Stormwater Management Report

Vincentia High School upgrade

Project Reference: 132571

March 2025

Prepared For: NSW Department of Education

142 The Wool Road, Vincentia

Meinhardt

Level 4, 66 Clarence Street
Sydney, NSW 2000

P. 02 9399 3088 | F. 02 9319 7508
www.meinhardtgroup.com

Copyright

Disclaimer

Information in this document is current at the time of writing. While all professional care has been undertaken in preparing the document, Meinhardt accepts no liability for loss or damages incurred as a result of reliance placed upon its content.

The mention of any company, product or process in this report does not constitute or imply endorsement by Meinhardt.

REV	DATE	WRITTEN BY	REVIEWED BY	APPROVED BY
00	10.01.2025	BK	LM	BL
01	14.02.2025	BK	LM	BL
02	21.03.2025	BK	LM	BL
03	31.03.2025	BL	LM	BL

Table of Contents

Contact Details

Brian Kim
Civil Project Engineer
02 8252 0428
Brian.Kim@meinhardtgroup.com

Brad Lusty
NSW Regional Lead
0415 369 695
Brad.lusty@meinhardtgroup.com

Meinhardt Australia Pty Ltd
Level 4, 66 Clarence St
Sydney, NSW 2000
www.meinhardtgroup.com

1. Introduction

This Stormwater Management Report has been prepared to support a Review of Environmental Factors (REF) for the NSW Department of Education (DoE) for Vincentia High School upgrade (the activity).
The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP.

This document has been prepared in accordance with the Guidelines for Division 5.1 assessments (the Guidelines) by the Department of Planning, Housing and Infrastructure (DPHI) as well as the Addendum Division 5.1 guidelines for schools. The purpose of this report is to examine and take into account the relevant environmental factors in the Guidelines and Environmental Planning and Assessment Regulations 2021 under Section 170, Section 171 and Section 171A of the EP&A Regulation.

2. Site Description

The site is located at 142 The Wool Road, Vincentia, NSW, 2540 and has an approximate site area of 8.09ha. The site is comprised of two lots, legally referred to as Lot 1 Deposited Plan P809057 and Lot 1 Deposited Plan 550361 and is located within the Shoalhaven City Local Government Area (LGA). An aerial photograph of the site is provided at **Figure 1.**

The site is zoned SP2 Educational Establishment and existing development comprises various buildings, a car park, landscaping, a sports field and sports courts associated with Vincentia High School. Vincentia High School currently comprises 49 permanent teaching spaces (PTS) and 17 demountable teaching spaces (DTS). The eastern portion of the site contains natural bushland.
The site is an irregularly shaped lot. Vehicle access is provided to The Wool Road via a driveway that connects to a signalised intersection. There is a footpath and cycleway along The Wool Road. The surrounding land consists of extensive natural bushland (Jervis Bay National Park).

Figure 1 Aerial Photograph of the Site (Source: Urbis, January, 2024)

3. Proposed Activity Description

The proposed activity relates to upgrades to Vincentia High School. Specifically, the proposed activity comprises the following:

- Construction of a new two-storey home base building.
- Installation of solar panels.
- Construction of new stairs and covered walkways.
- Internal road upgrade which involves providing a new drop off zone, parking spaces and pedestrian pathway.
- Relocation of existing shade structure.
- External landscape works.
- Tree removal.

Any works relating to the existing demountables will be undertaken via a separate planning pathway. **Figure 2** provides an extract of the proposed site plan.

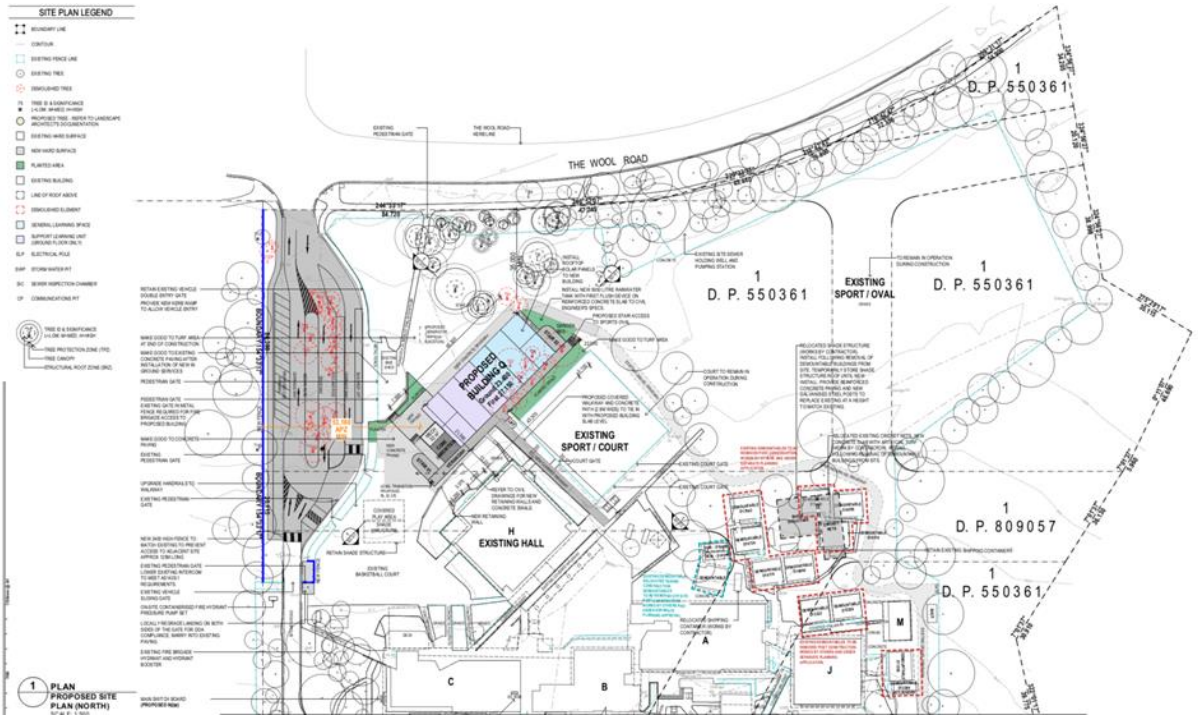


Figure 2 Site Plan (Source: Fulton Trotter, 2025)

4. REF Reporting Requirements

This report has been prepared in accordance with environmental mitigation measures and technical stormwater management plan to meet the Shoalhaven Council requirements for the proposed development. The REF deliverable requirements are presented in **Table 1**.

Item	REF Requirement	Relevant Section of Report
1	*Stormwater Management Plan*	*Section 5.1, 6.0, and 7.0 consider design solutions to mitigate sediment runoff and drainage system throughout construction and early work stage.*

Table 1. Relevant REF Requirements

5. Stormwater Quantity Management

5.1 Stormwater Drainage Works

Stormwater works proposed consist of:

- A pit and pipe system within the site area to convey minor flows (in accordance with the Major/Minor stormwater strategy approach defined in Australian Rainfall and Runoff). Roof drainage system has been designed, and documented by the Hydraulic Engineer, and is directly discharged to the proposed pit behind the proposed building.
- Onsite detention and water quality measures will not be required from Shoalhaven Development Control Plan 2014
- Overland flow paths are provided to cater for upstream catchments to bypass the proposed site, and to convey major storm flows within the proposed area along proposed swales near the proposed building.

The proposed stormwater adjustments are shown in **Figure 3**.

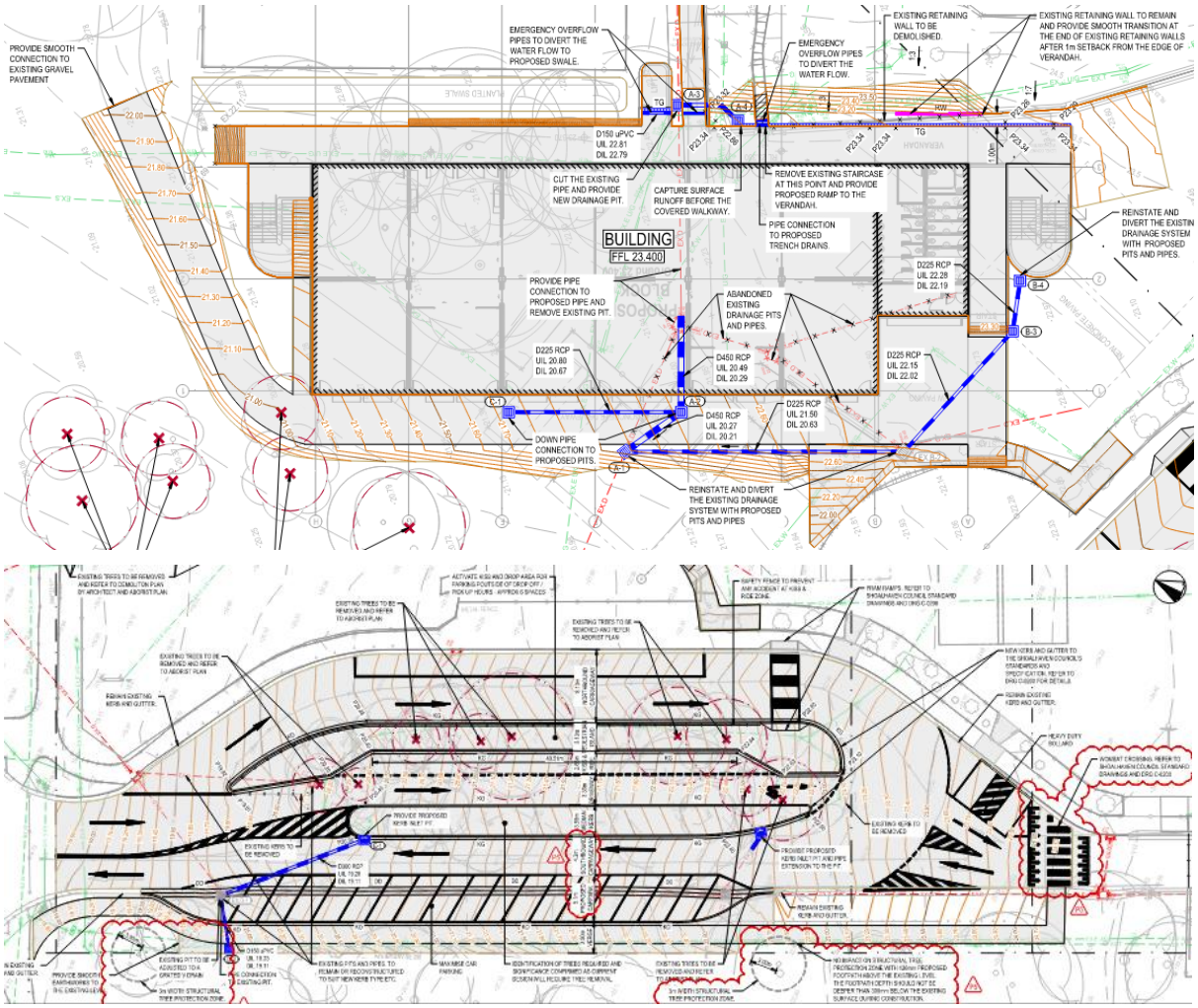


Figure 3. Stormwater System for Proposed Development.

5.2 On Site Detention

Shoalhaven City Council DCP requires the provision of an on-site detention system to ensure that new areas do not increase peak stormwater flows in any downstream area during major storms up to and including 100-year ARI events.

The Shoalhaven Council “Shoalhaven Development Control Plan 2014” in section 5.1.4 sets out the exceptional cases for onsite detention requirements to the proposed activity and no OSD tanks to be required. Onsite detention is not required for the proposed building site, bus bay and new drop of zone as shown in “Shoalhaven Development Control Plan 2014” in section 5.1.4 and specified below:

- The additional is less than 10% of the existing total site footprint.
- The overall site impervious areas are less than 50% of the site.

The design criterion for below ground pipe drainage has been adopted from section 5.1.4 of the Development Control Plan and are listed as follows:

- Minor Internal Roof and Surface Drainage system 20-year ARI
- Major stormwater event 100-year ARI

5.3 Catchment Plan

The proposed catchment plan for the site is presented in **Figure 4** and further detailed in Appendix C. The proposed site’s catchment is comprised of a bus bay zone, pavement, roof and covered walkway drainage. Flows coming from the roof will be conveyed through downpipes which will all discharge into the proposed pits.

The total catchment area across the proposed site is approximately 0.4774 hectares and 100% of the total catchment area is proposed to drain into the proposed pits on The Wool Road. This is comprised of a bus bay (new drop-off zone), driveway and roof catchment areas (Magenta, blue, grey and cyan hatches). The bus bay catchment Area is approximately 0.2931 and the captured runoff from the proposed building and bus bay areas is discharged to one existing kerb inlet pit on The Wool Road.

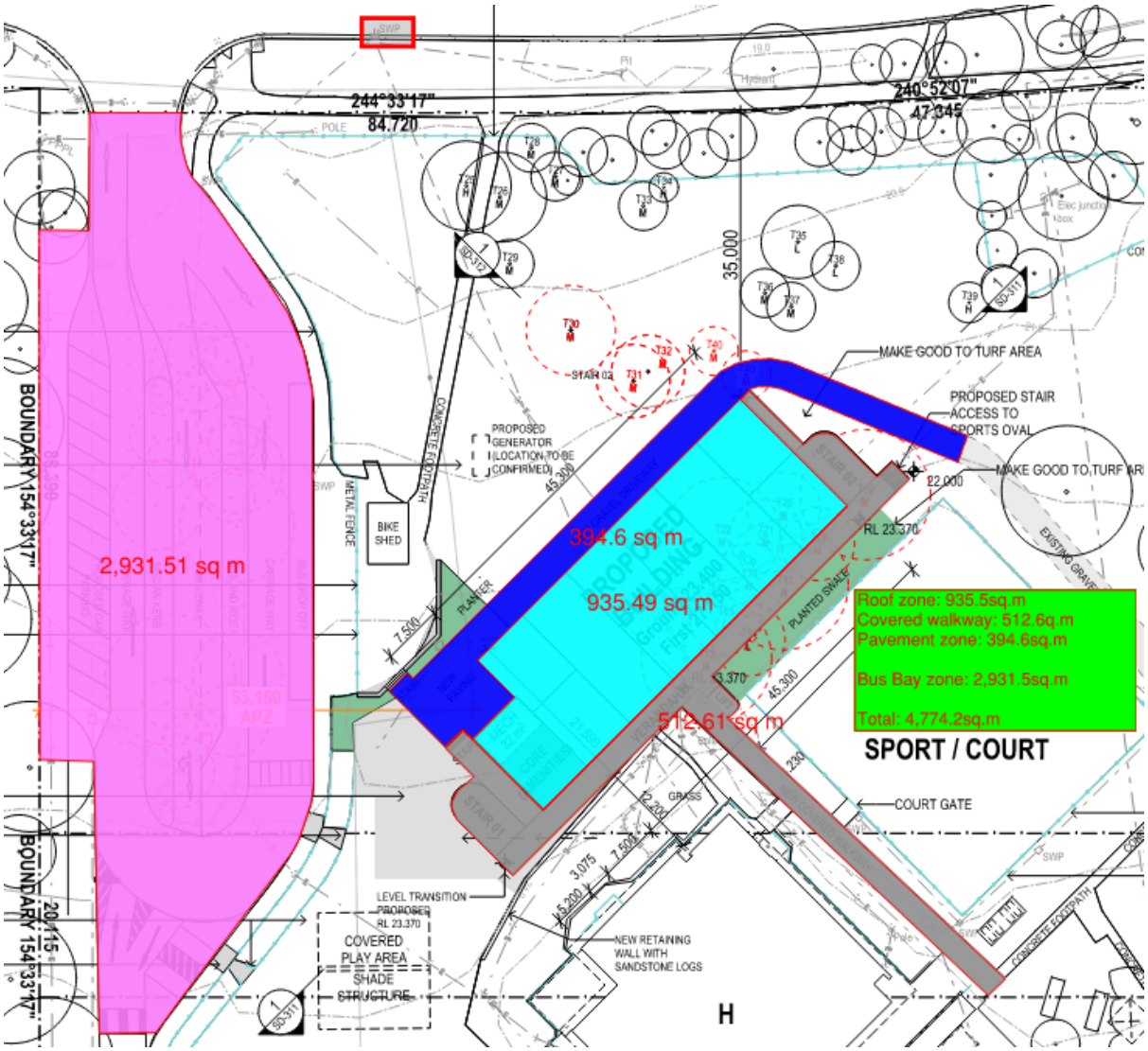


Figure 4. Site Catchment Plan (indicative plan)

6. Stormwater Quality Strategy

In order to meet Shoalhaven Council's requirements for stormwater management, the water quality strategy will need to include treatment of the stormwater prior to discharge to the nominated point of connection, reducing waterborne pollutants as per all relevant guidelines.

The Shoalhaven Council "Shoalhaven Development Control Plan 2014" in section 5.1.4 and 6 sets out the exceptional cases for onsite detention and water quality requirements for the proposed activity. The additional area for the proposed activity is less than 10% of the total existing site footprint at the proposed site which is an exceptional case according to the Shoalhaven DCP 2014 and no significant environmental impacts and pollutant issues are anticipated in comparison to pre-developed conditions, hence we do not consider water quality measures necessary.

7. Sediment and erosion management

The site is to be provided with catch drains, sediment fences, straw bales, inlet traps and filters.

The provision of a sediment basin, vegetated swale and fences provides an area of sediment storage that will reduce the likelihood of sediment runoff. Sediment runoff during minor storm events would be temporarily stored in the vegetated swale with straw bales and sediment fences (See **Figure 5** below). The swale would need to be regularly maintained and cleaned after each rainfall event.

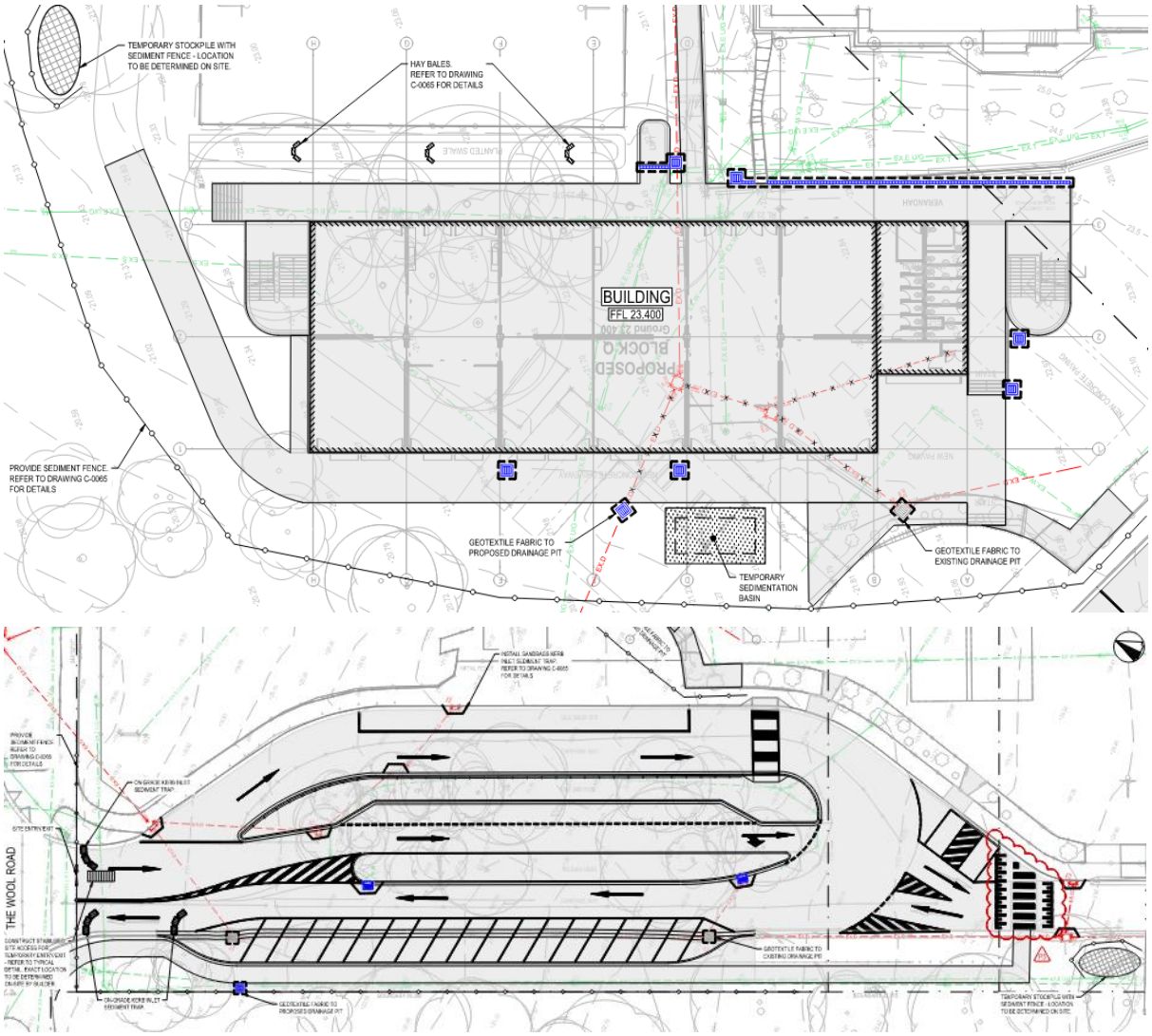


Figure 5. Sediment and erosion control

8. Bulk Earthworks

During bulk earthworks, 150mm topsoil removal, platform for the proposed ramp & footpath, stormwater pipes and pits are expected except the area below the suspended slab. The total volume of bulk is relatively reasonable with approximately 583.4 cu.m cut required which are based on 785.4 cu.m cut and 202.0 cu.m fill respectively (See **Figure 6** below).

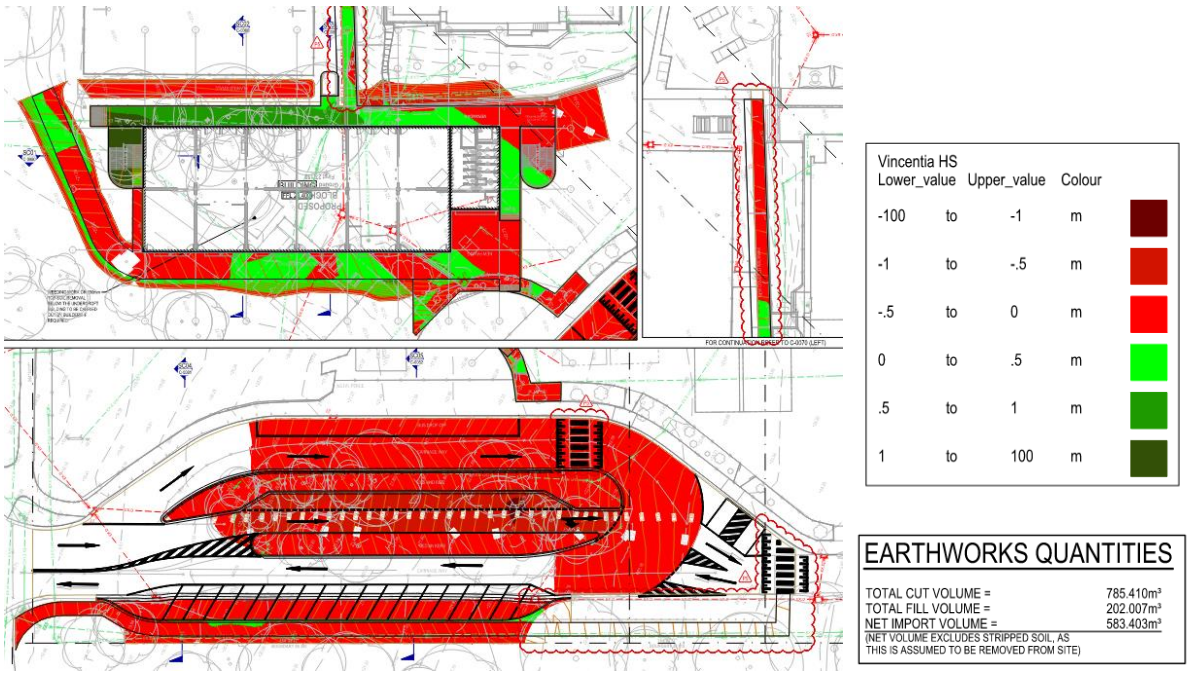


Figure 6. Bulk earthworks

9. Construction Management

During the construction phase, the maintenance and monitoring of erosion and sediment control measures remain the responsibility of the project Contractor. Details of the inspection frequency expected will need to be noted within the Operational Environmental Management Plan (EMP). If during the construction phase of the activity it is deemed necessary, monitoring of the erosion and sediment control measures will be undertaken by a qualified consultant. This is to determine the impact of construction activities on the subject site. In addition, an approved inspector will have an inspection for maintenance purposes during approved work hours and respite period.

10. Mitigation Measures

A summary of mitigation measures is outlined below and detailed in the relevant report sections.

Project Stage ***Design(D)*** ***Construction(C)*** ***Operation (O)***	**Mitigation Measures**	**Reason For Mitigation Measure**	**Relevant Section of Report**
C / O	*Sediment and erosion control – Sediment control measures, including the provision of sediment basins, straw bales, inlet traps and filters will be implemented.*	*To mitigate sediment and erosion during construction and early work stage.*	*Section 9*
C	*All works will be scheduled in accordance with the following:* *Works to be scheduled talking into account approved works hours,* *any restrictions relevant to specific tolls / activities and respite periods etc.*	*To minimize the impact of construction activities on the subject site.*	*Section 10*

11. Evaluation of Environmental Impacts

This report has been prepared to assess the potential environmental impacts that could arise from the activity of The Vincentia High School Upgrade at 142 The Wool Road, Vincentia. Construction management and sediment & erosion control are adequately adopted throughout the site during early works and construction phase by sediment fences, sediment basin and proper mitigation measures and inspection and maintenance work will be scheduled during off peak hours and approved work hours.

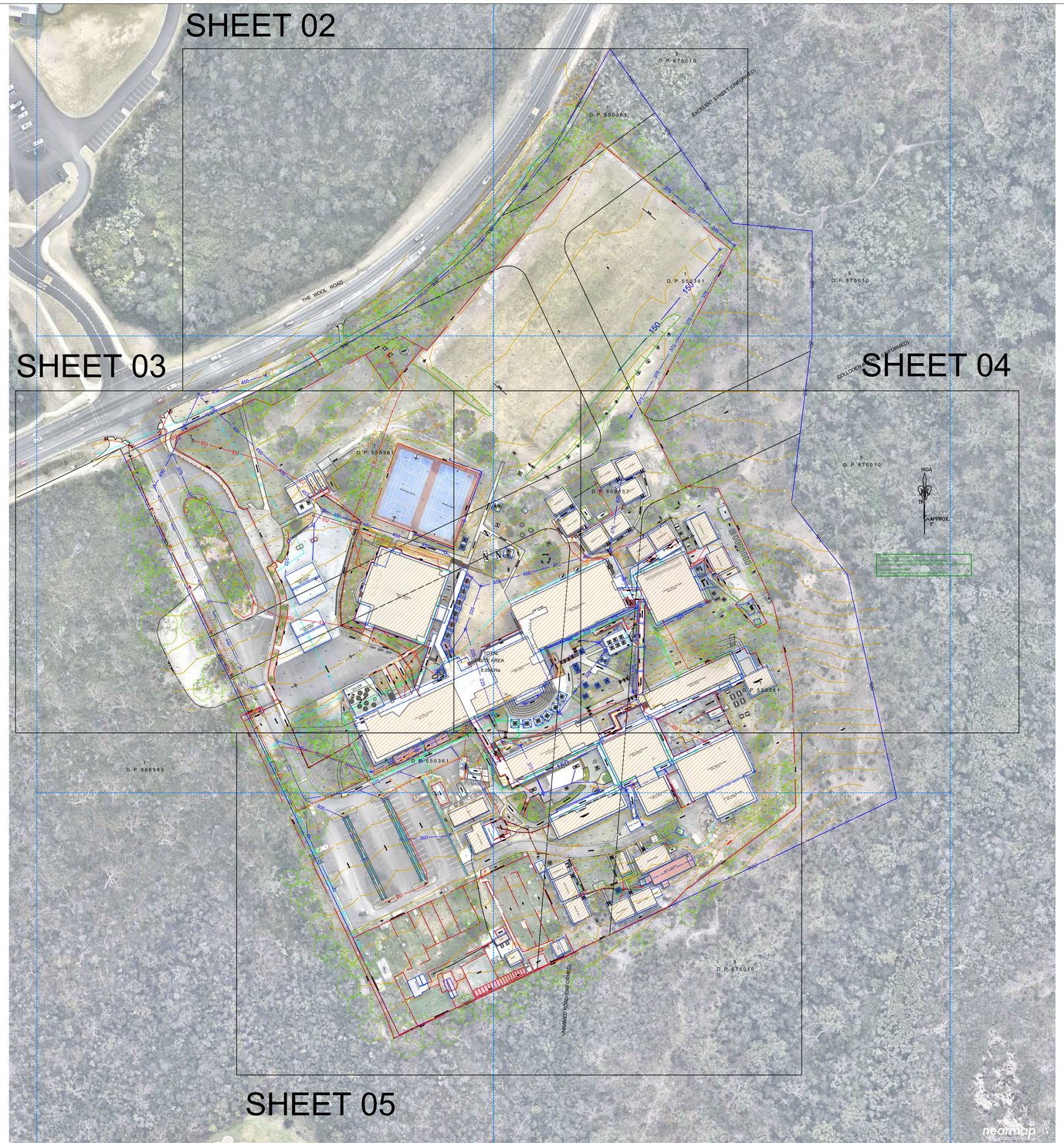
Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed development, it is determined that:

- The extent and nature of potential impacts are low and will not have significant adverse effects on the locality, community and the environment.
- Potential impacts can be appropriately mitigated or managed to ensure that there is minimal effect on the locality, community and the environment.

12. References

AS/NZ 3500.3:2003 Stormwater Drainage
AS/NZ 1428.1:2009 Design for access and mobility
Architectural plans by Fulton Trotter;
Shoalhaven Council _ DCP_2014_Chapter_G2
Watercom – *DRAINS Version 2023.07*

Appendix A – Survey



A1

UTILITY ASSETS LEGEND

- ELECTRICITY — EU — EU
- COMMS TELEPHONE LINE — T — T
- COMMS OPTICAL FIBRE — OU — OU
- COMMS HOUSE CONNECTION — TH — TH
- WATER MAIN
- RECYCLED WATER MAIN — WR — WR
- WATER HOUSE CONNECTION — WH — WH
- LOW PRESSURE GAS
- GAS HOUSE CONNECTION — GH — GH
- SEWER MAIN — S — S
- STORMWATER PIPE — SW — SW — SW
- OVERHEAD ELECTRICITY — OHP — OHP — OHP

UTILITY MAPPING NOTES:

1. Subsurface utility investigation was undertaken by Atrea Pty Ltd, the plan is to be read inconjuction with the subsurface utility investigation report.
2. Positions are based on Astrea Class A & B point surface indicator(s) located during field survey. Confirmation of the exact position should be made to the relevant authorities prior to any excavation work. Other services may still exist.
3. This plan shows a representation of the dwg model. this model should be viewed in a cadd environment to interpret this information.
4. This utility plan is valid for 28 days starting from the date of the issue, as underground utility works are often updated.
5. Electricity cables are not necessarily enclosed in conduits and are not necessarily covered with markers, tape or other indicators of their presence.
6. All services have been electronically traced in the field and are shown here for diagrammatic purposes only. Depths shown are approximate only and should be verified prior to works.
7. This plan includes information describing the location of subterranean features, which were purported to exist at the time of the survey. This information was compiled from a combination of field techniques and available data from cooperating utility authorities. Whilst all care has been taken in the preparation of this plan of survey, we cannot guarantee that the plan is without flaw of any kind.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS

Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be managed.

CLASS A: Information is the highest possible level of accuracy and is obtained by exposing the underground utility using a on-destructive excavation (pot holing) technique. The vertical information for this locating method is to the top or shallowest part of the located service. The 3D location is recorded by survey as an X, Y, Z coordinate.

CLASS B: Information is collected by designating the horizontal and vertical location of underground utilities by using electromagnetic pipe and cable locators, sondes or flexi-trace, ground penetrating radar and acoustic pulse equipment. This is the most common form of utility locating and although an X, Y and Z axis can be established it is not always entirely accurate due to differing electromagnetic fields, soil conditions and multiple banks of cables affecting the locating signal.

CLASS C: Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired Dial-Before-You-Dig plans to "draw" a string which shows the approximate position of services. This method does not usually show multiple banks of cables and does not always show three dimensional information. Electronically traced locate marks with poor scratchy signals are represented as QL-C.

CLASS D: Information is the most basic level of utility locations using only information based on existing Dial-Before-You-Dig plans and by measuring boundary offsets etc. This method of utility locations should always be treated as an indication of the presence of a service only and should not be used for design. GPR scans are also represented as QL-D as the GPR image cannot be confirmed to it's origin point. Depths on GPR scan must be treated as indicative only.

GENERAL SURVEY LEGEND:

DP - DRAINAGE PIT
PDJM - DRAINAGE JUNCTION MANHOLE
PSMH - SEWER MANHOLE
PWHY - HYDRANT
PWSV - STOP VALVE
PGUL - GULLY PIT
PGPM - GAS MARKER
PGTP - GAS TEST POINT
PPPL - POWER POLE
PTSP - TELSTRA PIT
TK - TOP OF KERB
PC - PRAM RAMP
FP - FOOTPATH
DW - DRIVEWAY
LIP - LIP OF GUTTER
EOT - END OF TRACE
UTL - UNABLE TO LOCATE
FOD - FULL OF DIRT

SERVICE TYPE / PROTECTION QUALITY LEVEL / PIPE MATERIAL & SIZE
T/N/A A100
33.15
SERVICE LOCATION / LOCATION OF CENTRE OF PIPE / LEVEL AT THE TOP OF PIPE

DIAL BEFORE YOU DIG www.1100.com.au

GENERAL SURVEY NOTES :

* THIS TITLEBLOCK IS AN INTEGRAL PART OF THIS DWG AND SHOULD NOT BE REMOVED
* COORDINATE SYSTEM MGA 2020
* LEVEL DATUM IS AHD
* IT IS THE RESPONSIBILITY OF ANY USER OF THIS DATA TO ENSURE ANY OTHER DATA BEING INTEGRATED IS ON THE SAME COORDINATE SYSTEM
* REFER TO THE FACE OF THE PLAN FOR TITLE NOTATIONS
* BOUNDARIES HAVE BEEN DEFINED BY SURVEY.
* CONTOURS ARE INDICATIVE OF LAND FORM. SPOT LEVELS TAKE PRECEDENCE.

SCALE 1:1000

0 10 20 30 40 50 60 70 80 90 100

GDA 2020

ORIGIN	PM66501 E 287148.053 N 6116179.025
ORIENTATION	PM66501 - PM 76129
AHD ORIGIN	PM66501 RL 17.600

CLIENT : SCHOOLS INFRASTRUCTURE

PLAN IN RELATION TO : VINCENTIA HIGH SCHOOL

SHOWING : TOPOGRAPHICAL SURVEY AND UTILITY MAPPING IN ACCORDANCE WITH AS4588.1-2019

PURPOSE: ENGINEERING DESIGN

SHEET 01 0F 05

DIGITAL SURVEY SOLUTIONS
UTILITY MAPPING
SUITE 6.01, TRINITI II, TRINITI BUSINESS PARK
39 DELHI ROAD, NORTH RYDE 2113
SCOTT DEVERIDGE 0425 285 270
www.astrea.com.au

Astrea

JOB REFERENCE : A4066
DWG No. A4066-UTIL&TOPO
SURVEYOR: BD, JD, EK
DATE OF SURVEY: OCT 2023
UTILITY LOCATOR: LB

I/D 7453
SCOTT DEVERIDGE
REGISTERED LAND SURVEYOR UNDER THE SURVEYING AND SPATIAL INFORMATION ACT, 2002

REV	AMENDMENTS	DATE

UTILITY ASSETS LEGEND

ELECTRICITY	EU — EU
COMMS TELEPHONE LINE	T — T
COMMS OPTICAL FIBRE	OU — OU
COMMS HOUSE CONNECTION	TH — TH
WATER MAIN	
RECYCLED WATER MAIN	WR — WR
WATER HOUSE CONNECTION	WH — WH
LOW PRESSURE GAS	
GAS HOUSE CONNECTION	GH — GH
SEWER MAIN	S — S
STORMWATER PIPE	SW — SW — SW
OVERHEAD ELECTRICITY	OHP — OHP — OHP

UTILITY MAPPING NOTES:

1. Subsurface utility investigation was undertaken by Atrea Pty Ltd, the plan is to be read inconjuction with the subsurface utility investigation report.
2. Positions are based on Astrea Class A & B point surface indicator(s) located during field survey. Confirmation of the exact position should be made to the relevant authorities prior to any excavation work. Other services may still exist.
3. This plan shows a representation of the dwg model. this model should be viewed in a cadd environment to interpret this information.
4. This utility plan is valid for 28 days starting from the date of the issue, as underground utility works are often updated.
5. Electricity cables are not necessarily enclosed in conduits and are not necessarily covered with markers, tape or other indicators of their presence.
6. All services have been electronically traced in the field and are shown here for diagrammatic purposes only. Depths shown are approximate only and should be verified prior to works.
7. This plan includes information describing the location of subterranean features, which were purported to exist at the time of the survey. This information was compiled from a combination of field techniques and available data from cooperating utility authorities. Whilst all care has been taken in the preparation of this plan of survey, we cannot guarantee that the plan is without flaw of any kind.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS

Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be managed.

CLASS A: Information is the highest possible level of accuracy and is obtained by exposing the underground utility using a on-destructive excavation (pot holing) technique. The vertical information for this locating method is to the top or shallowest part of the located service. The 3D location is recorded by survey as an X, Y, Z coordinate.

CLASS B: Information is collected by designating the horizontal and vertical location of underground utilities by using electromagnetic pipe and cable locators, sondes or flexi-trace, ground penetrating radar and acoustic pulse equipment. This is the most common form of utility locating and although an X, Y and Z axis can be established it is not always entirely accurate due to differing electromagnetic fields, soil conditions and multiple banks of cables affecting the locating signal.

CLASS C: Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired Dial-Before-You-Dig plans to "draw" a string which shows the approximate position of services. This method does not usually show multiple banks of cables and does not always show three dimensional information. Electronically traced locate marks with poor scratchy signals are represented as QL-C.

CLASS D: Information is the most basic level of utility locations using only information based on existing Dial-Before-You-Dig plans and by measuring boundary offsets etc. This method of utility locations should always be treated as an indication of the presence of a service only and should not be used for design. GPR scans are also represented as QL-D as the GPR image cannot be confirmed to it's origin point. Depths on GPR scan must be treated as indicative only.

GENERAL SURVEY LEGEND:

DP - DRAINAGE PIT
PDJM - DRAINAGE JUNCTION MANHOLE
PSMH - SEWER MANHOLE
PWHY - HYDRANT
PWSV - STOP VALVE
PGUL - GULLY PIT
PGPM - GAS MARKER
PGTP - GAS TEST POINT
PPPL - POWER POLE
PTSP - TELSTRA PIT
TK - TOP OF KERB
PC - PRAM RAMP
FP - FOOTPATH
DW - DRIVEWAY
LP - LIP OF GUTTER
EOT - END OF TRACE
UTL - UNABLE TO LOCATE
FOD - FULL OF DIRT

SERVICE TYPE
DETECTION QUALITY LEVEL
PIPE MATERIAL & SIZE
TN/A A100
33.15
SERVICE LOCATION
LOCATION OF CENTRE OF PIPE
LEVEL AT THE TOP OF PIPE

DIAL BEFORE YOU DIG®
www.1100.com.au

GENERAL SURVEY NOTES :

* THIS TITLEBLOCK IS AN INTEGRAL PART OF THIS DWG AND SHOULD NOT BE REMOVED
* COORDINATE SYSTEM MGA 2020
* LEVEL DATUM IS AHD
* IT IS THE RESPONSIBILITY OF ANY USER OF THIS DATA TO ENSURE ANY OTHER DATA BEING INTEGRATED IS ON THE SAME COORDINATE SYSTEM
* REFER TO THE FACE OF THE PLAN FOR TITLE NOTATIONS
* BOUNDARIES HAVE BEEN DEFINED BY SURVEY.
* CONTOURS ARE INDICATIVE OF LAND FORM. SPOT LEVELS TAKE PRECEDENCE.

SCALE 1:300

0 10 20 30

GDA 2020

ORIGIN	- E N
ORIENTATION	-
AHD ORIGIN	-

CLIENT : SCHOOLS INFRASTRUCTURE

PLAN IN RELATION TO :
VINCENTIA HIGH SCHOOL

SHOWING : TOPOGRAPHICAL SURVEY AND UTILITY MAPPING IN ACCORDANCE WITH AS4588.1-2019

PURPOSE: ENGINEERING DESIGN

SHEET 02 0F 05

DIGITAL SURVEY SOLUTIONS
UTILITY MAPPING
SUITE 6.01, TRINITI II, TRINITI BUSINESS PARK
39 DELHI ROAD, NORTH RYDE 2113
SCOTT DEVERIDGE 0425 285 270
www.astrea.com.au

Astrea

JOB REFERENCE : A4066
DWG No. A4066–UTIL&TOPO
SURVEYOR: BD
DATE OF SURVEY: OCT 2023
UTILITY LOCATOR: LB

I/D
7453

SCOTT DEVERIDGE
REGISTERED LAND SURVEYOR UNDER THE SURVEYING AND SPATIAL INFORMATION ACT, 2002

REV	AMENDMENTS	DATE

TITLE NOTATIONS 1/550361:
1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT
2. LAND EXCLUDES MINERALS BY THE CROWN GRANT OF 137 ACRES 3 ROODS

TITLE NOTATIONS 1/809057:
1. LAND EXCLUDES MINERALS VIDE MEMORANDUM T447400

A1

UTILITY ASSETS LEGEND

ELECTRICITY	EU	EU
COMMS TELEPHONE LINE	T	T
COMMS OPTICAL FIBRE	OU	OU
COMMS HOUSE CONNECTION	TH	TH
WATER MAIN		
RECYCLED WATER MAIN	WR	WR
WATER HOUSE CONNECTION	WH	WH
LOW PRESSURE GAS		
GAS HOUSE CONNECTION	GH	GH
SEWER MAIN	S	S
STORMWATER PIPE	SW	SW
OVERHEAD ELECTRICITY	OH	OH

UTILITY MAPPING NOTES:

1. Subsurface utility investigation was undertaken by Atrea Pty Ltd, the plan is to be read inconjuction with the subsurface utility investigation report.
2. Positions are based on Astrea Class A & B point surface indicator(s) located during field survey. Confirmation of the exact position should be made to the relevant authorities prior to any excavation work. Other services may still exist.
3. This plan shows a representation of the dwg model. this model should be viewed in a cadd environment to interpret this information.
4. This utility plan is valid for 28 days starting from the date of the issue, as underground utility works are often updated.
5. Electricity cables are not necessarily enclosed in conduits and are not necessarily covered with markers, tape or other indicators of their presence.
6. All services have been electronically traced in the field and are shown here for diagrammatic purposes only. Depths shown are approximate only and should be verified prior to works.
7. This plan includes information describing the location of subterranean features, which were purported to exist at the time of the survey. This information was compiled from a combination of field techniques and available data from cooperating utility authorities. Whilst all care has been taken in the preparation of this plan of survey, we cannot guarantee that the plan is without flaw of any kind.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS

Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be managed.

CLASS A: Information is the highest possible level of accuracy and is obtained by exposing the underground utility using a on-destructive excavation (pot holing) technique. The vertical information for this locating method is to the top or shallowest part of the located service. The 3D location is recorded by survey as an X, Y, Z coordinate.

CLASS B: Information is collected by designating the horizontal and vertical location of underground utilities by using electromagnetic pipe and cable locators, sondes or flexi-trace, ground penetrating radar and acoustic pulse equipment. This is the most common form of utility locating and although an X, Y and Z axis can be established it is not always entirely accurate due to differing electromagnetic fields, soil conditions and multiple banks of cables affecting the locating signal.

CLASS C: Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired Dial-Before-You-Dig plans to "draw" a string which shows the approximate position of services. This method does not usually show multiple banks of cables and does not always show three dimensional information. Electronically traced locate marks with poor scratchy signals are represented as QL-C.

CLASS D: Information is the most basic level of utility locations using only information based on existing Dial-Before-You-Dig plans and by measuring boundary offsets etc. This method of utility locations should always be treated as an indication of the presence of a service only and should not be used for design. GPR scans are also represented as QL-D as the GPR image cannot be confirmed to it's origin point. Depths on GPR scan must be treated as indicative only.

GENERAL SURVEY LEGEND:

DP - DRAINAGE PIT
PDJM - DRAINAGE JUNCTION MANHOLE
PSMH - SEWER MANHOLE
PWHY - HYDRANT
PWSV - STOP VALVE
PGUL - GULLY PIT
PGPM - GAS MARKER
PGTP - GAS TEST POINT
PPPL - POWER POLE DW - DRIVEWAY
PTSP - TELSTRA PIT LP - LIP OF GUTTER
TK - TOP OF KERB EOT - END OF TRACE
PC - PRAM RAMP UTL - UNABLE TO LOCATE
FP - FOOTPATH FOD - FULL OF DIRT

SERVICE TYPE / DETECTION QUALITY LEVEL / PIPE MATERIAL & SIZE
TN/A A100
33.15
SERVICE LOCATION / LOCATION OF CENTRE OF PIPE LEVEL AT THE TOP OF PIPE

DIAL BEFORE YOU DIG www.1100.com.au

GENERAL SURVEY NOTES :

* THIS TITLEBLOCK IS AN INTEGRAL PART OF THIS DWG AND SHOULD NOT BE REMOVED
* COORDINATE SYSTEM MGA 2020
* LEVEL DATUM IS AHD
* IT IS THE RESPONSIBILITY OF ANY USER OF THIS DATA TO ENSURE ANY OTHER DATA BEING INTEGRATED IS ON THE SAME COORDINATE SYSTEM
* REFER TO THE FACE OF THE PLAN FOR TITLE NOTATIONS
* BOUNDARIES HAVE BEEN DEFINED BY SURVEY.
* CONTOURS ARE INDICATIVE OF LAND FORM. SPOT LEVELS TAKE PRECEDENCE.

SCALE 1:300

0 10 20 30

GDA 2020

ORIGIN	-	
	E	N
ORIENTATION	-	
AHD ORIGIN	-	

CLIENT : SCHOOLS INFRASTRUCTURE

PLAN IN RELATION TO :
VINCENTIA HIGH SCHOOL

SHOWING : TOPOGRAPHICAL SURVEY AND UTILITY MAPPING IN ACCORDANCE WITH AS4588.1-2019

PURPOSE: ENGINEERING DESIGN

SHEET 03 0F 05

DIGITAL SURVEY SOLUTIONS
UTILITY MAPPING
SUITE 6.01, TRINITI II, TRINITI BUSINESS PARK
39 DELHI ROAD, NORTH RYDE 2113
SCOTT DEVERIDGE 0425 285 270
www.astrea.com.au

Astrea

JOB REFERENCE : A4066
DWG No. A4066-UTIL&TOPO
SURVEYOR: BD
DATE OF SURVEY: OCT 2023
UTILITY LOCATOR: LB

I/D 7453

SCOTT DEVERIDGE
REGISTERED LAND SURVEYOR UNDER THE SURVEYING AND SPATIAL INFORMATION ACT, 2002

REV	AMENDMENTS	DATE

UTILITY ASSETS LEGEND

- ELECTRICITY — EU — EU
- COMMS TELEPHONE LINE — T — T
- COMMS OPTICAL FIBRE — OU — OU
- COMMS HOUSE CONNECTION — TH — TH
- WATER MAIN
- RECYCLED WATER MAIN — WR — WR
- WATER HOUSE CONNECTION — WH — WH
- LOW PRESSURE GAS
- GAS HOUSE CONNECTION — GH — GH
- SEWER MAIN — S — S
- STORMWATER PIPE — SW — SW — SW
- OVERHEAD ELECTRICITY — OHP — OHP — OHP

UTILITY MAPPING NOTES:

1. Subsurface utility investigation was undertaken by Atrea Pty Ltd, the plan is to be read inconjuction with the subsurface utility investigation report.
2. Positions are based on Astrea Class A & B point surface indicator(s) located during field survey. Confirmation of the exact position should be made to the relevant authorities prior to any excavation work. Other services may still exist.
3. This plan shows a representation of the dwg model. this model should be viewed in a cadd environment to interpret this information.
4. This utility plan is valid for 28 days starting from the date of the issue, as underground utility works are often updated.
5. Electricity cables are not necessarily enclosed in conduits and are not necessarily covered with markers, tape or other indicators of their presence.
6. All services have been electronically traced in the field and are shown here for diagrammatic purposes only. Depths shown are approximate only and should be verified prior to works.
7. This plan includes information describing the location of subterranean features, which were purported to exist at the time of the survey. This information was compiled from a combination of field techniques and available data from cooperating utility authorities. Whilst all care has been taken in the preparation of this plan of survey, we cannot guarantee that the plan is without flaw of any kind.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS

Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be managed.

CLASS A: Information is the highest possible level of accuracy and is obtained by exposing the underground utility using a on-destructive excavation (pot holing) technique. The vertical information for this locating method is to the top or shallowest part of the located service. The 3D location is recorded by survey as an X, Y, Z coordinate.

CLASS B: Information is collected by designating the horizontal and vertical location of underground utilities by using electromagnetic pipe and cable locators, sondes or flexi-trace, ground penetrating radar and acoustic pulse equipment. This is the most common form of utility locating and although an X, Y and Z axis can be established it is not always entirely accurate due to differing electromagnetic fields, soil conditions and multiple banks of cables affecting the locating signal.

CLASS C: Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired Dial-Before-You-Dig plans to "draw" a string which shows the approximate position of services. This method does not usually show multiple banks of cables and does not always show three dimensional information. Electronically traced locate marks with poor scratchy signals are represented as QL-C.

CLASS D: Information is the most basic level of utility locations using only information based on existing Dial-Before-You-Dig plans and by measuring boundary offsets etc. This method of utility locations should always be treated as an indication of the presence of a service only and should not be used for design. GPR scans are also represented as QL-D as the GPR image cannot be confirmed to it's origin point. Depths on GPR scan must be treated as indicative only.

GENERAL SURVEY LEGEND:

DP - DRAINAGE PIT
PDJM - DRAINAGE JUNCTION MANHOLE
PSMH - SEWER MANHOLE
PWHY - HYDRANT
PWSV - STOP VALVE
PGUL - GULLY PIT
PGPM - GAS MARKER
PGTP - GAS TEST POINT
PPPL - POWER POLE
PTSP - TELSTRA PIT
TK - TOP OF KERB
PC - PRAM RAMP
FP - FOOTPATH
DW - DRIVEWAY
LIP - LIP OF GUTTER
EOT - END OF TRACE
UTL - UNABLE TO LOCATE
FOD - FULL OF DIRT

SERVICE TYPE / ATTRIBUTE QUALITY LEVEL / PIPE MATERIAL & SIZE
TN/A A100
33.15
SERVICE LOCATION / LOCATION OF CENTRE OF PIPE / LEVEL AT THE TOP OF PIPE

DIAL BEFORE YOU DIG www.1100.com.au

GENERAL SURVEY NOTES :

* THIS TITLEBLOCK IS AN INTEGRAL PART OF THIS DWG AND SHOULD NOT BE REMOVED
* COORDINATE SYSTEM MGA 2020
* LEVEL DATUM IS AHD
* IT IS THE RESPONSIBILITY OF ANY USER OF THIS DATA TO ENSURE ANY OTHER DATA BEING INTEGRATED IS ON THE SAME COORDINATE SYSTEM
* REFER TO THE FACE OF THE PLAN FOR TITLE NOTATIONS
* BOUNDARIES HAVE BEEN DEFINED BY SURVEY.
* CONTOURS ARE INDICATIVE OF LAND FORM. SPOT LEVELS TAKE PRECEDENCE.

SCALE 1:300

0 10 20 30

GDA 2020

ORIGIN	-	
	E	N
ORIENTATION	-	
AHD ORIGIN	-	

CLIENT : SCHOOLS INFRASTRUCTURE

PLAN IN RELATION TO :
VINCENTIA HIGH SCHOOL

SHOWING : TOPOGRAPHICAL SURVEY AND UTILITY MAPPING IN ACCORDANCE WITH AS4588.1-2019

PURPOSE: ENGINEERING DESIGN

SHEET 04 0F 05

DIGITAL SURVEY SOLUTIONS
UTILITY MAPPING
SUITE 6.01, TRINITI II, TRINITI BUSINESS PARK
39 DELHI ROAD, NORTH RYDE 2113
SCOTT DEVERIDGE 0425 285 270
www.astrea.com.au

Astrea

JOB REFERENCE : A4066
DWG No. A4066-UTIL&TOPO
SURVEYOR: BD
DATE OF SURVEY: OCT 2023
UTILITY LOCATOR: LB

I/D 7453

SCOTT DEVERIDGE
REGISTERED LAND SURVEYOR UNDER THE SURVEYING AND SPATIAL INFORMATION ACT, 2002

REV	AMENDMENTS	DATE

TITLE NOTATIONS 1/550361:
1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT
2. LAND EXCLUDES MINERALS BY THE CROWN GRANT OF 137 ACRES 3 ROODS

TITLE NOTATIONS 1/809057:
1. LAND EXCLUDES MINERALS VIDE MEMORANDUM T447400

A1

UTILITY ASSETS LEGEND

- ELECTRICITY — EU
- COMMS TELEPHONE LINE — T
- COMMS OPTICAL FIBRE — OU
- COMMS HOUSE CONNECTION — TH
- WATER MAIN
- RECYCLED WATER MAIN — WR
- WATER HOUSE CONNECTION — WH
- LOW PRESSURE GAS
- GAS HOUSE CONNECTION — GH
- SEWER MAIN — S
- STORMWATER PIPE — SW
- OVERHEAD ELECTRICITY — OHP

UTILITY MAPPING NOTES:

1. Subsurface utility investigation was undertaken by Atrea Pty Ltd, the plan is to be read inconjuction with the subsurface utility investigation report.
2. Positions are based on Astrea Class A & B point surface indicator(s) located during field survey. Confirmation of the exact position should be made to the relevant authorities prior to any excavation work. Other services may still exist.
3. This plan shows a representation of the dwg model. this model should be viewed in a cadd environment to interpret this information.
4. This utility plan is valid for 28 days starting from the date of the issue, as underground utility works are often updated.
5. Electricity cables are not necessarily enclosed in conduits and are not necessarily covered with markers, tape or other indicators of their presence.
6. All services have been electronically traced in the field and are shown here for diagrammatic purposes only. Depths shown are approximate only and should be verified prior to works.
7. This plan includes information describing the location of subterranean features, which were purported to exist at the time of the survey. This information was compiled from a combination of field techniques and available data from cooperating utility authorities. Whilst all care has been taken in the preparation of this plan of survey, we cannot guarantee that the plan is without flaw of any kind.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS

Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be managed.

CLASS A: Information is the highest possible level of accuracy and is obtained by exposing the underground utility using a on-destructive excavation (pot holing) technique. The vertical information for this locating method is to the top or shallowest part of the located service. The 3D location is recorded by survey as an X, Y, Z coordinate.

CLASS B: Information is collected by designating the horizontal and vertical location of underground utilities by using electromagnetic pipe and cable locators, sondes or flexi-trace, ground penetrating radar and acoustic pulse equipment. This is the most common form of utility locating and although an X, Y and Z axis can be established it is not always entirely accurate due to differing electromagnetic fields, soil conditions and multiple banks of cables affecting the locating signal.

CLASS C: Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired Dial-Before-You-Dig plans to "draw" a string which shows the approximate position of services. This method does not usually show multiple banks of cables and does not always show three dimensional information. Electronically traced locate marks with poor scratchy signals are represented as QL-C.

CLASS D: Information is the most basic level of utility locations using only information based on existing Dial-Before-You-Dig plans and by measuring boundary offsets etc. This method of utility locations should always be treated as an indication of the presence of a service only and should not be used for design. GPR scans are also represented as QL-D as the GPR image cannot be confirmed to it's origin point. Depths on GPR scan must be treated as indicative only.

GENERAL SURVEY LEGEND:

DP - DRAINAGE PIT
PDJM - DRAINAGE JUNCTION MANHOLE
PSMH - SEWER MANHOLE
PWHY - HYDRANT
PWSV - STOP VALVE
PGUL - GULLY PIT
PGPM - GAS MARKER
PGTP - GAS TEST POINT
PPPL - POWER POLE
PTSP - TELSTRA PIT
TK - TOP OF KERB
PC - PRAM RAMP
FP - FOOTPATH
DW - DRIVEWAY
LP - LIP OF GUTTER
EOT - END OF TRACE
UTL - UNABLE TO LOCATE
FOD - FULL OF DIRT

TN/A A100
33.15
SERVICE TYPE
DETECTION QUALITY LEVEL
PIPE MATERIAL & SIZE
SERVICE LOCATION
LOCATION OF CENTRE OF PIPE
LEVEL AT THE TOP OF PIPE

DIAL BEFORE YOU DIG ® www.1100.com.au

GENERAL SURVEY NOTES :

* THIS TITLEBLOCK IS AN INTEGRAL PART OF THIS DWG AND SHOULD NOT BE REMOVED
* COORDINATE SYSTEM MGA 2020
* LEVEL DATUM IS AHD
* IT IS THE RESPONSIBILITY OF ANY USER OF THIS DATA TO ENSURE ANY OTHER DATA BEING INTEGRATED IS ON THE SAME COORDINATE SYSTEM
* REFER TO THE FACE OF THE PLAN FOR TITLE NOTATIONS
* BOUNDARIES HAVE BEEN DEFINED BY SURVEY.
* CONTOURS ARE INDICATIVE OF LAND FORM. SPOT LEVELS TAKE PRECEDENCE.

SCALE 1:300

0 10 20 30

GDA 2020

ORIGIN	-	
	E	N
ORIENTATION	-	
AHD ORIGIN	-	

CLIENT : SCHOOLS INFRASTRUCTURE

PLAN IN RELATION TO :
VINCENTIA HIGH SCHOOL

SHOWING : TOPOGRAPHICAL SURVEY AND UTILITY MAPPING IN ACCORDANCE WITH AS4588.1-2019

PURPOSE: ENGINEERING DESIGN

SHEET 05 OF 05

DIGITAL SURVEY SOLUTIONS
UTILITY MAPPING
SUITE 6.01, TRINITI II, TRINITI BUSINESS PARK
39 DELHI ROAD, NORTH RYDE 2113
SCOTT DEVERIDGE 0425 285 270
www.ostrea.com.au

Astrea

JOB REFERENCE : A4066
DWG No. A4066-UTIL&TOPO
SURVEYOR: BD
DATE OF SURVEY: OCT 2023
UTILITY LOCATOR: LB

I/D 7453
SCOTT DEVERIDGE
REGISTERED LAND SURVEYOR
UNDER THE SURVEYING AND SPATIAL INFORMATION ACT, 2002

REV	AMENDMENTS	DATE