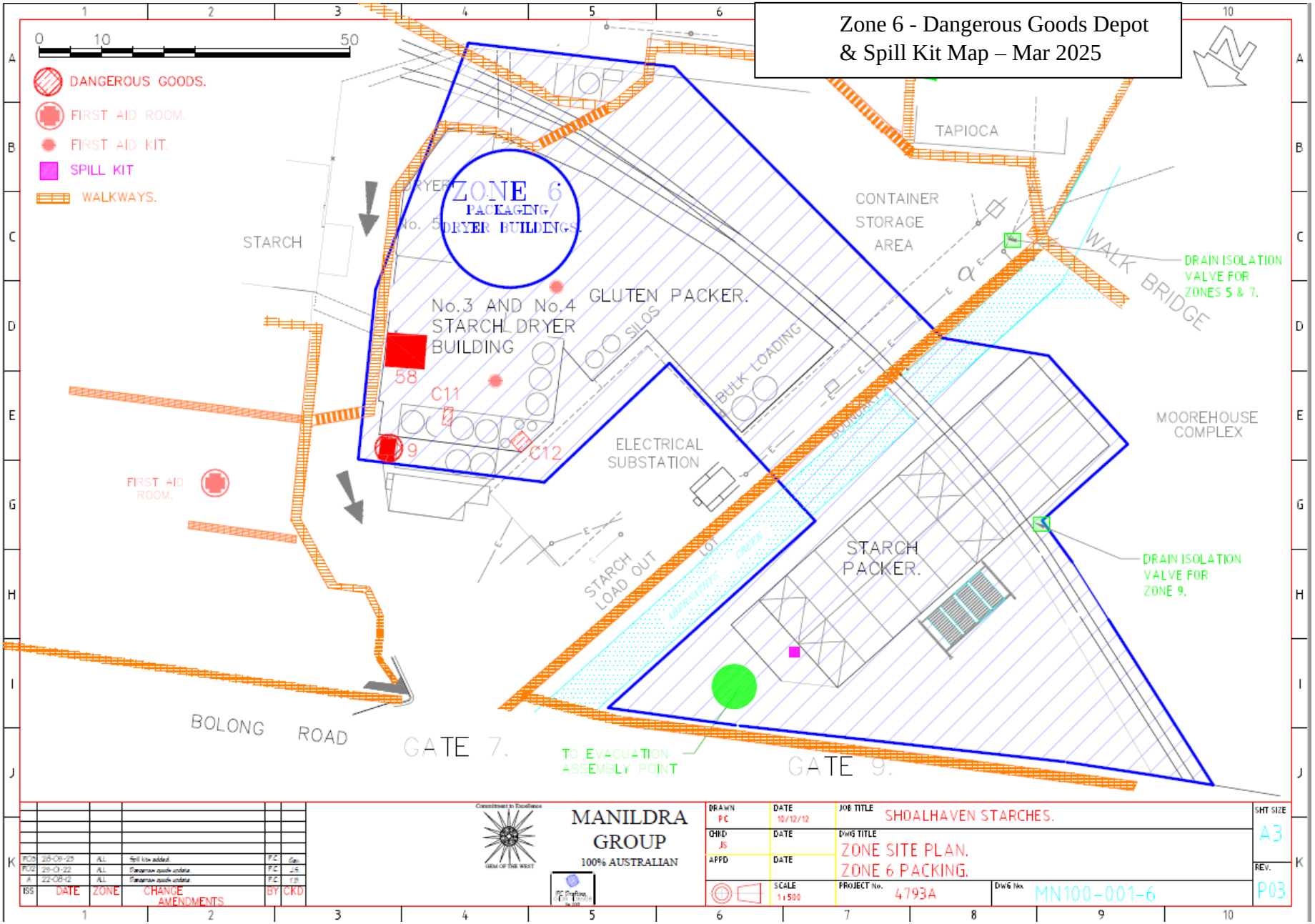


ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
P03	25-11-22	B6	27 was C25/24 wood chip removed.	PC	JS
P02	28-10-22	ALL	Dangerous goods update.	PC	JS
A	22-08-12	ALL	Dangerous goods update.	PC	CB

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DRAWN PC	DATE 10/12/12	JOB TITLE SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD JS	DATE	DWG TITLE ZONE SITE PLAN. ZONE 5 BOILER HOUSE.	
APPD	DATE		REV. P03
SCALE 1:500		PROJECT No. 4793A	DWG No. MN100-001-5

Zone 6 - Dangerous Goods Depot & Spill Kit Map – Mar 2025

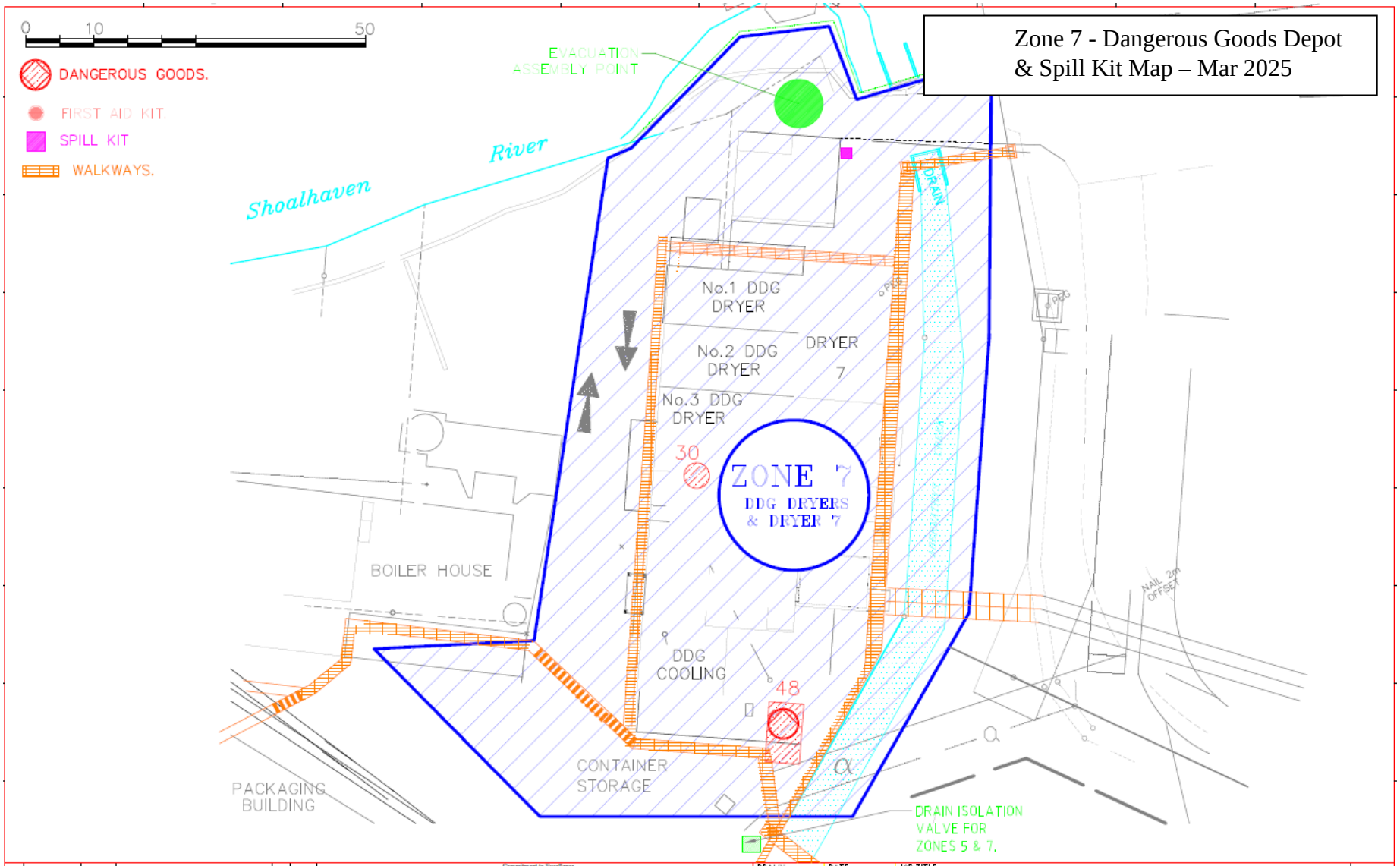


ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
P03	28-09-25	ALL	Spill kits added.	PC	
P02	29-01-22	ALL	Dangerous goods update.	PC	JS
A	22-08-12	ALL	Dangerous goods update.	PC	JS

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DRAWN PC	DATE 10/12/12	JOB TITLE SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD JS	DATE	DWG TITLE ZONE SITE PLAN. ZONE 6 PACKING.	REV. P03
APPD	DATE		
	SCALE 1:500	PROJECT No. 4793A	DWG No. MN100-001-6

Zone 7 - Dangerous Goods Depot & Spill Kit Map – Mar 2025

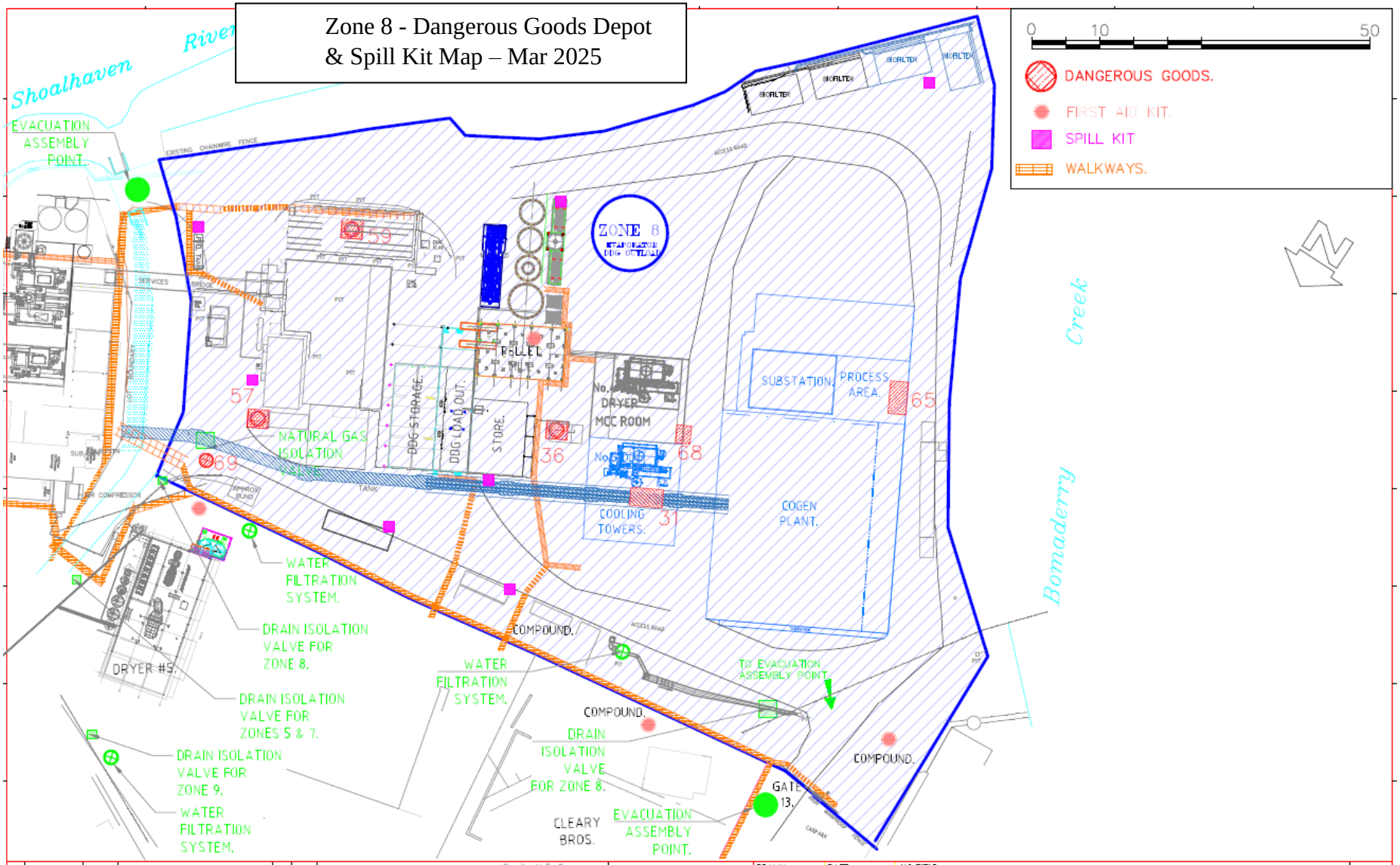


ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
P09	15-05-25	88	Depot 40 removed.	PC	Gen
P04	28-09-23	ALL	Spill kits added.	PC	Gen
P03	25-11-22	88	50 was 07.	PC	JS
P02	26-01-22	ALL	Dangerous goods update.	PC	JS
A	22-08-12	ALL	Dangerous goods update.	PC	TB

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DRAWN PC	DATE 10/12/12	JOB TITLE SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD JS	DATE	DWG TITLE ZONE SITE PLAN. ZONE 7 DDG DRYERS.	
APPD	DATE		REV. P05
	SCALE 1 : 500	PROJECT No. 4793A	DWG No. MN100-001-7

Zone 8 - Dangerous Goods Depot & Spill Kit Map – Mar 2025



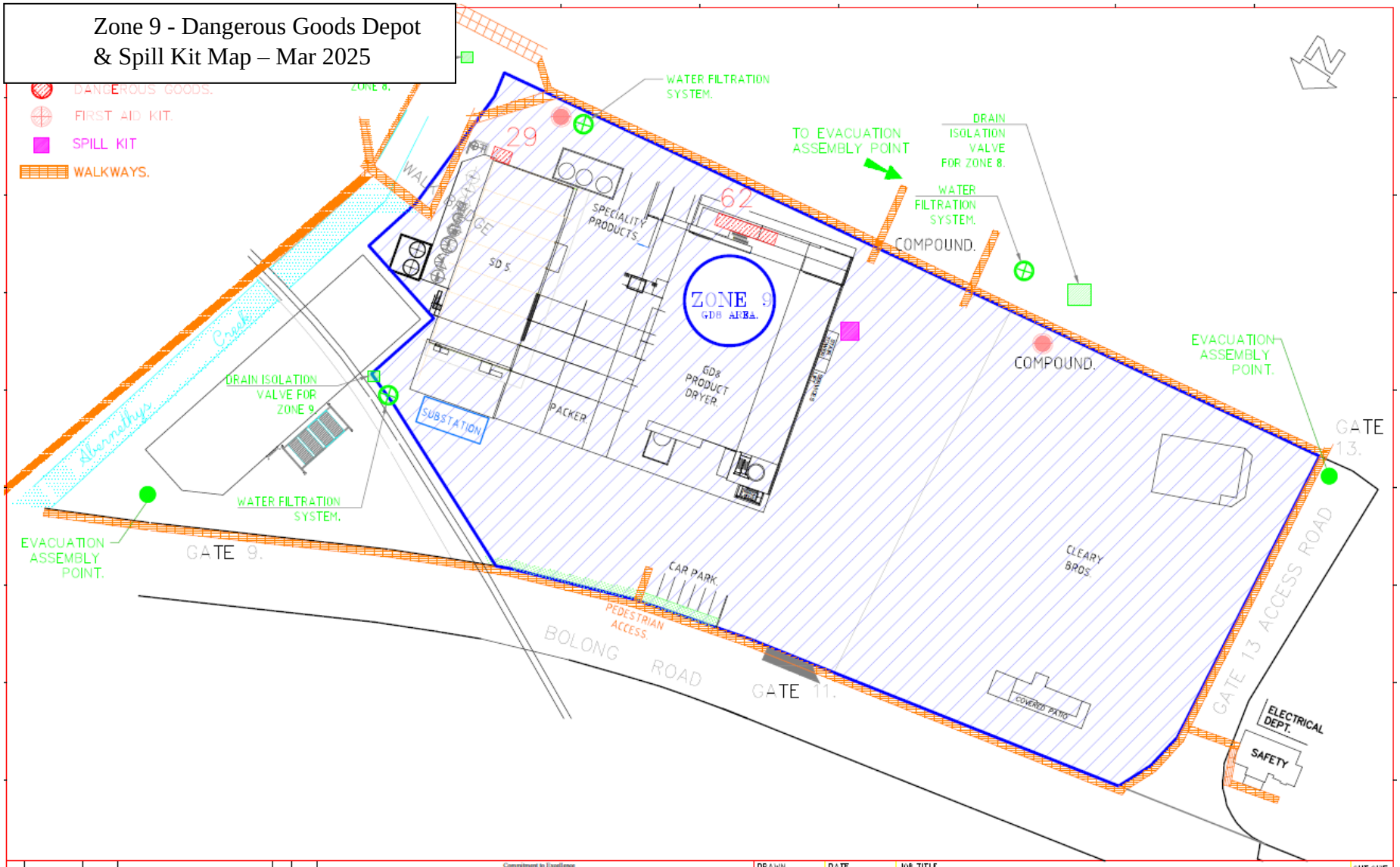
ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
P09	29-08-24	E2	69 Added. Spill kits added.	PC	Gm
P08	29-08-24	ALL	68 Added.51 relocated.	PC	Gm
P07	18-08-23	ALL	69 Added.	PC	Gm
P06	28-06-23	ALL	Spill kits added.	PC	Gm
P05	14-12-22	D9	Cases updated.	PC	JS

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DRAWN PC	DATE 10/12/12	JOB TITLE SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD JS	DATE	DWG TITLE ZONE SITE PLAN. ZONE 8 EVAPORATOR.	
APPD	DATE		REV. P09
	SCALE 1:1000	PROJECT No. 4793B	DWG No. MN100-001-8

Zone 9 - Dangerous Goods Depot & Spill Kit Map – Mar 2025

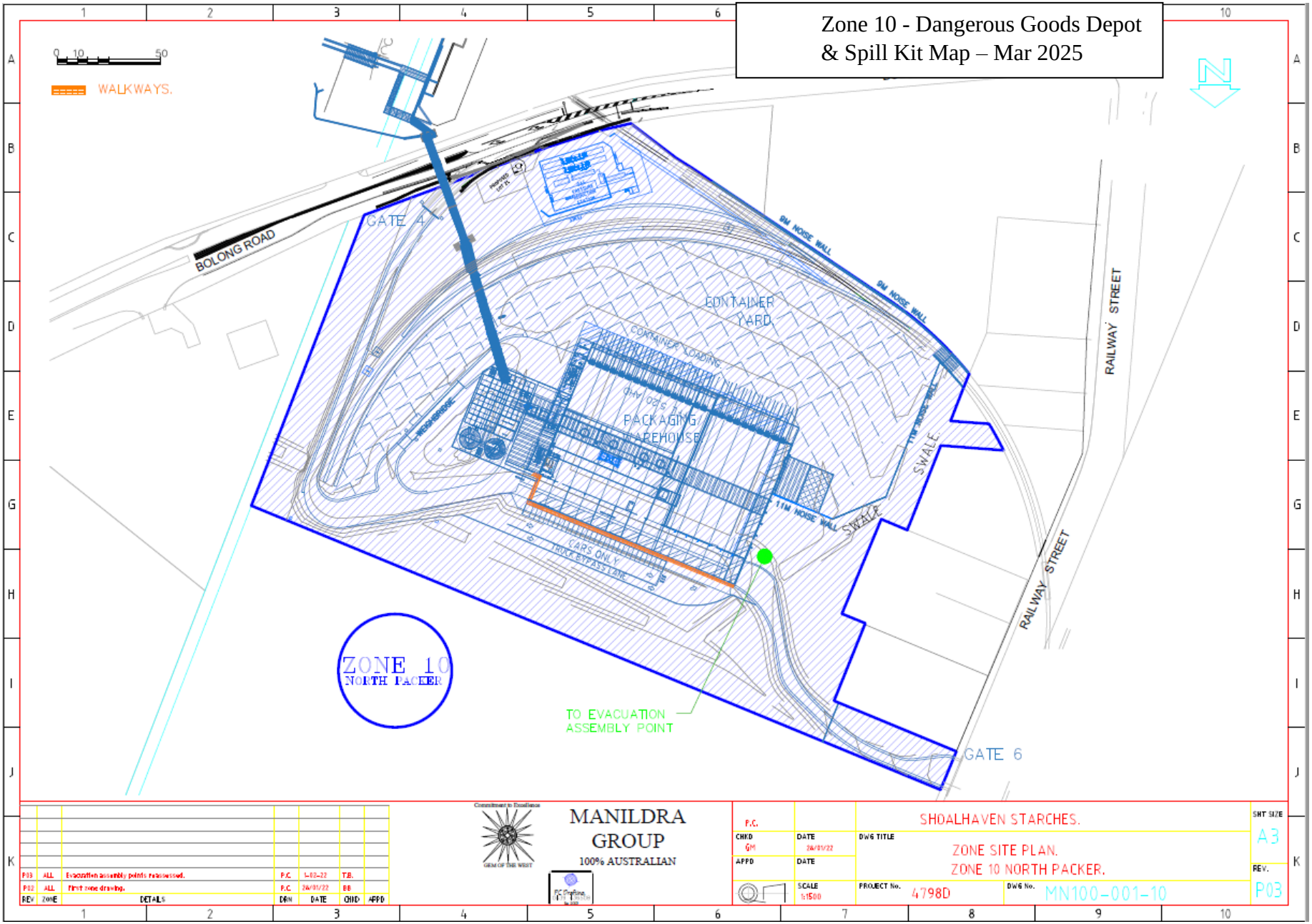


ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
P07	5-01-23	ALL	Spill kit & cleary bros. added.	P.C.	Gen.
P06	28-09-22	ALL	Depot 62 added.	P.C.	Gen.
P05	06-01-22	Z9	Proposed GD 6, GD 10 & office removed.	P.C.	J.S.
P04	25-11-22	Z9	Z9 new CIP Water Fill. Sys. added at starch packer.	P.C.	J.S.
P03	1-02-22	ALL	Evacuation assembly points remeasured.	P.C.	T.B.
P02	28-01-22	ALL	Dangerous goods update.	P.C.	J.S.

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DRAWN PC	DATE 10/12/12	JOB TITLE SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD JS	DATE	DWG TITLE ZONE SITE PLAN. ZONE 9.GD8 AREA.	REV. P07
APPD	DATE		
	SCALE 1 : 750	PROJECT No. 4793D	DWG No. MN100-001-9

Zone 10 - Dangerous Goods Depot & Spill Kit Map – Mar 2025

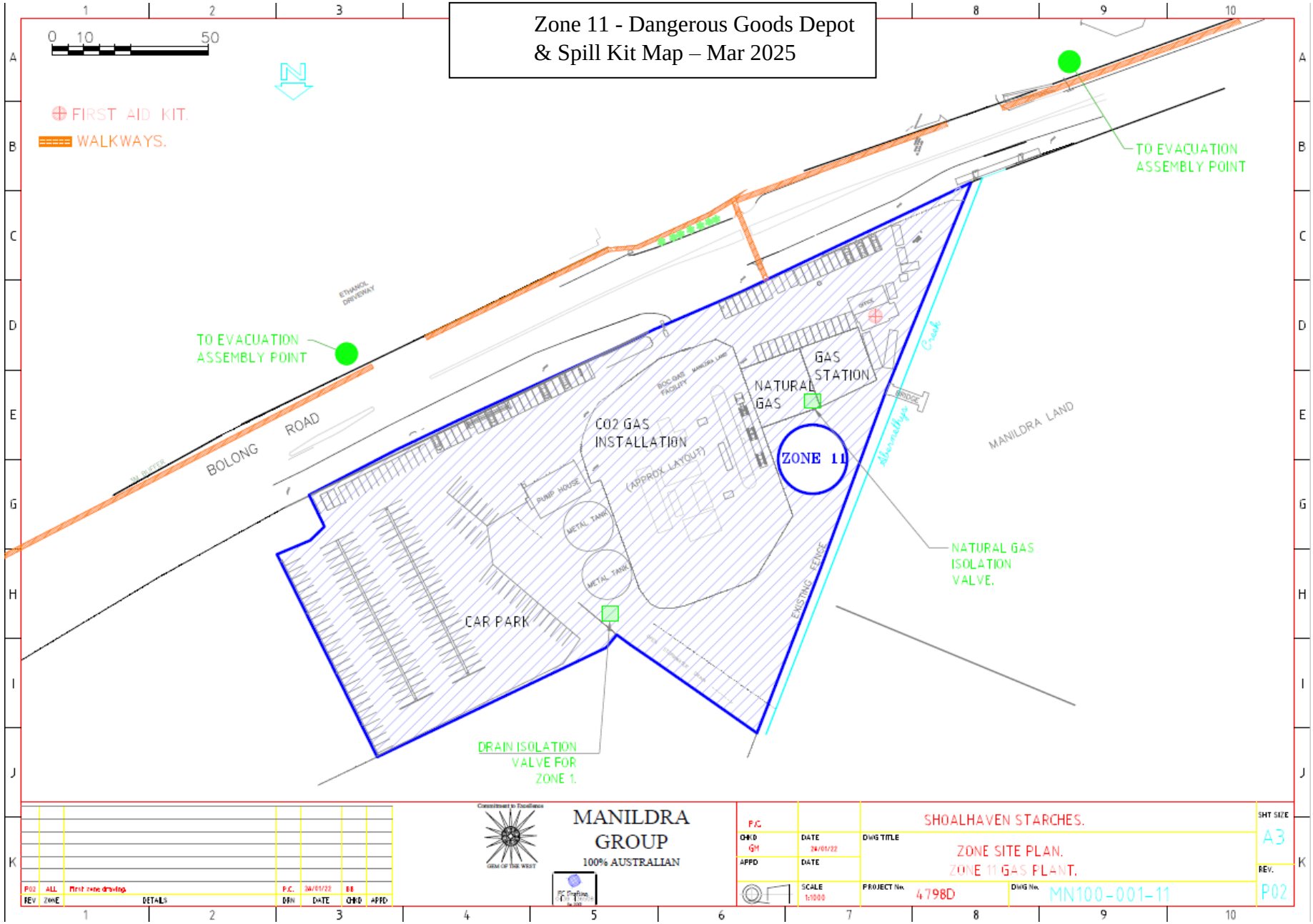


REV	ZONE	DETAILS	DRN	DATE	CHKD	APPD
P03	ALL	Evacuation assembly points reassessed.	P.C.	1-02-22	T.B.	
P02	ALL	First zone drawing.	P.C.	24/01/22	BB	

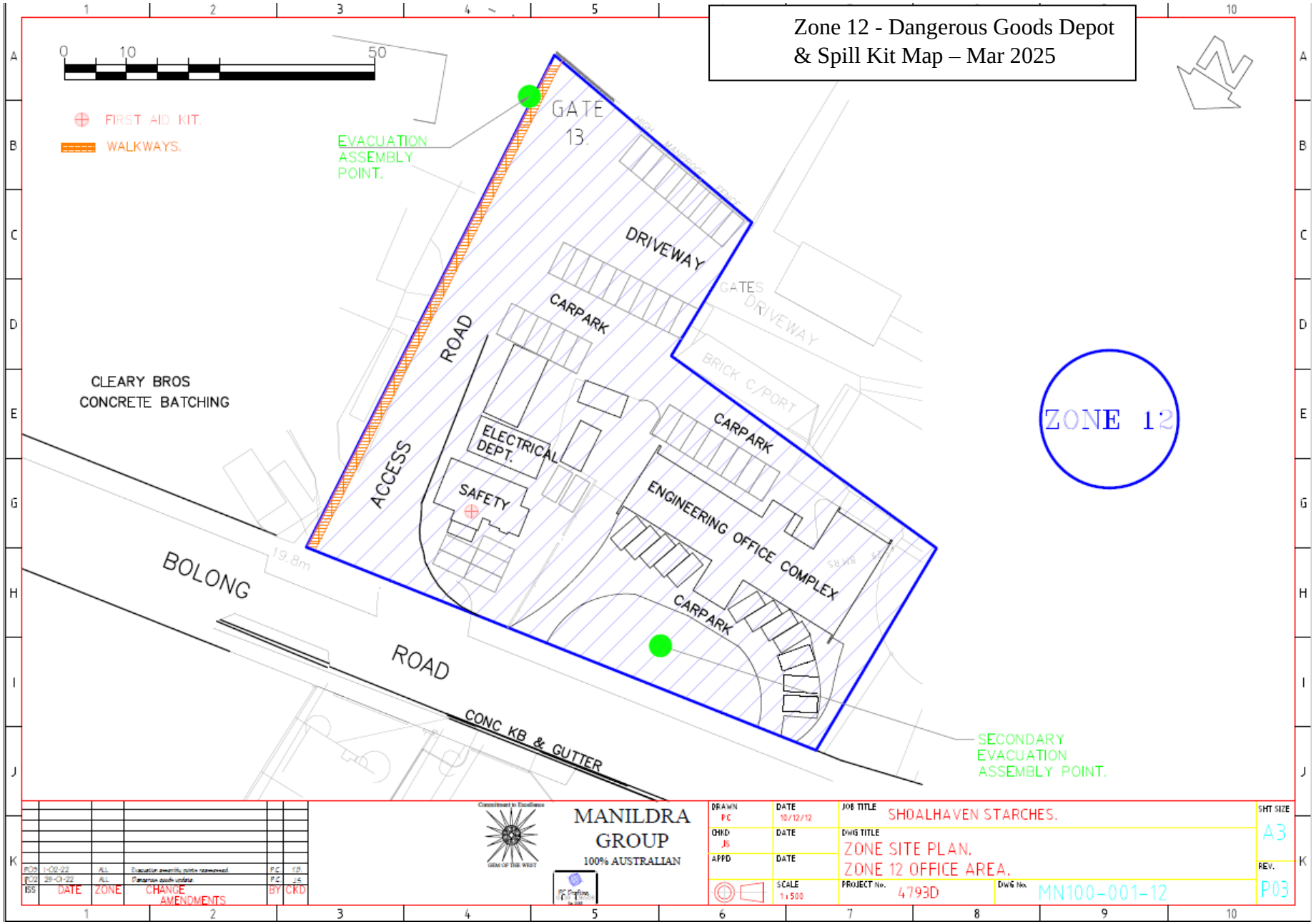
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P.C.		SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD GM	DATE 24/01/22	DWG TITLE ZONE SITE PLAN. ZONE 10 NORTH PACKER.	
APPD	DATE		REV. P03
SCALE 1:1500		PROJECT No. 4798D	DWG No. MN100-001-10

Zone 11 - Dangerous Goods Depot & Spill Kit Map – Mar 2025



Zone 12 - Dangerous Goods Depot & Spill Kit Map – Mar 2025

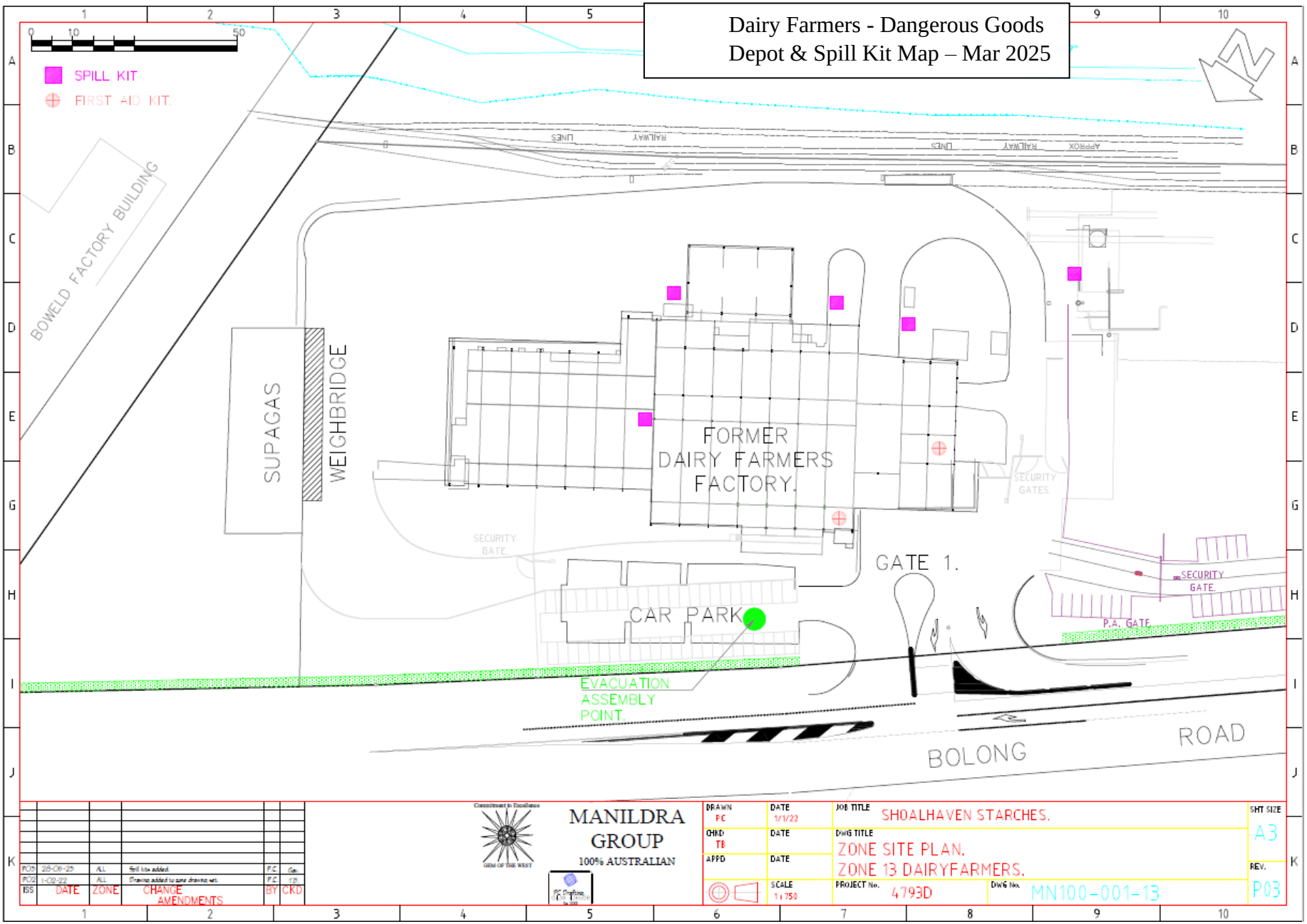


ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
P01	1-02-22	ALL	Evacuation assembly points repositioned	PC	TB
P02	29-03-22	ALL	Dangerous goods update	PC	JS

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DRAWN PC	DATE 10/12/12	JOB TITLE SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD JS	DATE	DWG TITLE ZONE SITE PLAN. ZONE 12 OFFICE AREA.	
APPD	DATE		REV. P03
	SCALE 1:500	PROJECT No. 4793D	DWG No. MN100-001-12

Dairy Farmers - Dangerous Goods Depot & Spill Kit Map – Mar 2025

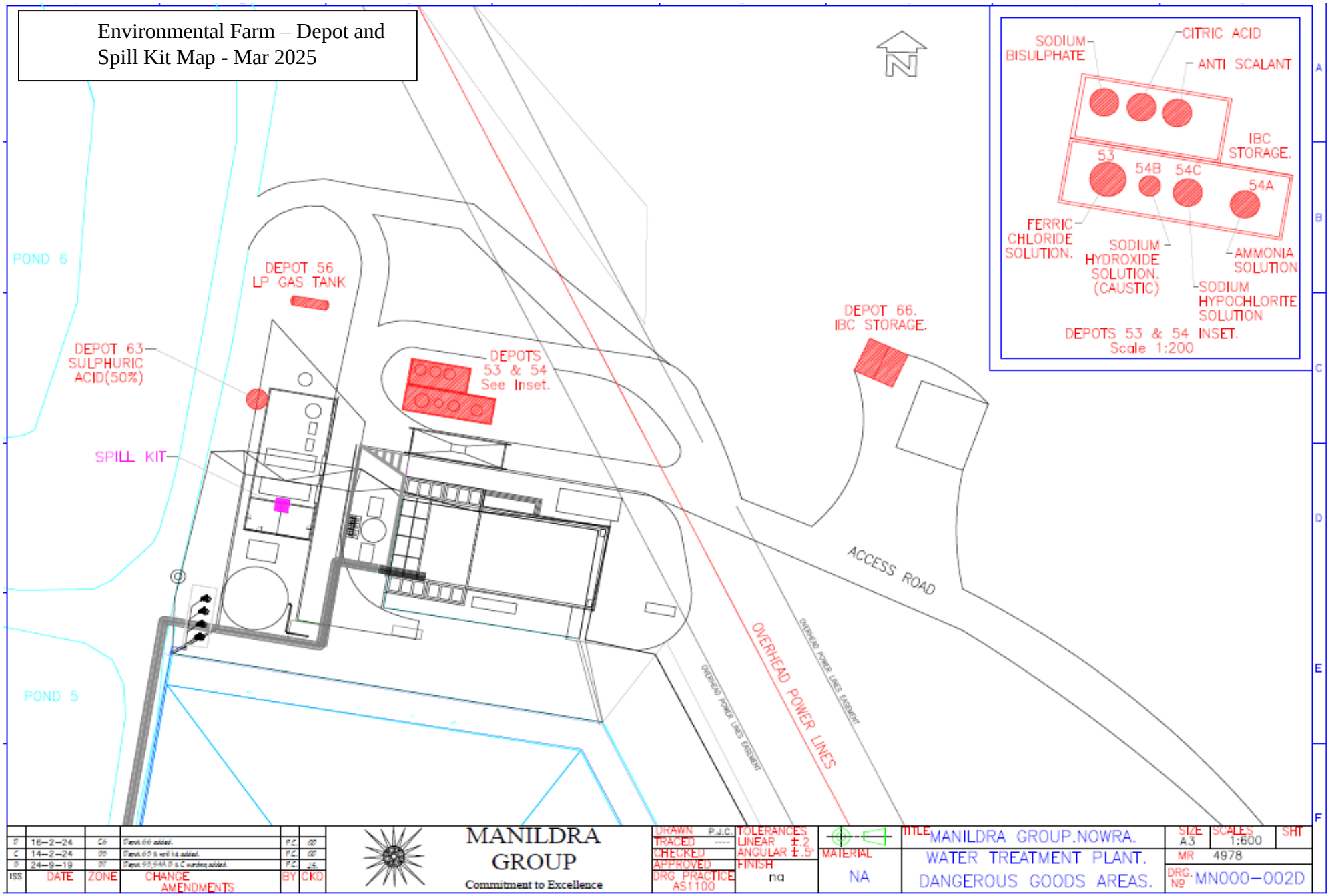


ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
P03	28-09-25	ALL	Spill kits added.	PC	
P02	1-09-22	ALL	Drawing added to same drawing set.	PC	TB

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DRAWN PC	DATE 1/1/22	JOB TITLE SHOALHAVEN STARCHES.	SHT SIZE A3
CHKD TB	DATE	DWG TITLE ZONE SITE PLAN. ZONE 13 DAIRYFARMERS.	
APPD	DATE		REV. P03
	SCALE 1 : 750	PROJECT No. 4793D	DWG No. MN100-001-13

Environmental Farm – Depot and Spill Kit Map - Mar 2025



ISS	DATE	ZONE	CHANGE AMENDMENTS	BY	CKD
D	16-2-24	C6	Depot 66 added.	P.C.	GD
C	14-2-24	D6	Depot 65 & well hd. added.	P.C.	GD
B	24-9-19	D7	Depot 53,54A,B & C wording added.	P.C.	J.S.

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DRAWN P.J.C.
TRACED ----
CHECKED
APPROVED
DRG PRACTICE AS1100

TOLERANCES
LINEAR ±.2
ANGULAR ±.5°
FINISH na

MATERIAL NA

TITLE MANILDRA GROUP.NOWRA.
WATER TREATMENT PLANT.
DANGEROUS GOODS AREAS.

SIZE A3 | SCALE 1:600 | SHT
MR 4978
DRG. Nº MN000-002D

Appendix I

SDS – Fire Fighting Foams

MATERIAL SAFETY DATA SHEET

3M
3M Center
St. Paul, Minnesota
55144-1000
1-800-364-3577 or (651) 737-6501 (24 hours)

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2) neither the copy nor the original is resold or otherwise distributed with the intention of earning a profit thereon.

DIVISION: 3M SPECIALTY MATERIALS
TRADE NAME:
FC-600F LIGHT WATER(TM) ATC(TM) AR-AFFF 3% OR 6%
ID NUMBER/U.P.C.:

98-0211-6634-7	00-51135-10452-1	98-0211-6635-4	00-51135-10453-8
98-0211-6636-2	00-51135-10454-5	98-0211-7178-4	00-51135-10595-5
H0-0015-4999-9	- - -	H0-0015-6973-2	- - -
H0-0015-6980-7	- - -	ZF-0002-0617-5	- - -
ZF-0002-0630-8	- - -	ZF-0002-0640-7	- - -
ZF-0002-0641-5	- - -		

ISSUED: December 07, 1999
SUPERSEDES: July 20, 1999
DOCUMENT: 05-6019-3

1. INGREDIENT	C.A.S. NO.	PERCENT
WATER	7732-18-5	83 - 87
DIETHYLENE GLYCOL BUTYL ETHER	112-34-5	5
ALKYL SULFATE SALT +(5890P)	TradeSecret	1 - 5
AMPHOTERIC FLUOROALKYLAMIDE DERIVATIVE + (5887P)	TradeSecret	1 - 5
INORGANIC ACETATE SALT + (5892P)	TradeSecret	1 - 5
THICKENERS + (5127P, 5123P)	TradeSecret	1 - 5
PERFLUOROALKYL SULFONATE SALTS(5) +(5144P)	TradeSecret	0.1 - 1.0
TRIETHANOLAMINE	102-71-6	0.5
RESIDUAL ORGANIC FLUOROCHEMICALS	Mixture	Unknown

The components of this product are in compliance with the chemical notification requirements of TSCA. All applicable chemical ingredients in this material are listed on the European Inventory of Existing Chemical Substances (EINECS), or are exempt polymers whose monomers are listed on EINECS.

New Jersey Trade Secret Registry Number EIN 04499600-+.

This product contains the following toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR Part 372:
DIETHYLENE GLYCOL BUTYL ETHER

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

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1. INGREDIENT C.A.S. NO. PERCENT

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2. PHYSICAL DATA

BOILING POINT:..... ca. 100 C
(Initial)
VAPOR PRESSURE:..... ca. 17.8 mmHg
Calc. @ 20 C
VAPOR DENSITY:..... ca. 0.65 Air=1
Calc. @ 20 C
EVAPORATION RATE:..... < 1.0 BuOAc=1
SOLUBILITY IN WATER:..... complete
SPECIFIC GRAVITY:..... ca. 1.0 Water=1
PERCENT VOLATILE:..... ca. 85 %
pH:..... ca. 8.5
VISCOSITY:..... 1950 centipoise Brookfield
@ 25 C; 2075 CENTIPOISE @ 4.4 C
MELTING POINT:..... N/A

APPEARANCE AND ODOR:
Translucent, amber colored liquid.

---

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... None (Setaflash CC)
FLAMMABLE LIMITS - LEL:..... N/A
FLAMMABLE LIMITS - UEL:..... N/A
AUTOIGNITION TEMPERATURE:..... N/A

EXTINGUISHING MEDIA:
Product is a fire-extinguishing agent.

Fire extinguishing agent.

SPECIAL FIRE FIGHTING PROCEDURES:
None known.

None Known

UNUSUAL FIRE AND EXPLOSION HAZARDS:
See Hazardous Decomposition section for products of combustion.

NFPA HAZARD CODES: HEALTH: 1 FIRE: 0 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
None known.

Not Applicable

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon Monoxide and Carbon Dioxide, Hydrogen Fluoride, Toxic Vapors, Gases or Particulates

Thermal decomposition of usage concentrations does not present a hazard.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Observe precautions from other sections. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container.

RECOMMENDED DISPOSAL:
Slowly discharge spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HF.

ENVIRONMENTAL DATA:
A Product Environmental Data Sheet (PED) is available.

REGULATORY INFORMATION:
Volatile Organic Compounds: 50 gms/liter South Coast Air Quality Mgmt Dist Method Calc. @ 20 C.
VOC Less H2O & Exempt Solvents: N/A.

Since regulations vary, consult applicable regulations or authorities before disposal. In the event of an uncontrolled release of this material, the user should determine if the release qualifies as a reportable quantity. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

The components of this product are in compliance with the chemical registration requirements of: TSCA, EINECS, CDSL, MITI.

5. ENVIRONMENTAL INFORMATION (continued)

OTHER ENVIRONMENTAL INFORMATION:
This product contains one or more organic fluorochemicals that have the potential to resist degradation and persist in the environment.

EPCRA HAZARD CLASS:
FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: Yes

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:
Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact with vapor, spray, or mist. Wear vented goggles.

SKIN PROTECTION:
Avoid skin contact. Wear appropriate gloves when handling this material. A pair of gloves made from the following material(s) are recommended: butyl rubber.

RECOMMENDED VENTILATION:
If exhaust ventilation is not adequate, use appropriate respiratory protection. Provide ventilation adequate to control vapor concentrations below recommended exposure limits and/or control spray or mist.

RESPIRATORY PROTECTION:
Avoid breathing of airborne material. Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: Half-mask

7. PRECAUTIONARY INFORMATION (continued)

organic vapor respirator with dust/mist prefilter.

PREVENTION OF ACCIDENTAL INGESTION:
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Wash hands after handling and before eating.

RECOMMENDED STORAGE:
Store away from areas where product may come into contact with food or pharmaceuticals. Store at temperatures below 120 degrees F (49 degrees C). Store at temperatures above 32 degrees F (O degrees C). Keep container closed when not in use. Keep container in well-ventilated area.

FIRE AND EXPLOSION AVOIDANCE:
Keep container tightly closed. Nonflammable.

OTHER PRECAUTIONARY INFORMATION:
No smoking: Smoking while using this product can result in contamination of the tobacco and/or smoke and lead to the formation of the hazardous decomposition products mentioned in the Reactivity Data section of this MSDS.

HMIS HAZARD RATINGS: HEALTH: 1 FLAMMABILITY: 0 REACTIVITY: 0
PERSONAL PROTECTION: X (See precautions, section 7.)

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
WATER.....	NONE	NONE	NONE	NONE	
DIETHYLENE GLYCOL BUTYL ETHER.....	35	PPM	TWA	CMRG	
ALKYL SULFATE SALT +(5890P).....	NONE	NONE	NONE	NONE	
AMPHOTERIC FLUOROALKYLAMIDE DERIVATIVE + (5887P).....	NONE	NONE	NONE	NONE	
INORGANIC ACETATE SALT + (5892P).....	NONE	NONE	NONE	NONE	
THICKENERS + (5127P, 5123P).....	NONE	NONE	NONE	NONE	
PERFLUOROALKYL SULFONATE SALTS(5) +(5144P).....	0.1	MG/M3	TWA	3M	Y
TRIETHANOLAMINE.....	5	MG/M3	TWA	ACGIH	
RESIDUAL ORGANIC FLUOROCHEMICALS.....	0.1	MG/M3	TWA	3M	Y

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- 3M: 3M Recommended Exposure Guidelines
- ACGIH: American Conference of Governmental Industrial Hygienists

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

EXPOSURE LIMITS (continued)

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*

- CMRG: Chemical Manufacturer Recommended Exposure Guidelines

- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
Moderate Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

SKIN CONTACT:
Mild Skin Irritation (after prolonged or repeated contact): signs/symptoms can include redness, swelling, and itching.

INHALATION:
Single overexposure, above recommended guidelines, may cause:

Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:
Animal studies conducted on organic fluorochemicals which are present in this product indicate effects including liver disturbances, weight loss, loss of appetite, lethargy, and neurological, pancreatic, adrenal and hematologic effects. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used as intended and instructed.

Ingestion may cause:

Aspiration Pneumonitis: signs/symptoms can include coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.

WHILE THE FOLLOWING EFFECTS ARE ASSOCIATED WITH ONE OR MORE OF THE INDIVIDUAL INGREDIENTS IN THIS PRODUCT AND ARE REQUIRED TO BE INCLUDED ON THE MSDS BY THE U.S. OSHA HAZARD COMMUNICATION STANDARD, THEY ARE NOT EXPECTED EFFECTS DURING FORESEEABLE USE OF THIS PRODUCT.

Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.

Central Nervous System Depression: signs/symptoms can include

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8. HEALTH HAZARD DATA (continued)

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headache, dizziness, drowsiness, muscular weakness, incoordination, slowed reaction time, fatigue, blurred vision, slurred speech, giddiness, tremors and convulsions.

OTHER HEALTH HAZARD INFORMATION:
This product contains one or more organic fluorochemicals that have the potential to be absorbed and remain in the body for long periods of time, either as the parent molecule or as metabolites, and may accumulate with repeated exposures. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used as intended and instructed.

The presence of organic fluorochemicals in the blood of the general population and subpopulations, such as workers, has been published dating back to the 1970's. 3M's epidemiological study of its own workers indicates no adverse effects.

SECTION CHANGE DATES

PRECAUTIONARY INFO. SECTION CHANGED SINCE July 20, 1999 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

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The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

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Angus Fire Alcoseal 3/6% AR-FFFP

Fire Safety Equipment Pty Ltd

Chemwatch Hazard Alert Code: **1**

Chemwatch: **59319**
Version No: **4.1.1.1**
Safety Data Sheet according to WHS and ADG requirements

Issue Date: **06/27/2017**
Print Date: **09/21/2018**
L.GHS.AUS.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

Product name	Angus Fire Alcoseal 3/6% AR-FFFP
Synonyms	Foam FFFP Alcohol Resistant Film Forming Fluoroprotein (AR-FFFP)
Other means of identification	Not Available

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Firefighting foam concentrate.

Details of the supplier of the safety data sheet

Registered company name	**Fire Safety Equipment Pty Ltd**	**Fire Safety Equipment Pty Ltd**
Address	2A Staple Street Seventeen Mile Rocks QLD 4073 Australia	Suite 6, Level 1 32 Frederick St Oatley NSW 2223 Australia
Telephone	+61 7 3715 5644	+61 2 9579 3045
Fax	+61 7 3715 8450	+61 2 9579 3049
Website	www.fsequip.com.au	Not Available
Email	ray@fsequip.com.au	Not Available

Emergency telephone number

Association / Organisation	**Not Available**	**Not Available**
Emergency telephone numbers	+61 7 3715 5644 Mon-Fri 8am - 5pm	Not Available
Other emergency telephone numbers	Not Available	Not Available

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

Poisons Schedule	Not Applicable
Classification	Not Applicable

Label elements

Hazard pictogram(s)	Not Applicable
SIGNAL WORD	NOT APPLICABLE

Hazard statement(s)

Not Applicable

Precautionary statement(s) Prevention

Not Applicable

Continued...

Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

Not Applicable

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
	21-31	hydrolysed protein
107-41-5	5-10	hexylene glycol
	3-7	fluorosurfactants
	1-5	1,2-benzoisothiazolin-3-one
7732-18-5	>60	water

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact	If this product comes in contact with eyes: ▸ Wash out immediately with water. ▸ If irritation continues, seek medical attention. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin or hair contact occurs: ▸ Flush skin and hair with running water (and soap if available). ▸ Seek medical attention in event of irritation.
Inhalation	▸ If fumes, aerosols or combustion products are inhaled remove from contaminated area. ▸ Other measures are usually unnecessary.
Ingestion	▸ If swallowed do **NOT** induce vomiting. ▸ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▸ Observe the patient carefully. ▸ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▸ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▸ Seek medical advice.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.

Advice for firefighters

Fire Fighting	▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Wear breathing apparatus plus protective gloves in the event of a fire. ▸ Prevent, by any means available, spillage from entering drains or water courses. ▸ Use fire fighting procedures suitable for surrounding area. ▸ **DO NOT** approach containers suspected to be hot. ▸ Cool fire exposed containers with water spray from a protected location.

Continued...

	▸ If safe to do so, remove containers from path of fire. ▸ Equipment should be thoroughly decontaminated after use.
Fire/Explosion Hazard	▸ Non combustible. ▸ Not considered to be a significant fire risk. ▸ Expansion or decomposition on heating may lead to violent rupture of containers. ▸ Decomposes on heating and may produce toxic fumes of carbon monoxide (CO). ▸ May emit acrid smoke. Decomposes on heating and produces toxic fumes of: carbon dioxide (CO_2) fluorides
HAZCHEM	Not Applicable

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	Slippery when spilt. ▸ Clean up all spills immediately. ▸ Avoid breathing vapours and contact with skin and eyes. ▸ Control personal contact with the substance, by using protective equipment. ▸ Contain and absorb spill with sand, earth, inert material or vermiculite. ▸ Wipe up. ▸ Place in a suitable, labelled container for waste disposal.
Major Spills	Slippery when spilt. Minor hazard. ▸ Clear area of personnel. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Control personal contact with the substance, by using protective equipment as required. ▸ Prevent spillage from entering drains or water ways. ▸ Contain spill with sand, earth or vermiculite. ▸ Collect recoverable product into labelled containers for recycling. ▸ Absorb remaining product with sand, earth or vermiculite and place in appropriate containers for disposal. ▸ Wash area and prevent runoff into drains or waterways. ▸ If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	▸ Limit all unnecessary personal contact. ▸ Wear protective clothing when risk of exposure occurs. ▸ Use in a well-ventilated area. ▸ Avoid contact with incompatible materials. ▸ When handling, **DO NOT** eat, drink or smoke. ▸ Keep containers securely sealed when not in use. ▸ Avoid physical damage to containers. ▸ Always wash hands with soap and water after handling. ▸ Work clothes should be laundered separately. ▸ Use good occupational work practice. ▸ Observe manufacturer's storage and handling recommendations contained within this SDS. ▸ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
Other information	▸ Store in original containers. ▸ Keep containers securely sealed. ▸ Store in a cool, dry, well ventilated area. ▸ **DO NOT** allow to freeze. ▸ Store away from incompatible materials. ▸ Protect containers against physical damage and check regularly for leaks. ▸ Observe manufacturer's storage and handling recommendations contained within this SDS.

Continued...

	|Store above -4 degC and below 49 degC.

Conditions for safe storage, including any incompatibilities

Suitable container	▸ Polyethylene or polypropylene container. ▸ Packing as recommended by manufacturer. ▸ Check all containers are clearly labelled and free from leaks.
Storage incompatibility	None known

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	hexylene glycol	Hexylene glycol	Not Available	Not Available	25 ppm / 121 mg/m3	Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
hexylene glycol	Hexylene glycol	2.3 ppm	25 ppm	150 ppm

Ingredient	Original IDLH	Revised IDLH
hexylene glycol	Not Available	Not Available
water	Not Available	Not Available

MATERIAL DATA

Exposure controls

Appropriate engineering controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
The basic types of engineering controls are:
Process controls which involve changing the way a job activity or process is done to reduce the risk.
Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.
Employers may need to use multiple types of controls to prevent employee overexposure.

General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air)	0.25-0.5 m/s (50-100 f/min)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use

Continued...

	4: Large hood or large air mass in motion / 4: Small hood - local control only Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.
Personal protection	
Eye and face protection	▸ Safety glasses with side shields ▸ Chemical goggles. ▸ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]
Skin protection	See Hand protection below
Hands/feet protection	Wear general protective gloves, eg. light weight rubber gloves.
Body protection	See Other protection below
Other protection	No special equipment needed when handling small quantities. **OTHERWISE:** ▸ Overalls. ▸ Barrier cream. ▸ Eyewash unit.

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:
"Forsberg Clothing Performance Index".
The effect(s) of the following substance(s) are taken into account in the ***computer-generated*** selection:
Angus Fire Alcoseal 3/6% AR-FFFP

Material	CPI
BUTYL	C
NATURAL RUBBER	C
NEOPRENE	C
PVA	C
VITON	C

* CPI - Chemwatch Performance Index
A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Respiratory protection

Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Required minimum protection factor	Maximum gas/vapour concentration present in air p.p.m. (by volume)	Half-face Respirator	Full-Face Respirator
up to 10	1000	A-AUS / Class1	-
up to 50	1000	-	A-AUS / Class 1
up to 50	5000	Airline *	-
up to 100	5000	-	A-2
up to 100	10000	-	A-3
100+			Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Continued...

Appearance	Dark brown viscous liquid with organic odour; mixes with water.|Consists essentially of a hydrolysed protein solution containing|fluorocarbon surfactants.

Physical state	Liquid	**Relative density (Water = 1)**	1.09
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not available.
pH (as supplied)	6.5-7.5	**Decomposition temperature**	Not available.
Melting point / freezing point (°C)	-7	**Viscosity (cSt)**	Not Available
Initial boiling point and boiling range (°C)	100	**Molecular weight (g/mol)**	Not Applicable
Flash point (°C)	Not Applicable	**Taste**	Not Available
Evaporation rate	Not Available	**Explosive properties**	Not Available
Flammability	Not Applicable	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Applicable	**Surface Tension (dyn/cm or mN/m)**	Not Available
Lower Explosive Limit (%)	Not Applicable	**Volatile Component (%vol)**	VOCs <20%
Vapour pressure (kPa)	Not Available	**Gas group**	Not Available
Solubility in water (g/L)	Miscible	**pH as a solution (1%)**	Not Available
Vapour density (Air = 1)	Not available.	**VOC g/L**	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	▸ Unstable in the presence of incompatible materials. ▸ Product is considered stable. ▸ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	Limited evidence or practical experience suggests that the material may produce irritation of the respiratory system, in a significant number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system.
Ingestion	The material has **NOT** been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.
Skin Contact	The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.
Eye	The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

Continued...

Chronic	Long-term exposure to the product is not thought to produce chronic effects adverse to health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

Angus Fire Alcoseal 3/6% AR-FFFP	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
hexylene glycol	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: 8560 mg/kg[2]	Eye (rabbit): 93mg - SEVERE
	Oral (rat) LD50: 3700 mg/kg[2]	Skin (rabbit):465 mg open-mild
		Skin (rabbit):465mg/24hr-moderate
water	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*	

HEXYLENE GLYCOL	For hexylene glycol **Acute toxicity:** Hexylene glycol is of relatively low acute toxicity to mammals, the acute oral LD50 is >2000 and <5000 mg/kg (range >2000-4700 mg/kg) while the dermal LD50 is >2000 mg/kg (range >1.84-12.3 g/kg). The acute inhalational LC50 is ³ the saturated vapour concentration. Skin and eye irritation guideline studies indicate that hexylene glycol has low potential to irritate the skin and is slightly irritating to the eye. Skin and eye effects are reversible. Hexylene glycol is not a skin sensitiser. **Repeat dose toxicity:** Repeated exposure by oral gavage to rats at 50, 150 or 450 mg/kg/day hexylene glycol for 90 days, with additional animals at the top dose also allowed a 4 week exposure-free recovery period, resulted in hepatocellular hypertrophy and increased liver weight, male rat specific nephropathy and inflammatory changes in the forestomach and to a lesser extent the glandular stomach. The liver changes were reversible and considered an adaptive physiological response to increased metabolic demand. The male rat nephropathy was partially reversible and associated with an increased severity of acidophilic globules, subsequently identified by specific staining (Masson's trichrome) as alpha-2-microglobulins, and considered of questionable biological significance to humans. Changes in the stomach (reversible) and forestomach (partially reversible) were considered attributable to local irritation induced by the gavage procedure. The NOAEL for this local effect being 50 mg/kg/day. The systemic NOAEL for this guideline study is considered to be 450 mg/kg/day with a no effect level for local irritation to the stomach and forestomach of 50 mg/kg/day. **Genotoxicity:** Hexylene glycol is not genotoxic in either mammalian or non-mammalian cells *in vitro*. **Reproductive and developmental toxicity:** No standard fertility studies are available. No effects on the gonads were observed in a good quality 90-day oral gavage study in rats, which were, administered hexylene glycol at doses up to 450 mg/kg/day by oral gavage. In a good quality developmental toxicity study, in which rats received 30, 300 or 1000 mg/kg/day hexylene glycol by oral gavage, the LOAEL for maternal toxicity was 1000 mg/kg/day, based on slightly reduced weight gain at this top dose level. Greater pre-implantation loss observed at this dose level may be regarded of questionable biological significance. This dose level was also the LOAEL for foetotoxicity based on a, slight delay in ossification, a greater number of foetuses with extra thoraco-lumbar ribs, and a slight decrease (not statistically significant) in foetal body weight. There was no evidence of teratogenicity up to the limit dose of 1000 mg/kg.
WATER	No significant acute toxicological data identified in literature search.

Acute Toxicity	⊘	**Carcinogenicity**	⊘
Skin Irritation/Corrosion	⊘	**Reproductivity**	⊘
Serious Eye Damage/Irritation	⊘	**STOT - Single Exposure**	⊘
Respiratory or Skin sensitisation	⊘	**STOT - Repeated Exposure**	⊘
Mutagenicity	⊘	**Aspiration Hazard**	⊘

Legend: ✘ *– Data available but does not fill the criteria for classification*
✔ *– Data available to make classification*
⊘ *– Data Not Available to make classification*

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Angus Fire Alcoseal 3/6% AR-FFFP	**ENDPOINT**	**TEST DURATION (HR)**	**SPECIES**	**VALUE**	**SOURCE**

Continued...

	Not Available	Not Available	Not Available	Not Available	Not Available

hexylene glycol

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
LC50	96	Fish	=73.5mg/L	4
EC50	48	Crustacea	=59.7mg/L	4
EC50	72	Algae or other aquatic plants	>429mg/L	2
NOEC	72	Algae or other aquatic plants	429mg/L	2

water

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
Not Available	Not Available	Not Available	Not Available	Not Available

Legend: *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

DO NOT discharge into sewer or waterways.
|Readily biodegradable.|Chemical Oxygen Demand: COD 0.29 g/g|Aquatic toxicity: LC50 (rainbow trout) 3 hours: 8500 ppm

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
hexylene glycol	LOW	LOW
water	LOW	LOW

Bioaccumulative potential

Ingredient	Bioaccumulation
hexylene glycol	LOW (LogKOW = 0.5802)
water	LOW (LogKOW = -1.38)

Mobility in soil

Ingredient	Mobility
hexylene glycol	HIGH (KOC = 1)
water	LOW (KOC = 14.3)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal

- Recycle wherever possible.
- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or incineration in a licensed apparatus (after admixture with suitable combustible material).
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

SECTION 14 TRANSPORT INFORMATION

Labels Required

Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Continued...

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture

HEXYLENE GLYCOL(107-41-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards
Australia Inventory of Chemical Substances (AICS)
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

WATER(7732-18-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)

National Inventory Status

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (water; hexylene glycol)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	Y
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
Legend:	*Y = All ingredients are on the inventory* *N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)*

SECTION 16 OTHER INFORMATION

Revision Date	06/27/2017
Initial Date	Not Available

Other information

Ingredients with multiple cas numbers

Name	CAS No
hexylene glycol	107-41-5, 99210-90-9

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。
IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value

Continued...

LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index

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TEL (+61 3) 9572 4700.

end of SDS

Tridol S 6

Not Available

Chemwatch Hazard Alert Code: **2**

Chemwatch: **5094-28**
Version No: **4.1.1.1**
Safety Data Sheet according to WHS and ADG requirements

Issue Date: **06/27/2017**
Print Date: **11/08/2017**
L.GHS.AUS.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

Product name	Tridol S 6
Synonyms	Tridol S 6% AFFF
Other means of identification	Not Available

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Fire fighting foam concentrate.

Details of the supplier of the safety data sheet

Registered company name	**Not Available**
Address	Not Available
Telephone	Not Available
Fax	Not Available
Website	Not Available
Email	Not Available

Emergency telephone number

Association / Organisation	**Not Available**
Emergency telephone numbers	Not Available
Other emergency telephone numbers	Not Available

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

Poisons Schedule	Not Applicable
Classification	Not Applicable

Label elements

Hazard pictogram(s)	Not Applicable

SIGNAL WORD	NOT APPLICABLE

Hazard statement(s)

Not Applicable

Precautionary statement(s) Prevention

Not Applicable

Continued...

Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

Not Applicable

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
112-34-5	14	diethylene glycol monobutyl ether
Not Available	<5	hydrocarbon surfactants, unspecified
14168-73-1	<5	magnesium sulfate monohydrate
Not Available	<5	fluorosurfactants
7732-18-5	>60	water

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact	If this product comes in contact with eyes: ▸ Wash out immediately with water. ▸ If irritation continues, seek medical attention. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin or hair contact occurs: ▸ Flush skin and hair with running water (and soap if available). ▸ Seek medical attention in event of irritation.
Inhalation	▸ If fumes, aerosols or combustion products are inhaled remove from contaminated area. ▸ Other measures are usually unnecessary.
Ingestion	▸ Immediately give a glass of water. ▸ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

The product contains a substantial proportion of water, therefore there are no restrictions on the type of extinguishing media which may be used. Choice of extinguishing media should take into account surrounding areas.
Though the material is non-combustible, evaporation of water from the mixture, caused by the heat of nearby fire, may produce floating layers of combustible substances.
In such an event consider:

- foam.
- dry chemical powder.
- carbon dioxide.

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.

Advice for firefighters

Fire Fighting	This material is a fire fighting agent.
Fire/Explosion Hazard	▸ Combustible. ▸ Slight fire hazard when exposed to heat or flame. ▸ Heating may cause expansion or decomposition leading to violent rupture of containers. ▸ On combustion, may emit toxic fumes of carbon monoxide (CO).

Continued...

	▸ May emit acrid smoke. ▸ Mists containing combustible materials may be explosive. , carbon dioxide (CO_2) , other pyrolysis products typical of burning organic material. Combustion products include: May emit poisonous fumes.
HAZCHEM	Not Applicable

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	▸ Remove all ignition sources. ▸ Clean up all spills immediately. ▸ Avoid breathing vapours and contact with skin and eyes. ▸ Control personal contact with the substance, by using protective equipment. ▸ Contain and absorb spill with sand, earth, inert material or vermiculite. ▸ Wipe up. ▸ Place in a suitable, labelled container for waste disposal.
Major Spills	Moderate hazard. ▸ Clear area of personnel and move upwind. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Wear breathing apparatus plus protective gloves. ▸ Prevent, by any means available, spillage from entering drains or water course. ▸ No smoking, naked lights or ignition sources. ▸ Increase ventilation. ▸ Stop leak if safe to do so. ▸ Contain spill with sand, earth or vermiculite. ▸ Collect recoverable product into labelled containers for recycling. ▸ Absorb remaining product with sand, earth or vermiculite. ▸ Collect solid residues and seal in labelled drums for disposal. ▸ Wash area and prevent runoff into drains. ▸ If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	The tendency of many ethers to form explosive peroxides is well documented. Ethers lacking non-methyl hydrogen atoms adjacent to the ether link are thought to be relatively safe ▸ **DO NOT** concentrate by evaporation, or evaporate extracts to dryness, as residues may contain explosive peroxides with DETONATION potential. ▸ Any static discharge is also a source of hazard. ▸ Before any distillation process remove trace peroxides by shaking with excess 5% aqueous ferrous sulfate solution or by percolation through a column of activated alumina. ▸ Distillation results in uninhibited ether distillate with considerably increased hazard because of risk of peroxide formation on storage. ▸ Add inhibitor to any distillate as required. ▸ When solvents have been freed from peroxides by percolation through columns of activated alumina, the absorbed peroxides must promptly be desorbed by treatment with polar solvents such as methanol or water, which should then be disposed of safely. ▸ Avoid all personal contact, including inhalation. ▸ Wear protective clothing when risk of exposure occurs. ▸ Use in a well-ventilated area. ▸ Prevent concentration in hollows and sumps. ▸ **DO NOT** enter confined spaces until atmosphere has been checked. ▸ **DO NOT** allow material to contact humans, exposed food or food utensils. ▸ Avoid contact with incompatible materials. ▸ When handling, **DO NOT** eat, drink or smoke.

Continued...

	▸ Keep containers securely sealed when not in use. ▸ Avoid physical damage to containers. ▸ Always wash hands with soap and water after handling. ▸ Work clothes should be laundered separately. Launder contaminated clothing before re-use. ▸ Use good occupational work practice. ▸ Observe manufacturer's storage and handling recommendations contained within this SDS. ▸ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
Other information	▸ Store in original containers. ▸ Keep containers securely sealed. ▸ No smoking, naked lights or ignition sources. ▸ Store in a cool, dry, well-ventilated area. ▸ Store away from incompatible materials and foodstuff containers. ▸ Protect containers against physical damage and check regularly for leaks. ▸ Observe manufacturer's storage and handling recommendations contained within this SDS.

Conditions for safe storage, including any incompatibilities

Suitable container	▸ Metal can or drum ▸ Packaging as recommended by manufacturer. ▸ Check all containers are clearly labelled and free from leaks.
Storage incompatibility	None known

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
diethylene glycol monobutyl ether	Butoxyethoxy)ethanol, 2-(2-; (Diethylene glycol monobutyl ether)	30 ppm	33 ppm	200 ppm
magnesium sulfate monohydrate	Magnesium sulfate (1:1)	20 mg/m3	220 mg/m3	1,300 mg/m3

Ingredient	Original IDLH	Revised IDLH
diethylene glycol monobutyl ether	Not Available	Not Available
hydrocarbon surfactants, unspecified	Not Available	Not Available
magnesium sulfate monohydrate	Not Available	Not Available
fluorosurfactants	Not Available	Not Available
water	Not Available	Not Available

MATERIAL DATA

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee overexposure. General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

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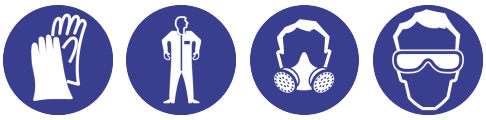
Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air)	0.25-0.5 m/s (50-100 f/min)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood - local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Personal protection



Eye and face protection

- Safety glasses with side shields
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]

Skin protection

See Hand protection below

Hands/feet protection

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.
Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).

- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
- Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.
- Contaminated gloves should be replaced.

For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended.
It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific

Continued...

	chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times. Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers' technical data should always be taken into account to ensure selection of the most appropriate glove for the task. Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example: · Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of. · Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended. ▸ Wear chemical protective gloves, e.g. PVC. ▸ Wear safety footwear or safety gumboots, e.g. Rubber
Body protection	See Other protection below
Other protection	▸ Overalls. ▸ P.V.C. apron. ▸ Barrier cream. ▸ Skin cleansing cream. ▸ Eye wash unit.
Thermal hazards	Not Available

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:
"Forsberg Clothing Performance Index".
The effect(s) of the following substance(s) are taken into account in the ***computer-generated*** selection:
Tridol S 6

Material	CPI
BUTYL	C
NATURAL RUBBER	C
NEOPRENE	C
PVA	C
VITON	C

* CPI - Chemwatch Performance Index
A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Respiratory protection

Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Required minimum protection factor	Maximum gas/vapour concentration present in air p.p.m. (by volume)	Half-face Respirator	Full-Face Respirator
up to 10	1000	A-AUS / Class1	-
up to 50	1000	-	A-AUS / Class 1
up to 50	5000	Airline *	-
up to 100	5000	-	A-2
up to 100	10000	-	A-3
100+			Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Clear pale yellow liquid with a organic odour; mixes with water.

Physical state	Liquid	**Relative density (Water = 1)**	1.01
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Available

Continued...

pH (as supplied)	6.5-8.0	**Decomposition temperature**	Not Available
Melting point / freezing point (°C)	-2	**Viscosity (cSt)**	Not Available
Initial boiling point and boiling range (°C)	100	**Molecular weight (g/mol)**	Not Applicable
Flash point (°C)	>98	**Taste**	Not Available
Evaporation rate	Not Available	**Explosive properties**	Not Available
Flammability	Not Applicable	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Applicable	**Surface Tension (dyn/cm or mN/m)**	Not Available
Lower Explosive Limit (%)	Not Applicable	**Volatile Component (%vol)**	Not Available
Vapour pressure (kPa)	Not Available	**Gas group**	Not Available
Solubility in water (g/L)	Miscible	**pH as a solution (1%)**	Not Available
Vapour density (Air = 1)	Not Available	**VOC g/L**	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	▸ Unstable in the presence of incompatible materials. ▸ Product is considered stable. ▸ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	Not normally a hazard due to non-volatile nature of product The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
Ingestion	The material has **NOT** been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.
Skin Contact	Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected. The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
Eye	The liquid may produce eye discomfort causing transient smarting, blinking
Chronic	Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. Studies with some glycol ethers (principally the monoethylene glycols) and their esters indicate reproductive changes, testicular atrophy, infertility and kidney function changes. The metabolic acetic acid derivatives of glycol ethers (alkoxyacetic acids), not the ether itself, have been found to be the proximal reproductive toxin in animals. The potency of these metabolites decreases significantly as the chain length of the ether increases. Consequently glycol ethers with longer substituents (e.g diethylene glycols, triethylene glycols) have not generally been associated with reproductive effects. One of the most sensitive indicators of toxic effects observed from many of the glycol ethers is an increase in the erythrocytic osmotic fragility in rats Which produces haemolytic anaemia). This appears to be related to the development of haemoglobinuria (blood in the urine) at higher exposure levels or as a result of chronic exposure. Glycol ethers based on propylene oxides, propylene glycol ethers, dipropylene glycol ethers and tripropylene glycol ethers are mainly available, commercially, as alpha-isomers (because of thermodynamic considerations); these are incapable of

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	forming alkoxyacetic or alkoxypropionic acids as metabolites and therefore do not produce erythrocyte fragility unless contaminated by ethylene glycol ethers or to a significant degree by the beta-isomer . beta-Isomers are able to form the alkoxypropionic acids and these are linked to teratogenic effects (and possibly haemolytic effects).

Tridol S 6	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
diethylene glycol monobutyl ether	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: 2700 mg/kg[2]	Eye (rabbit): 20 mg/24h moderate
	Oral (rat) LD50: 4500 mg/kg[2]	Eye (rabbit): 5 mg - SEVERE
magnesium sulfate monohydrate	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >2000 mg/kg[1]	Not Available
	Oral (rat) LD50: >2000 mg/kg[1]	
water	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*	

Tridol S 6	The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
DIETHYLENE GLYCOL MONOBUTYL ETHER	The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. For diethylene glycol monoalkyl ethers and their acetates: This category includes diethylene glycol ethyl ether (DGEE), diethylene glycol propyl ether (DGPE) diethylene glycol butyl ether (DGBE) and diethylene glycol hexyl ether (DGHE) and their acetates. **Acute toxicity:** There are adequate oral, inhalation and/or dermal toxicity studies on the category members. Oral LD50 values in rats for all category members are all > 3000 mg/kg bw, with values generally decreasing with increasing molecular weight. Four to eight hour acute inhalation toxicity studies were conducted for all category members except DGPE in rats at the highest vapour concentrations achievable. No lethality was observed for any of these materials under these conditions. Dermal LD50 values in rabbits range from 2000 mg/kg bw (DGHE) to 15000 mg/kg bw (DGEEA). Signs of acute toxicity in rodents are consistent with non-specific CNS depression typical of organic solvents in general. All category members are slightly irritating to skin and slightly to moderately irritating to eyes (with the exception of DGHE, which is highly irritating to eyes). Sensitisation tests with DGEE, DGEEA, DGPE, DGBE and DGBEA in animals and/or humans were negative. **Repeat dose toxicity**: Valid oral studies conducted using DGEE, DGPE, DGBEA, DGHE and the supporting chemical DGBE ranged in duration from 30 days to 2 years. Effects predominantly included kidney and liver toxicity, absolute and/or relative changes in organ weights, and some changes in haematological parameters. All effects were seen at doses greater than 800-1000 mg/kg bw/day from oral or dermal studies; no systemic effects were observed in inhalation studies with less than continuous exposure regimens. **Mutagenicity:** DGEE, DGEEA, DGBE, DGBEA and DGHE generally tested negative for mutagenicity in *S. typhimurium* strains TA98, TA100, TA1535, TA1537 and TA1538 and DGBEA tested negative in E. coli WP2uvrA, with and without metabolic activation. *In vitro* cytogenicity and sister chromatid exchange assays with DGBE and DGHE in Chinese Hamster Ovary Cells with and without metabolic activation and *in vivo* micronucleus or cytogenicity tests with DGEE, DGBE and DGHE in rats and mice were negative, indicating that these diethylene glycol ethers are not likely to be genotoxic. **Reproductive and developmental toxicity:** Reliable reproductive toxicity studies on DGEE, DGBE and DGHE show no effect on fertility at the highest oral doses tested (4,400 mg/kg/day for DGEE in the mouse and 1,000 mg/kg/day for DGBE and DGHE in the rat). The dermal NOAEL for reproductive toxicity in rats administered DGBE also was the highest dose tested (2,000 mg/kg/day). Although decreased sperm motility was noted in F1 mice treated with 4,400 mg/kg/day DGEE in drinking water for 14 weeks, sperm concentrations and morphology, histopathology of the testes and fertility were not affected. Results of the majority of adequate repeated dose toxicity studies in which reproductive organs were examined indicate that DGPE and DGBEA do not cause toxicity to reproductive organs (including the testes). Test material-related testicular toxicity was not noted in the majority of the studies with DGEE or DGEEA. Results of the developmental toxicity studies conducted with DGEE, DGBE and DGHE are almost exclusively negative. In these studies, effects on the foetus are generally not observed (even at concentrations that produced maternal toxicity). Exposure to 102 ppm (560 mg/m3) DGEE by inhalation (maximal achievable vapour concentration) or 1385 mg/kg/day DGEE by the dermal route during gestation did not cause maternal or developmental toxicity in the rat. Maternal toxicity and teratogenesis were not observed in rabbits receiving up to 1000 mg/kg/day DGBE by the dermal route during gestation; however a transient decrease in body weight was observed, which reversed by Day 21 In the mouse, the only concentration of DGEE tested (3500 mg/kg/day by gavage) caused maternal, but no foetal toxicity. Also, whereas oral administration of 2050 mg/kg/day DGBE (gavage) to the mouse and 1000 mg/kg/day DGHE (dietary) caused maternal toxicity, these doses had no effect on the developing foetus

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MAGNESIUM SULFATE MONOHYDRATE & WATER	No significant acute toxicological data identified in literature search.

Acute Toxicity	⊘	**Carcinogenicity**	⊘
Skin Irritation/Corrosion	⊘	**Reproductivity**	⊘
Serious Eye Damage/Irritation	⊘	**STOT - Single Exposure**	⊘
Respiratory or Skin sensitisation	⊘	**STOT - Repeated Exposure**	⊘
Mutagenicity	⊘	**Aspiration Hazard**	⊘

Legend: ✗ *– Data available but does not fill the criteria for classification*
✓ *– Data available to make classification*
⊘ *– Data Not Available to make classification*

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Tridol S 6

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
Not Available	Not Available	Not Available	Not Available	Not Available

diethylene glycol monobutyl ether

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
LC50	96	Fish	1300mg/L	4
EC50	48	Crustacea	>100mg/L	1
EC50	96	Algae or other aquatic plants	>100mg/L	1
NOEC	96	Algae or other aquatic plants	>=100mg/L	1

magnesium sulfate monohydrate

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
LC50	96	Fish	2820mg/L	4
EC50	48	Crustacea	343.56mg/L	4
EC50	72	Algae or other aquatic plants	=2700mg/L	1
EC0	72	Algae or other aquatic plants	=220mg/L	1
NOEC	504	Crustacea	360mg/L	4

water

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
Not Available	Not Available	Not Available	Not Available	Not Available

Legend: *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
diethylene glycol monobutyl ether	LOW	LOW
magnesium sulfate monohydrate	HIGH	HIGH
water	LOW	LOW

Bioaccumulative potential

Ingredient	Bioaccumulation
diethylene glycol monobutyl ether	LOW (BCF = 0.46)

Continued...

magnesium sulfate monohydrate	LOW (LogKOW = -2.2002)
water	LOW (LogKOW = -1.38)

Mobility in soil

Ingredient	Mobility
diethylene glycol monobutyl ether	LOW (KOC = 10)
magnesium sulfate monohydrate	LOW (KOC = 6.124)
water	LOW (KOC = 14.3)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	▸ Recycle wherever possible or consult manufacturer for recycling options. ▸ Consult State Land Waste Authority for disposal. ▸ Bury or incinerate residue at an approved site. ▸ Recycle containers if possible, or dispose of in an authorised landfill.

SECTION 14 TRANSPORT INFORMATION

Labels Required

Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture

DIETHYLENE GLYCOL MONOBUTYL ETHER(112-34-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Hazardous Substances Information System - Consolidated Lists | Australia Inventory of Chemical Substances (AICS)

MAGNESIUM SULFATE MONOHYDRATE(14168-73-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)

WATER(7732-18-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (magnesium sulfate monohydrate; diethylene glycol monobutyl ether; water)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	Y
Korea - KECI	Y
New Zealand - NZIoC	Y

Continued...

Philippines - PICCS	Y
USA - TSCA	Y
Legend:	*Y = All ingredients are on the inventory* *N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)*

SECTION 16 OTHER INFORMATION

Other information

Ingredients with multiple cas numbers

Name	CAS No
magnesium sulfate monohydrate	14168-73-1, 14567-64-7

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。
IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index

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TEL (+61 3) 9572 4700.

Appendix J

Figures from Coffey 2015 contamination assessment (Coffey, 2015a)



LEGEND

- APPROXIMATE SITE BOUNDARY
- DIESEL AST
- BOWSER
- TANK
- STOCKPILE
- T — TRANSFORMER
- FENCING
- IBC STORAGE CONTAINER
- SHIPPING CONTAINER
- ALGAE DEMONSTRATION FACILITY
- 2 — PHOTOGRAPH NO. AND DIRECTION

THIS IS ONE INTERPRETATION ONLY OTHER INTERPRETATIONS ARE POSSIBLE.

AERIAL IMAGE SOURCE: http://maps.six.nsw.gov.au/

revision	no.	description	drawn	approved	date
	A	ORIGINAL ISSUE			

NOTE:
ALL LOCATION ARE APPROXIMATE
DIMENSIONS IN METRES.

10 0 10 30 50

Scale (metres) 1:1000

drawn	MV
approved	JB
date	18/09/14
scale	AS SHOWN
original size	A3

coffey

client: MANILDRA GROUP PTY LTD

project: CONTAMINATION ASSESSMENT, PROPOSED STARCHES PRODUCT DRYER, BOLONG ROAD, BOMADERRY, NSW

title: APPROXIMATE SITE LAYOUT PLAN

project no: GEOTWOLL03658AB | figure no: FIGURE 2 | rev: A

PLOT DATE: 30/09/2014 5:23:29 PM DWG FILE: F:\ENV\PROJECTS\OTHER OFFICES\GEOTWOLL\GEOTWOLL03658AB\GEOTWOLL03658AB-D01.DWG



LEGEND

- APPROXIMATE SITE BOUNDARY
- AEC 1 — WASTEWATER TREATMENT FACILITY
- AEC 2 — DIESEL AST AND BOWSER
- AEC 3 — FORMER ALGAE DEMONSTRATION FACILITY
- AEC 4 — SITE WIDE APPLICATION OF PESTICIDES AND HERBICIDES
- AEC 5 — FILL MATERIAL USED TO FILL FORMER EFFLUENT POND IN SOUTHERN ARES OF THE SITE
- AEC 6 — FILL MOUND IN NORTHERN AREA OF THE SITE
- AEC 7 — FILL OF UNKNOWN QUALITY AND ORIGIN ACROSS THE SITE
- AEC 8 — STORAGE AREAS IN WESTERN AND SOUTHERN PARTS OF THE SITE
- AEC 9 — STORAGE AREAS IN EASTERN PARTS OF THE SITE
- AEC 10 — AREAS AROUND THE FOOTPRINT OF THE FORMER BUILDINGS ON SITE
- AEC 11 — RAILWAY SIDING IN THE SOUTHWESTERN CORNER OF THE SITE

THIS IS ONE INTERPRETATION ONLY OTHER INTERPRETATIONS ARE POSSIBLE.

AERIAL IMAGE SOURCE: http://maps.six.nsw.gov.au/

revision	no.	description	drawn	approved	date
	A	ORIGINAL ISSUE			

NOTE:
ALL LOCATION ARE APPROXIMATE
DIMENSIONS IN METRES.

10 0 10 30 50

Scale (metres) 1:1000

drawn	MV
approved	JB
date	18/09/14
scale	AS SHOWN
original size	A3

coffey

client: MANILDRA GROUP PTY LTD

project: CONTAMINATION ASSESSMENT, PROPOSED STARCHES PRODUCT DRYER, BOLONG ROAD, BOMADERRY, NSW

title: APPROXIMATE AREAS OF ENVIRONMENTAL CONCERN

project no: GEOTWOLL03658AB | figure no: FIGURE 3 | rev: A

PLOT DATE: 3/10/2014 5:25:01 PM DWG FILE: F:\ENVIPROJECTS\OTHER OFFICES\GEOTWOLL\GEOTWOLL03658ABIGEOTWOLL03658AB-D01.DWG



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