



VIRTUS HERITAGE



UPGRADES TO EXISTING RISING SEWER MAINS

29 ST JOHNS ROAD, JILLIBY, NSW

ABORIGINAL ARCHAEOLOGICAL

DUE DILIGENCE ASSESSMENT

Final | May 2025

Prepared for SLR

PO Box 101, Pottsville NSW 2489

(02) 6676 4354

info@virtusheritage.com.au

[ABN 56 159 910 228](https://www.virtusheritage.com.au)

VIRTUSERITAGE.COM.AU

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2	27 May 2025	Kate Morris	SLR	Client review

Acknowledgement of Country

Virtus Heritage acknowledges the Traditional Custodians of the land on which this project was undertaken and pays respect to Elders past, present and emerging.

Content Warning

Aboriginal and Torres Strait Islander people are warned that this publication may contain names and images of deceased people, descriptions of traumatic historic events and parts of Country that have been impacted by development.

Disclaimer and cultural restrictions

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Information contained in the Report is current as at the date of the Report and may not reflect any event or circumstances which occur after the date of the Report.

All queries related to the content, or to any use of this report must be addressed to Dr Mary-Jean Sutton.

Executive Summary

Virtus Heritage was engaged by SLR Consulting Australia to prepare an Aboriginal archaeological due diligence assessment (DD) for the proposed upgrades to existing rising sewer mains works at the Twin Service stations centre, 29 St Johns Road, Jilliby, NSW. The project is located on Aboriginal lands in the Central Coast Local Government Area and Darkinjung Local Aboriginal Land Council boundaries.

SLR requires the DD as part of the DA for the proposed upgrade works (refer to Appendix C for detailed plans of the proposal).

CONSULTATION FOR CULTURAL INPUTS AND VALUES

The project area lies in the Darkinjung Local Aboriginal Land Council boundary. Consultation for this assessment was undertaken by Virtus Heritage with Darkinjung Local Aboriginal Land Council and Wannangini. Tracey Howie and Kyle Howie attended the site inspection to assist with identifying Aboriginal sites and objects and to provide cultural information about the project area. Preliminary comments made during fieldwork were recorded but need to be verified during the review of the draft report (Section 2). A copy of this draft report was provided to Darkinjung Local Aboriginal Land Council for review with no comments received.

UNDERSTANDING LANDFORM SENSITIVITY

The project area is in a sensitive landform under the Due Diligence Code (<200 m of water). Under the Code, it is recognised that this area may have increased potential for Aboriginal objects 'as a result of Aboriginal people's use of those features in their everyday lives and for traditional cultural activities' (Due Diligence Code, 0.12).

PREDICTING POTENTIAL FOR ABORIGINAL OBJECTS/PLACES

An understanding to predict the potential for Aboriginal objects/places in the project was developed drawing on the results of background research, including relevant statutory heritage register searches as part of this Due Diligence assessment.

The search results indicate that artefact sites (isolated finds and scatters) are the most common site type in close proximity to the project area. There is also low potential for scarred trees to occur in wooded areas along Alison Road that are adjacent to Wyong River.

SITE INSPECTION & RESULTS

No Aboriginal objects or places were identified in the project area during the site inspection.

The site inspection was undertaken on 23 April 2025. Tracey Howie (Wannangini), Kyle Howie (Wannangini) and Kate Morris (Virtus Heritage) undertook pedestrian inspection of the project area.

The inspection confirmed that the project area was modified with extensive ground disturbance associated with the previous and current underground services use. Additionally, ground surface visibility (GSV) was limited in areas of project area. Small areas of exposure in the project area exposed a clay-based soil profile in the northern section and sand-based soil profile in the southern section.

DUE DILIGENCE PROCESS AND REQUIREMENTS

This report outlines the results of the Due Diligence Assessment generic process in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (2010).

Following the conditions of the Due Diligence Code, the desktop assessment and visual inspection found no known Aboriginal objects in the project area and concluded that there was a low probability to encounter

unknown Aboriginal objects through the majority of the inspected areas. **However, the section of project area located on the bank of the Wyong River is in a sensitive landform is the exception (refer to Figure 3).** If the proposed impact footprint is wider than the existing services, further assessment will be triggered under the Due Diligence Code may be required.

The following recommendations have been made based on the information provided on project impacts, consultation to date, relevant archaeological and environmental background research, and the results of the site inspection.

1. Unexpected Find Procedure

It is recommended that an Unexpected Finds Procedure be implemented for the duration of the project. In the unlikely event that a suspected Aboriginal object/s is identified the procedure should include the following:

- ◆ Works are to stop immediately.
- ◆ The area of the suspected find/s is to be fenced off with an appropriate buffer and protected.
- ◆ A qualified archaeologist and representative of Darkinjung LALC are to be contacted to inspect the area and the nature of the find.
- ◆ Representative of Darkinjung LALC to determine the find's significance, in consultation with a qualified archaeologist or Heritage NSW, and the requirement for an Aboriginal Heritage Impact Permit (AHIP).
- ◆ Works are not to proceed until written advice is provided from the archaeologist or Heritage NSW on the appropriate management of the find.

2. Unexpected Human Remains Procedure

It is recommended that an Unexpected Human Remains procedure be implemented for the duration of the project. In the unlikely event that suspected Human Remains are identified the procedure should include the following:

- ◆ Works are to stop immediately.
- ◆ The area of the suspected Human Remains find is to be secured and cordoned off.
- ◆ NSW Police are to be notified. No further works can be undertaken until the NSW Police provide written advice.
- ◆ If these remains are deemed to require archaeological investigation by the NSW Police or NSW Coroner, then:
- ◆ Heritage NSW and the relevant Aboriginal parties must be notified; and
- ◆ a plan of management for the preservation of any identified Aboriginal human remains or for the salvage must be put in place or conducted under an AHIP methodology and variation developed in consultation with all relevant Aboriginal parties and the Heritage NSW.
- ◆ Works are not to proceed until written advice is provided from the archaeologist or Heritage NSW.

3. Induction

It is recommended that all site workers and personnel involved in site impact works should be inducted and briefed on the possible identification of Aboriginal sites and objects during construction and their responsibilities according to the provisions of the NPW Act 1974 and NPW Regulation 2019 in the unlikely event that unknown objects or items are uncovered during proposed works.

This induction package must be developed in consultation with Darkinjung LALC, prior to works proceeding. The induction must include:

- ◆ The contact phone numbers of the Heritage NSW regional archaeologist, EnviroLine 131 555, and Darkinjung LALC.
- ◆ The relevant contact phone number Environmental Officer responsible for this project in case unknown objects or items are uncovered during excavation.
- ◆ The penalties for moving Aboriginal objects need to be made clear and given due consideration.
- ◆ An outline types of unexpected heritage objects, items & relics, and their legal protection
- ◆ The Unexpected Finds and Human Remains Procedures, as outlined in Recommendation 1 and 2.

4. Wannangini recommendations

For any proposed works wider than the existing pipeline along Alison Road, Wannangini have requested consideration for a Cultural Site Officer to be onsite to supervise the works. Please note if Aboriginal objects or potential human remains were uncovered there may be no defence to unknowingly harming an Aboriginal object by Council and Wannangini for the project, unless this activity was undertaken under an AHIP endorsed by Heritage NSW.

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Definitions

AHD	Australian Heritage Database
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
Code of Practice	<i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> (DECCW 2010)
DA	Development Application
DD	Due Diligence
DPC	Department of Premier and Cabinet
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
LALC	Local Aboriginal Land Council
LEP	Local Environment Plan
LGA	Local Government Area
NNTT	National Native Title Tribunal
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NTA	<i>Native Title Act 1993</i>
PAD	Potential Archaeological Deposit
SHI	State Heritage Inventory
SLR	SLR Consulting Australia

Glossary

Aboriginal object – A term used in the NPW Act legislation, meaning: ‘... any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains’ (s.5 NPW Act).

Registered Aboriginal party – An individual or party who registers for Aboriginal consultation as part of the consultation and notification process following Aboriginal cultural heritage consultation requirements for proponents 2010 (NSW DECCW 2010b).

AHIP – An Aboriginal Heritage Impact Permit which is a document provided by Heritage NSW which provides a defence to the applicant to certain activities which constitute ‘harm’ to Aboriginal objects or Aboriginal places under Part 6 of the NPW Act. A proponent must prepare an application for an AHIP and other relevant documentation (including an ACHA) to obtain an AHIP from Heritage NSW in the Department of Premier and Cabinet.

Declared Aboriginal place – A term used in the NPW Act legislation, meaning any place declared to be an Aboriginal place (under s.84 of the NPW Act) by the Minister administering the NPW Act, by order published in the NSW Government Gazette, because the Minister is of the opinion that the place is or was of special significance with respect to Aboriginal culture. It may or may not contain Aboriginal objects.

Due Diligence assessment – Due diligence is taking reasonable and practical steps to determine whether a person’s actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm. A due diligence assessment will assess the potential for harm and provide recommendations to mitigate harm, generally in the form of an Aboriginal Cultural Heritage Assessment (ACHA), if Aboriginal objects or places are likely to be harmed by proposed works.

Harm – A term used in the NPW Act Amendments meaning ‘... any act or omission that destroys, defaces, damages an object or place or, in relation to an object – moves the object from the land on **which it had been situated**’ (s.5 NPW Act).

Project area – Area proposed to be impacted as part of a specified activity or development proposal. These activities include indirect impact.

Place – An area of cultural value to Aboriginal people in the area (whether or not it is an Aboriginal place declared under s.84 of the Act).

Proponent – A person proposing an activity that may harm Aboriginal objects or declared Aboriginal places and who may apply for an AHIP under the NPW Act.

1. INTRODUCTION

Virtus Heritage was engaged by SLR Consulting Australia (SLR) to prepare an Aboriginal archaeological due diligence (DD) assessment for the proposed upgrades to existing rising sewer mains works at the Twin Service stations centre, 29 St Johns Road, Jilliby, NSW. The project is located on Aboriginal lands in the Central Coast Local Government Area (LGA) and Darkinjung Local Aboriginal Land Council (LALC) boundaries.

SLR requires the DD as part of the Development Application (DA) for the proposed upgrade works (refer to Appendix C for detailed plans of the proposal).

1.1 PROJECT LOCATION

The service centre site is generally known as the M1 Wyong Northbound, or 'Twin Servos' and is formally recognised as 29 St Johns Road, Jilliby, NSW (Lot 41 DP814963). The lot is irregular in shape, with a total area of approximately 11.5 ha, although the existing development footprint extends over less than half of the total lot area.

The site fronts the Pacific Motorway to the east. A dense section of trees is concentrated in the western and southern undeveloped pockets of the site which help to buffer the existing development from adjoining land uses. A number of trees are located in and around the service centre complex.

The majority of the works will occur outside the service centre site. The proposed works will follow the 4.5 km route of the existing rising sewer main, which traverses east from the service centre lot, along Brolga Way, south along Hue Hue Road, and west along Alison Road. Works outside the service centre site will occur solely on road reserves. The works will occur in the suburbs of Jilliby, Alison and Wyong, all located in the Central Coast Council LGA.

1.2 PROJECT DESCRIPTION

A DA is being prepared for sewerage system maintenance works to support the continued operation of the Twin Highway Service Centres. The works involve the replacement of the rising sewer main which extends from the Northbound service centre site and runs 4.5 km south along the road verge of Brolga Way, Hue Hue Road, and Alison Road.

The proposed works include ground surface disturbances:

- Removal of vegetation, subsoil and topsoil
- Decommission and removal/demolition of the existing pipeline/demolition works
- Installation of a larger capacity sewer pipeline/construction and establishment of services and infrastructure
- Vehicle and machinery movements
- Where possible, the reinstatement of landscaping

The works will mainly utilise the minimal-impact method of trenchless Horizontal Directional Drilling, also known as 'underboring'. This technique aims to minimise contact with above ground flora and fauna, thereby reducing any potential adverse risks (refer to Appendix C for detailed plans).

1.3 REPORT REQUIREMENTS TO THE CODE OF PRACTICE AND LIMITATIONS

This report was compiled with reference to the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (NSW)* (Due Diligence Code). The aim of this report is to advise on the archaeological (scientific) potential of the project area in order to assist the proponent in exercising due diligence in determining if their actions will harm Aboriginal objects.

This report follows the below steps, in line with the Due Diligence Code (Table 1):

- identify whether or not Aboriginal objects are, or are likely to be, present in the area
- if objects are present or likely to be present, determine whether the proposed development activities are likely to harm Aboriginal objects
- determine whether further assessment or an Aboriginal Heritage Impact Permit (AHIP) is required

Table 1. Code of Practice Requirements

Due Diligence CoP Process	Section of Report
Step 1: Will the activity disturb the ground surface?	Yes. Refer to Section 1.2, project descriptions provided by Council.
Step 2a: AHIMS Search Are there any relevant confirmed site records or other associated landscape feature information on AHIMS?	Yes. Refer to Section 4.1.1, data provided by databases is assumed as accurate.
Step 2b: Are there any other sources of information of which a person is already aware? e.g. this may include other searches, knowledge from landholders, Aboriginal community, oral history, history or some other resource or knowledge holder.	Yes. Refer to Section 4.
Step 2c: Are there landscape features that are likely to indicate presence of Aboriginal objects? within 200m of waters, or located within a sand dune system, or located on a ridge top, ridge line or headland, or located within 200m below or above a cliff face, or within 20m of or in a cave, rock shelter, or a cave mouth, or is one land that is not disturbed land.	Yes. Refer to Section 3 and Section 4.3.
Step 3: Can you avoid harm to the object or disturbance of the landscape feature?	No. Refer to Section 6 for further information
Step 4: Does a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely?	No. Refer to Section 6 for further information.

This report is limited to the assessment of project impacts (Section 1.2) in the mapped project area. The site inspection undertaken was confined to areas of proposed works provided by SLR and illustrated in Figure 1. The project area had limited ground surface visibility in areas inspected.

The assessment undertaken by Virtus Heritage provides the archaeological (scientific) potential of the project area, and the management strategies related to these. The cultural (social) and spiritual values can only be commented on by the Aboriginal community representatives for any project.

Virtus Heritage takes no responsibility for errors in Heritage NSW's Aboriginal Heritage Information Management Systems (AHIMS) data, and the Heritage NSW listings and has assumed information provided by Heritage NSW is accurate.

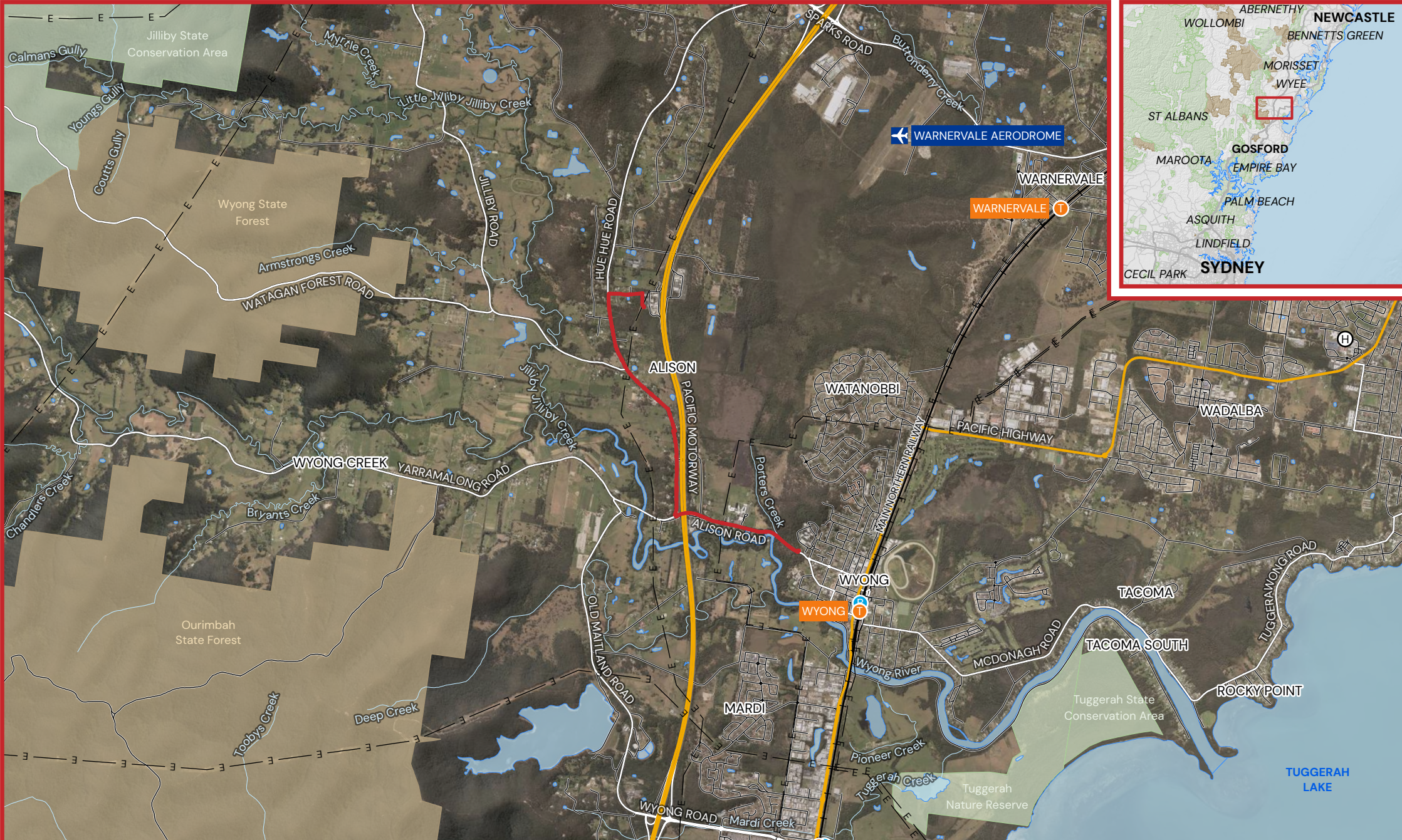
1.4 PROJECT TEAM AND QUALIFICATIONS

This project was directed by Kate Morris (BA/BSc (Hons), University of Queensland). The reporting was undertaken by Archaeologist, Kate Morris (BA/BSc (Hons), University of Queensland) and Martin Wright (BA Hons. Archaeology University of Sydney, B. Bus Economics, Queensland University of Technology). Quality review was undertaken by Director, Dr Mary-Jean Sutton (PhD, Department of Archaeology and Anthropology, University of Queensland; Hons Prehistoric and Historical Archaeology, University of Sydney). GIS Mapping was prepared by Peter Tolley (GIS Analyst). Project information and description of works was provided by Council.

1.5 ACKNOWLEDGEMENTS

We would like to acknowledge the assistance of the following individuals for the completion of this report:

- Tracey Howie (Wannangini)
- Kyle Howie (Wannangini)
- Jacob Cain (Darkinjung LALC)
- Kaveen Wickremaratchy (SLR)



2. CONSULTATION FOR CULTURAL INPUT & VALUES

Aboriginal people are the primary determinants of their culture and heritage, and cultural values can only be assessed and advised by the relevant Aboriginal parties for the locality. It should be noted that Aboriginal heritage refers both to Aboriginal archaeological sites and sites/places of cultural value to Aboriginal people, protected under the NPW Act as “Aboriginal Objects” and “Aboriginal Places”. Sites and places of Aboriginal cultural significance can only be identified by the relevant local Aboriginal people and are likely in many cases (for example, song lines and story places) to not contain any archaeological evidence.

This assessment was conducted by archaeologists providing advice on the archaeological (scientific) values of the project area. The cultural values of the project area were assessed by Wannangini onsite and Darkinjung LALC during review.

A summary of the consultation undertaken for this assessment is provided in Table 2. A copy of this draft report was provided to Darkinjung LALC for comment and review.

Table 2. Summary of Consultation

Date	Comment	Method	Response
3 April 2025	Virtus Heritage contacted Darkinjung LALC and Wannangini to gauge site officer availability.	Email	Darkinjung LALC acknowledged receipt and had to determine availability. Wannangini confirmed availability.
3 April 2025	Darkinjung LALC contacted Virtus Heritage about site officer availability.	Email	Darkinjung LALC responded they could not attend the survey.
22 April 2025	Virtus Heritage sent through a site invite with meeting place location and time to Wannangini.	Email	Wannangini confirmed receipt of information via phone.
23 April 2025	Site inspection	In Person	Wannangini attended the site inspection.
13 May 2023	Virtus Heritage provided the draft Due Diligence assessment for Darkinjung LALC’s review and comment.	Email	A copy of this draft report was provided to Darkinjung Local Aboriginal Land Council for review with no comments received.
23 May 2023	Virtus Heritage provided the draft Due Diligence assessment for Darkinjung LALC’s review and comment.	Email and phone	Called and emailed to follow up on review with no comments received.

A copy of this draft report was provided to Darkinjung Local Aboriginal Land Council for review with no comments received.

Wannangini and the Darkinjung LALC are important voices in the assessment process to provide comment on the cultural and spiritual values of the locality.

3. UNDERSTANDING LANDFORM SENSITIVITY

This section of the report details the existing geology, soils and topography, climate, fauna and flora, previous land use history and other environment factors to provide an environmental context to understanding the potential for Aboriginal occupation and evidence of material culture surviving in the project impact areas (Table 3).

Table 3. Predicting Potential for Aboriginal Objects/Places.

Topography	Geology	Soils	Hydrology	Vegetation
The project area falls in a landscape of undulating low hills and rises on the Central Coast Lowlands north of Wyong. In the northern portion of the project area, slope gradients are <20% and the hills comprise broad crests and ridges with local relief of <80 m. Rock outcrop is absent. In the southern portion of the project area, slope gradients are <3% and on gently undulating alluvial plain with low relief (<10 m). The gentle slopes allow for a build-up of soil deposits.	The project area is situated in the Narrabeen Group and Clifton Subgroup. It is associated with the Tuggerah Formation, which comprises sandstone, claystone and siltstone; the Patonga Claystone Formation which comprises claystone and siltstone with some sandstone; and Quaternary sediments comprising sands, silts, gravels and clays. Claystone, siltstone and sandstone are all materials that are utilised in stone tool production.	The project area predominately sits atop the Gorokan (gk) Erosional Soil Landscape (DPIE 2020). However, it also crosses into the Woodburys Bridge (wo), Yarramalong alluvial (ya) and Wyong (wy) south landscapes in the southern portion of the project area. Gorokan (gk) – moderately deep soils including loamy sand and clayey sand topsoils, and pedal clay and massive clay subsoils. Loam and sand topsoils are known to retain archaeological deposit depending on the extent of impacts from previous land use history.	Porters Creek intersects the project area in the southeast. It is a tributary of the perennial Wyong River which is <15 m from the southern portion of the project area. The Wyong River connects to Tuggerah Lake which is approximately 5 km east of the project area. It is a brackish lake that connects to the ocean/coast. Aboriginal people utilising the project area and its immediate surrounds would have had access to fresh water as well as an abundance of estuarine and marine resources.	The original vegetation (open woodlands) in the project area has been partially cleared. Native species found in the area include: smooth-barked apple, rough-barked apple, scribbly gum, spotted gum, grey gum, Sydney blue gum, blackbutt, cabbage gum, red bloodwood, stringybarks, grey ironbarks, forest oak, woollybutt, swamp mahogany, swamp oak, banksias, tea-trees, kangaroo grass and paperbarks.

3.1 LANDFORM RELEVANCE TO ABORIGINAL HERITAGE POTENTIAL

The project area falls in the undulating alluvial plains and low hills and rises on the Central Coast Lowlands north of Wyong. This topography is easily traversable, and the gentle slopes gradients suggest higher retention of soil profiles as steeper slopes erode and are unlikely to retain *in situ* archaeological deposits. To the west of the project area, Jilliby, Wyong and Ourimbah nature reserves provide elevated areas with mountains and hills.

Claystone, siltstone and sandstone are all materials that are utilised in stone tool production; however, rock outcrop is absent, so sources are likely to be cobbles found in waterways. The soils in the area are moderately deep and include loamy sand and clayey sand topsoils, which are known to retain archaeological deposit.

The project area is intersected by and in close proximity to freshwater courses. The brackish lake and coast are >5 km to the east. This hydrology provides both access to fresh water and riverine and marine plant and animal resources for food, medicine, cultural and utilitarian purposes. Access to fresh water is a major determinant for Aboriginal occupation.

Many of the native species that have been present or are currently present in the area also have utility to Aboriginal people for food, medicine, shelter, cultural and utilitarian purposes.

Table 4: Traditional uses of native flora in the area

Native plants	Traditional uses
Eucalypts	Eucalypts are high quality, hard timber that resists rotting and is excellent for making canoes. Many eucalypts occur along waterways with huge scars caused by the removal of bark for canoes, coolamons and shields. The leaves of eucalypts were also used medicinally by Aboriginal groups (Cumpston 2020).
Banksia	Banksias have flowers that attract nectar-eating birds, bees, butterflies, various insects and mammals. Many diverse groups of Aboriginal people use the flowers to make a sweet nectar drink (often mixed with wattle gum), with stamens used to make fine paint brushes. The dry cones are also useful as strainers and fire carriers (Cumpston 2020).
Kangaroo Grass	Kangaroo Grass was an important food for Indigenous Australians, with its seeds made into a porridge or ground to make flour for bread. Kangaroo Grass was skilfully cultivated, harvested and stored and once formed a large part of the landscape of the low-lying plains of Victoria. In NSW, grinding stones with Kangaroo Grass seed residue show Aboriginal bread-making using this plant occurred at least 36,000 years ago, proving Aboriginal people as the first to harness technologies to make bread. Kangaroo Grass is also used by several Aboriginal groups in the manufacture of nets for hunting. Grasslands provide food and habitat for animals that can be hunted for meat, pelts, fats and bone. Leave and stems of grasses can be used to make cultural items such as baskets and nets (Cumpston 2020).

3.2 LAND USE HISTORY

Aboriginal peoples have occupied the region for thousands of years with material evidence including scatters of stone artefacts, stone and ochre quarries, middens, burials, ceremonial sites such as bora rings, mythological sites and culturally modified (scarred) trees. Specific land use history of the project area can be gleaned from historic aerial imagery. The earliest aerial imagery where the project area can be identified is 1966 (Table 5).

Table 5: Aerial imagery

Date and image	Notes
 <i>Plate 1: Northern section of the project area, 1966</i>	• There is much remnant bushland in the east, intersected by roads and easements • Hue Hue Road is already established • The cemetery is visible between the intersection of Hue Hue Road and Watagan Forest Road • Some built structures are present
 <i>Plate 2: Southern section of the project area, 1966</i>	• Most of this southern area has been used for agriculture, in close proximity to the Wyong River • Hue Hue Road is established • Alison Road is established • Remnant bush is predominately concentrated along waterways • Some built structures are present

Table 5: Aerial imagery

Date and image	Notes
 Plate 3: Northern section of the project area, 1976	• Minor changes in the bushland in the east, intersected by roads and easements • The cemetery is visible between the intersection of Hue Hue Road and Watagan Forest Road • Some additional built structures are present in the north-west
 Plate 4: Southern section of the project area, 1976	• Minimal changes are evident between 1966 and 1976 • Some additional built structures are present in the south-east

Table 5: Aerial imagery

Date and image	Notes
 <i>Plate 5: Northern section of the project area, 1984</i>	• The most noticeable change is the construction of the Pacific Motorway (M1) • Changes in the bushland in the east are also evident with modified bodies of water
 <i>Plate 6: Southern section of the project area, 1984</i>	• The most noticeable change is the construction of the Pacific Motorway (M1) and the bridge over the Wyong River • Changes in the bushland in the east are also evident with modified bodies of water • Additional built structures are present in the south-east

Table 5: Aerial imagery

Date and image	Notes
 Plate 7: Northern section of the project area, 1994	• The most noticeable change is the construction of the Twin Servo (Ampol Wyong Northbound and Southbound service stations) • A reduction in the bushland in the west is also evident • Additional built structures are associated with the vegetation clearance in the west
 Plate 8: Southern section of the project area, 1994	• Changes in the bushland in the west are evident with additional built structures

Table 5: Aerial imagery

Date and image	Notes
 <i>Plate 9: Northern section of the project area, 2006</i>	Minimal changes are evident between 1994 and 2006
 <i>Plate 10: Southern section of the project area, 2006</i>	- Some minor revegetation has occurred in the south-west - Additional built structures are evident north of Alison Road and east of the Pacific Motorway

3.3 SUMMARY

The environmental context is suitable for occupation and the land retains evidence of Aboriginal use (Section 4). The specific project area land use demonstrates historic disturbances including agriculture and roadway. The extent of these historical land use practices and how they have impacted the soil profiles, hydrology and topography and the potential for Aboriginal occupation deposits in these environmental features, are important considerations for this report.

4. PREDICTING POTENTIAL FOR ABORIGINAL OBJECTS/PLACES

The archaeological context draws on existing heritage registers and database searches, previous archaeological research, and discussions of archaeological potential to understand and predict the potential for evidence of Aboriginal occupation in the project impact areas.

4.1 HERITAGE REGISTER AND DATABASE SEARCHES

This section of the report provides a summary of the results of relevant statutory heritage register searches were undertaken as part of this Due Diligence assessment.

4.1.1. *Aboriginal Heritage Information Management System (AHIMS)*

The AHIMS is a database of registered Aboriginal sites in NSW, administered by the Department of Planning and Environment (DPE). The limitation of the AHIMS cultural heritage database is that it contains information that has been registered, and that it doesn't contain all Aboriginal cultural sites. The AHIMS database is being continually updated as sites are identified. Please note the prevalence and occurrence of registered sites indicates survey bias rather than occupation.

An extensive AHIMS search was undertaken on 25 March 2025 for any Aboriginal Heritage sites recorded in or adjacent to the project area. The search area, centred on the project area, encompassed Zone: 56, Lat, Long From: -33.3056, 151.35 to: -33.2339, 151.4736.

The search identified 77 recorded sites in the search area. Of these 77 sites, 62 are listed as valid, 5 are listed as partially destroyed and 8 are listed as destroyed. Two sites have been updated to 'Not a Site'. There are two 'closed sites'; all others listed are 'open sites'. One site had restricted information.

Heritage NSW was contacted on 7 April 2025 to confirm whether the restricted site is located in the project area and could be impacted by the proposed works (Appendix B). Heritage NSW responded on 8 April 2025 that the restricted site would not be impacted by the proposed works (Appendix B).

No sites are recorded in the project area and the closest valid sites are WHS Scar Tree (AHIMS ID #45-3-4508) 300 m to the south, WRMD1 (AHIMS ID #38-4-2100) 400 m to the west, and Porters Creek-OS1 (AHIMS ID #45-3-3971) 800 m to the north of Alison Road (Figure 2). The table below conveys information about all of the sites identified in the search, regardless of status, to characterise the archaeological context of the locality (Table 6).

Table 6: AHIMS search results

Site types	Number	Percent
Artefact scatter	26	33%
Isolated Find	19	24%
Grinding Groove	8	10.5%
PAD with artefact/s	4	5.25%
Scar Tree	4	5.25%
Open Camp Site	4	5.25%
PAD	4	5.25%
Bora/Ceremonial	2	2.5%

Grinding groove, artefact and shell	1	1.5%
Grinding Grooves and artefacts	1	1.5%
Grinding groove and art	1	1.5%
Shelter with Art	1	1.5%
Shelter with Art, Shelter with Deposit	1	1.5%
Restricted	1	1.5%
Total	77	100%

The search results indicate that artefact scatters are the most common site type (n=26), followed by isolated finds (n=19) in the search area. When the artefact scatters and isolated finds are combined, they account for over half of the sites (n=45).

Sites in proximity or of note

WHS Scar Tree (AHIMS ID #45-3-4508)

WHS Scar Tree (AHIMS ID #45-3-4508) is located approximately 300 m to the south of Alison Road, situated in the grounds of the Wyong High School. The ironbark tree has a single, elongated scar measuring 5.5 m high by 0.3 m wide. The scar was recorded by Darkinjung LALC as a canoe scar. The site sits on the western slope of a hill overlooking the Wyong River approximately 100 m to the west.

WRMD1 (AHIMS ID #38-4-3312)

WRMD1 (AHIMS ID #38-4-2100) is located adjacent to Yarramalong Road, approximately 400 m west of the intersection of Hue Hue Road and Alison Road. The site was identified by Therin in 2006 and was located in the bank of a dam located 10 m north of a proposed pipeline easement between the Wyong River and Old Maitland Road. Site WRMD1 consisted of a single silcrete artefact redeposited onto the bank of the dam during the dam's excavation. Therin (2006) identifies that the site is associated with PAD (PAD WRMD) defined as the pipeline easement and that the majority of the floodplain of the Wyong River can be identified as a having a potential for the presence of sub-surface Aboriginal objects. The original site was disturbed by flooding in 2007. Excavations were conducted on the site in 2010 by Biosis with two additional artefacts identified. The site has been assessed as having low scientific significance while the site is culturally significant to Aboriginal people.

Porters Creek-OS1 (AHIMS ID #45-3-3971)

The Porters Creek site is an artefact scatter spanning a 115 m by 16 m area along a farm track that is situated along the eastern edge of the Porters Creek floodplain, approximately 350 m from Porters Creek. The site contained over 75 dark mudstone, chert, quartz and quartzite artefacts. It is located approximately 800 m to the north of Alison Road.

In the site card prepared by Ozark for the site, they surmise that the site probably extended east into more elevated landforms. Furthermore, they note that while the floodplain has soil depth, it is assessed that the visible artefacts are in a secondary context and that the site has a low probability of subsurface archaeological deposits that have conservation value. It is noted by Virtus Heritage that the site sits on an elevated area overlooking wetlands to the west and may have been an ideal spot for watching for prey animals and therefore, it *may* have had greater potential than what was recognised by Ozark.

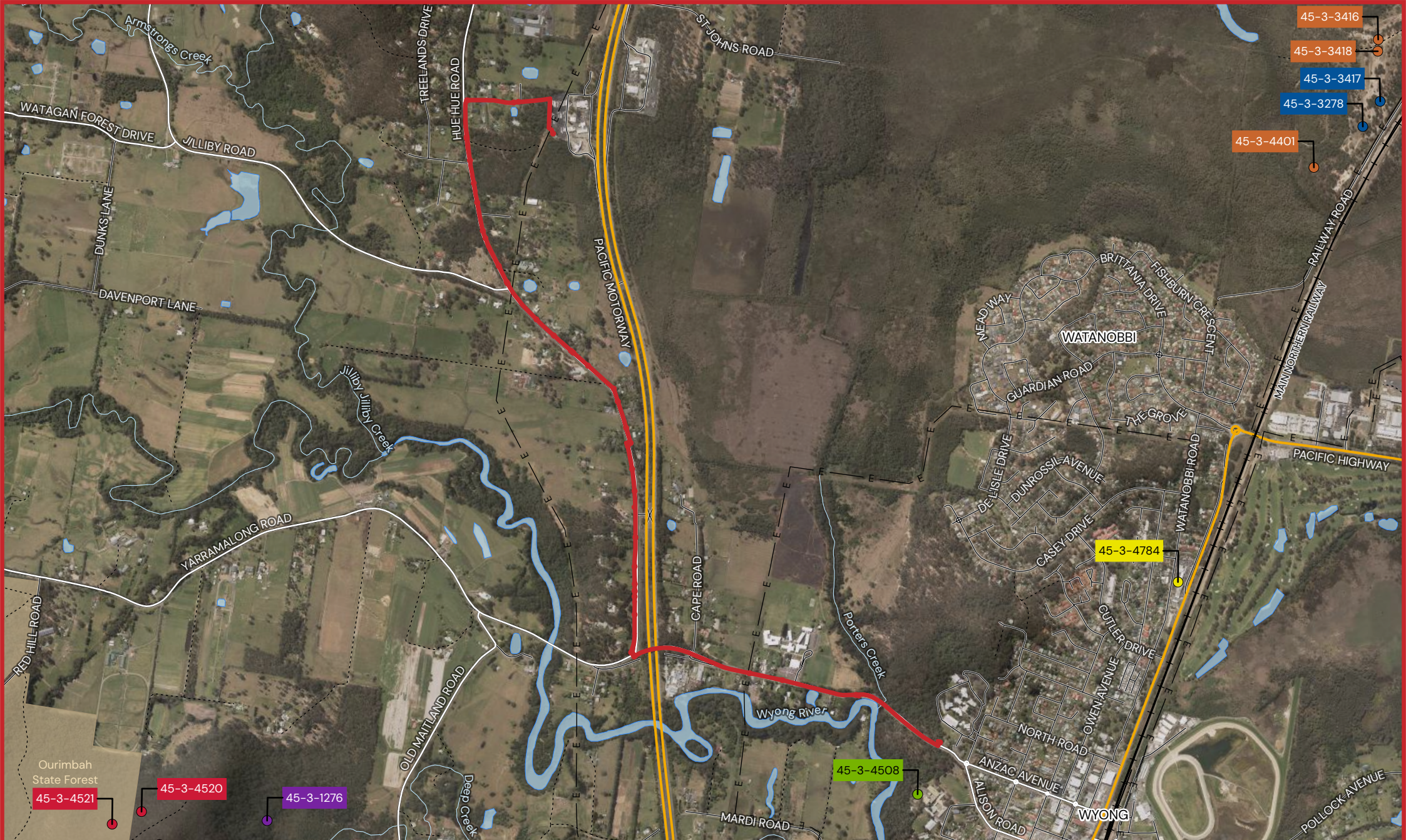
Hue Hue Road Surface Scatter Wyong (AHIMS ID #45-3-0815)

The Hue Hue Road artefact scatter is located approximately 900 m north of the northern edge of Lot 41 DP814963. The scatter was composed of 1 yellow mudstone flake, 1 grey silcrete flake, and 1 yellow chert flake. The flakes were identified on exposed compact clays and gravels on a slope overlooking a creek 90 m to the north. Due to the history of previous land use and its impacts on the area assessed in this report, Potential Archaeological Deposit (PAD) in the vicinity was thought to be highly unlikely.

Raverson Close Engraving (AHIMS #45-3-4784)

This site was recorded by the Darkinjung LALC and is approximately 1.2 km to the northeast of the project area. This site includes engravings depicting two male figures, a speared kangaroo with ceremonial lines across tail, as well as an indeterminate object and incomplete figure across a 15 m by 10 m area. Three grinding grooves are located near the tail of the kangaroo engraving. Details on the location are not recorded on the site card however the included pictures depict a large stone outcrop.

It is noted that the coordinates used in the site card correspond to the Darkinjung LALC office. The name of the site (Raverson Close) suggests that the site is located near Raversons Close, a locality approximately 18km to the south-southwest of the project area. It is suspected that the coordinates used to locate the site may have been registered in error.



683 - Jilliby DD

Jiliby, Alison and Wyong, NSW

Figure 2 - AHIMS site locations

Author: Peter Tolley

Date: 07/04/2025

Scale: 1:20,000 @A4

Datum: GDA2020 MGA Zone 56

Source: Department of Customer Service Spatial Services (2025); Geoscience Australia (2011); Office of Environment & Heritage (2025)

Maps and figures contained within this document may be based on third party data, may not be to scale and are intended for use as a guide only. Virtus Heritage does not warrant the accuracy of such maps or figures.

Legend

- Project Area
- Electricity transmission line
- Rail
- Major road
- Minor road
- Local road
- Vehicular track

- Named watercourse
- Waterbody
- State forest

AHIMS - valid site

- Grinding groove
- Artefact scatter
- Grinding groove and art
- Isolated find
- Scar tree
- Shelter with art

Note: Restricted site (45-3-3628) may be present within view extent



**VIRTUS
HERITAGE**

4.1.2. Other heritage register searches

The following registers and databases were searched on 26 March 2025 (results in Table 77):

- National Native Title Tribunal
- Indigenous Land Use Agreements (ILUAs)
- Aboriginal Heritage Impact Permit List
- World Heritage List
- National Heritage List
- Commonwealth Heritage list
- Register of the National Estate
- State Heritage Register
- Central Coast Council Local Environmental Plan (LEP) (2022)

Table 7: Heritage database/register search results

Heritage Database	About the Database	Search Area Date	Results of the Search
National Native Title Tribunal and ILUAs	The Native Title Act 1993 (Cth) (the "Act") creates an Australia-wide native title scheme, the objectives of which include: • providing for the recognition and protection of native title; • establishing a mechanism for determining claims to native title; and • establishing ways in which future dealings affecting native title (future acts) may proceed. Native Title Vision (NTV) is a free online visualisation, mapping and query tool. NTV brings together: • a geospatial view of the Registers and databases • overlays of administrative regions, non-freehold land parcels and resources tenure.	This database was searched on the 26 March 2025 for all Indigenous heritage items in the Central Coast LGA.	A total of 37 claims have been submitted in the Central Coast LGA; however, there are no active claims. Only 11 claims have been determined and all found Native title does not exist. The remaining claims have been withdrawn, discontinued and dismissed. The are no claims over the project area. No ILUAs have been identified over the project area.
Australian Heritage Database	The Australian Heritage Database (AHD) is a Commonwealth administered heritage database that includes entries from the former Register of the National Estate and the current Commonwealth and National Heritage Lists.	This database was searched on the 26 March 2025 for all Indigenous heritage items in the Central Coast LGA.	Two items are listed on the National Heritage List in the Central Coast LGA including: • The Great North Road, Wisemans Ferry to Bucketty • Old Great North Road There are no places recorded in the project area.

State Heritage Inventory and State Heritage Register	The State Heritage Inventory (SHI) is a heritage database administered by the Heritage NSW (Department of Premier & Cabinet). This database includes heritage listings from local and regional planning instruments and heritage studies and State significant heritage items. Information and items listed in the State Heritage Inventory come from a number of sources. This means that there may be several entries for the same heritage item in the database. Search results are divided into three sections:		The results were as follows:
	Section 1 – Aboriginal Places – declared by the Minister for the Environment under the National Parks and Wildlife Act. This information is provided by Heritage NSW.	This database was searched on the 26 March 2025 for all Aboriginal places in the Central Coast LGA.	Section 1: There are 4 Aboriginal Places in the Central Coast LGA; however, none are in proximity to the project area: • Tuggerah Lakes Resting Place (>5 km) • Bulgandry Art Site (>20 km) • Kariong Sacred Land (>20 km) • Warre Warren Aboriginal Place (>20 km)
	Section 2 – State Heritage Register items – listed by the Heritage Council of NSW under the Heritage Act and includes items listed in Interim Heritage Orders. This information is provided by Heritage NSW.	This database was searched on the 26 March 2025 for all SHR items in the Central Coast LGA.	Section 2: 20 items listed under the Heritage Act are located in the Central Coast LGA. The closest item is >12 km away.
	Section 3 – Heritage items listed by local councils on Local Environmental Plans under the Environmental Planning and Assessment Act, and State government agencies under s.170 of the Heritage Act. This information is provided by local councils and State government agencies.	This database was searched on the 26 March 2025 for all heritage items listed by local Councils on LEPs and State agencies under s.170 listed on this database in the Central Coast LGA.	Section 3: 544 heritage items were identified in Central Coast LGA. One item is in 200 m of the project area: Listing No: I71 (Jilliby Cemetery) 0 m, abuts the western boundary of the sewer main Listing No: I371 (Former Wyong Dairy Co-Operative) 0 m, abuts the southern boundary of the sewer main Listing No: I375 (Alison Homestead) 0 m, abuts

			the northern boundary of the sewer main
Central Coast Local Environmental Plan (2022)	A Local Environmental Plan (LEP) is a planning instrument administered by councils, which contains provisions and listings of items of environmental heritage including heritage, conservation areas and archaeological sites in Schedule 5.	The LEP was searched on 26 March 2025.	The search found 418 items, 3 heritage conservation areas and 34 archaeological sites listed in the Central Coast LGA. The project area is not located in any of the heritage conservation areas.

A Native Title search was conducted of the National Native Title Tribunal (NNTT) web map on 24 March 2025 of the project area to identify if any Native Title claims or Indigenous Land Use Agreements exist over the project impact areas (Appendix C). The searches identified that there are no Native Title claims, determinations or Indigenous Land Use Agreements (ILUA) over the project area.

4.2 PREVIOUS ARCHAEOLOGICAL RESEARCH

A review of the Heritage NSW AHIMS library and online searches were undertaken to obtain copies of previous Aboriginal heritage studies and archaeological investigations in the locality of the project area (refer to Appendix E).

The project area and its immediate surrounds have been subject to heritage assessments, particularly adjacent to the M1 and to the east where residential and industrial development has occurred. Key investigations include the surveys of Mary Dallas in 1986 and Archaeological Heritage and Management Solutions (AHMS) in 2014 – both surveys overlapped with areas along Hue Hue Road. Dallas did not identify areas of archaeological sensitivity in the project area and only identified a single site located approximately 900 m north of the northern edge of Lot 41 DP814963 (Dallas, 1986:15). Dallas deduced that European impacts had occurred in the same locations that Aboriginal sites were likely to be found. AHMS surveys did not identify any areas of archaeological sensitivity and also suggested that previous infrastructure development had removed the evidence of cultural material, if it had been extant.

One other study of note is the work conducted by Therin (2000) at Woodbury Park Estate, Mardi just to the west of Alison Road in an area adjacent to the Wyong River. During this survey Therin identified the WRMD1 site (AHIMS ID #38-4-2100) and a PAD (PAD WRMD) that has been discussed in Section 4.1.1. Therin has identified the majority of the floodplain of the Wyong River as having the potential for PAD. This is of note for the section of the current project area that follows Alison Road as the majority of this area sits within 10 and 100 m of the Wyong River. It is also noted that no studies were identified that have surveyed this part of the project area previously.

4.2.1. Significant Local Studies

The local assessments presented in Table 8 below convey information about the archaeological characterisation of the area.

Table 8: Assessments in the area

Author	Date	Locality	Relevance to the project area
M. Dallas	1986	Hue Hue Road	The project area for this survey encompasses the land surrounding Hue Hue Road, bounded on the east by the Sydney-

		(including parts of the current project area)	Newcastle Freeway (Now the M1) and in the north by Sparks Road and Sandra Street. The western boundary is formed by existing properties abutting Dickson' s Road. The survey area covered the norther portion of Lot 41 DP814963 and all the of Hue Hue Road down to its intersection with Alison Road. The predictive model suggested that open campsites (artefact scatters and isolated artefacts) were likely along dry and relatively flat landforms such as hill tops and creek flats with potential for repeated usage and therefore accumulated deposits in elevated dry areas close to creeks. Due to an absence of sandstone, scar trees were thought to be a possibility due to the need for bark to construct shelters, however previous tree clearing meant the potential was still low. An artefact scatter (AHIMS #45-3-0815 - 1 yellow mudstone flake, 1 grey silcrete flake, 1 yellow chert flake) was identified on exposed compact clays and gravels on a slope overlooking a creek 90 m to the north. Due to the land use, PAD in the vicinity was thought to be highly unlikely. No scarring was identified on any of the mature trees in the survey area. The study concluded that the likelihood of significant and substantial occupation sites in the area was remote due to significant European surface and subsurface disturbance to areas of high potential (elevated ground above watercourses, ridgelines overlooking swamp and marshland). Occupation of the area would have consisted of sporadic foraging from base camps near the lakes, around 1 days walk away.
Australian Museum Business Services (AMBS)	2014	M1 Pacific Motorway Tuggerah to Doyalson (including parts of the current project area)	Survey units 2, 3, 4, and 6 overlap with Lot 41 DP814963. Effective coverage (Visibility & Exposure) across these survey units ranged from 0% in Survey Unit 2 (grassed verge on Hue Hue Road approaching Alison Road), and Survey Unit 3 (Motorway service centre/truck stop, car park, & grassed verge in Lot 41 DP814963), <1% for Survey Unit 4 (Cultivation areas, grassed paddocks, modified dam, and dwelling. including western section of Lot 41 DP814963), and 6% for Survey Unit 6 (grassed electricity easement, unsealed vehicle access tracks, and former concrete batching site in northern extent of Lot 41 DP814963). No Aboriginal sites were identified during the survey. The study area has been subject to high levels of ground disturbance arising from the development of the M1 Motorway (road verges - Survey Unit 6), commercial and industrial development (Survey Unit 3), the installation of subsurface gas and telecommunications infrastructure including high pressure mains and optic fibre cables (Survey Unit 2), waste disposal, and vegetation clearance for rural and agricultural land use (Survey Unit 4).
Therin Archaeological Consulting (TAC)	2000b	Woodbury Park Estate, Mardi (<1km to the south	This study undertook survey for a Local Environmental Study seeking to rezone the area for residential development. The study area was situated in two landforms: low sandstone hills, and the flat floodplain of the Wyong River.

		of Alison Road)	Four Aboriginal sites were located during the survey, 2 open camp sites (WPI & WP2) and two isolated finds (WP3 & WP4). Site WP1 was located on the hillslope in the south-western corner of the study area. This site consisted of 9 artefacts redeposited in gravel used for paving adjacent houses. The source of the gravel was not able to be determined. Sites WP2, WP3 and WP4 were located on the floodplain of the Wyong River. WP2 was composed of 1 mudstone and 1 quartz flake, WP3 was a broken mudstone flake, and WP4 was a single broken silcrete flake. The presence of these sites meant there is a likelihood that the floodplain area could contain Potential Archaeological Deposit (PAD) consisting of a low-density artefact scatter resulting from Aboriginal use of the billabongs resources. The test excavation of the PAD was not recommended due to the probably low artefact densities and due to the presence of more suitable areas for excavation elsewhere in the area. The three <i>in situ</i> sites (WP2, WP3 and WP4) located during the survey are consistent with the predictive models for the region. This model suggests that there should be evidence for the exploitation of resources around the creeks, billabongs and swamps of the low-lying area between the Terrigal Formation sandstone and Tuggerah Lake in the form of low-density artefact scatters or isolated finds. Therin notes that there is no evidence for large knapping events in the Wyong area (2000b:16)..
Archaeological Heritage and Management Solutions (AHMS)	2009	Blue Tongue Brewery Site, Warnervale (2.1km N of northern extent of project area)	This study investigated the proposed Bluetongue Brewery, located off Burnett Road, Warnervale. The 1 m x 1 m mechanical test pitting was undertaken in a 17 m² area. The area was highly disturbed, with most natural topsoil absent, most likely due to the nearby construction of Warnervale Business Park. Re-located topsoil was identified under clay capping and appeared to represent topsoil from across the site that had been stockpiled. Of the 16 artefacts identified, 6 were from the stockpiled top soil, with two others recovered from the excavation and the remaining 8 recovered from surface collection. Only 1 complete flake, 1 broken tool (a scraper) and a core fragment were recovered, with the remaining being flake pieces or angular fragments. These sites were recorded and removed from the study area (Site #45-3-3377 and #45-3-3448). Site #45-3-3377 is listed on the AHIMS database as destroyed. Due to the extensive removal of the top soils from the site, it was deemed to have low to nil archaeological significance.
OZArk	2009	Wyong, NSW, (3km to the N of the northern extent of the project area)	This study assessed five areas associated with a proposed mine and included areas of direct impact and areas for potential off-set conservation. The predictive model identified the areas as having moderate archaeological potential on the basis of the geology, topography, and soil composition. Artefacts (isolated and scatters) were predicted to be the most likely site type,

			occurring on ridges and high slopes or along low gentle slopes and terraces adjacent to permanent water sources. The surveys identified areas adjacent to Wallarah Creek and Spring Creek that were recognised as having archaeological sensitivity due to their proximity to permanent water and their general landscapes. The survey also identified three sites (artefact scatter, scarred tree, isolated artefact) along Wallarah Creek in the Hue Hue Road ecological offset investigation area.
Therin Archaeological Consulting (TAC)	2000a	Wadalba (3.5km E of eastern extent of project area)	This project was located to the east of the current project area and assessed areas on lower hillslopes with one also including a drainage depression. An artefact scatter was identified (one mudstone and one acid volcanic flake) in a surface exposure close to southern boundary. The report recommended that the identified site was conserved and that the rest of the area had low potential to contain Aboriginal objects.

These previous archaeological assessments either overlap or are in the vicinity of the project area. These studies note that:

- The most common site types are isolated artefacts and low-density artefact scatters. Flakes, including broken flakes and debitage, are the most common artefact types while the materials commonly include silcrete, mudstone, chert, and quartz.
- No evidence for extensive or repeated occupation of sites.
- Predictive models suggest the highest potential to be elevated, dry areas overlooking watercourses, marshlands, and swamps. The results of the studies have reinforced the models.
- Areas of disturbance from agriculture and construction have occurred in these high potential areas, reducing the probability for recovering cultural material.
- Much of the project area to the west of the M1 has been surveyed previously. Surveys have not identified any sites and have suggested that farming in the area have disrupted surface and subsurface cultural materials if extant. Mature trees have been identified in this area however, no scarring or carving was found.
- No surveys were identified that encompassed Alison Road to the east of the M1.

These assessments, note that in the project area around Hue Hue Road, previous impacts have reduced the potential for cultural material to be found. There is some potential for materials to be identified along Alison Road, particularly in undisturbed areas of floodplain in proximity to the Wyong River. Due to the alluvial soils along the floodplain, there is potential for subsurface deposits (PAD).

4.3 PREDICTIVE MODEL

A predictive model for sites includes both analysis of the most likely site types to occur in a given area and predictions about where in the landscape sites might be likely to be located. The purpose of a predictive model is to “present a model, or series of testable statements, about the nature and distribution of evidence of Aboriginal land use within the project area” (Code of Practice: 10).

The predictive model of Aboriginal site distribution considers the location of previously recorded sites, the results of assessments undertaken in the area, the availability of raw material and resources and is, by nature, broad in scope. The following summary provides an indication of the likely occurrence of various Aboriginal site types in the project area and surrounds.

When considering the potential for Aboriginal cultural sites in the project area, the Due Diligence Code states that ‘Aboriginal objects are often associated with particular landscape features as a result of Aboriginal

people's use of those features in their everyday lives and for traditional cultural activities'. Sensitive landscape features for Aboriginal sites include areas:

- within 200 m of waters;
- located within a sand dune system;
- located on a ridge top, ridge line or headland;
- located within 200 m below or above a cliff face;
- within 20 m of or in a cave, rock shelter, or a cave mouth; or
- is on land that is not disturbed land.

It is noted that due to the long and irregular shape of the project area, that different sections hold different potentials for cultural material. It is noted that the southern part of the project area that runs along Alison Road is located in a sensitive landscape (<200 m of water), however, the remaining areas along Hue Hue Road and at Lot 41 DP814963 fall outside of areas that can be considered sensitive landscape features.

With consideration to the Understanding Landform Sensitivity (Section 3), previous archaeological modelling and research undertaken in proximity to the project area (Section 4.2), the archaeological (scientific) predictions outlined in Table 9 can be made.

Table 9 Predictive Model for sites in the Project Area

Site Type/Material Culture	Description	Relevance to the Project Area and Understanding Potential of Aboriginal occupation
<i>Culturally Modified Trees (Scarred/Carved Trees)</i>	Scarred trees and carved trees contain evidence of scars and carved patterns which can be attributed as having Aboriginal cultural origin. Scarred trees include the removal of bark from the trunk of the tree (usually with a stone axe) to make shields, canoes, implements and other types of items which leave a wound on the tree trunk. Carved tree contains carved patterns on the tree trunk and are often found in association with ceremonial grounds, burials, or cultural sites. Carved trees are a very rare site type.	Carved and scarred trees are usually a very rare site type. It is noted that 4 modified trees are recorded in the region with one (AHIMS ID #45-3-4508) is located near the eastern end of the project area, overlooking the Wyong River. The eastern end of Alison Road passes through a wooded area that is close to Wyong River, for approximately 650 m. If there are mature trees in this area, there is low to moderate potential for scar trees to occur.
<i>Middens</i>	Middens are not the best word to describe these sites, as it is a European word to describe rubbish pits. Middens sites often contain the accumulation of debris from fish, crustaceans, molluscs, and other shellfish (shells, fish bones) consumed as part of Aboriginal people's diet. Middens may also contain charcoal, stone artefacts, bone and other types of material used by Aboriginal people. Middens or shell mounds are also known to contain cremated human remains or human burials, particularly in coastal environments.	There is low potential for midden material in the project area. No middens were identified in the searches undertaken for the project area. It is likely that the distance of the project area to the main sources of shellfish in the region (Tuggerah Lake) is too great for large accumulations of shell and related materials to accumulate.

	These places are argued also have spiritual or ceremonial use or evidence of the early aspects of domiculture or as camp sites. Middens occur in close proximity to freshwater and saltwater sources which have potential to contain mussels, oysters, and other types of edible molluscs. Middens are identified in sand dunes, beaches, terraces above watercourses, and inland, near lagoons and water holes.	
Isolated artefacts and open campsites (artefact scatters)	Isolated artefacts and open camp sites (artefact scatters) are the locations of discarded stone artefacts, often material that has been discarded as part of making stone tools or over frequent episodes of occupation/visitation of an area. These sites are most likely to be found within 200 metres of a water course in well drained alluvial flats, alluvial terraces, lower slopes, and confluences where the landscape has not been heavily modified and on spurs, ridge lines and crests. All of Australia has potential for discarded Aboriginal stone tools unless areas are heavily modified, and soils have been removed. Stone tools have been found of context in areas of imported fill, quarries, mining emplacement dumps, housing areas and caravan parks and are often found in eroding A1 soils or any eroding alluvial or colluvial deposits. This site type is the most common site type in Australian and New South Wales, and the most highly recorded evidence of Aboriginal occupation.	There is high potential for artefact sites to be identified in the project area. In the project area, isolated artefacts and artefact scatters would be most likely to include mudstone, chert and silcrete artefacts (flakes and or broken flakes) which dominate many of the assemblages of sites identified in the region. These sites are most likely to be found within 200 m of a water course in well drained alluvial flats, alluvial terraces, spurs, lower slopes, swamps, lagoons, coastal and estuarine landscapes, and confluences where the landscape has not been heavily modified. Isolated artefacts and small open camp sites (artefact scatters) are also likely to be found on ridges, crests, saddles, or floodplains as they provide an excellent outlook over the surrounding area.
<i>Petroglyphs (Rock Engravings)</i>	Petroglyphs (also referred to as Rock Engravings) are art sites where marks have been made in stone by Aboriginal people (for example, spirit figures, animals, implements and footprints).	Given the environmental context and the previous land use history, there is low to no potential for petroglyphs to be uncovered in the project area. It is noted that the location of the only petroglyph site in the vicinity of the project area (AHIMS #45-3-4784) may have been erroneously recorded.
<i>Rock shelter sites with Art and Potential Archaeological Deposit or Archaeological Deposits</i>	Rock shelter sites with art rock overhangs used for shelter by Aboriginal people and where smooth surfaces on the walls of the shelter (sandstone surfaces) are painted with ochres and pigments. Rock shelters with floor deposits are closed sites perfect for Aboriginal occupation and evidence of burials, stone tools	Due to the location of the project area, there is low to no potential of a rockshelter to be present due to the absence of suitable geology.

	and midden material maybe subsurface or extant.	
<i>Aboriginal axe grinding grooves</i>	Aboriginal axe grinding grooves are grooves most often found in sandstone where Aboriginal people have sharpened or manufactured stone axes and other implements and, in some cases, ground seed and grains in the sandstone forming 'bowls'. This site type can occur where suitable geology is present.	Grinding grooves are one of the more common sites in the search area for the project. The presence of grinding grooves is dependant upon there being suitable rocky outcrops and sources of water. Due to the depth of soils in the area, it is unlikely that there are rocky outcrops outside of areas immediately adjacent to the Wyong River. As such there is low to no potential for grinding grooves, outside of the project area that runs adjacent to the Wyong River. In the small portion of the project area that runs adjacent to the Wyong River (Alison Road) there is a low potential for grinding grooves.
<i>Stone quarries</i>	Stone quarries for artefact manufacture, are most likely found in areas of exposed bedrock, particularly in silcrete and basalt deposits.	There are no known stone quarries in the project area. There is low to no potential for stone quarries in the project area.
<i>Burial Sites</i>	Burial sites or Aboriginal ancestral remains may be found in a variety of landscapes throughout NSW, although most frequently they are found in middens, sand dunes, lunettes, bordering dunes, river terraces and other sandy or soft sedimentary soils, as well as defined cemeteries or burial grounds, mounds, rockshelters, and caves. They may be marked with stones, carved trees, or found in association with other sites such as middens. These sites are rare and have a very special importance to Aboriginal people. There are numerous examples in Australian and NSW of burials being found in highly modified contexts such as Narabeen carpark and foreshore for Narabeen man and underneath houses at Nambucca.	There are no known burial sites, in the project area. There is low potential for burials in the project area.
<i>Ceremonial/bora grounds, earthworks and stone arrangements</i>	Ceremonial or Bora grounds, earthworks and stone arrangements are rare site types and sometimes difficult to identify as they are generally low constructions, usually less than a metre high, and may range from being very simple to more elaborate. They are made by the movement and mounding of earth or the arrangement of stones in circular, linear or	There are two bora grounds or in the search area, both of which are situated at Rocky Point on the shore of Tuggerah Lake. The landscape here has changed considerably since they were originally recorded. Virtus Heritage (2024) undertook surveys in the

	figurative patterns, cairns and as paths. Bora grounds and stone arrangements are generally found on flat or gently sloping landforms but are known to exist in other contexts (e.g. cairns on hilltops and crests, or stone structures in rockshelters).	2024 on behalf of the Central Coast Council but were unable to relocate these two sites. If these sites are typical of the type of Bora Grounds common to the area, then there is low to no potential of bora grounds being present in the project area.
Story places and songlines	Story places and songlines are places associated with the continuation of sharing cultural knowledge	No known story places or songlines are located in the project area.

Potential Archaeological Deposits refer to soil profiles in landforms which are predicted to contain buried evidence of Aboriginal occupation. This buried evidence is most often stone artefact scatters which survive most frequently in the archaeological record. PADs can be defined in a number of different ways; however, the primary archaeological importance of subsurface deposits is the possibility that they will provide information that can be used to interpret changes in the archaeological record through time and space. Consequently, for the purposes of this assessment, a landform or area will only be designated a PAD if it meets one or more of the following criteria:

- The PAD should not have been significantly disturbed by post-depositional factors such as animal burrowing, vegetation clearance, erosion, vehicle activity and track construction. Areas with limited post-depositional disturbance may retain high archaeological integrity and therefore artefacts in these areas are more likely to accurately record the human behaviours leading to their deposition; and/or
- It should be likely that the PAD will contain enough artefacts to allow for statistically viable detailed analysis and comparison of the artefact assemblage both in and between sites. The probability that a sufficient quantity of artefacts will be present in a PAD should be assessed in light of the environmental context (including topography, resource availability, geomorphic patterns, and the depth of the topsoil horizon) and the local archaeological context (in relation to the patterning of site location in the local area); and/or
- The PAD should be predicted to contain materials that can be dated, either in relative or absolute terms. The provision of dateable materials allows for the examination of chronological change in and between assemblages. This is an integral component of any discussion of changes in how people used the landscape and resources through time.
- The land use history of the area reduces the chances for the presence of PAD, however, there is still low potential for PAD to occur, especially in level elevated areas with high visibility that are situated close to water.

How archaeological potential is defined and to be assessed in this report is provided in Table 10.

Table 10. Definitions of Archaeological Potential

Archaeological Potential	Definition
Low to Zero	Landforms that have been totally modified and have low to zero potential for any remaining original soil profile or intact archaeological deposits. This category includes existing roads, quarry areas or any area where the original soil profile (topsoil – A horizon) has been stripped and the landform

	completely modified. This landform may also include areas where there are no intact A horizon soils due to high levels of erosion.
Low	Landforms that may have been utilised by Aboriginal people in the past, but at a lower intensity relative to all surrounding landforms, resulting in a lower artefact density than all surrounding landforms. This category also includes landscape areas of low terrain integrity, where geomorphic processes or human action may have redistributed artefacts from their deposited locations, such as stripping of soil to create levees or excavation to create culverts, dams or bridges, resulting in site disturbance or destruction.
Moderate	Landforms that are predicted to have been utilised by Aboriginal people in the past, but not intensively or repeatedly. There is therefore potential for artefactual deposition, but at a lower frequency and density than in areas of high archaeological potential. This category may also refer to landforms known to be sensitive for higher levels of Aboriginal occupation but where prior ground surface disturbances has decreased the archaeological integrity and potential of finding evidence of Aboriginal occupation (for example, creek confluences, alluvial terraces where stratigraphic integrity may have decreased due to previous land use).
High	Landscape areas predicted to have been intensively or repeatedly utilised by Aboriginal people in the past, such as creek confluences, Pleistocene terraces, floodplains or elevated landforms above major watercourses or floodplains. In these areas, site and artefact density are expected to be higher than the surrounding landscape, and sites in these areas may possibly be more complex. Terrain integrity in these areas may be variable although prior ground surface disturbance should be low or non-existent. An important characteristic of areas of high archaeological potential is the research potential or the capacity of sites to provide valuable information on past Aboriginal land use.

4.4 SUMMARY

Previous archaeological research demonstrates that Aboriginal objects and places have been identified in vicinity of the project area. These objects are mostly isolated and scattered artefacts, with grinding grooves, scar trees, and areas of PAD also to be found. Previous studies in the area have noted that sites are more likely to occur in areas of elevated ground above watercourses, and ridgelines overlooking swamp and marshland – the results of previous surveys tend to support these observations.

Previous surveys of Hue Hue Road suggest there is limited potential for cultural material due to extensive agricultural use and infrastructure development. The section of the project area along Alison Road has greater potential due to its proximity to the Wyong River, the presence of wooded areas at its eastern end, and the proximity to a registered scar tree (AHIM #45-3-4508).

5. SITE INSPECTION & RESULTS

A pedestrian inspection of the project area was undertaken on 23 April 2025 by Tracey Howie (Wannangini), Kyle Howie (Wannangini) and Kate Morris (Virtus Heritage).

The inspection aimed to identify and assess any potential Aboriginal archaeological sites and/or cultural heritage constraints in the project area. Representatives of the Aboriginal community advised on any cultural matters.

Overall, the archaeological inspection aimed to:

- confirm the desktop environment context (e.g. soils, geology, and vegetation, see above)
- identify landscape features in the project area and record landscape elements that may have potential for cultural heritage
- confirm the past land use and disturbance history in the project area
- test the archaeological predictive model
- identify and record cultural heritage sites

The following methodology was implemented:

- the inspection focussed on areas of proposed impacts
- recording the different types of surface exposures (e.g. vehicle tracks, ploughing, cattle), previous land use history and disturbance, natural features (e.g. presence of sandstone), soils, erosion, ground surface visibility, and geomorphic
- mapping and recording all identified Aboriginal sites and/or PADs in the project area using a mapping software on a phone

5.1 SITE INSPECTION RESULTS

No Aboriginal objects or places were identified in the project area during the site inspection.

The visual inspection confirmed that the project area had extensive ground disturbance associated with the previous and current underground services use. Ground surface visibility (GSV) varied across the project area (<5–50%) due to grass coverage, concrete and service access (Plate 11–12).

Ground Surface Exposures (GSE) of up to 50% were noted in the project area, predominately in the road easement, which exposed the brown clay-based soil profile with imported gravels in the northern section and a sand-based soil profile in the southern section (Plate 13–14). In these exposures no raw materials or Aboriginal objects were identified.

Potential for PAD was low in the northern section due to the existing underground services and lack of A horizon topsoils. Potential for PAD would have been higher in the southern section due to the presence of sandy A horizon topsoils; however, the presence of evidence of extensive disturbances, varying GSV, and no areas of discreet PAD were identified in the project area. Disturbances throughout the project area included signage, fencing, telegraph poles, culverts, pathways, vegetation clearance, modified dam, drainage and driveways and underground service access (Plate 15–18).

Large native tree species were identified on the northern bank of the Wyong River. These were inspected signs of cultural modifications, but none were noted (Plate 19). Kyle and Tracey Howie identified native bushfoods in the project area including garlic chives and nasturtiums (Plate 20).

The section of project area that crosses the Pacific Motorway was not inspected due to accessibility and safety risks.



Plate 11: Low GSV, leaf litter in the northern section



Plate 12: GSE in the Hue Hue Road easement, view north



Plate 13: GSE in northern section revealing clays



Plate 14: GSE in southern section revealing sand



Plate 15: Example of disturbances and low GSV at Alison Road, view west



Plate 16: Sewer access and culverts



Plate 17: Porters Creek crossing, low GSV, view east



Plate 18: Porters Creek crossing, disturbances, view northeast



Plate 19: Trees on the northern bank of the Wyong, view northwest



Plate 20: Endemic garlic chives and nasturtiums

5.2 CONCLUSIONS

No Aboriginal objects or places were identified in the project area during the site inspection. No areas of PAD were identified in the project area which was partially due to extensive disturbance were recorded from inspection indicating the impacts of decades of previous land use history.

However, the southern section of the project area along Alison Road is in a sensitive landform (<200 m of waters) on the northern bank of the Wyong River and the confluence of Wyong River and Porters Creek. Sandy topsoils were identified in this area indicating higher likelihood for PAD. Kyle and Tracey have worked on nearby pipeline works where artefact scatters were identified and the sites presented in section 4 demonstrate artefacts in proximity to the pipeline.

The nearby sites indicate varying levels of PAD and artefacts in disturbed contexts:

Site WRMD1 (AHIMS ID #38-4-2100) is approximately 400 m west of the intersection of Hue Hue Road and Alison Road, located 10 m north of a proposed pipeline easement between the Wyong River and Old Maitland Road. Site WRMD1 consisted of a single silcrete artefact and PAD with the

majority of the floodplain of the Wyong River identified as a having a potential for the presence of sub-surface Aboriginal objects. Excavations revealed two additional artefacts identified. The site has been assessed as having low scientific significance while the site is culturally significant to Aboriginal people.

Site Porters Creek-OS1 (AHIMS ID #45-3-3971) is approximately 800 m to the north of Alison Road and approximately 350 m east of Porters Creek. The site contained over 75 dark mudstone, chert, quartz and quartzite artefacts. It was initially recorded as having low probability of subsurface archaeological deposits; however, the site sits on an elevated area overlooking wetlands *may* have greater potential than what was noted.

Site Hue Hue Road Surface Scatter Wyong (AHIMS ID #45-3-0815) is approximately 900 m north of the northbound Twin Service Station. The three flakes were identified on exposed compact clays and gravels on a slope overlooking a creek 90 m to the north. Due to the land use, PAD in the vicinity was thought to be highly unlikely.

Due to the results of the previous assessments, environmental context and site inspection results, potential for subsurface artefacts is assessed as low in the northern section along Hue Hue Road and still low in the southern section along Alison Road. However, we note that the southern section along Alison Road it is located in a sensitive area for Aboriginal occupation evidence dependent on the extent of previous land use history (Figure 3).

If the proposed works impact footprint was wider than the existing pipeline, further assessment may be needed along Alison Road prior to ground surface disturbance activities (Figure 3).



683 - Jilliby DD

Jiliby, Alison and Wyong, NSW

Figure 3 - Survey results

Author: Peter Tolley

Date: 30/04/2025

Scale: 1:20,000 @A4

Datum: GDA2020 MGA Zone 56

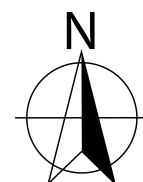
Source: Department of Customer Service Spatial Services (2025); Geoscience Australia (2011)

Maps & figures contained within this document may be based on third party data, may not be to scale & are intended for use as a guide only. Virtus Heritage does not warrant the accuracy of such maps or figures.

Legend

- Project Area
- Sensitive area
- Watercourse buffer (200 m)
- Existing environment
- E- Electricity transmission line
- + Rail
- Major road
- Minor road

- Local road
- - - Vehicular track
- Watercourse/drainage line
- Waterbody
- Lot boundary



6. DUE DILIGENCE PROCESS AND REQUIREMENTS

Heritage NSW (formerly DECCW) have set out the steps under the due diligence process where further impact assessment and an Aboriginal Heritage Impact Permit may be required.

Applying the generic due diligence process for this project, Table 11 provides the steps for further management advice based on the information provided on project impacts, consultation to date, relevant archaeological and environmental background research, and the results of the site inspection.

Table 11. Generic Due Diligence Process Applied to the Project Description.

Due Diligence CoP Process	Comment	Further steps
Step 1: Will the activity disturb the ground surface?	Yes The proposed scope of works will disturb the ground surface. Refer to Section 1.2 and Appendix C.	If Yes, Go to Step 2.
Step 2a: AHIMS Search Are there any relevant confirmed site records or other associated landscape feature information on AHIMS?	No. A search of the AHIMS database did not find any previously recorded sites in the project area (Section 4).	If Yes to any, Go to Step 3
Step 2b: Are there any other sources of information of which a person is already aware? e.g. this may include other searches, knowledge from landholders, Aboriginal community, oral history, history or some other resource or knowledge holder.	Yes. Previous assessments in the area have identified artefacts along Hue Hue Road and in disturbed contexts (Section 4).	If Yes to any, Go to Step 3
Step 2c: Are there landscape features that are likely to indicate presence of Aboriginal objects? within 200m of waters, or located within a sand dune system, or located on a ridge top, ridge line or headland, or located within 200m below or above a cliff face, or within 20m of or in a cave, rock shelter, or a cave mouth, or is one land that is not disturbed land.	Yes. The project area is within 200 m of water (Wyong River and confluence of Wyong River and Porters Creek), which is considered a sensitive landform under the Due Diligence Code. Under the Code, it is recognised that this area may have increased potential for Aboriginal objects 'as a result of Aboriginal people's use of those features in their everyday lives and for traditional cultural activities' (Due Diligence Code, p.12). Refer to Section 4.3 for a Predictive Model.	If Yes to any, Go to Step 3
Step 3. Can you avoid harm to the object or disturbance of the landscape feature?	No. The project area is an existing pipeline that requires maintenance upgrades. However, if the proposed impacts change, particularly if any harm is proposed to the section of project area located on the bank of the Wyong River, wider than the existing services, further impact assessment will be	If No, Go to Step 4

Due Diligence CoP Process	Comment	Further steps
	triggered under the Due Diligence Code and reconsideration of advice in this report.	
Step 4: Does a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely?	No. There were no Aboriginal objects or places identified in the project area during the desktop assessment and visual inspection that will be knowingly harmed by the proposed works based on the current impacts. Considering the disturbance that has previously occurred in the project area and the results of the desktop assessment and visual inspection, it can be concluded that the proposed works are unlikely to harm Aboriginal objects in the majority of the project area, particularly heavily modified contexts (such as the services footprint of the bank of the Wyong River) and areas with the clay-based soils which are less likely to retain archaeological material. Following the Due Diligence process, as no known or predicted Aboriginal objects or Aboriginal places are identified to date that may be harmed by the proposal, the proposed works can proceed with caution in line with the following recommendations. However, the exception is the section of project area located on the bank of the Wyong River which is in a sensitive landform where it is outside of the existing services footprint and if harmed by the proposal it will require further impact assessment and investigation through the Aboriginal cultural heritage assessment process and a possible AHIP. i.	

This report outlines the results of the Due Diligence Assessment generic process in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (2010).

Following the conditions of the Due Diligence Code, the desktop assessment and visual inspection found no known Aboriginal objects in the project area and concluded that there was a low probability to encounter unknown Aboriginal objects.

However, the section of project area located on the bank of the Wyong River is in a sensitive landform is the exception. If the proposed impact footprint is wider than the existing services, further assessment will be triggered under the Due Diligence Code may be required.

The following recommendations have been made based on the information provided on project impacts, consultation to date, relevant archaeological and environmental background research, and the results of the site inspection.

1. Unexpected Find Procedure

It is recommended that an Unexpected Finds Procedure be implemented for the duration of the project. In the unlikely event that a suspected Aboriginal object/s is identified the procedure should include the following:

- ◆ Works are to stop immediately.
- ◆ The area of the suspected find/s is to be fenced off with an appropriate buffer and protected.
- ◆ A qualified archaeologist and representative of Darkinjung LALC are to be contacted to inspect the area and the nature of the find.
- ◆ Representative of Darkinjung LALC to determine the find's significance, in consultation with a qualified archaeologist or Heritage NSW, and the requirement for an Aboriginal Heritage Impact Permit (AHIP).
- ◆ Works are not to proceed until written advice is provided from the archaeologist or Heritage NSW on the appropriate management of the find.

2. Unexpected Human Remains Procedure

It is recommended that an Unexpected Human Remains procedure be implemented for the duration of the project. In the unlikely event that suspected Human Remains are identified the procedure should include the following:

- ◆ Works are to stop immediately.
- ◆ The area of the suspected Human Remains find is to be secured and cordoned off.
- ◆ NSW Police are to be notified. No further works can be undertaken until the NSW Police provide written advice.
- ◆ If these remains are deemed to require archaeological investigation by the NSW Police or NSW Coroner, then:
- ◆ Heritage NSW and the relevant Aboriginal parties must be notified; and
- ◆ a plan of management for the preservation of any identified Aboriginal human remains or for the salvage must be put in place or conducted under an AHIP methodology and variation developed in consultation with all relevant Aboriginal parties and the Heritage NSW.
- ◆ Works are not to proceed until written advice is provided from the archaeologist or Heritage NSW.

3. Induction

It is recommended that all site workers and personnel involved in site impact works should be inducted and briefed on the possible identification of Aboriginal sites and objects during construction and their responsibilities according to the provisions of the NPW Act 1974 and NPW Regulation 2019 in the unlikely event that unknown objects or items are uncovered during proposed works.

This induction package must be developed in consultation with TLALC, prior to works proceeding. The induction must include:

- ◆ The contact phone numbers of the Heritage NSW regional archaeologist, EnviroLine 131 555, and Darkinjung LALC.
- ◆ The relevant contact phone number Environmental Officer responsible for this project in case unknown objects or items are uncovered during excavation.

- ♦ The penalties for moving Aboriginal objects need to be made clear and given due consideration.
- ♦ An outline types of unexpected heritage objects, items & relics, and their legal protection
- ♦ The Unexpected Finds and Human Remains Procedures, as outlined in Recommendation 1 and 2.

4. Wannangini recommendations

For any proposed works wider than the existing pipeline along Alison Road, Wannangini have requested consideration for a Cultural Site Officer to be onsite to supervise the works. Please note that community collection of Aboriginal objects or 'monitoring' without further impact assessment (ACHA) as part of an AHIP application that would need submission and be successfully endorsed by Heritage NSW prior to works proceeding.

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Appendix A. Legislation

This section provides a summary of relevant legislation for the consideration of Aboriginal cultural heritage within the project area.

The *National Parks and Wildlife Act 1974* (NPW Act), the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Heritage Act 1977* are the relevant statutory controls protecting Aboriginal heritage within New South Wales. Details on these key pieces of legislation are provided below.

Environmental Planning and Assessment Act 1979 (EP&A Act)

The EP&A Act requires that environmental impacts are considered in land use planning and decision-making. The definition of 'environmental impacts' includes impacts on the cultural heritage of the project area. The Act sets out specific statutory assessment processes including:

- Part 4: Development that requires consent under consideration of environmental planning instruments.
- Part 5: An assessment process for activities undertaken by public authorities and for developments that do not require development consent but an approval under another mechanism.

The EP&A Act also gives statutory force to planning instruments. Environmental planning instruments (such as state environmental planning policies, regional environmental plans, and local environmental plans) are legal documents that regulate land use and development.

National Parks and Wildlife Act 1974 (NPW Act)

Under the provisions of the NPW Act, all Aboriginal objects are protected regardless of their significance or land tenure. Aboriginal objects are defined as *'any deposit, object, or material evidence (not being a handicraft made for sale) relating to Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal remains'*.

Aboriginal objects are therefore limited to physical evidence and may also be referred to as 'Aboriginal sites', 'relics' or 'cultural material'. Aboriginal objects can include pre-contact features such as scarred trees, middens, and artefact scatters, as well as physical evidence of post-contact use of the area such as Aboriginal built fencing or stockyards and missions.

The NPW Act also protects Aboriginal Places, which are defined as *'a place that is or was of special significance to Aboriginal culture. It may or may not contain Aboriginal objects'*. Aboriginal Places can only be declared by the Minister administering Part 6 of the NPW Act. The NPW Act protects Aboriginal objects and Aboriginal places in NSW. Under the *National Parks and Wildlife Act 1974* (NPW Act), and *National Parks and Wildlife Regulation 2019*, it is an offence to harm or desecrate an Aboriginal object:

- which the person knows is an Aboriginal object (a 'knowing offence'); and
- whether or not a person knows it is an Aboriginal object (a 'strict liability offence').

From 1 October 2010, the maximum penalty for a knowing offence is \$550,000 (5000 penalty units) or imprisonment for 2 years or both for an individual or \$1.1 million for a corporation. The maximum penalty for unknowingly harming offence is \$110,000 (1000 penalty units) for an individual or \$220,000 (2000 penalty units) for a corporation (DECCW 2010:5). A person or organisation who exercises due diligence in reasonably determining that their actions would not harm Aboriginal objects as a defence against prosecution for the s.86(2) offence if they later unknowingly harm an object without an AHIP (DECCW 2010:5). The due diligence defence (s.87(2)) is not available as a defence for any actions which harm or desecrate an Aboriginal place. The Due Diligence Code of Practice sets out a procedure which, when followed, will satisfy the due diligence

requirement. If a person or company can demonstrate that they exercised due diligence and determined that it was unlikely that Aboriginal objects would be harmed, then they have a defence to prosecution under Section 86(2) of the NPW Act (DECCW 2010:5).

Harm includes activities that destroy, deface, or damage an Aboriginal object or an Aboriginal Place, and in relation to an object, moving the object from the land on which it has been situated. Under s.89A (formerly Section 91) of the Act, the Chief Executive (*now the Secretary of Department of Planning and Environment (DPE). Heritage NSW in the DPE*) must be informed upon the identification of all Aboriginal Objects. Failure to do this within a reasonable time is an offence under the Act. Under Section 87 of the Act, it is a defence for a person to destroy, deface, damage, or desecrate an Aboriginal Object or Aboriginal Place with a valid Aboriginal Heritage Impact Permit (AHIP) issued under section 90 of the Act. Aboriginal Heritage Impact Permits are issued by Heritage NSW, DPE. Part 6 of the NPW Act provides specific protection for Aboriginal objects and places by making it an offence to harm them. If harm to Aboriginal objects and places is anticipated an Aboriginal Heritage Impact Permit should be sought as a defence.

The NPW Act also provides for stop-work orders under Part 6A Division 1 if an action is likely to significantly affect an Aboriginal Object or Aboriginal Place. The order may require that an action is to cease or that no action is carried out in the vicinity of the Aboriginal Object or Aboriginal Place for a period of up to 40 days.

Heritage Act 1977

The Heritage Act, 1977 (as amended in 2009) protects and aims to conserve the environmental heritage of New South Wales. Environmental heritage is broadly defined under Section 4 of the Heritage Act as consisting of “those places, buildings, works, relics, moveable objects, and precincts, of State or local heritage significance” (Heritage Branch, DoP 2009:4). Aboriginal places or objects that are recognized as having high cultural value (potentially of local and State significance) can be listed on the State Heritage Register and protected under the provisions of the Heritage Act.

Amendments to the Heritage Act made in 2009 have changed the definition of an archaeological ‘relic’ under the Act, so that it is no longer based on age. A relic is now an archaeological deposit, resource or feature that has heritage significance at a local or State level. This significance-based approach to identifying ‘relics’ is consistent with the way other heritage items such as buildings, works, precincts or landscapes are identified and managed in NSW (Heritage Branch, DoP 2009:1). Section 4(1) of the Heritage Act (as amended 2009) defines ‘relic’ as follows:

Relic means any deposit, artefact, object, or material evidence that:

- a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and
- b) is of State or local heritage significance (Heritage Branch, DoP, 2009:6).

Native Title Legislation

The Native Title Act 1993 (NTA) provides the legislative framework to:

- recognise and protect native title.
- establish ways in which future dealings affecting native title may proceed and to set standards for those dealings, including providing certain procedural rights for registered native title claimants and native title holders in relation to acts which affect native title.
- establish a mechanism for determining claims to native title.
- provide for, or permit, the validation of past acts invalidated because of the existence of native title.

The *NSW Native Title Act 1994* was introduced to make sure the laws of NSW are consistent with the Commonwealth’s NTA on future dealings. It validates past and intermediate acts that may have been invalidated because of the existence of native title.

The National Native Title Tribunal has a number of functions under the NTA, including maintaining the Register of Native Title Claims, the National Native Title Register and the Register of Indigenous Land Use Agreements and mediating native title claims.

Other Acts

The Australian Government *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* may be relevant if any item of Aboriginal heritage significance to an Aboriginal community or historical heritage is under threat of injury or desecration and state-based processes are unable to protect it. The *Environment Protection and Biodiversity Conservation Act 1999* is relevant to projects where there are heritage values of national significance present.



Appendix B. AHIMS Search Results

Virtus Heritage Pty Ltd - Pottsville

Date: 25 March 2025

38 Border Crescent

Pottsville New South Wales 2489

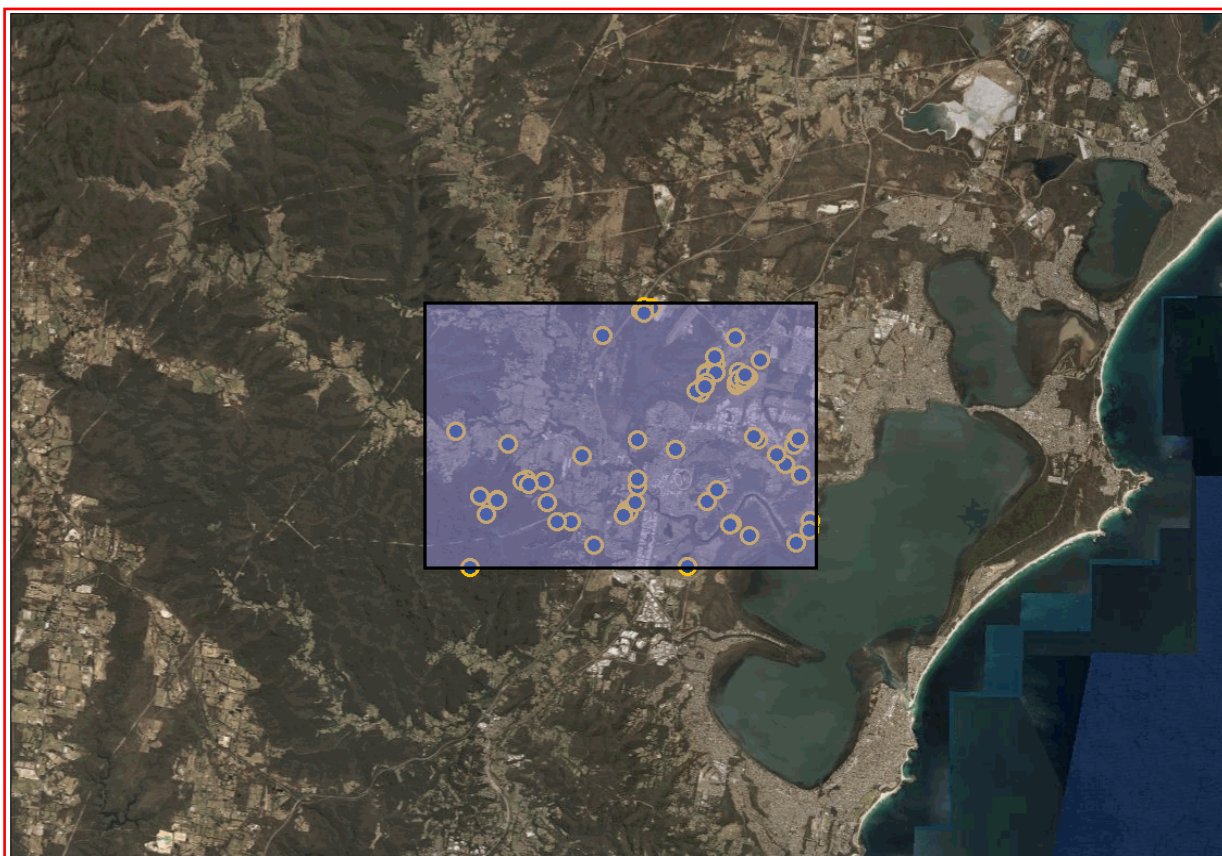
Attention: Kate Morris

Email: k.morris@virtusheritage.com.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -33.3056, 151.35 - Lat, Long To : -33.2339, 151.4736, conducted by Kate Morris on 25 March 2025.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

77	Aboriginal sites are recorded in or near the above location.
1	Aboriginal places have been declared in or near the above location. *
ID	Aboriginal Place Name
20	Tuggerah Lakes Resting Place

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-3-1141	Tacoma South;Tacoma;	AGD	56	355300	6314900	Open site	Valid	Artefact : -, Grinding Groove : -	Axe Grinding Groove,Open Camp Site	308,98461
	<u>Contact</u>	<u>Recorders</u>	Len Dyall					<u>Permits</u>		
45-3-3406	Bitova ISO 3	GDA	56	355830	6319481	Open site	Valid	Artefact : 1		101823
	<u>Contact</u>	<u>Recorders</u>	Mr.John Appleton,Mr.Neville Baker,Sydney Water - Parramatta					<u>Permits</u>	5388	
45-3-3408	Bitova ISO 5	GDA	56	355490	6319291	Open site	Valid	Artefact : 1		101823
	<u>Contact</u>	<u>Recorders</u>	Mr.John Appleton,Mr.Neville Baker,Sydney Water - Parramatta					<u>Permits</u>		
45-3-3411	Bitova ISO 8	GDA	56	355687	6319543	Open site	Valid	Artefact : 1		101823
	<u>Contact</u>	<u>Recorders</u>	Mr.John Appleton,Mr.Neville Baker,Sydney Water - Parramatta					<u>Permits</u>	5388	
45-3-3393	Mardi to Mangrove 3	GDA	56	350674	6315081	Open site	Destroyed	Artefact : 2		101521,102841
	<u>Contact</u>	<u>Recorders</u>	Doctor.Johan Kamminga					<u>Permits</u>	3549	
45-3-4193	Warnervale Artefact Scatter 1	GDA	56	355524	6319357	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Neville Baker,Extent Heritage Pty Ltd - Pyrmont - Individual users,Sydney Wate					<u>Permits</u>	5388	
45-3-4661	HN-WA-ST1	GDA	56	357397	6316565	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	<u>Contact</u>	<u>Recorders</u>	Heritage Now - Belmont,Ms.Lara Donohoe (nee Tooby)					<u>Permits</u>		
45-3-1275	Tacoma;	AGD	56	357200	6314340	Open site	Valid	Ceremonial Ring (Stone or Earth) : -	Bora/Ceremonial	98461
	<u>Contact</u>	<u>Recorders</u>	Len Dyall					<u>Permits</u>		
45-3-1297	Tooby's Creek;	AGD	56	347627	6313475	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	
	<u>Contact</u>	<u>Recorders</u>	Len Dyall					<u>Permits</u>		
45-3-3448	Bluetongue Brewery Re-deposit	GDA	56	352618	6321404	Open site	Valid	Artefact : 24		
	<u>Contact</u>	<u>Recorders</u>	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams					<u>Permits</u>		
45-3-4958	South Tacoma dam grinding grooves	GDA	56	355341	6315050	Open site	Valid	Artefact : -, Shell : -, Grinding Groove : -		
	<u>Contact</u>	<u>Recorders</u>	Guringai Tribal Link Aboriginal Corporation,Mrs.Tracey Howie					<u>Permits</u>		
45-3-3169	J 1	AGD	56	356049	6317397	Open site	Valid	Artefact : -		97583,100541,100863,101093,102647
	<u>Contact</u>	<u>Recorders</u>	Mr.Michael Therin					<u>Permits</u>		
45-3-3419	Lakes G ISO 16	GDA	56	354817	6319736	Open site	Partially Destroyed	Artefact : 1		101823
	<u>Contact</u>	<u>Recorders</u>	Mr.John Appleton,OzArk Environmental and Heritage Management - Dubbo,OzArk					<u>Permits</u>		
45-3-3383	Bluetongue IF3 (Dooralong)	GDA	56	352964	6321510	Open site	Destroyed	Artefact : 1		101321,102647
	<u>Contact</u>	<u>Recorders</u>	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams					<u>Permits</u>	3104	

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-3-3628	Restriction applied. Please contact ahims@environment.nsw.gov.au. Contact					Open site	Valid			
45-3-4916	OUR003_HAB_PAD Contact	Recorders GDA	Ms.Sharon Hodgetts					Permits Habitation Structure : -, Potential Archaeological Deposit (PAD) : -		
45-3-4987	NWi ring tree Contact	Recorders GDA	Darkinjung LALC - Wyong,Ms.Sharon Hodgetts			Open site	Valid	Permits Modified Tree (Carved or Scarred) : -		
45-3-1144	Tuggerah; Contact	Recorders AGD	Guringai Tribal Link Aboriginal Corporation,Mrs.Tracey Howie			Open site	Valid	Permits Artefact : -	Open Camp Site	308,98461
45-3-1145	Rocky Knob;Tacoma South; Contact	Recorders AGD	Len Dyall			Open site	Valid	Permits Grinding Groove : -	Axe Grinding Groove	308,98461
45-3-3404	Bitova ISO 1 Contact	Recorders GDA	Len Dyall			Open site	Valid	Permits Artefact : 1		101823
45-3-3194	WP-4 Contact	Recorders AGD	Mr.John Appleton,Mr.Neville Baker,Mr.Neville Baker,Sydney Water - Parramatta,Sy			Open site	Valid	Permits Artefact : -		100054,10109 3
45-3-3278	WS20/B Contact T Russell	Recorders AGD	Mr.Michael Therin			Open site	Valid	Permits Artefact : 1	2451,2516	102647
45-3-3183	WP3 Contact	Recorders AGD	South East Archaeology - Hughes ACT			Open site	Valid	Permits Artefact : -		100054,10109 3
45-3-3971	Porters Creek-OS1 Contact	Recorders GDA	Mr.Michael Therin			Open site	Partially Destroyed	Permits Artefact : -	2451,2516	
45-3-4375	Ourimbah-144 Bantam Rd Shelter Contact	Recorders GDA	OzArk Environmental and Heritage Management - Dubbo,OzArk Environmental an			Open site	Valid	Permits Habitation Structure : -, Potential Archaeological Deposit (PAD) : -	4571	
45-3-1142	Tacoma South;Tacoma; Contact	Recorders AGD	Darkinjung LALC - Wyong,Ms.Sharon Hodgetts			Open site	Valid	Permits Artefact : -	Open Camp Site	308,98461
45-3-3405	Bitova OS 2 Contact	Recorders GDA	Len Dyall			Open site	Valid	Permits Artefact : 4		101823
45-3-3410	Bitova OS 7 Contact	Recorders GDA	Mr.John Appleton,Mr.Neville Baker,Sydney Water - Parramatta			Open site	Valid	Permits Artefact : 11		101823

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Mr.John Appleton,Mr.Neville Baker,Sydney Water - Parramatta					Permits		
45-3-3416	Lakes G OS 13	GDA	56	354570	6319567	Open site	Valid	Artefact : 14		101823
	Contact	Recorders	Mr.John Appleton					Permits		
45-3-3418	Lakes G OS 15	GDA	56	354568	6319518	Open site	Valid	Artefact : 12		101823
	Contact	Recorders	Mr.John Appleton					Permits		
45-3-3653	WLR Artefact Scatter	GDA	56	354875	6319848	Open site	Partially Destroyed	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	OzArk Environmental and Heritage Management - Dubbo,OzArk Environmental an					Permits	4571	
45-3-4520	Ourimbah 144 AGG 1	GDA	56	349345	6316305	Open site	Valid	Grinding Groove : -		
	Contact	Recorders	Darkinjung LALC - Wyong,Ms.Sharon Hodgetts					Permits		
45-3-4521	Ourimbah 144 AGG 2	GDA	56	349221	6316252	Open site	Valid	Grinding Groove : -		
	Contact	Recorders	Darkinjung LALC - Wyong,Ms.Sharon Hodgetts					Permits		
45-3-3277	WS20/A	GDA	56	354426	6318971	Open site	Destroyed	Artefact : 2		102647
	Contact T Russell	Recorders	South East Archaeology - Hughes ACT,OzArk Environmental and Heritage Managen					Permits	4571	
45-3-1276	Wyong Creek Wen Mar	AGD	56	349771	6316077	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	101093
	Contact	Recorders	ASRSYS					Permits		
45-3-1102	Main Range	GDA	56	348194	6315239	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -	Shelter with Deposit	98168
	Contact	Recorders	ASRSYS,Darkinjung LALC - Wyong,Ms.Sharon Hodgetts					Permits		
45-3-1104	Wyong Creek;	AGD	56	349316	6315976	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	308,98168,101093
	Contact	Recorders	ASRSYS					Permits		
45-3-3312	WRMD1	AGD	56	350875	6316849	Open site	Partially Destroyed	Artefact : 3, Potential Archaeological Deposit (PAD) : -		100351,102389
	Contact Searle	Recorders	Therin Archaeological Consulting,Biosis Pty Ltd - Sydney					Permits	2615,3257,3423	
45-3-4792	Rocky Point Foreshore	GDA	56	357722	6315193	Open site	Valid	Artefact : -		
	Contact	Recorders	Guringai Tribal Link Aboriginal Corporation,Mrs.Tracey Howie,Virtus Heritage Pty					Permits		
45-3-3382	Bluetongue IF2 (Dooralong)	GDA	56	352719	6321522	Open site	Destroyed	Artefact : 1		101321,102647
	Contact	Recorders	Jo McDonald Cultural Heritage Management see GML,Extent Heritage Pty Ltd - Pyrr					Permits	3104	
45-3-3412	Bitova OS 9	GDA	56	355745	6319429	Open site	Valid	Artefact : 4		101823
	Contact	Recorders	Mr.John Appleton,Mr.Neville Baker,Sydney Water - Parramatta					Permits		
45-3-3414	Bitova ISO 11	GDA	56	355485	6319224	Open site	Valid	Artefact : 1		101823
	Contact	Recorders	Mr.John Appleton,Mr.Neville Baker,Sydney Water - Parramatta					Permits		
45-3-3415	Lakes G ISO 12	GDA	56	354815	6320059	Open site	Valid	Artefact : 1		101823

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>	Mr.John Appleton					<u>Permits</u>		
45-3-4401	Warnervale Artefact Reburial	GDA	56	354298	6319027	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	OzArk Environmental and Heritage Management - Dubbo,Mr.Ben Churcher					<u>Permits</u>		
45-3-3371	Wadalba Hill Scar 1	AGD	56	357150	6317468	Open site	Valid	Modified Tree (Carved or Scarred) : 1		101367,10264 7
	<u>Contact</u>	<u>Recorders</u>	Mr.Roger Mehr					<u>Permits</u>		
45-3-3407	Bitova OS 4	GDA	56	355761	6319510	Open site	Valid	Artefact : 40		101823
	<u>Contact</u>	<u>Recorders</u>	Mr.John Appleton,Mr.Neville Baker,Sydney Water - Parramatta					<u>Permits</u>	5388	
45-3-3413	Bitova OS 10	GDA	56	355767	6319460	Open site	Valid	Artefact : 18		101823
	<u>Contact</u>	<u>Recorders</u>	Mr.John Appleton,Mr.Neville Baker,Mr.Neville Baker,Sydney Water - Parramatta,Sy					<u>Permits</u>		
45-3-4055	45-3-4055 Warnervale Residential Isolated Find 1	GDA	56	355554	6319630	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Neville Baker,Extent Heritage Pty Ltd - Pyrmont - Individual users,Sydney Wate					<u>Permits</u>	5388	
45-3-3223	Koondah Resort 2	AGD	56	354579	6315544	Open site	Destroyed	Artefact : -		100541,10086 3
	<u>Contact</u>	<u>Recorders</u>	Doctor.Julie Dibden					<u>Permits</u>	1742	
45-3-3377	Bluetongue IF1 (Dooralong)	GDA	56	352727	6321351	Open site	Destroyed	Artefact : 1		101321,10264 7
	<u>Contact</u>	<u>Recorders</u>	Extent Heritage Pty Ltd - Pyrmont - Individual users,Doctor.Alan Williams,Mr.Roge					<u>Permits</u>	3104	
45-3-3369	Wadalba Hill Grooves 1	AGD	56	357107	6317252	Open site	Valid	Grinding Groove : 50		101367,10264 7
	<u>Contact</u>	<u>Recorders</u>	Mr.Roger Mehr					<u>Permits</u>		
45-3-3370	Wadalba Hill Grooves 2	AGD	56	357225	6317446	Open site	Valid	Grinding Groove : 2		101367,10264 7
	<u>Contact</u>	<u>Recorders</u>	Mr.Roger Mehr					<u>Permits</u>		
45-3-4196	Warnervale Isolated Find 2	GDA	56	355673	6319357	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Neville Baker,Extent Heritage Pty Ltd - Pyrmont - Individual users,Sydney Wate					<u>Permits</u>		
41-3-0133	HN-WA-Testing Area	GDA	56	356960	6316871	Open site	Not a Site	Potential Archaeological Deposit (PAD) : -		105311
	<u>Contact</u>	<u>Recorders</u>	Heritage Now - Belmont,Heritage Now - Belmont,Ms.Lara Donohoe (nee Tooby),Ms					<u>Permits</u>		
45-3-1274	Rocky Point;Tacoma;	AGD	56	357580	6314740	Open site	Valid	Ceremonial Ring (Stone or Earth) : -	Bora/Ceremonial	98461
	<u>Contact</u>	<u>Recorders</u>	Len Dyall					<u>Permits</u>		
45-3-3184	WP2	AGD	56	352450	6315470	Open site	Valid	Artefact : -		100054,10109 3
	<u>Contact</u>	<u>Recorders</u>	Mr.Michael Therin					<u>Permits</u>	2451,2516	
45-3-3228	Wyong Creek 1 PAD	AGD	56	347156	6317525	Open site	Not a Site	Potential Archaeological Deposit (PAD) : -		102389
	<u>Contact</u>	<u>Recorders</u>	Doctor.Penny Mccardle,Biosis Pty Ltd - Canberra					<u>Permits</u>	2087,3257	

Report generated by AHIMS Web Service on 25/03/2025 for Kate Morris for the following area at Lat, Long From : -33.3056, 151.35 - Lat, Long To : -33.2339, 151.4736. Number of Aboriginal sites and Aboriginal objects found is 77

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-3-4917	OUR003_GDG	GDA	56	348493	6315660	Open site	Valid	Grinding Groove : -		
	<u>Contact</u>	<u>Recorders</u>				Darkinjung LALC - Wyong,Ms.Sharon Hodgetts		<u>Permits</u>		
45-3-3276	IF 1, Wyong	AGD	56	354770	6319410	Open site	Valid	Artefact : 1		
	<u>Contact</u> T Russell	<u>Recorders</u>				Rex Silcox		<u>Permits</u>		
45-3-3409	Bitova OS 6	GDA	56	355489	6319301	Open site	Valid	Artefact : 2		101823,102647
	<u>Contact</u>	<u>Recorders</u>				Mr.John Appleton,Mr.Neville Baker,Sydney Water - Parramatta		<u>Permits</u>		
45-3-3417	Lakes G ISO 14	GDA	56	354578	6319306	Open site	Valid	Artefact : 1		101823
	<u>Contact</u>	<u>Recorders</u>				Mr.John Appleton		<u>Permits</u>		
45-3-3654	WRL Isolated Find	GDA	56	354558	6319178	Open site	Destroyed	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				OzArk Environmental and Heritage Management - Dubbo,Mr.Ben Churcher,Mr.Ash		<u>Permits</u>	4571	
45-3-4508	WHS Scar Tree	GDA	56	352624	6316378	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	<u>Contact</u>	<u>Recorders</u>				Darkinjung LALC - Watanobbi,Ms.Amanda Shields		<u>Permits</u>		
45-3-3222	Kooindah Resort 1	AGD	56	354832	6315900	Open site	Destroyed	Artefact : -		100541,100863
	<u>Contact</u>	<u>Recorders</u>				Doctor.Julie Dibden		<u>Permits</u>	1742	
45-3-4194	Warnervale Artefact Scatter 2	GDA	56	355544	6319415	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Mr.Neville Baker,Extent Heritage Pty Ltd - Pyrmont - Individual users,Sydney Wate		<u>Permits</u>	5388	
45-3-1103	Wyong Creek;	AGD	56	349875	6315439	Closed site	Valid	Artefact : -, Art (Pigment or Engraved) : -	Shelter with Art,Shelter with Deposit	98168
	<u>Contact</u>	<u>Recorders</u>				ASRSYS		<u>Permits</u>		
45-3-0815	Hue Hue Road Surface Scatter;Wyong;	AGD	56	351420	6320460	Open site	Valid	Artefact : -	Open Camp Site	910,101093,102647
	<u>Contact</u>	<u>Recorders</u>				Mary Dallas Consulting Archaeologists (MDCA)		<u>Permits</u>	789,1084	
45-3-3420	OWP ISO 17	GDA	56	356182	6320002	Open site	Valid	Artefact : 1		101823,105542
	<u>Contact</u>	<u>Recorders</u>				Mr.John Appleton		<u>Permits</u>		
45-3-3421	OWP ISO 18	GDA	56	355427	6320658	Open site	Valid	Artefact : 1		101823,105390
	<u>Contact</u>	<u>Recorders</u>				Mr.John Appleton,Mrs.Angela Besant,Insite Heritage Pty Ltd		<u>Permits</u>		
45-3-4054	Warnervale Residential Artefact Scatter 1	GDA	56	355695	6319423	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Mr.Neville Baker,Extent Heritage Pty Ltd - Pyrmont - Individual users,Sydney Wate		<u>Permits</u>	5388	
45-3-3392	Mardi to Mangrove 2	GDA	56	348794	6317353	Open site	Partially Destroyed	Artefact : 26, Potential Archaeological Deposit (PAD) : -		101521,102389
	<u>Contact</u>	<u>Recorders</u>				Biosis Pty Ltd - Sydney,Doctor.Johan Kamminga		<u>Permits</u>	3257,3423	

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 683 Jiliby DD

Client Service ID : 988529

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-3-4195	Warnervale Isolated Find 1	GDA	56	355732	6319524	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Neville Baker,Extent Heritage Pty Ltd - Pyrmont - Individual users,Sydney Wate							
45-3-4620	HN-WA-A01	GDA	56	356684	6317178	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Heritage Now - Belmont,Ms.Crystal Phillips							
45-3-1108	Tuggerah;	AGD	56	351271	6314185	Open site	Valid	Artefact : -	Open Camp Site	308,98461
	<u>Contact</u>	<u>Recorders</u>	ASRSYS							
45-3-3181	WP1	AGD	56	352110	6315080	Open site	Valid	Artefact : -		100054,101093
	<u>Contact</u>	<u>Recorders</u>	Mr.Michael Therin							
45-3-3576	MARDI TO MANGROVE	GDA	56	350281	6315062	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	John Holland Pty Ltd							
45-3-4784	Raverson Close Engraving	GDA	56	353724	6317275	Open site	Valid	Art (Pigment or Engraved) : -, Grinding Groove : -		
	<u>Contact</u>	<u>Recorders</u>	Darkinjung LALC - Watanobbi,Mr.Matthew Syrong							

** Site Status

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

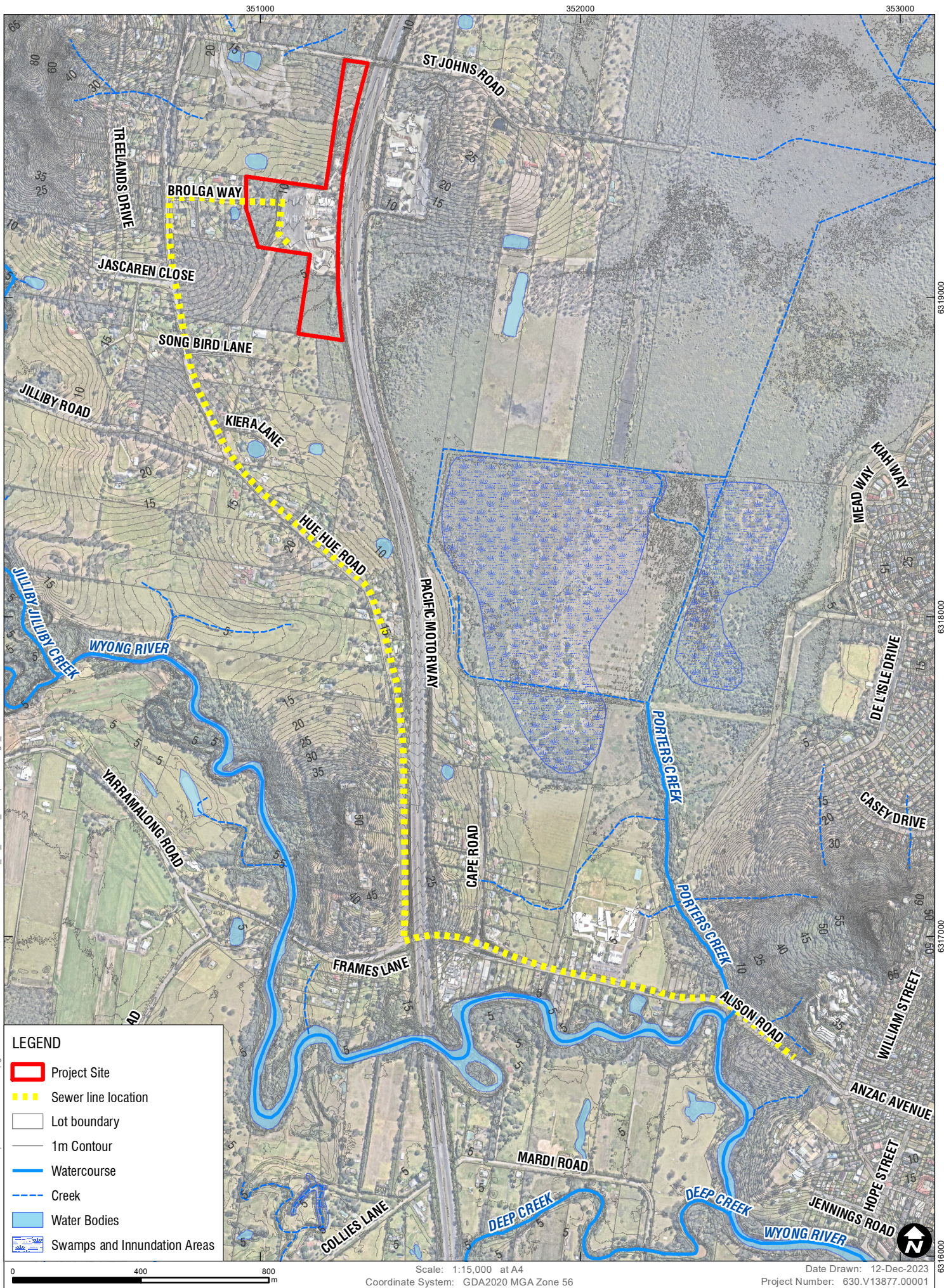
Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 25/03/2025 for Kate Morris for the following area at Lat, Long From : -33.3056, 151.35 - Lat, Long To : -33.2339, 151.4736. Number of Aboriginal sites and Aboriginal objects found is 77

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Appendix C. Project Plans

H:\Projects-SLR\630-Sydney\630-V13877-00001 Ampol M1 Sewer Main Upgrade\06 SLR Data\01 CAD\GIS\GIS\SLR\630-V13877-F3_SWMP_Site Topo&Drainage_01.mxd



LEGEND

- Project Site
- Sewer line location
- Lot boundary
- 1m Contour
- Watercourse
- Creek
- Water Bodies
- Swamps and Inundation Areas



PROPOSED DEVELOPMENT

FIGURE 2

AMPOL M1 WYONG

DISCIPLINE: HYDRAULIC SERVICES

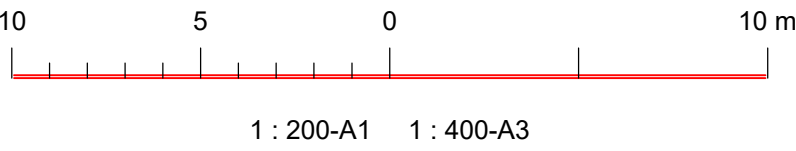


DRAWING LIST

H000	COVER SHEET AND DRAWING LIST
H001	LEGEND OF SYMBOLS AND GENERAL NOTES
H100	SEWER RISING MAIN SHEET 1
H101	SEWER RISING MAIN SHEET 2
H102	SEWER RISING MAIN SHEET 3
H103	SEWER RISING MAIN SHEET 4
H104	SEWER RISING MAIN SHEET 5
H105	SEWER RISING MAIN SHEET 6
H106	SEWER RISING MAIN SHEET 7
H107	SEWER RISING MAIN SHEET 8
H108	SEWER RISING MAIN SHEET 9
H109	SEWER RISING MAIN SHEET 10
H110	SEWER RISING MAIN SHEET 11
H111	SEWER RISING MAIN SHEET 12
H112	SEWER RISING MAIN SHEET 13
H113	SEWER RISING MAIN SHEET 14
H114	SEWER RISING MAIN SHEET 15
H115	SEWER RISING MAIN SHEET 16
H116	SEWER RISING MAIN SHEET 17
H117	SEWER RISING MAIN SHEET 18
H118	SEWER RISING MAIN SHEET 19
H119	SEWER RISING MAIN SHEET 20
H120	SEWER RISING MAIN SHEET 21
H121	SEWER RISING MAIN SHEET 22
H122	SEWER RISING MAIN SHEET 23
H123	SEWER RISING MAIN SHEET 24
H124	SEWER RISING MAIN SHEET 25
H125	SEWER RISING MAIN SHEET 26
H126	SEWER RISING MAIN SHEET 27
H500	SEWER RISING MAIN DETAIL SHEET 1
H501	SEWER RISING MAIN DETAIL SHEET 2

SITE PLAN

SCALE: N.T.S.



REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				

All dimensions to be verified on site/s prior to commencement of on-site work and/ or off-site prefabrication. Figured dimension to be taken in preference to scaled dimensions. This drawing is copyright and remains the property of JHA Consulting Engineers. Reproduction in whole or part of these drawings without written consent constitutes an infringement of copyright.

CLIENT



ARCHITECT



ABN: 34 001 485 436

CONSULTANT



Level 20, 2 Market Street,
Sydney NSW, 2000
Australia
+61 (02) 9437 1000
general@jhaengineers.com.au
www.jhaservices.com

PROJECT
AMPOL M1 WYONG
WYONG M1 NSW 2259

TITLE
HYDRAULIC SERVICES
COVER SHEET
AND DRAWING LIST

PRELIMINARY ISSUE
NOT TO BE USED FOR CONSTRUCTION

DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	
APPROVED	A.B.	
CREATED	DEC 2023	

JOB No.	DRAWING No.	REV
220449	H000	P1

HYDRAULIC LEGEND

	COLD WATER SERVICE
	GAS SERVICE
	SEWER RISING MAIN
	EXISTING STORMWATER (BY SURVEY)
	EXISTING WATER SERVICE (BY SURVEY)
	EXISTING GAS SERVICE
	EXISTING SEWER RISING MAIN (BY SURVEY)
	EXISTING ELECTRICAL (BY SURVEY)
	EXISTING COMMUNICATIONS (BY SURVEY)

	AREA OF PIPEWORK WHICH IS TO BE INSTALLED BY UNDER BORE
	AREA OF PIPEWORK WHICH CAN BE INSTALLED BY EXCAVATION

SYSTEM ACCESSORIES LEGEND

	PUMP
	CLEAROUT
	FILTER
	FLANGED JOINT
	UNION
	PIPELINE CONTINUES
	PIPELINE TERMINATED WITH BLANK FLANGE
	PIPELINE CAPPED OFF
	FIRE HOSE REEL
	FIRE HYDRANT - INTERNAL
	DUAL FIRE HYDRANT - EXTERNAL
	FLEXIBLE CONNECTION
	OVERFLOW GULLY
	WATER METER
	GAS METER
	BOUNDARY TRAP
	Drainage outlet
	BUCKET TRAP FLOOR WASTE
	RAIN WATER OUTLET
	PLANTER DRAIN OUTLET
	PLANT ROOM FLOOR WASTE
	VINYL FLOOR WASTE
	SPOON DRAIN OUTLET
	PLANTER DRAIN
	DRAINAGE TURN-UP
	MAINTENANCE HOLE
	SEWERAGE MAINTENANCE HOLE
	STORMWATER MAINTENANCE HOLE
	KERB INLET PIT WITH GRATES
	STORMWATER PIT WITH SEALED COVER
	STORMWATER PIT WITH GRATE
	EXISTING STORMWATER PIT
	STORMWATER SPREADER
	PUMP ELECTRICAL CONTROL PANEL
	PENETRATION CORE THROUGH STRUCTURAL ELEMENT
	INDUCT PIPE MICA FLAP
	NEW JUNCTION INTO EXISTING PIPELINE
	NEW BRANCH INTO EXISTING PIPELINE
	FAIL SAFE BALCONY OVERFLOW
	GRATED DRAIN
	TUNDISH
	OVERLAND FLOW PATH
	AIR ELIMINATION VALVE
	SEWER MAINTENANCE SHAFT

DESIGN ZONES

IN THE STRATA	OUT OF STRATA
SERVICES SHOWN ON THIS DRAWING ARE ABOVE SLAB	SERVICES SHOWN ON THIS DRAWING ARE BELOW SLAB

SYSTEM ACCESSORIES LEGEND

	ISOLATION VALVE
	PATH VALVE IN CAST IRON SURFACE BOX
	GAS REGULATOR
	REFLUX VALVE
	REDUCED PRESSURE ZONE DEVICE
	PRESSURE LIMITING VALVE (ADJUSTABLE)
	PRESSURE LIMITING VALVE
	NON RETURN VALVE
	BALANCING VALVE
	DOUBLE CHECK VALVE
	SOLENOID VALVE
	MONITORED GATE VALVE
	AIR ADMITTANCE VALVE
	BASIN, SINK, SHOWER OR BATH TAP SET
	BASIN, SINK, SHOWER OR BATH CW TAP
	BASIN, SINK, SHOWER OR BATH HW TAP
	HOSE TAP WITH CONTROL, TAP ON PIPE OUTSIDE BUILDING
	HOSE TAP
	THERMOSTATIC MIXING VALVE
	STREET FIRE HYDRANT
	WATER METER ASSEMBLY
	WATER METER ASSEMBLY WITH RPZ
	WATER METER WITH DOUBLE CHECK VALVE
	GAS METER ASSEMBLY
	RISER
	DROPPER
	TEE RISER
	TEE DROPPER
	HOT WATER UNIT
	HOT WATER PUMP SET
	COLD WATER PUMP SET
	FIRE HYDRANT BRIGADE BOOSTER ASSEMBLY
	FIRE HYDRANT/SPRINKLER BOOSTER ASSEMBLY WITH DOUBLE CHECK VALVE AND METER BY-PASS
	PIPEWORK ACOUSTICALLY TREATED
	FLOW DIRECTION ARROW
	DEMOLISH
	AMENDMENT SYMBOL
	INDICATES PIPE RISERS
	INDICATES SERVICE TYPE
	INDICATES SERVICE SIZE
	INDICATES PIPE DROPPERS
	EXISTING SERVICES IDENTIFICATION, DROPPER / RISER / SIZE
	FOR CONTINUATION REFER DRAWING No. H-...

GENERAL ABBREVIATIONS

AAV	- AIR ADMITTANCE VALVE	IM	- ICE MACHINE
AFFL	- ABOVE FINISHED FLOOR LEVEL	IO	- INSPECTION OPENING
AC	- AIR CONDITIONING	K	- KAMLOCK FITTING WITH CAP & CHAIN
AD	- AERIAL DRAINAGE	LD	- LIGHT DUTY
AP	- ACCESS PANEL	LL	- LOW LEVEL
AV	- AIR ELIMINATION VALVE	LT	- LAUNDRY TUB
B	- BASIN	MD	- MEDIUM TUB
BAV	- BALANCING VALVE	ML	- MID LEVEL
BG	- BOX GUTTER	NPCW	- NON-POTABLE COLD WATER
BT	- BOUNDARY TRAP	No	- NUMBER
BU	- BUBBLERS	NRV	- NON RETURN VALVE
BTH	- BATH	OPSO	- OVER PRESSURE SHUT OFF REGULATOR
BWU	- BOILING WATER UNIT	PLV	- PRESSURE LIMITING VALVE
CHW	- CHILLED WATER	PRV	- PRESSURE REDUCTION VALVE
CHV	- CHAMBER VENT	QF	- OVERFLOW
CL	- CEILING LEVEL	QFG	- OVERFLOW GULLY
CO	- CLEAROUT	OSD	- ON SITE DETENTION TANK
CP	- CHROME PLATED	PA	- PLASTER ARRESTOR
CS	- CLEANER'S SINK	PCW	- POTABLE COLD WATER
CTE	- CONNECT TO EXISTING	RL	- REDUCED LEVEL
CW	- COLD WATER	RPZD	- REDUCED PRESSURE ZONE DEVICE
D	- DRAINAGE	RWO	- RAINWATER OUTLET
DE	- DIESEL EXHAUST	RFV	- REFLEX VALVE
DF	- DRINKING FOUNTAIN	RV	- RELIEF VENT
DHB	- DISABLED PERSONS HANDWASH BASIN	SD	- SAFE DRAIN
DL	- DILUTION PIT	SEW	- SEWER
DP	- DOWNPIPE	SHR	- SHOWER
DTU	- DRAINAGE TURN-UP	SK	- SINK
DW	- DISHWASHER MACHINE	SMH	- SEWER MANHOLE
DWC	- DISABLED PERSONS WATER CLOSET	SRM	- SEWER RISING MAIN
DWG No.	- DRAWING NUMBER	SS	- SUB-SOL PIPE
DWV	- DRAINAGE WASTE AND VENT	SSHR	- SAFETY SHOWER
EJ	- EXPANSION JOINT	SSL	- STRUCTURAL SLAB LEVEL
ESOV	- EMERGENCY SHUT OFF VALVE	ST	- SANITARY/DRAINAGE STACK
EX	- EXISTING	SW	- STORM WATER
EW	- EYE WASH	SWMH	- STORMWATER MANHOLE
FD	- FIRE DRENCHER	SWP	- STORM WATER PIT
FFL	- FINISHED FLOOR LEVEL	SWRM	- STORMWATER RISING MAIN
FGL	- FINISHED GROUND LEVEL	TD	- TUNDISH
FH	- FIRE HYDRANT	TMV	- THERMOSTATIC MIXING VALVE
FHBV	- FIRE HYDRANT BOOSTER VALVE	TPR	- TEMPERATURE AND PRESSURE RELIEF VALVE
FHR	- FIRE HOSE REEL	TR	- TROUGH
FU	- FIXTURE UNIT	TTD	- TRAPPED TUNDISH
FW	- FLOOR WASTE	TV	- TEMPERING VALVE
G	- GAS	TW	- TRADE WASTE
GA	- GREASE ARRESTOR	TWST	- TRADE WASTE STACK
GD	- GRATED DRAIN	TYP	- TYPICAL
GL	- GROUND LEVEL	UG	- UNDERGROUND
GW	- GREASE WASTE	UNO	- UNLESS NOTED OTHERWISE
GWV	- GREASE WASTE VENT	UR	- URINAL
GW	- GLASS WASHER	UIS	- UNDERSIDE
HD	- HEAVY DUTY	USFL	- UNDERSIDE FLOOR LEVEL
HP	- HOT PLATE	VB	- VACUUM BREAKER
HL	- HIGH LEVEL	VCG	- VALVE GROUP
HR	- HALF ROUND	VFW	- VINYL FLOOR WASTE
HT	- HOSE TAP	VP	- VENT PIPE
HW	- HOT WATER	WC	- WATER CLOSET
HWF	- HOT WATER FLOW	WM	- WASHING MACHINE
HWR	- HOT WATER RETURN	WM	- WATER METER
HWU	- HOT WATER UNIT	WW	- WARM WATER
IPMF	- INDUCT PIPE MICA FLAP	WWF	- WARM WATER FLOW
IRR	- IRRIGATION	WWR	- WARM WATER RETURN
IS	- INSPECTION SHAFT	YG	- YARD GULLY
IL	- INVERT LEVEL	Ø	- DIAMETER

FLUID FLOW AND MATERIAL ABBREVIATIONS

AHD	- AUSTRALIAN HEIGHT DATUM	L/s	- FLOW IN LITRES PER SECOND
Br	- BRASS	mm	- MILLIMETRES
CI	- CAST IRON	m	- METRES
CONC	- CONCRETE	m²	- METRES SQUARED
CICL	- CAST IRON CEMENT LINED	MDPE	- MEDIUM DENSITY POLYETHYLENE
CP	- CHROME PLATED	MJ	- MEGAJOULE
Cu	- COPPER	m/s	- VELOCITY OF FLOW IN METRES PER SECOND
DICL	- DUCTILE IRON CEMENTED LINE	mhd	- PRESSURE IN METRES HEAD
FRC	- FIBRE GLASS REINFORCED CEMENT	OD	- OUTSIDE DIAMETER
FU	- FIXTURE UNITS	PE	- POLYETHYLENE
GMS	- GALVANISED MILD STEEL	PP	- POLYPROPYLENE
HDPE	- HIGH DENSITY POLYETHYLENE	RCP	- REINFORCED CONCRETE PIPE
ID	- INSIDE DIAMETER	RHS	- RECTANGULAR HOLLOW SECTION GALVANISED STEEL
kPa	- PRESSURE IN KILOPASCALS	SS	- STAINLESS STEEL
kW	- KILOWATT	uPVC	- UNPLASTICISED POLYVINYL CHLORIDE
L	- LITRES	VCP	- VITRIFIED CLAY PIPE

GENERAL NOTES

- THIS PLAN MUST NOT BE COPIED OR REPRODUCED IN ANY FORM OR USED FOR ANY PURPOSE OTHER THAN ORIGINALLY INTENDED WITHOUT APPROVAL FROM JHA CONSULTING ENGINEERS.
- THIS PLAN SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL, OTHER CONSULTANTS DRAWINGS, SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE. REFER TO THE ARCHITECT FOR DECISIONS BEFORE PROCEEDING WITH ANY WORK.
- ALL WORKS TO BE IN ACCORDANCE WITH THE HYDRAULIC SERVICES SPECIFICATION, AUTHORITIES REQUIREMENTS, PLUMBING CODE OF AUSTRALIA, ASS3500, CENTRAL COAST COUNCIL, NCC & PLUMBING CODE OF AUSTRALIA.
- CONFIRM LOCATION, SIZE AND LEVELS OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORK.
- PIPEWORK INSTALLATION METHODOLOGY:
PIPEWORK PROPOSED TO BE EXCAVATED WITHIN YELLOW CLOUDED AREA AS PER AEP REPORT AND GREEN DASHED AREA AS PER JHA DRAWINGS. PIPEWORK WITHIN RED CLOUDED ON AEP REPORT AND BLUE DASHED AREA AS PER JHA DRAWINGS TO BE UNDER BORED.
- PIPEWORK REMOVAL METHODOLOGY:
PIPEWORK PROPOSED TO BE EXCAVATED WITHIN YELLOW CLOUDED AREA AS PER AEP REPORT AND GREEN DASHED AREA AS PER JHA DRAWINGS. PIPEWORK WITHIN RED CLOUDED ON AEP REPORT AND BLUE DASHED AREA AS PER JHA DRAWINGS TO BE UNDER BORED.
- LOCATIONS & FIXING OF PIPEWORK SHALL BE SUBJECT TO CO-ORDINATION WITH OTHER DESIGN DISCIPLINES, ie STRUCTURAL, MECHANICAL, ELECTRICAL AND OTHER SERVICES ENGINEERS.
- ALL LOCATIONS OF EXISTING SERVICES MAINS TO BE CONFIRMED BY MEANS OF DIAL BEFORE YOU DIG. PIPE LOCATOR AND TRACING PRIOR TO COMMENCEMENT OF WORKS.
- ALL WORKS TO INCLUDE TESTING & INSPECTIONS. OBTAIN REQUIRED CERTIFICATES ON COMPLETION & PAYMENT OF RELEVANT FEES.
- THE HYDRAULIC CONTRACTOR SHALL ALLOW IN THE TENDER TO SUBMIT PHOTO BASED INSPECTION AND TEST PLANS ESPECIALLY FOR SERVICE PENETRATIONS THROUGH FIRE AND SMOKE WALLS. REFER TO ARCHITECTURAL DRAWINGS FOR DEMOLITION PLAN AND SCOPE OF WORKS.
- ALLOW TO SAWCUT/REMOVE HARD SURFACES AREAS AS REQUIRED TO COMPLETE THE INSTALLATION. ALLOW TO MAKE GOOD SURFACES UPON COMPLETION.
- CHECK EXISTING ELECTRICAL EARTHING TO METALLIC PLUMBING SERVICES. PROVIDE TEMPORARY EARTHING CABLES BETWEEN SERVICES WHICH ARE TO BE CUT, TERMINATED OR EXTENDED. CONFIRM WITH SITE ELECTRICIAN FOR SAFE PROCEDURES.
- CONTRACTOR IS TO SET OUT & DIMENSION ALL PENETRATIONS & GAIN APPROVAL FROM STRUCTURAL ENGINEER BEFORE WORK COMMENCES. PROVIDE SEPARATE PENETRATION FOR EACH SERVICE SO AS TO ENSURE ADEQUATE FIRE STOPPING. ALL PIPE PENETRATIONS SHALL BE FITTED WITH APPROVED FIRE STOP COLLARS/ DEVICES TO CONFORM TO AS1530.
- WATER, WASTE & GAS PIPES LOCATED WITHIN JOINERY CABINETS, SINK CUPBOARD etc. SHALL BE ARRANGED IN A MANNER SO AS NOT TO OBSTRUCT THE FREE SPACE AS FAR AS PRACTICAL INSTALLATION PERMITS.
- THE DOCUMENTS REPRESENT DESIGN CONCEPT ONLY. IT IS THE SUB CONTRACTORS RESPONSIBILITY TO DEVELOP DETAILED DRAWINGS, FULLY CO-ORDINATED WITH ALL SERVICE DISCIPLINES, NEW AND EXISTING STRUCTURE AND ARCHITECTURAL DOCUMENTATION.
- THE SUB-CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DETAILED DESIGN, CALCULATIONS AND SUBMISSIONS, SUPPLY AND INSTALLATION OF ALL SERVICES, CERTIFICATION AND APPROVALS, COMMISSIONING, TESTING & HANDOVER.
- THE SUB-CONTRACTOR IS TO ALLOW FOR THE PAYMENT OF ALL FEES AND CHARGES LEVIED BY THE VARIOUS AUTHORITIES AND PREPARE ALL SUBMISSIONS AS REQUIRED TO FACILITATE THE CONSTRUCTION OF ALL SERVICES.
- CONTRACTOR TO CONFIRM IF A CURRENT PRESSURE & FLOW APPLICATION IS IN PLACE PRIOR TO CONNECTING TO THE AUTHORITY WATER MAIN & MAKE NEW APPLICATION PRIOR TO STARTING WORKS ON-SITE.
- DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- ALL DIMENSIONS SHALL BE VERIFIED ON SITE BEFORE PROCEEDING WITH THE WORK. THE CLIENT SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES.
- THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACTS, SPECIFICATIONS, REPORTS AND DRAWINGS.

REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				

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PROJECT
AMPOL M1 WYONG
WYONG M1 NSW 2259

TITLE
HYDRAULIC SERVICES
LEGEND OF SYMBOLS
AND GENERAL NOTES

PRELIMINARY ISSUE

NOT TO BE USED FOR CONSTRUCTION

DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	
APPROVED	A.B.	
CREATED	DEC 2023	

JOB No.

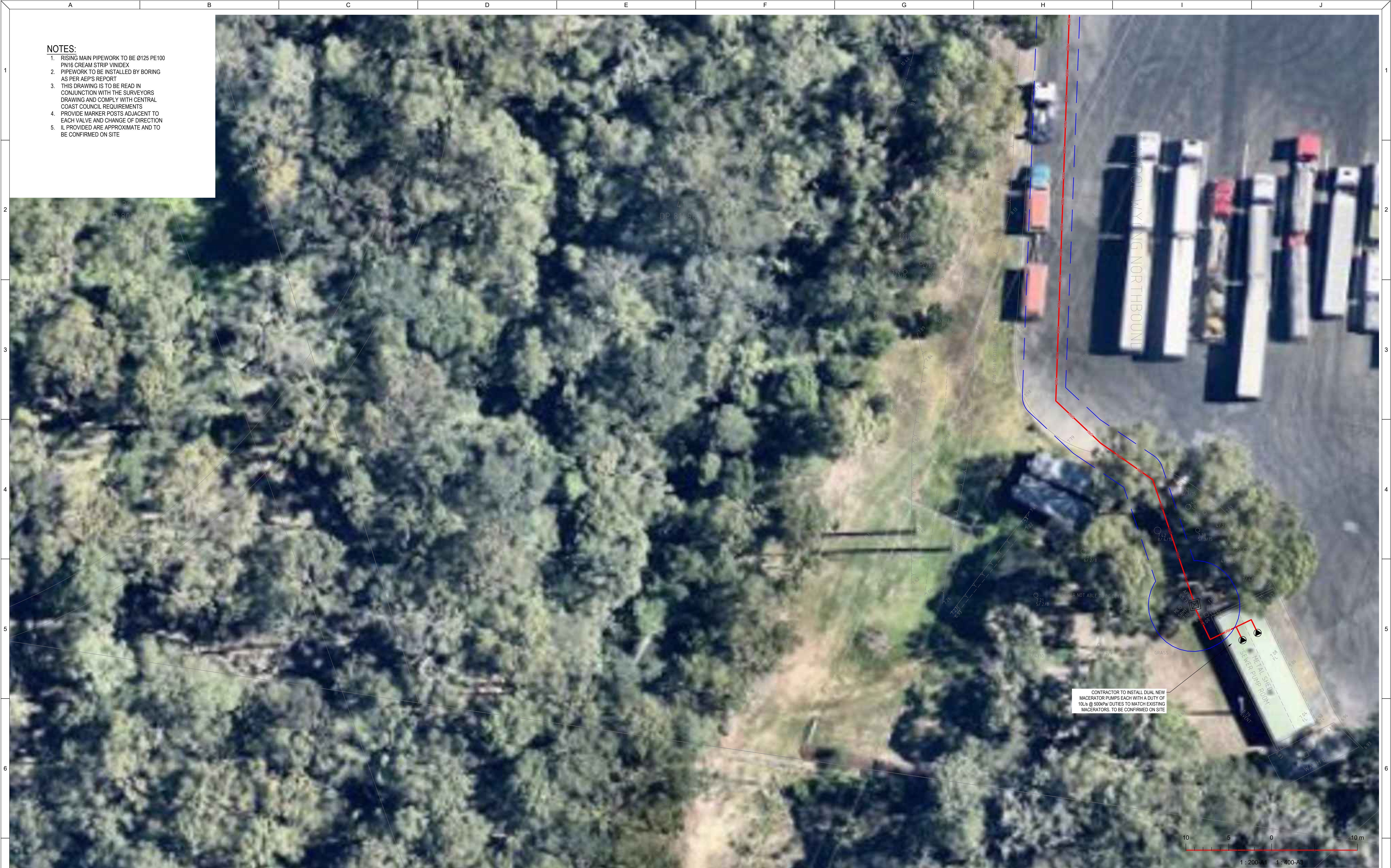
DRAWING No.

REV

220449

H001

P2



- NOTES:**
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PN16 CREAM STRIP VINDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
 4. PROVIDE MARKER POSTS ADJACENT TO EACH VALVE AND CHANGE OF DIRECTION
 5. IL PROVIDED ARE APPROXIMATE AND TO BE CONFIRMED ON SITE

CONTRACTOR TO INSTALL DUAL NEW MACERATOR PUMPS EACH WITH A DUTY OF 10L/s @ 500KPM DUTIES TO MATCH EXISTING MACERATORS. TO BE CONFIRMED ON SITE



REVISIONS / AMENDMENTS

Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.
P2	16.04.24	DA ISSUE	A.B.
A	21.04.24	D&C TENDER ISSUE	A.B.

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Rev	Date	Description	Verified



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CLIENT



ARCHITECT

Richmond+Ross
ABN: 34 001 485 436

CONSULTANT



Level 20, 2 Market Street,
Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@jhaengineers.com.au
www.jhaservices.com

PROJECT

AMPOL M1 WYONG
WYONG M1 NSW 2259

TITLE

HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 1

D&C TENDER ISSUE
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DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	1:200
APPROVED	A.B.	
CREATED	FEB 2025	

JOB No.	DRAWING No.	REV
220449	H200	A



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REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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CLIENT

ARCHITECT

Richmond+Ross

ABN: 34 001 485 436

CONSULTANT

Level 20, 2 Market Street,
Sydney NSW 2000
Australia

+61 (0)2 9437 1000

general@haengineers.com.au

www.haengineers.com

PROJECT

AMPOL M1 WYONG

WYONG M1 NSW 2259

TITLE

HYDRAULIC SERVICES

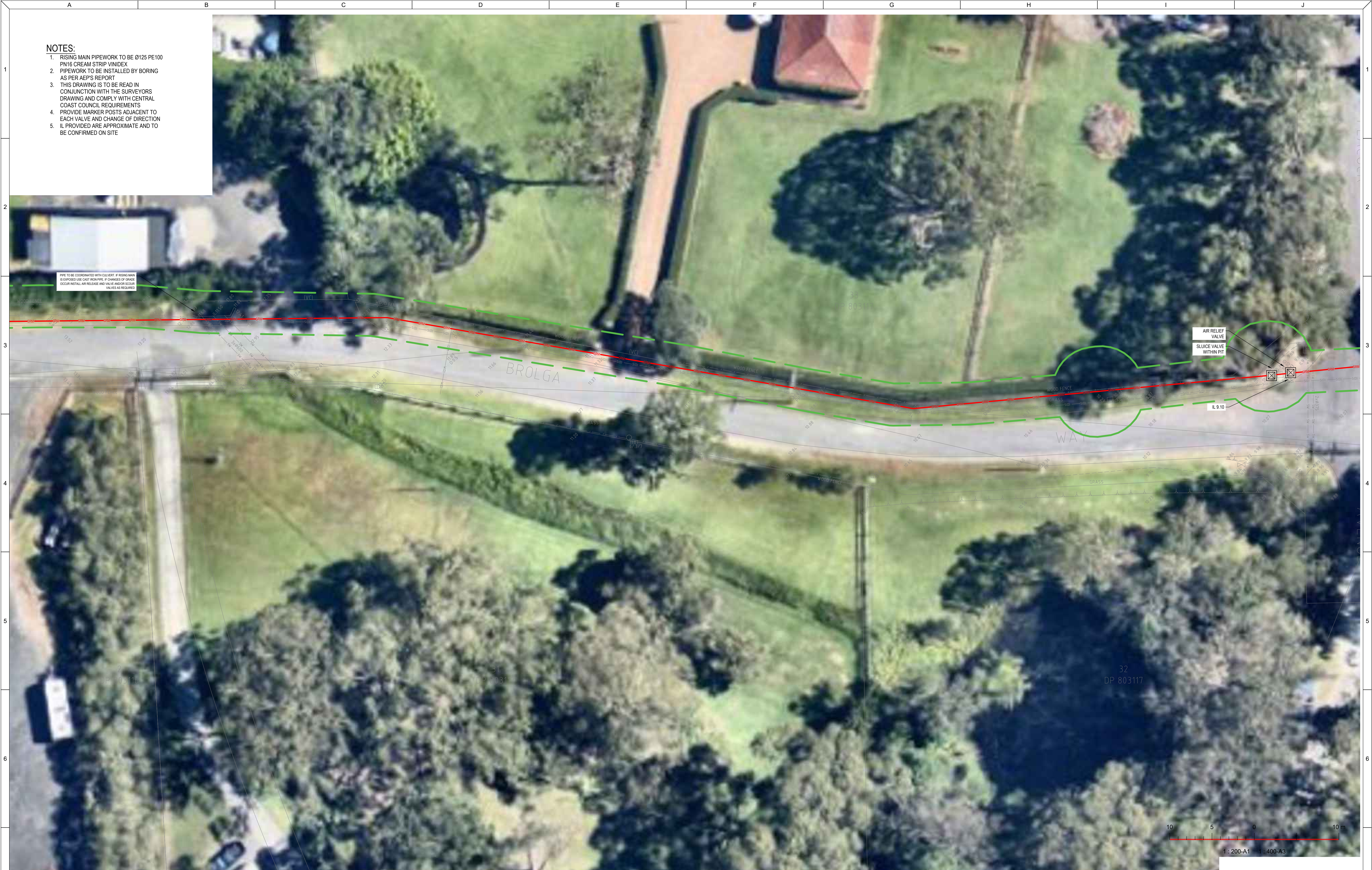
SEWER RISING MAIN

SHEET 2

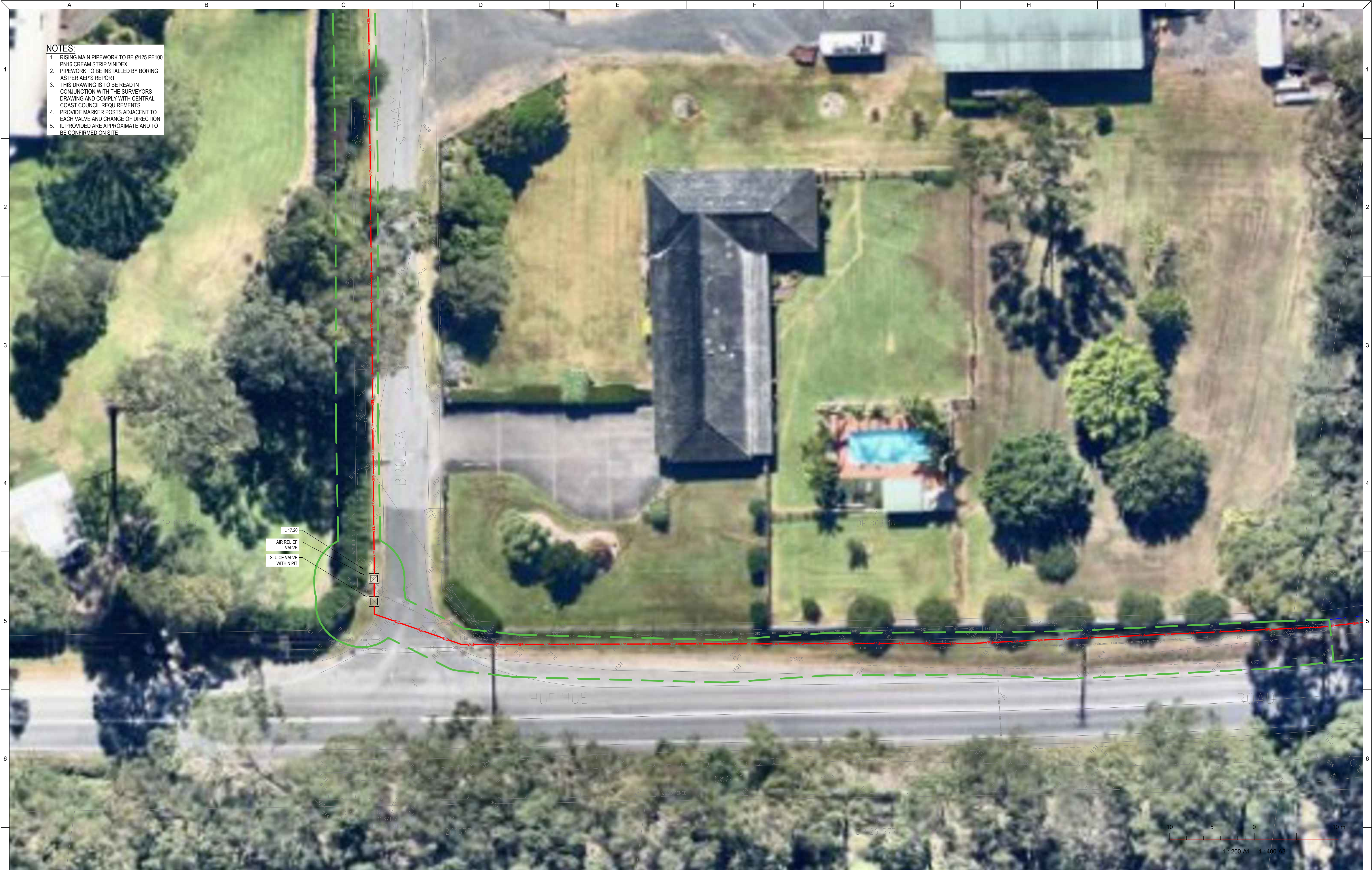
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CHECKED	D.C.	1:200
APPROVED	A.B.	
CREATED	FEB 2025	
JOB No.	DRAWING No.	REV
220449	H201	A



REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS				CLIENT		ARCHITECT		CONSULTANT		PROJECT		TITLE		D&C TENDER ISSUE					
7	Rev	Date	Description	Verified	Rev	Date	Description	Verified				Level 20, 2 Market Street, Sydney NSW 2000 Australia +61 (02) 9437 1000 general@haengineers.com.au www.jhaservices.com	AMPOL M1 WYONG WYONG M1 NSW 2259	HYDRAULIC SERVICES SEWER RISING MAIN SHEET 3	DRAWING No. 220449	REV H202	A	NOT TO BE USED FOR CONSTRUCTION					
	P1	15.12.23	DA ISSUE	A.B.															SCALE @ A1				
	P2	16.04.24	DA ISSUE	A.B.															1:200				
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A				B				C		D		E		F		G		H		I		J	
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- NOTES:**
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PN16 CREAM STRIP VINDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
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IL 17.20
AIR RELIEF VALVE
SLUICE VALVE WITHIN PIT

REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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AMPOL

ARCHITECT

Richmond+Ross
ABN: 34 001 485 436

CONSULTANT

JHA

Level 20, 2 Market Street,
Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@haengineers.com.au
www.haengineers.com

PROJECT

AMPOL M1 WYONG
WYONG M1 NSW 2259

TITLE

HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 4

D&C TENDER ISSUE
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CHECKED	D.C.	1:200
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CREATED	FEB 2025	
JOB No.	DRAWING No.	REV
220449	H203	A



- NOTES:**
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P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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ARCHITECT

Richmond+Ross

ABN: 34 001 485 436

CONSULTANT



Level 20, 2 Market Street,
Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@haengineers.com.au
www.haengineers.com

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TITLE

HYDRAULIC SERVICES

SEWER RISING MAIN

SHEET 5

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220449	H204	A



- NOTES:**
- 1. RISING MAIN PIPEWORK TO BE Ø125 PE100
 - 2. PIPEWORK TO BE INSTALLED BY BORING
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Richmond+Ross
ARCHITECT
ABN: 34 001 485 436



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Sydney
NSW 2000
Australia
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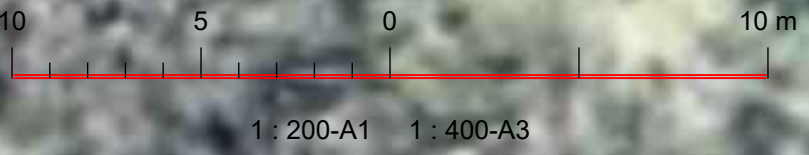
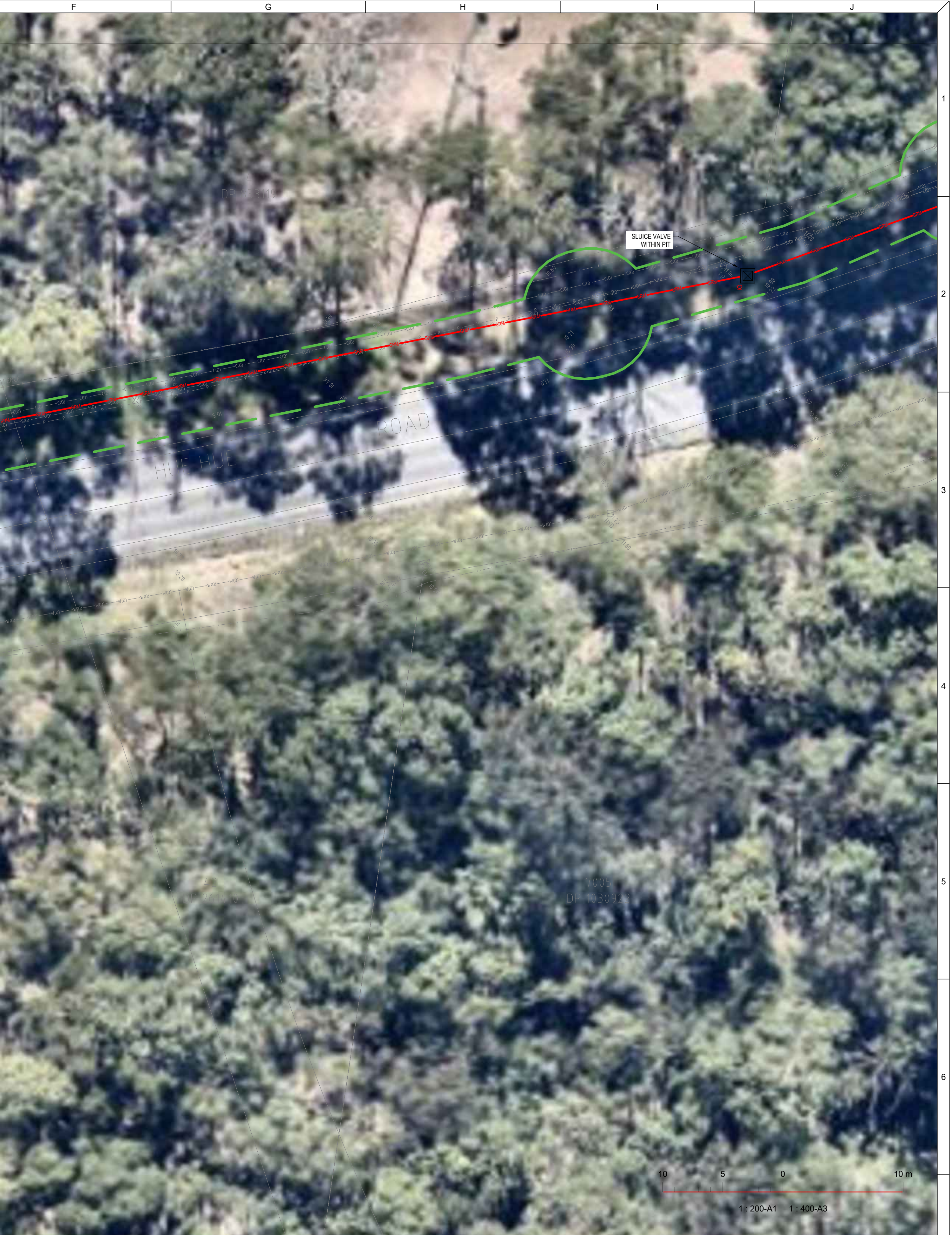
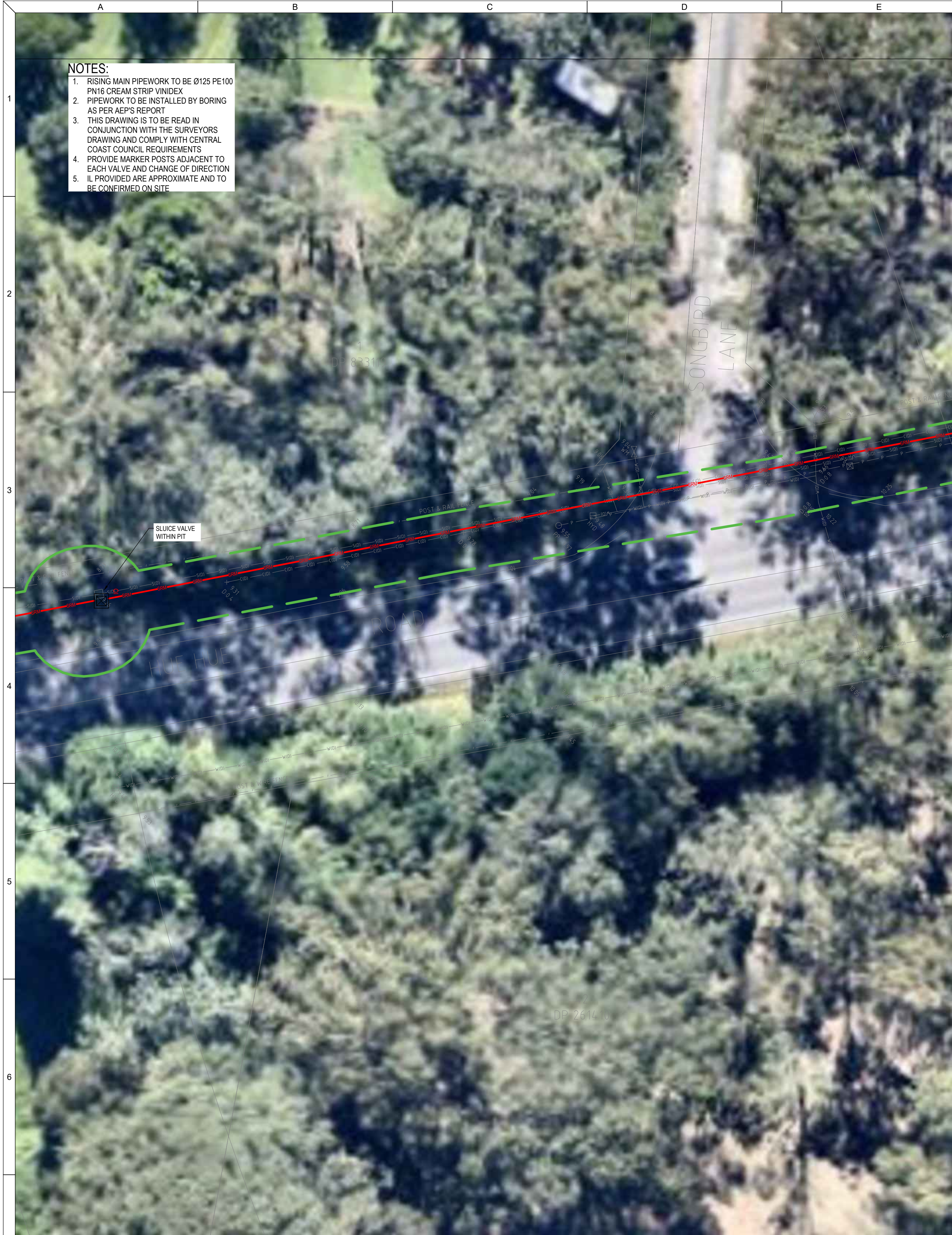
PROJECT
AMPOL M1 WYONG
WYONG M1 NSW 2259

TITLE
HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 6

D&C TENDER ISSUE
NOT TO BE USED FOR CONSTRUCTION

DRAWN	A.B.	SCALE @ A1 1:200
CHECKED	D.C.	
APPROVED	A.B.	
CREATED	FEB 2025	

JOB No.	DRAWING No.	REV
220449	H205	A



REVISIONS / AMENDMENTS

Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.
P2	16.04.24	DA ISSUE	A.B.
A	21.04.24	D&C TENDER ISSUE	A.B.

REVISIONS / AMENDMENTS

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ABN: 34 001 485 436

CONSULTANT



Level 20, 2 Market Street,
Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@jhaengineers.com.au
www.jhaservices.com

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WYONG M1 NSW 2259

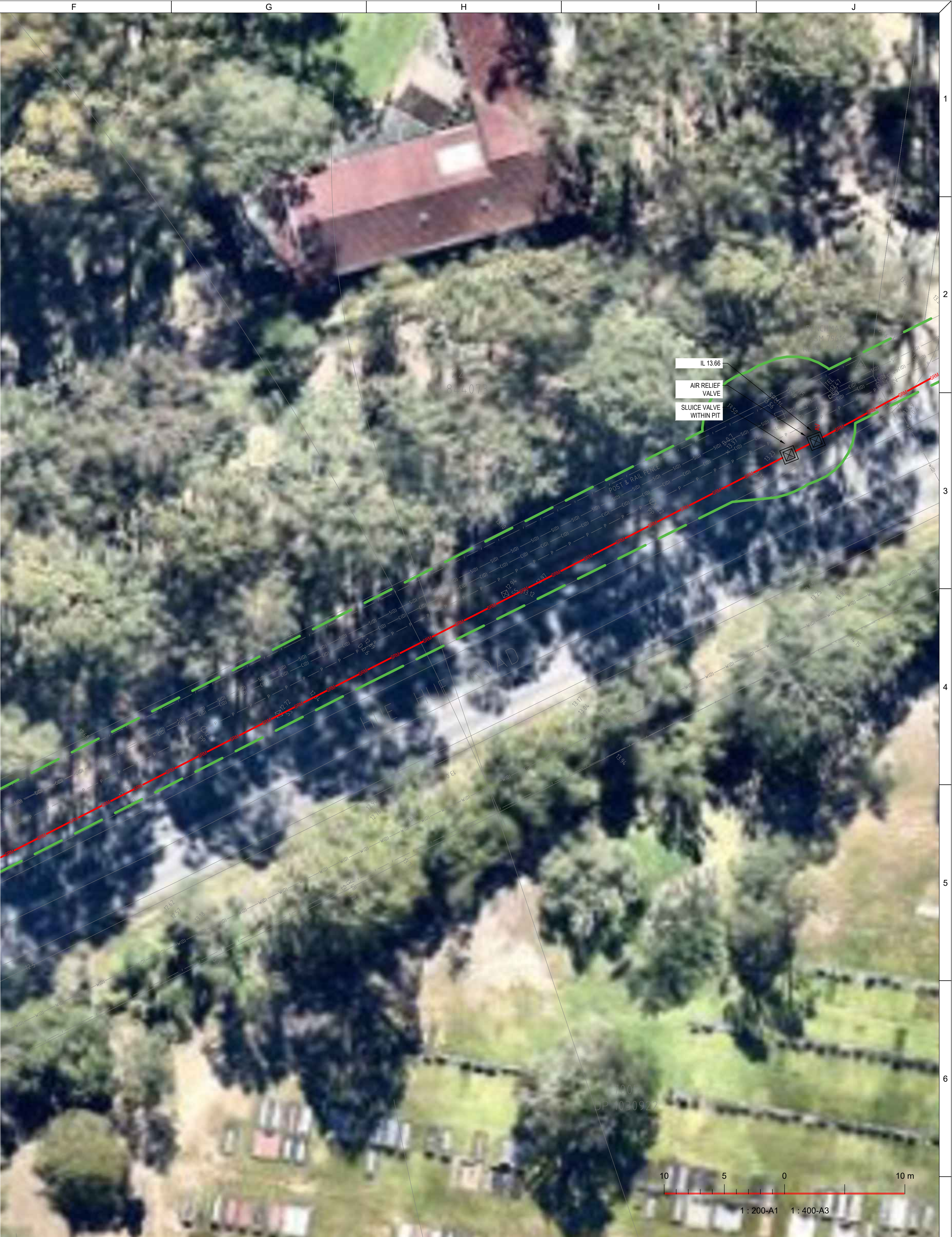
TITLE

HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 7

D&C TENDER ISSUE
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DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	1:200
APPROVED	A.B.	
CREATED	FEB 2025	

JOB No.	DRAWING No.	REV
220449	H206	A



REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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ARCHITECT
Richmond+Ross
ABN: 34 001 485 436

CONSULTANT
JHA
Level 20, 2 Market Street,
Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@haengineers.com.au
www.jhaservices.com

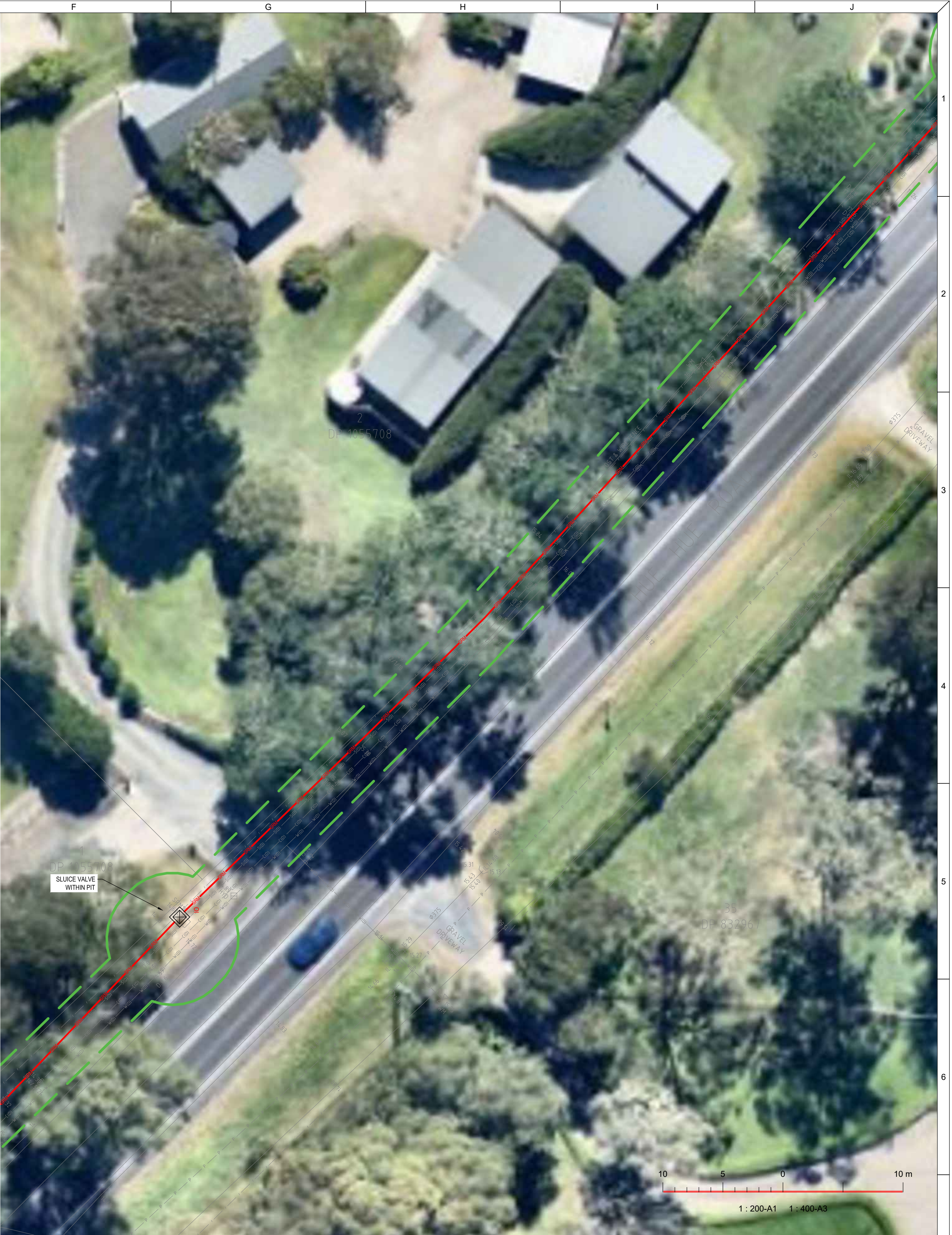
PROJECT
AMPOL M1 WYONG
WYONG M1 NSW 2259

TITLE
HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 8

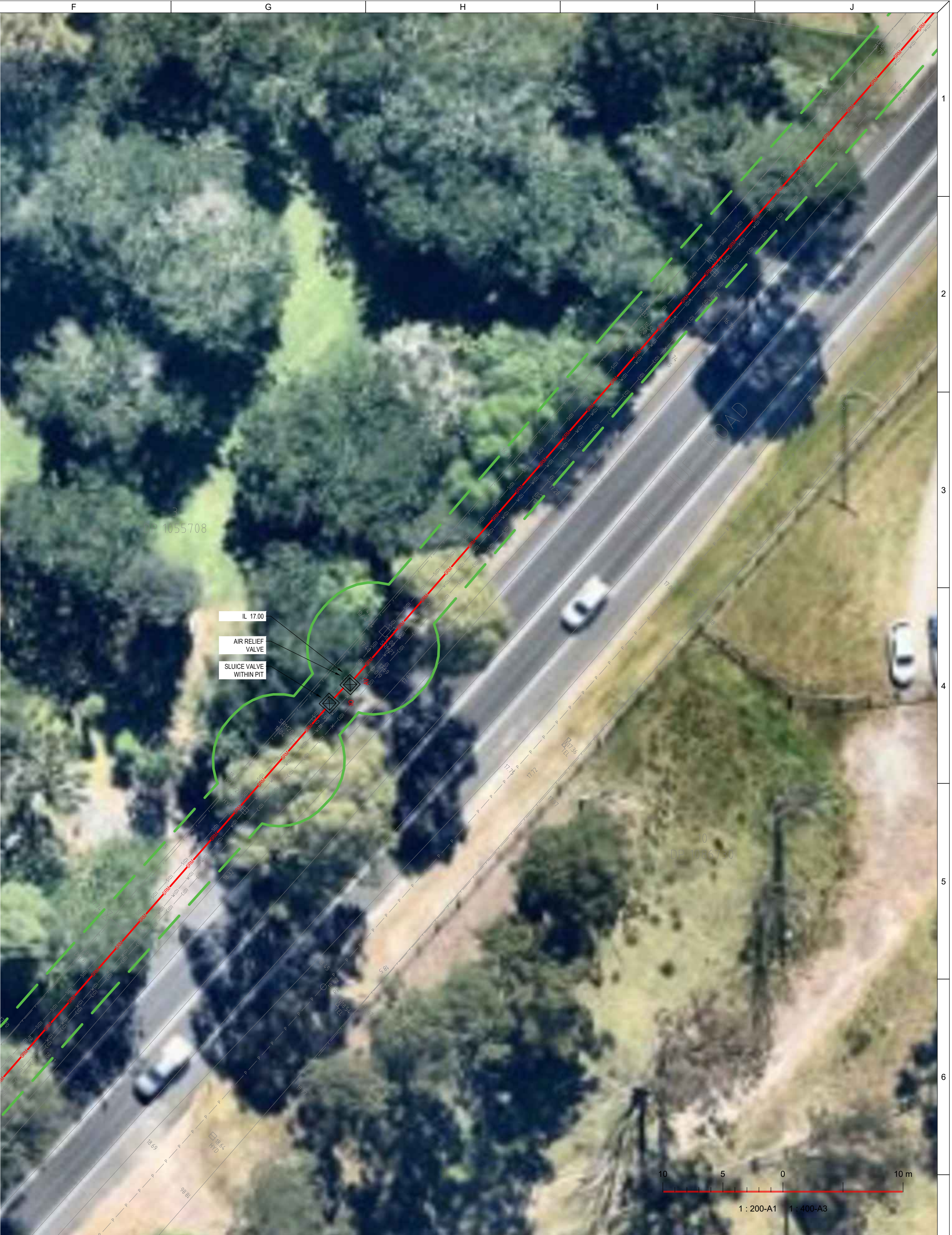
D&C TENDER ISSUE
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DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	1:200
APPROVED	A.B.	
CREATED	FEB 2025	

JOB No.	DRAWING No.	REV
220449	H207	A



REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS				CLIENT		ARCHITECT		CONSULTANT		PROJECT		TITLE		D&C TENDER ISSUE			
Rev	Date	Description	Verified	Rev	Date	Description	Verified							Level 20, 2 Market Street, Sydney NSW 2000 Australia +61 (02) 9437 1000 general@jhaengineers.com.au www.jhaservices.com		AMPOL M1 WYONG WYONG M1 NSW 2259		HYDRAULIC SERVICES SEWER RISING MAIN SHEET 10		NOT TO BE USED FOR CONSTRUCTION	
P1	15.12.23	DA ISSUE	A.B.																		
P2	16.04.24	DA ISSUE	A.B.							All dimensions to be verified on site prior to commencement of on-site work and/or off-site prefabrication. Figured dimension to be taken in preference to scaled dimensions. This drawing is copyright and remains the property of JHA Consulting Engineers. Reproduction in whole or part of these drawings without written consent constitutes an infringement of copyright.											
A	21.04.24	D&C TENDER ISSUE	A.B.																		



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Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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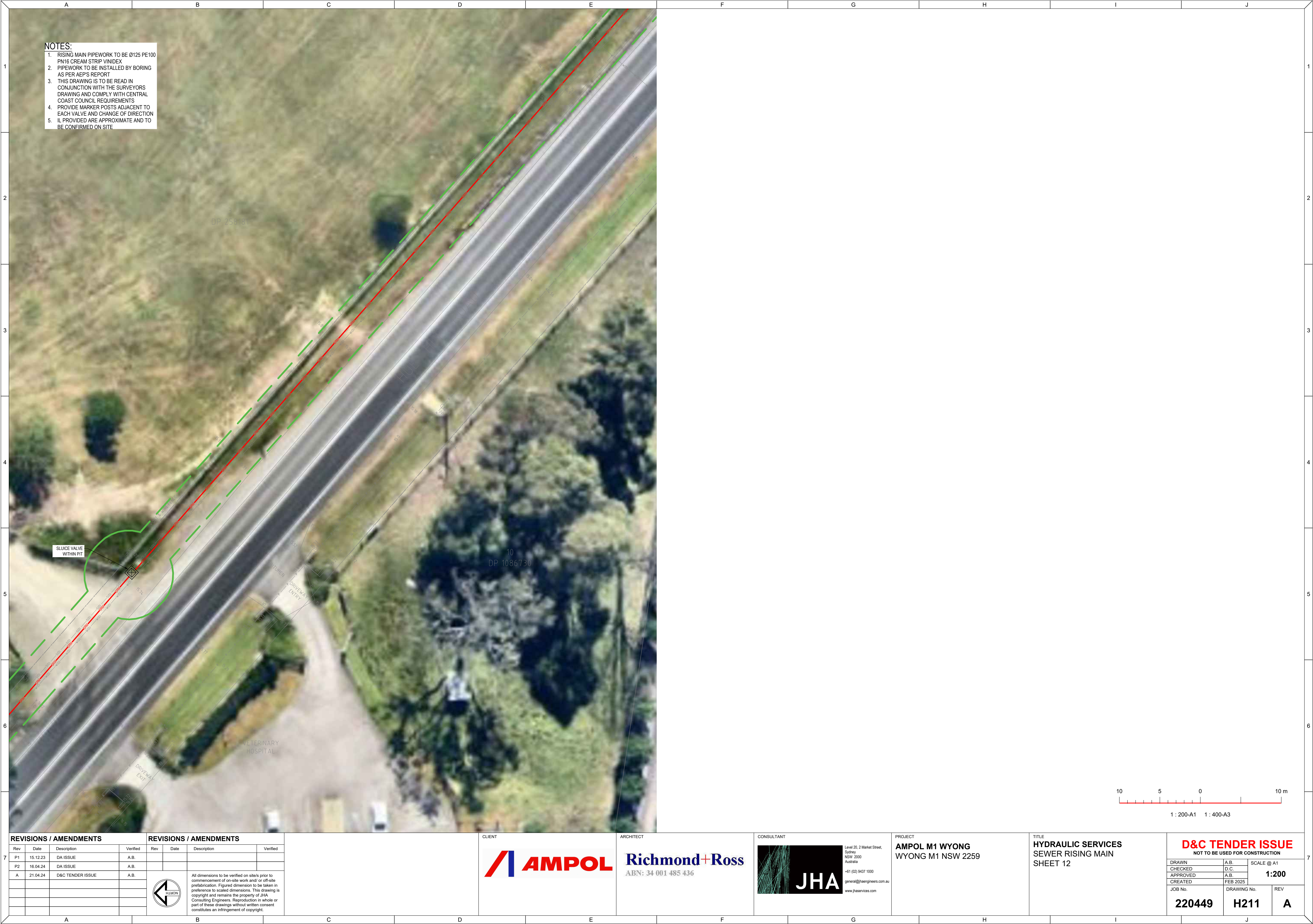
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Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@haengineers.com.au
www.jhaservices.com

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TITLE
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SEWER RISING MAIN
SHEET 11

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DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	1:200
APPROVED	A.B.	
CREATED	FEB 2025	
JOB No.	DRAWING No.	REV
220449	H210	A





- NOTES:**
1. RISING MAIN PIPEWORK TO BE Ø125 PE100
 2. PNV6 CREAM STRIP VINDEX
 3. PIPEWORK TO BE INSTALLED BY BORING
 4. AS PER AEP'S REPORT
 5. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
 6. PROVIDE MARKER POSTS ADJACENT TO EACH VALVE AND CHANGE OF DIRECTION
 7. IL PROVIDED ARE APPROXIMATE AND TO BE CONFIRMED ON SITE

REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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ABN: 34 001 485 436

CONSULTANT



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Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@haengineers.com.au
www.haengineers.com

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TITLE

HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 13

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DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	1:200
APPROVED	A.B.	
CREATED	FEB 2025	

JOB No.	DRAWING No.	REV
220449	H212	A



- NOTES:**
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PN16 CREAM STRIP VINIDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
 4. PROVIDE MARKER POSTS ADJACENT TO EACH VALVE AND CHANGE OF DIRECTION
 5. IL PROVIDED ARE APPROXIMATE AND TO BE CONFIRMED ON SITE

REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@haengineers.com.au
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TITLE
HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 14

D&C TENDER ISSUE
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DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	1:200
APPROVED	A.B.	
CREATED	FEB 2025	
JOB No.	DRAWING No.	REV
220449	H213	A

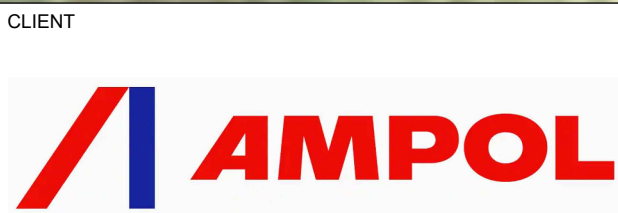


- NOTES:
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PN16 CREAM STRIP VINDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
 4. PROVIDE MARKER POSTS ADJACENT TO EACH VALVE AND CHANGE OF DIRECTION
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REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@haengineers.com.au
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TITLE
HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 15

D&C TENDER ISSUE
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DRAWN	A.B.	SCALE @ A1 1:200
CHECKED	D.C.	
APPROVED	A.B.	
CREATED	FEB 2025	
JOB No.	DRAWING No.	REV
220449	H214	A



REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS				CLIENT		ARCHITECT		CONSULTANT		PROJECT		TITLE		D&C TENDER ISSUE		
Rev	Date	Description	Verified	Rev	Date	Description	Verified											NOT TO BE USED FOR CONSTRUCTION		
P1	15.12.23	DA ISSUE	A.B.															SCALE @ A1		
P2	16.04.24	DA ISSUE	A.B.															1:200		
A	21.04.24	D&C TENDER ISSUE	A.B.															FEB 2025		
																		DRAWING No.		
																		REV		
																		220449		
																		H216		
																		A		



- NOTES:
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PN16 CREAM STRIP VINDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
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REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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CONSULTANT

Level 20, 2 Market Street,
Sydney NSW 2000
Australia

+61 (02) 9437 1000

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TITLE

HYDRAULIC SERVICES

SEWER RISING MAIN

SHEET 18

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DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	1:200
APPROVED	A.B.	
CREATED	FEB 2025	
JOB No.	DRAWING No.	REV
220449	H217	A



- NOTES:**
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PN16 CREAM STRIP VINDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
 4. PROVIDE MARKER POSTS ADJACENT TO EACH VALVE AND CHANGE OF DIRECTION
 5. IL PROVIDED ARE APPROXIMATE AND TO BE CONFIRMED ON SITE

REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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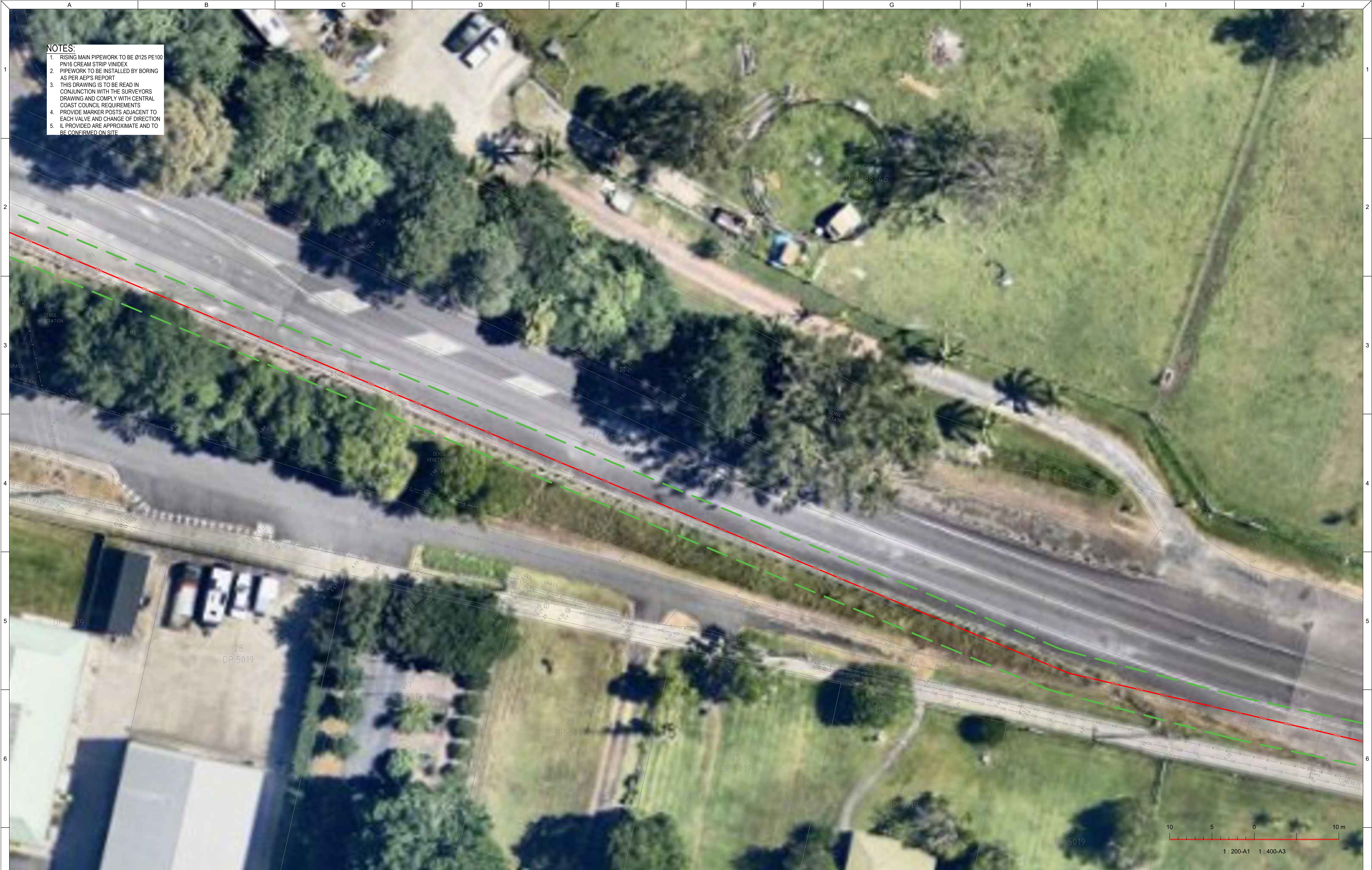
AMPOL M1 WYONG
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TITLE

HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 19

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DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	1:200
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CREATED	FEB 2025	
JOB No.	DRAWING No.	REV
220449	H218	A



- NOTES:
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PN16 CREAM STRIP VINIDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
 4. PROVIDE MARKER POSTS ADJACENT TO EACH VALVE AND CHANGE OF DIRECTION
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REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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APPROVED	A.B.	
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JOB No.	DRAWING No.	REV
220449	H219	A



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Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.
P2	16.04.24	DA ISSUE	A.B.
A	21.04.24	D&C TENDER ISSUE	A.B.

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Richmond+Ross
ABN: 34 001 485 436

CONSULTANT



Level 20, 2 Market Street,
Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@haengineers.com.au
www.jhaservices.com

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DRAWN	A.B.	SCALE @ A1
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APPROVED	A.B.	
CREATED	FEB 2025	

JOB No.

220449

DRAWING No.

H220

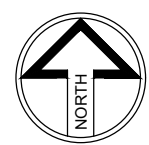
REV

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- NOTES:
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PN16 CREAM STRIP VINIDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
 4. PROVIDE MARKER POSTS ADJACENT TO EACH VALVE AND CHANGE OF DIRECTION
 5. IL PROVIDED ARE APPROXIMATE AND TO BE CONFIRMED ON SITE

REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
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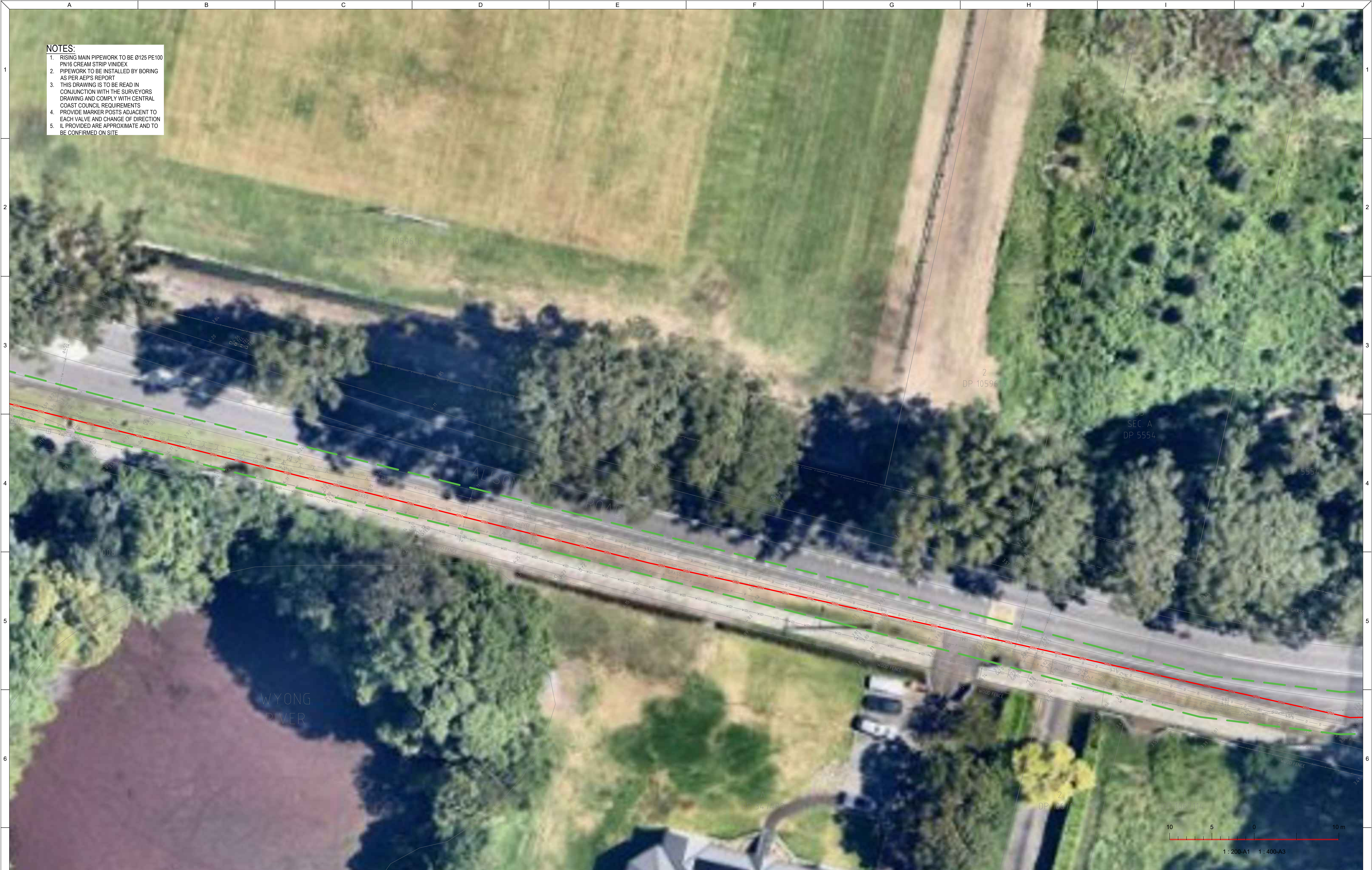
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WYONG M1 NSW 2259

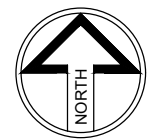
PROJECT
HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 22

D&C TENDER ISSUE			
NOT TO BE USED FOR CONSTRUCTION			
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APPROVED	A.B.		
CREATED	FEB 2025		
JOB No.	DRAWING No.	REV	
220449	H221	A	

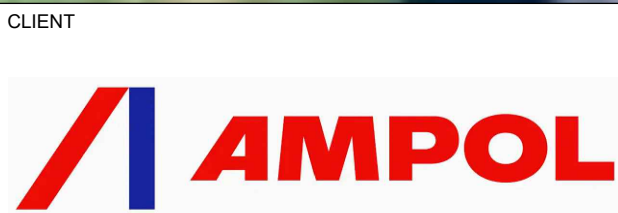


- NOTES:
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PN16 CREAM STRIP VINIDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
 4. PROVIDE MARKER POSTS ADJACENT TO EACH VALVE AND CHANGE OF DIRECTION
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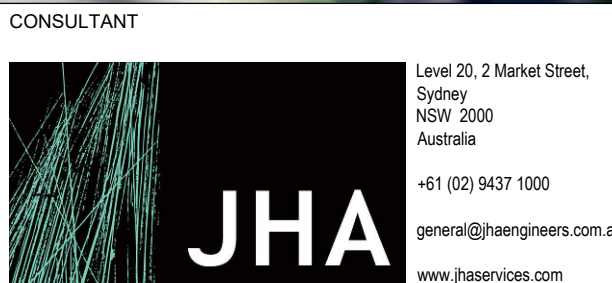
REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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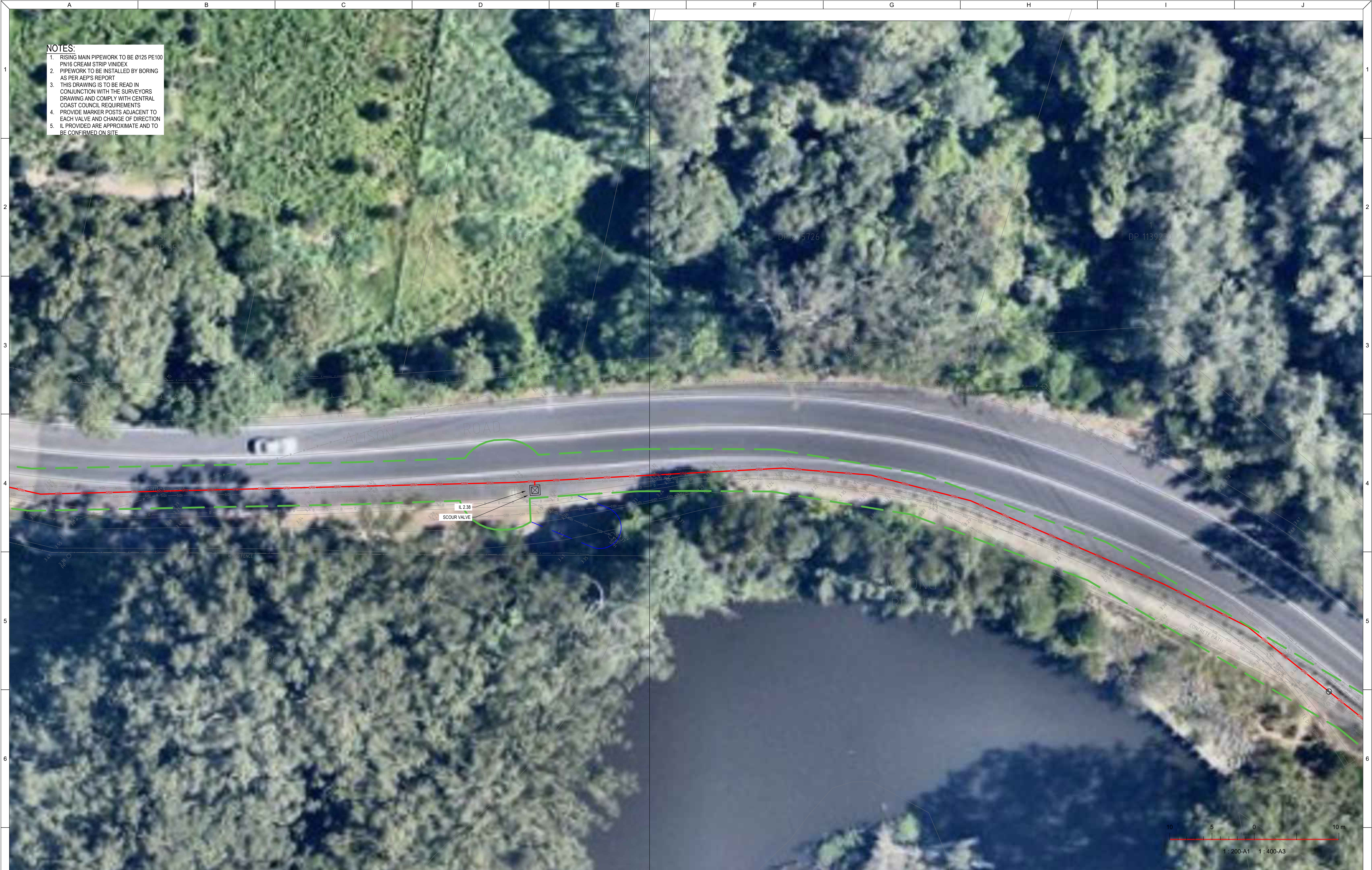
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Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@jhaengineers.com.au
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TITLE
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CHECKED	D.C.	
APPROVED	A.B.	
CREATED	FEB 2025	
JOB No.	DRAWING No.	REV
220449	H222	A



- NOTES:**
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PN16 CREAM STRIP VINDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
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REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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Australia
+61 (02) 9437 1000
general@haengineers.com.au
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TITLE

HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 24

D&C TENDER ISSUE
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DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	1:200
APPROVED	A.B.	
CREATED	FEB 2025	
JOB No.	DRAWING No.	REV
220449	H223	A



REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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NSW 2000
Australia
+61 (02) 9437 1000
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PROJECT

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WYONG M1 NSW 2259

TITLE

HYDRAULIC SERVICES

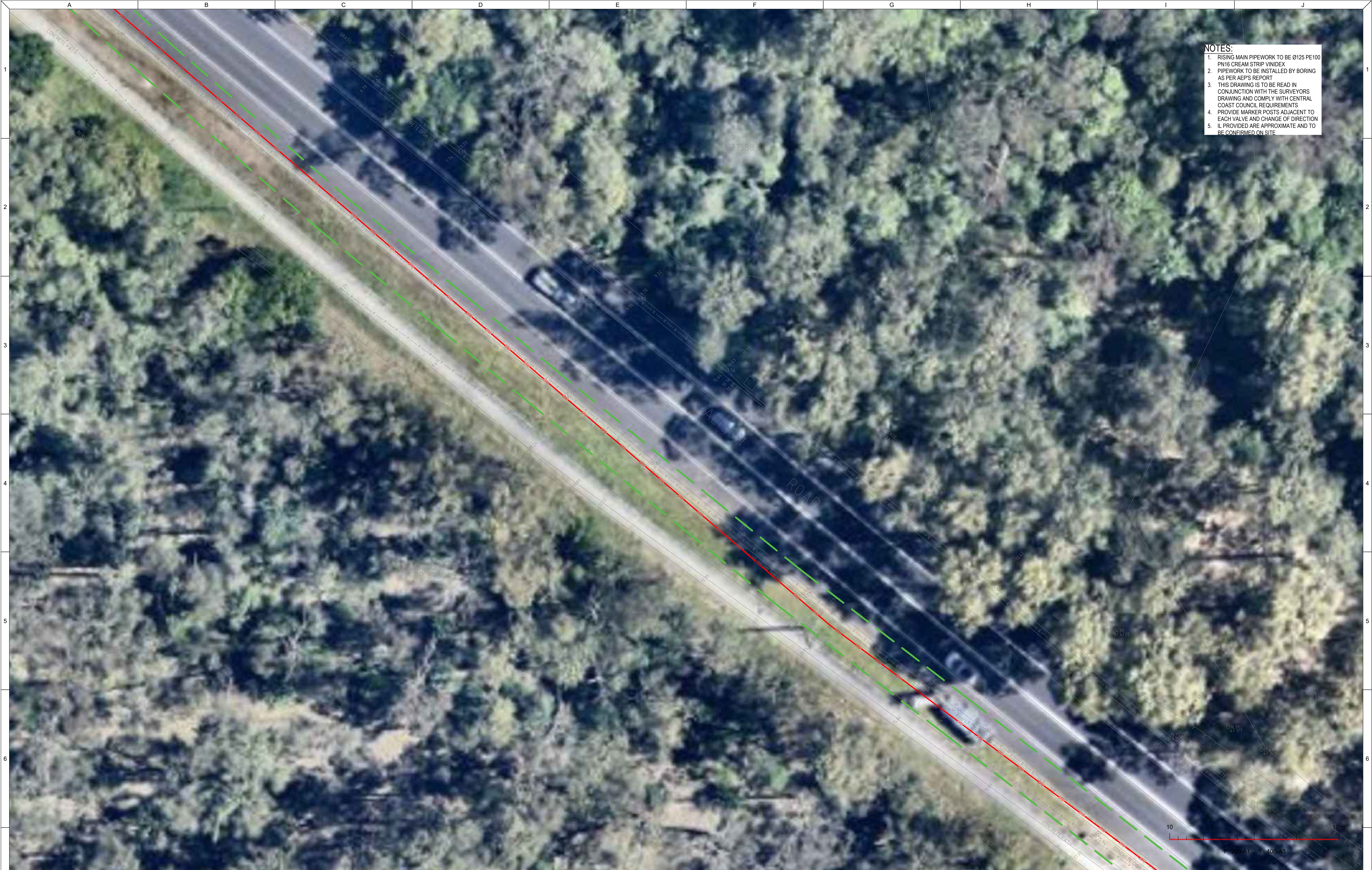
SEWER RISING MAIN

SHEET 25

D&C TENDER ISSUE

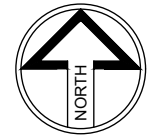
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DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	1:200
APPROVED	A.B.	
CREATED	FEB 2025	
JOB No.	DRAWING No.	REV
220449	H224	A



- NOTES:**
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PN16 CREAM STRIP VINIDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
 4. PROVIDE MARKER POSTS ADJACENT TO EACH VALVE AND CHANGE OF DIRECTION
 5. IL PROVIDED ARE APPROXIMATE AND TO BE CONFIRMED ON SITE

REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
P2	16.04.24	DA ISSUE	A.B.				
A	21.04.24	D&C TENDER ISSUE	A.B.				



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Richmond+Ross
ABN: 34 001 485 436



Level 20, 2 Market Street,
Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@haengineers.com.au
www.haengineers.com

PROJECT
AMPOL M1 WYONG
WYONG M1 NSW 2259

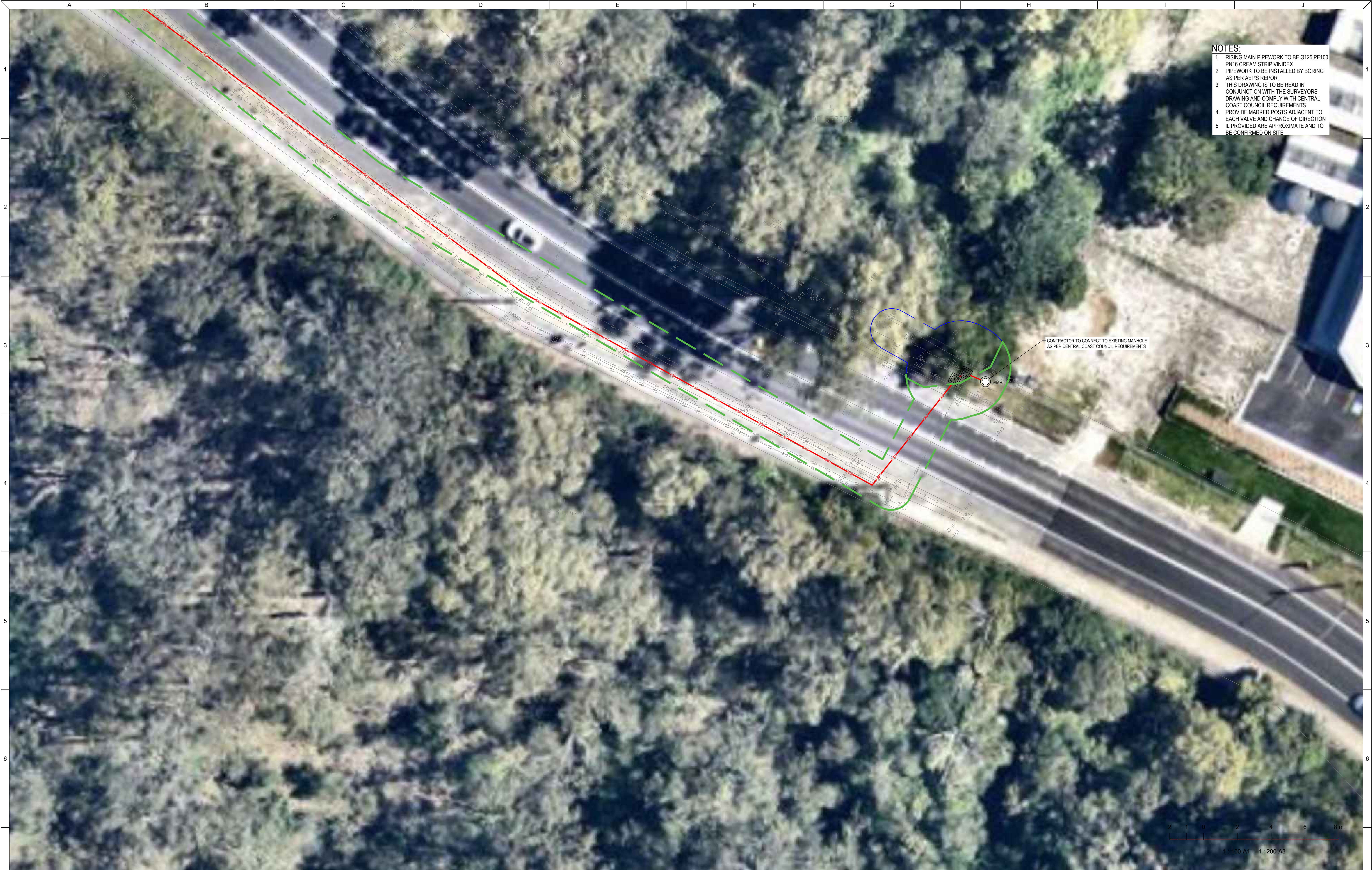
TITLE
HYDRAULIC SERVICES
SEWER RISING MAIN
SHEET 26

D&C TENDER ISSUE

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DRAWN	A.B.	SCALE @ A1 1:200
CHECKED	D.C.	
APPROVED	A.B.	
CREATED	FEB 2025	

JOB No.	DRAWING No.	REV
220449	H225	A



- NOTES:**
1. RISING MAIN PIPEWORK TO BE Ø125 PE100 PA16 CREAM STRIP UNIDEX
 2. PIPEWORK TO BE INSTALLED BY BORING AS PER AEP'S REPORT
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SURVEYORS DRAWING AND COMPLY WITH CENTRAL COAST COUNCIL REQUIREMENTS
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PROJECT
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TITLE
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SEWER RISING MAIN
SHEET 27

D&C TENDER ISSUE
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CHECKED	D.C.	1:200
APPROVED	A.B.	
CREATED	FEB 2025	
JOB No.	DRAWING No.	REV
220449	H226	A

DESIGNER TO SPECIFY SPECIAL BEDDING TO SUIT CONDITIONS IF TRENCH FLOOR HAS:

- IRREGULAR OUTCROPS OF ROCK
- ALLOWABLE BEARING PRESSURE OF ≤ 50 KPA, OR
- BEEN DISTURBED BY UNCONTROLLED GROUNDWATER

3 KEED SIDES OF EXCAVATION VERTICAL TO A LEAST 150 ABOVE PIPE

- FOR PRIVATE PROPERTY MINIMUM COVER MAY BE REDUCED TO 300 WITH MECHANICAL PROTECTION WHEN IN ROCK

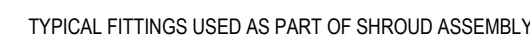
5. ALTERNATE TRENCHING TECHNIQUES E.G. NARROW TRENCHING USING "DITCHWITCH" TYPE EXCAVATORS SHALL BE SUBMITTED FOR CONSIDERATION AND ACCEPTANCE. PROPOSALS SHOULD ADDRESS THE METHOD FOR COMPACTION OF THE EMBEDEDMENT SUPPORT ZONE

NON-VEHICULAR LOADING
(INCLUDES LOCATIONS WHERE
OCCASIONAL VEHICLES LOADINGS
OCCUR eg. FOOTWAYS)

SPRING LINE TRENCH CLEARANCE	
NOMINAL SIZE (DN)	MINIMUM CLEARANCE "Lc" TO AS/NZS 2566.1
≤ 75	60
> 75, ≤ 110	70
> 110, ≤ 140	100
> 140, ≤ 315	150
≥ 315	200

TRENCH WIDTH TO BE SUFFICIENT
TO SAFELY LAY PIPE AND
COMPACT SIDE SUPPORT ZONE
(SEE NOTE 5)

PIPE JOINT BEDDING POCKETS FOR JOINT PROJECTIONS



100 MINIMUM
350 MAXIMUM
SEE NOTE 1

SURFACE BOX FOR
GATE VALVE

CONCRETE OR
RECYCLED PLASTIC
GUARDRAILS

FSL

GRADE

PLASTIC IDENTIFICATION
COVER SEE NOTE 3

SHROUD SUPPORT
FLANGE

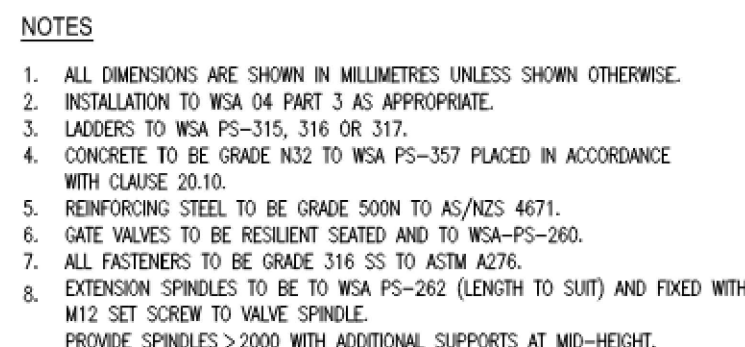
FLANGED GATE VALVE
TO WISA PS-260
SEE NOTE 2

PE PIPE

EMBODIMENT

TYPICAL SHROUD ASSEMBLY FOR GATE VALVES
LAID DEEPER THAN STANDARD DEPTH
(FOOTWAY INSTALLATION SHOWN)

SLUICE VALVE DETAIL IN GROUND



REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				
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JHA

Level 20, 2 Market Street,
Sydney
NSW 2000
Australia

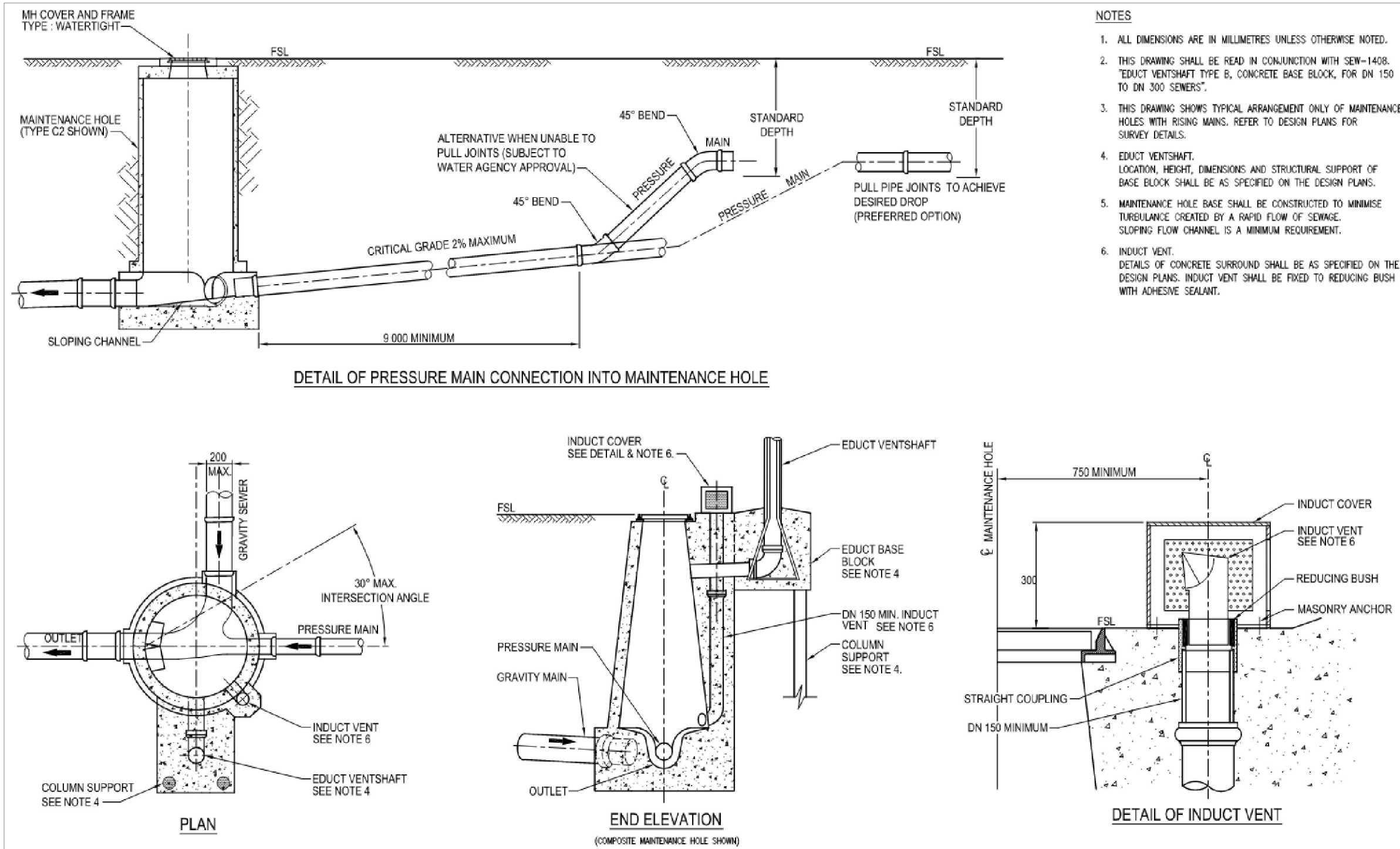
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general@jhaengineers.com.au

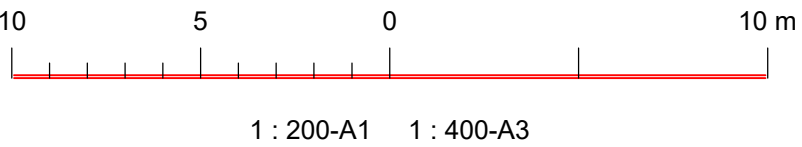
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TITLE
HYDRAULIC SERVICES
SEWER RISING MAIN
DETAIL SHEET 1

DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	
APPROVED	A.B.	
CREATED	DEC 2023	
JOB No.	DRAWING No.	REV
220449	H500	



DISCHARGE MH ARRANGEMENT AND CROSS SECTION



REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified	Rev	Date	Description	Verified
P1	15.12.23	DA ISSUE	A.B.				

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CLIENT



ARCHITECT



ABN: 34 001 485 436

CONSULTANT



Level 20, 2 Market Street,
Sydney NSW 2000
Australia
+61 (02) 9437 1000
general@jhaengineers.com.au
www.jhaservices.com

PROJECT
AMPOL M1 WYONG
WYONG M1 NSW 2259

TITLE
HYDRAULIC SERVICES
SEWER RISING MAIN
DETAIL SHEET 2

PRELIMINARY ISSUE
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DRAWN	A.B.	SCALE @ A1
CHECKED	D.C.	
APPROVED	A.B.	
CREATED	DEC 2023	

JOB No.	DRAWING No.	REV
220449	H501	P1