



RAW EARTH
ENVIRONMENTAL

Preliminary Site Investigation

Eileen O'Connor Catholic School
84 Gavenlock Road, Mardi
NSW, 2259

March 2024

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Report Distribution

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Document Revisions

Revision	Date	Created by	Short Description of Changes
1	8 th March 2024	Tiago Guedes	Final version
2	18 th March 2024	Gonzalo Serna Diaz	Amended Suburb, proposed development and added State Significant
3	27 th June 2025	Gonzalo Serna Diaz	Amend client as per DPHI comments



Executive Summary

Raw Earth were engaged to conduct a PSI at the property located at 84 Gavenlock Road, Mardi, NSW 2259 ('the site'). The site is described as Lot 9 Section 4 DP 3368 and comprises an approximate total area of 133,500 m². The investigation area is located on the north-west portion of the site and comprises an approximate total area of 10,000 m².

During the site walkover it was noted that the investigation area is predominantly covered by grass and vegetation. The centre of the investigation area is occupied by a surface water body with surrounding vegetation. There are 3 sheds with an adjacent concrete slab occupying the south-eastern portion of the investigation area. The sheds are single-storey buildings built on concrete slab, with steel frame structure and corrugated metal walls and roofing. There is a joined veranda along one of the sheds. It was also noted the existence of a sand pit located 50m to the west of the sheds.

The desktop investigation indicates the site has remained as commercial property in nature since 1983, after which it began to be developed. The historical image assessment indicates that there were some concrete slab structures present in 1997, adjacent to the sheds in the investigation area. However, in 2005 the concrete slabs are noted not to be present anymore. The presence of previous concrete structures may indicative the use of potential uncontrolled fill and therefore, a potential source of contamination. No waste/rubble was present on-site.

The site walkover and desktop investigation indicated 1 potential Areas of Environmental Concern (AECs) at the site, as follows:

- AEC1 – Potential uncontrolled fill material situated across site beneath the concrete building slab.

Based on the preliminary CSM, the potential exposure of CoPC at the site is considered **low-moderate** given the presence of one (1) AECs identified across the site, as shown in Figure 3, **Appendix A**.

It is the opinion of Raw Earth and in accordance with relevant Australian standards and guidelines that the site can be made suitable for its proposed development subject to the following recommendations:

- Based on the site inspection, desktop review and the proposed development involving in situ soil disturbance excavations, intrusive soil sampling in the form of a detailed site investigation is recommended to assess the contamination status of in situ soils identified in Areas of Environmental Concern: AEC1, of which are known to be disturbed during future site-based works. This will confirm the source, pathway, and receptor linkages to the CSM, assessing the risk of exposed soils to future site users and construction workers to ensure suitability for the proposed development;
- Any proposed soil is to be excavated as part of the development and requires offsite disposal, then waste needs to be classified in accordance with NSW Environmental Protection Authority, Waste Classification Guidelines Part 1-4: Classifying Waste, 2014 or be analysed for beneficial reuse under the NSW EPA Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation (2014) to be classified as Excavated Natural Material (ENM); and,
- In the event of any unexpected finds, including the discovery of asbestos containing materials, underground storage tanks, odorous and/or stained soil uncovered during works, all site works must cease, and Raw Earth must be notified immediately for further investigation.



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1 Introduction

1.1 Background

Raw Earth Environmental Pty Ltd (Raw Earth) have been engaged to conduct a Preliminary Site Investigation (PSI) at the property located at 84 Gavenlock Road, Mardi, NSW 2259 (herein referred to as 'the site'). The site is described as Lot 9 Section 4 DP 3368 and comprises an approximate total area of 133,500 m². The investigation area is located on the north-west portion of the site and comprises an approximate total area of 10,000 m².

The Site Location Plan is shown in Figure 1, in the **Appendix A**. The site is located approximately 15.5 km north-east of Gosford Central Business District (CBD), within the Local Government Area of Central Coast Council (CCC).

This report has been prepared to support a State Significant Development Application (SSDA) to CCC and for the purpose of enabling the developer to meet its obligations under the Contaminated Land Management Act 1997 (CLM Act) for the assessment and management of contaminated land.

Raw Earth understands that the proposed school development at the site includes the construction of an additional building with three (3) wings on the north-west portion of the site. Information provided to Raw Earth by the client indicates that as part of the project, bulk earthworks will consist of up to 2460 m³ of in situ soils disturbed to a maximum depth of 1.8 m bgl.

1.2 Objectives

The objectives of this PSI were as follows:

- Assess the potential for contamination at the site, from former and current land use activities;
- Assess site suitability for the proposed land use; and,
- Provide recommendations in relation to further investigations and/or a Detailed Site Investigation (DSI).



2 Scope of Works

To complete the PSI, Raw Earth undertook the following scope of works:

- A desktop review of the following sources:
 - Published geology maps;
 - Real NSW Bore reports;
 - Local council GIS layers including lot description, land zoning and council flood mapping;
 - NSW ePlanning Spatial Viewing GIS layers including hydrology and Acid Sulfate Soil Risk Mapping;
 - Australian Per and Polyfluoroalkyl Substances (PFAS) Chemical Map;
 - NSW Environmental Protection Agency (EPA) Contaminated Land Register (CLR) search;
 - Protection of the Environment Operations (POEO) Act Public Register search; and,
 - Local council records and planning search.
- A historical review, which included the following:
 - Current and historical aerial photographs; and,
 - Current and historical Certificate of Titles.
- Site inspection, detailing current site use and any potential indicators of contamination;
- Development of a preliminary Conceptual Site Model (CSM) identifying potential sources of contamination, pathways and receptors and any potential linkages; and,
- Preparation of this PSI Report, documenting our findings of the desktop study and recommendations for further investigations (if required).



3 Regulatory Framework

This PSI was undertaken in accordance with the following regulatory framework and guidelines:

- National Environment Protection (Assessment of Site Contamination) Measure as varied 2011, Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater, 2013;
- National Environment Protection (Assessment of Site Contamination) Measure as varied 2011, Schedule B2 – Guideline on Site Characterisation, 2013;
- NSW Department of Environment and Conservation, Guidelines for the Assessment and Management of Groundwater Contamination, 2007;
- NSW Department of Planning and Environment, State Environmental Planning Policy (Resilience and Hazards) Chapter 4, 2022;
- NSW Environmental Protection Authority, Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017;
- NSW Environmental Protection Authority, Guidelines on the Duty to Report Contamination under Contaminated Land Management Act, 1997;
- NSW Environmental Protection Authority, Sampling Design Guidelines, 2022;
- NSW Environmental Protection Authority, Waste Classification Guidelines Part 1-4, 2014;
- NSW Environmental Protection Authority, *Consultants reporting on contaminated Land: Contaminated land guidelines*, 2020;
- Western Australia Department of Health, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, 2021;
- Work Health and Safety Act, 2011; and,
- Work Health and Safety Regulation, 2017.



4 Site Condition and Environmental Setting

4.1 Site Identification

A site location plan is shown in Figure 1, with a site layout plan shown in Figure 2, **Appendix A**. A summary of the Site Details is shown below in **Table 1**.

<i>Table 1: Site Details</i>	
Site Address	84 Gavenlock Road, Mardi, NSW 2259
Lot Description	Lot 9 Section 4 DP 3368
Site Location Map	Figure 1, Appendix A
Site Photographs	Appendix B
Area of Site (m²)	133,500
Site Investigation Area (m²)	10,000
Local Government Council	Central Coast Council
Current Land Zoning	R2: Low Density Residential and C3: Environmental Management
Surrounding Land Zoning	R1: General Residential C2: Environmental Conservation and Management
Previous Land Zoning	R2: Low Density Residential



4.2 Site Inspection

Raw Earth undertook a site inspection at the site on 4th March 2024. Site photographs are shown in **Appendix B**. Key observations noted during the inspection are summarised in **Table 2** below.

Table 2: Site Layout and Current Use	
Site Layout and Use	Details
Current use	The site is a commercial property that is currently being used as a private school.
Surface cover type and condition	The site investigation area is predominantly covered by grass and vegetation. The centre of the investigation area is occupied by a surface water body with surrounding vegetation. There are 3 sheds occupying the south-eastern portion of site investigation area.
Building construction	There are 3 single-storey buildings (sheds) built on concrete slab, with steel frame structure and corrugated metal walls and roofing. There is also a joined veranda along one of the sheds.
Water runoff flow direction and drain/pit location	The site investigation area slopes downhill from southwest to northeast of the property, water runoff will follow this direction travelling across the site.
Depth, size and flow of any water features which may include creeks, rivers, lakes, ponds and lagoons	There is a lake/pond in the centre portion of the site, with an approximate area of 2000 m ² .
Waste/ rubble	No waste/rubble was present on-site.
Areas of restricted access	No areas of restricted access.



4.3 Surrounding Land use

A summary of surrounding features and/or land uses noted during a review of desktop information and the site inspected is provided in **Table 3** below.

Table 3: Surrounding Land Use	
North	Residential properties zoned as R1, and vacant bushland zoned as RE2 and C2 located adjacent and beyond.
East	Commercial properties zoned as E4 and E3 located across Gavenlock Road.
South	Residential properties zoned as R1, and vacant bushland zoned as C2 located adjacent and beyond.
West	Residential properties zoned as R1 adjacent, with vacant bushland zoned as C2.
Abbreviations (NSW Department of Planning and Environment): R1: General Residential C2: Environmental Conservation and Environmental Management E4: General Industrial E3: Productivity Support RE2: Private Recreation	

4.4 Geology

The Geological Map of Gosford-Lake Macquarie (Geological Series Sheet 9131, 1st Edition, Scale 1:100,000, D.J. Jones, D.C. Uren, and R.R. Hughes, 2015) published by the NSW Geological Survey, indicates the site is underlain by Quaternary gravel and sand as well as Triassic Patonga Siltstone consisting of red-brown claystone and pale grey sandstone.

4.5 Hydrogeology

A search of the WaterNSW Portal was conducted on 5th March 2024, which identified 1 registered groundwater bore within 500m of the site. Details and information about groundwater bores within the region of the site are presented in **Table 4**. Refer to Figure 4, **Appendix A** for groundwater bore details within proximity to site.

Table 4: Groundwater Bore Information					
Bore ID	Bore Location	Total Depth (m)	Lithology	Screen Depth (m)	Standing Water Level (m)
GW054807	500 m south	11.50	Sand underlain by clay	-	-

4.6 Hydrology

A search of Google Earth was undertaken on 5th March 2024, the closest off-site surface water receptor is a tributary to Mardi Creek, which is located approximately 700 m south-west.



4.7 Site Vegetation

The site investigation area is covered mainly by grass. Vegetation, including shrubs and trees were found surrounding the water body in the centre of the site and along the fences in the southern and eastern boundaries.

4.8 Topography

A review of Google Earth undertaken on the 5th of March 2024, indicates the topography of the site is sloping downhill from south towards the southwestern portion of the site. The surface elevation ranges from 14m to 10m above sea level.

4.9 Acid Sulfate Soils

A search of the Central Coast Council - Local Environmental Plan (LEP) 2022 was undertaken on the 5th of March 2024, to identify if Acid Sulfate Soils (ASS) are a risk at the site.

The investigation area is categorised as Class 4 and Class 5. The central and northern portions of the investigation area is categorised as Class 4, and the southern portion of the investigation area is categorised as Class 5. ASS within Class 4 areas is typically found below two (2) meters of the natural ground surface. The site's location in relation to nearby Class 1, 2, 3 and 4 ASS is presented in Figure 5, **Appendix A**.

Development consent is required for the carrying out of works within the following Class ASS Category:

- Class 4:
 - o Works more than 2 m below the natural ground surface; and,
 - o Works by which the water table is likely to be lowered more than 2 m below the natural ground surface.
- Class 5:
 - o Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the water table is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

Raw Earth Environmental has carried out an Acid Sulfate Soils Investigation for the investigation area in October 2023. Soil sampling and laboratory analysis indicated that the site is likely to present Potential Acid Sulfate Soils (PASS) and Actual Acid Sulfate Soils (AASS) within soils greater than 2.0m bgl.

4.10 Per & Polyfluoroalkyl Substances

The Australian potential per- and poly-fluoroalkyl substances (PFAS) Chemicals Map was viewed on the 5th of March 2024. No sites were identified as impacted by PFAS contamination within the immediate vicinity of the site.



5 Site History

A site history assessment was conducted for the site which comprised a review of current and historical aerial photographs and council records.

5.1 Historical Aerial Photographs

Aerial photographs dating back to 1961 were reviewed as part of this PSI. Descriptions of the aerial photographs are presented in **Table** below. Historical aerial photographs are presented in **Appendix A**.

<i>Table 5: Summary of Historical Aerial Review</i>		
Date	Observations on Site	Observations offsite
1965	The site seems to be a farm, partially covered by dense vegetation, mainly in the northern portion of site. There is a farmhouse in the centre portion of site.	The surrounding is undeveloped as the site. Dense vegetation can be seen along north and west directions. Deforested area to south.
1975	Part of the site area has been deforested. Two patches of vegetation left, one in the north-eastern portion and another in the western portion of site. It is possible to see a surface water body in the north-western portion of site.	Vegetation surrounding the site seem to be denser. Some builds can be seen in the eastern and north-eastern directions, suggesting signs of development in the surrounding area.
1983	The site is relatively unchanged.	Development started in the eastern direction across Gavenlock Road with visible buildings.
1989	The site has been developed. Several buildings can be seen as well as roads, mainly in the centre and western portion of site.	The building density has increased mainly in the eastern, north-eastern, and south-eastern directions. Deforestation can be noted to the south of site.
1997	The site has been slightly developed. Patches of vegetation have been deforested.	The building density has increased in all directions.
2005	Patches of deforested areas are regenerating.	Development in progress. Building density has increased in all directions. Deforested area to the west of site.



5.2 Section 10.7 (2) Local Council Planning Certificate

Section 10.7 (2) of the *Environmental Planning and Assessment 1979*. The site is zoned as R2 Low Residential use, under the Local Environmental Plan (Central Coast Council - 2022). This zoning has the following objectives:

- To provide for the housing needs of the community within a low-density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To encourage best practice in the design of low-density residential development.
- To ensure that non-residential uses do not adversely affect residential amenity or place unreasonable demands on services.
- To maintain and enhance the residential amenity and character of the surrounding area.

R2 Low Residential use zone permits the following land use:

- Permitted without consent: Home occupations, and; Recreation areas.
- Permitted with consent: Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Centre-based child care facilities; Community facilities; Dual occupancies; Dwelling houses; Educational establishments; Emergency services facilities; Environmental facilities; Environmental protection works; Exhibition homes; Exhibition villages; Flood mitigation works; Group homes; Health consulting rooms; Home-based child care; Home businesses; Home industries; Information and education facilities; Jetties; Neighbourhood shops; Oyster aquaculture; Places of public worship; Pond-based aquaculture; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Seniors housing; Sewage reticulation systems; Shop top housing; Tank-based aquaculture; Water recycling facilities; Water reticulation systems; and, Water storage facilities.
- Prohibited: Any development not specified in the previous items.

5.3 NSW EPA Contaminated Land Register

The NSW EPA publishes a list of contaminated land notified under Section 58 of the *Contaminated Land Management Act 1997* (CLM Act). These have been assessed by the EPA as being contaminated, but not always require regulation under the CLM Act. It does not include notifications under Section 60 of the CLM Act.

A search of the NSW EPA Contaminated Land Register found no results relating to the site or the surrounding area.

5.4 Protection of the Environmental Operations Act Public Register

A search of the Protection of the Environmental Operations Act (POEO) Public Register on the 5th of March 2024 indicated the site was not listed on the POEO Register, or within 500m of any site registered on the POEO.



5.5 SafeWork NSW Hazardous Goods

At the time of reporting, no authorisation was issued to request a site search for licensed to keep dangerous goods at the site through SafeWork NSW.



6 Preliminary Conceptual Site Model

In accordance with NEPM (2013) *Schedule B2 – Guideline on Site Characterisation* and to aid in the assessment of data collection for the site, a Conceptual Site Model (CSM) assesses plausible pollutant linkages between potential contamination sources, migration pathways and receptors. The CSM provides a framework for the review of the reliability and useability of the data collected and to identify data gaps in the existing site characterisation.

6.1 Potential Contamination Sources

Potential sources of contamination at the site and the associated Contaminants of Potential Concern (CoPC) are shown in **Table 6**.

Table 6: Potential Sources of Contamination		
Source	AEC	CoPC
Potential uncontrolled fill situated across site beneath the concrete building slab.	AEC1	Metals, Total Recoverable Hydrocarbons (TRH)/ Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene (BTEXN), Polycyclic Aromatic Hydrocarbons (PAH), Organochlorine Pesticides and Asbestos

6.2 Potential Migration Pathways

Currently, the site presents limited contaminant migration pathways and potential mechanisms associated with contamination. Once intended earthworks are undertaken, the potential contaminant migration pathways and mechanisms considered included:

- Soil ingestion;
- Dermal contact;
- Inhalation of vapours;
- Direct uptake;
- Vertical migration;
- Migration via underground service trenches and fill preferential pathways;
- Horizontal migration; and,
- Groundwater migration.

6.3 Potential Receptors

Key receptors and associated pathway mechanisms identified are presented below:

Onsite

- Maintenance workers conducting earthworks. Exposure pathways associated with these receptors include dermal contact, ingestion of soil and inhalation of dust or vapours associated with potential contamination;
- Future site workers and personnel utilising the site for residential purposes. Exposure pathways associated with these receptors include dermal contact, ingestion of soil and inhalation of dust or vapours associated with potential contamination;



- Ecological receptors (fauna). Direct and indirect exposure pathways include dermal contact, inhalation, ingestion (e.g., contaminated food items, ingestion of contaminated dust through preening);
- Ecological receptors (flora). Uptake of contaminated soil or groundwater contamination into the root system, foliage, or fruit; and,
- Surface body water and groundwater ecosystem onsite.

Offsite

- Commercial properties;
- Residential properties;
- Maintenance workers; and,
- Mardi Creek.

6.4 Exposure Assessment

Based on the preliminary CSM, the potential exposure of CoPC at the site is considered **low-moderate** given the presence of one (1) AECs identified across the site, as shown in Figure 3, **Appendix A**.

6.4.1 AEC1 – Building pad consisting of uncontrolled fill material

Uncontrolled fill in soils has the potential to contain contaminants within the matrix of the material that when applied to land as fill, can cause localised contamination, affecting ecological macrobacteria within the immediate strata beneath, nearby waterways due to contamination leachate runoff and any other flora and fauna coming into contact with the potentially contaminated soil. Contaminated uncontrolled fill also has the capacity to impact human health through contact of fill material via dermal contact, incidental ingestion, and incidental inhalation of volatising contaminants.



7 Discussion

Raw Earth were engaged to conduct a PSI at the property located at 84 Gavenlock Road, Mardi, NSW 2259. The site is described as Lot 9 Section 4 DP 3368 and comprises an approximate total area of 133,500 m². The investigation area is located on the north-west portion of the site and comprises an approximate total area of 10,000 m².

During the site walkover it was noted that the investigation area is predominantly covered by grass and vegetation. The centre of the investigation area is occupied by a surface water body with surrounding vegetation. There are 3 sheds with an adjacent concrete slab occupying the south-eastern portion of the investigation area. The sheds are single-storey buildings built on concrete slab, with steel frame structure and corrugated metal walls and roofing. There is a joined veranda along one of the sheds. It was also noted the existence of a sand pit located 50m to the west of the sheds.

The desktop investigation indicates the site has remained as commercial property in nature since 1983, after which it began to be developed. The historical image assessment indicates that there were some concrete slab structures present in 1997, adjacent to the sheds in the investigation area. However, in 2005 the concrete slabs are noted not to be present anymore. The presence of previous concrete structures may be an indicative of the use of potential uncontrolled fill and therefore, a potential source of contamination. No waste/rubble was present on-site.

The site walkover and desktop investigation indicated 1 potential Areas of Environmental Concern (AECs) at the site, as follows:

- AEC1 – Potential uncontrolled fill material situated across site beneath the concrete building slab.

Based on the preliminary CSM, the potential exposure of CoPC at the site during proposed works is considered **low-moderate** given the presence of 1 AECs identified across the site.

The site is currently in use as a commercial property (private school). Further site-based assessments are recommended to be undertaken prior to development, with specific recommendations presented below.



8 Conclusion & Recommendations

It is the opinion of Raw Earth and in accordance with relevant Australian standards and guidelines that the site can be made suitable for its proposed development subject to the following recommendations:

- Based on the site inspection, desktop review and the proposed development involving in situ soil disturbance excavations, intrusive soil sampling in the form of a detailed site investigation is recommended to assess the contamination status of in situ soils identified in Areas of Environmental Concern: AEC1, of which are known to be disturbed during future site-based works. This will confirm the source, pathway, and receptor linkages to the CSM, assessing the risk of exposed soils to future site users and construction workers to ensure suitability for the proposed development;
- Any proposed soil is to be excavated as part of the development and requires offsite disposal, then waste needs to be classified in accordance with NSW Environmental Protection Authority, Waste Classification Guidelines Part 1-4: Classifying Waste, 2014 or be analysed for beneficial reuse under the NSW EPA Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation (2014) to be classified as Excavated Natural Material (ENM); and,
- In the event of any unexpected finds, including the discovery of asbestos containing materials, underground storage tanks, odorous and/or stained soil uncovered during works, all site works must cease, and Raw Earth must be notified immediately for further investigation.



9 Limitations

Raw Earth Environmental Pty Ltd (Raw Earth) understands to the best of our knowledge, the information within this report is accurate at the date of issue. However, due to the irregularity and dynamic nature of subsurface conditions, soil and groundwater characteristics are capable of change over a short period of time. No warranties, expressed or implied, are made. The contents of this report must be read in full.

If the unexpected finds of materials suspected to be hazardous or toxic occur, all site works must cease, and Raw Earth must be immediately contacted for further instruction.

Raw Earth performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental consulting profession. There is no investigation thorough enough to dismiss a particular material, which presently or in the future is considered hazardous at the site. Regulatory criteria are subject to change, where concentrations of a particular contaminant currently considered low, could be subject to review and fall under different regulatory standards and criteria and may require remediation in the future.

The results of this assessment are based on a desktop review of available information and regulatory criteria identified at the time of the site inspection. Raw Earth will not be liable to revise the report to account for any changes in site characteristics, regulatory requirements, assessment criteria or the availability of additional information, subsequent to the issue date of this report. The scope and period of Raw Earths' services are subject to restrictions and limitations. Raw Earth did not perform a complete assessment of all possible conditions that may exist at the site.

Raw Earth takes no responsibility or liability for errors in any data obtained from scientific laboratories, regulatory agencies, statements from sources outside of Raw Earth, or developments resulting from situations outside the scope of this project.

All conclusions and recommendations regarding the site are the opinion of Raw Earth. Opinions are judgements, which are based on our understanding and interpretation of current regulatory standards and should not be construed as legal opinions.

We trust the information contained within this document meets your requirements. Should you have any queries, please do not hesitate to contact the Raw Earth.



10 References

- Google Earth, <https://www.google.com/earth>.
- National Environment Protection (Assessment of Site Contamination) (NEPC) Measure as varied 2011, Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater, 2013.
- National Environment Protection (Assessment of Site Contamination) (NEPC) Measure as varied 2011, Schedule B2 – Guideline on Site Characterisation, 2013.
- NSW Department of Environment and Conservation, Guidelines for the Assessment and Management of Groundwater Contamination, 2007.
- NSW Department of Planning and Environment, State Environmental Planning Policy (Resilience and Hazards) Chapter 4, 2022.
- NSW Environmental Protection Authority, Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017.
- NSW Environmental Protection Authority, Guidelines on the Duty to Report Contamination under Contaminated Land Management Act, 1997.
- NSW Environmental Protection Authority, Sampling Design Guidelines, 2022.
- NSW Environmental Protection Authority, Waste Classification Guidelines Part 1: Classifying Waste, 2014.
- NSW Office of Environment & Heritage, Guidelines for Consultants Reporting on Contaminated Sites, 2011.
- Six Maps, <https://www.maps.six.nsw.gov.au>.
- WaterNSW, water.nsw.com.au.
- Western Australia Department of Health, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, 2009.
- Work Health and Safety Act, 2011.
- Work Health and Safety Regulation, 2017.



11 Abbreviations

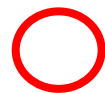
Abbreviation	Full Description
ACM	Asbestos Containing Material
AEC	Area of Environmental Concern
AFFF	Aqueous Firefighting Foam
ASS	Acid Sulfate Soils
BTEXN	Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene
C&D	Construction & Demolition
CoPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
DSI	Detailed Site Investigation
ENM	Excavated Natural Material
EPA	Environment Protection Agency
NSW CLR	New South Wales Contaminated Land Register
OCP	Organochlorine Pesticides
OPP	Organophosphorus Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PASS	Potential Acid Sulfate Soil
PFAS	Per and Poly-Fluoroalkyl Substances
PID	Photoionisation Detector
PSI	Preliminary Site Investigation
SSDA	State Significant Development Application/Approval
TPH	Total Petroleum Hydrocarbons
TSC	Tweed Shire Council



Appendix A: Figures



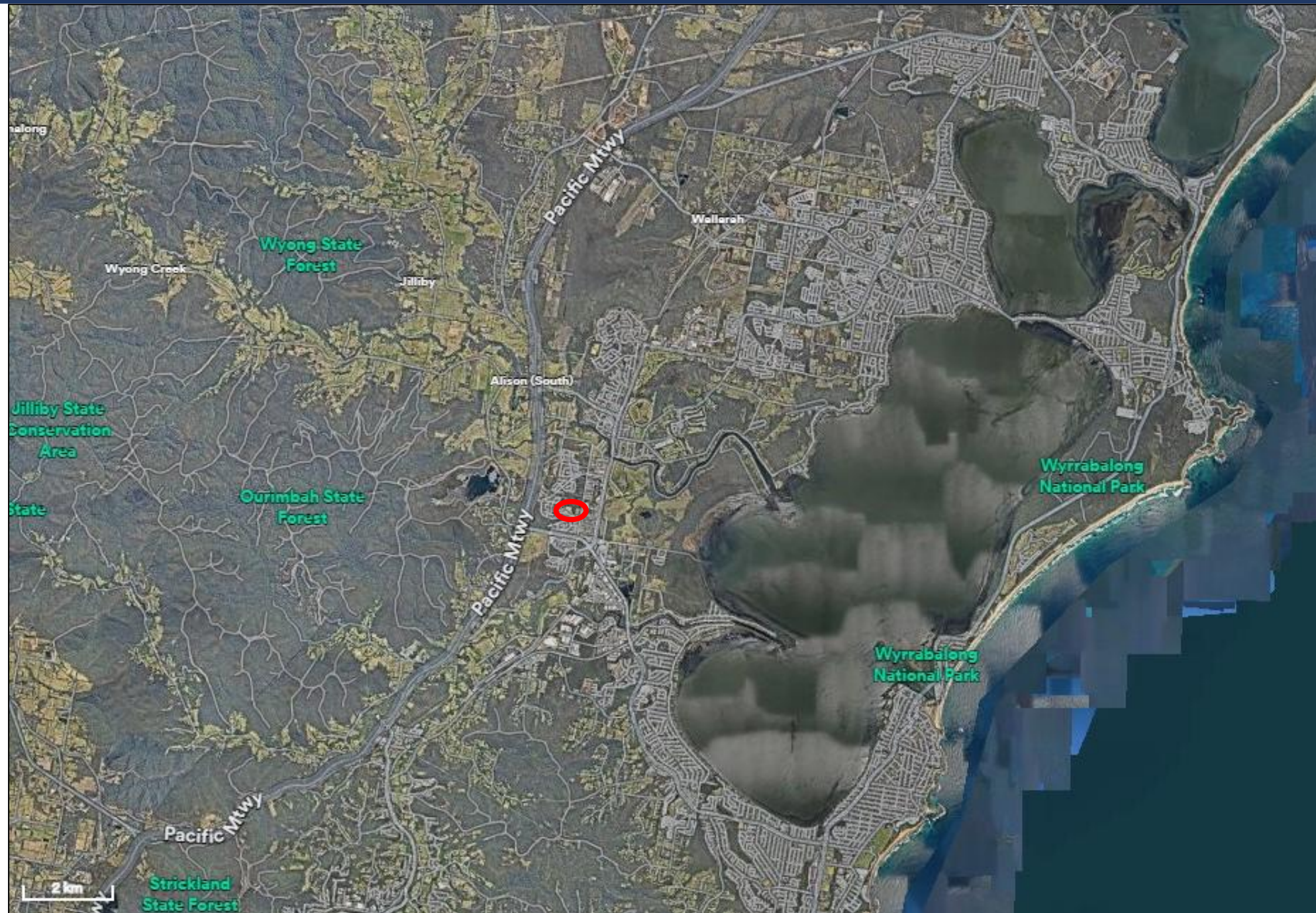
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Site location

Figure 1:
Site Location Plan

Project:
Preliminary Site Investigation.
84 Gavenlock Road, Mardi,
NSW 2259.





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Site Boundary



Site Investigation
Area

Figure 2:
Site Layout Plan

Project:
Preliminary Site Investigation.
84 Gavenlock Road, Mardi,
NSW 2259.





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Site Investigation
Area



AEC1 - Potential
uncontrolled fill

Figure 3:
Areas of Environmental
Concern Plan

Project:
Preliminary Site Investigation.
84 Gavenlock Road, Mardi,
NSW 2259.



Hydrogeology - Groundwater Bore Map



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Site location



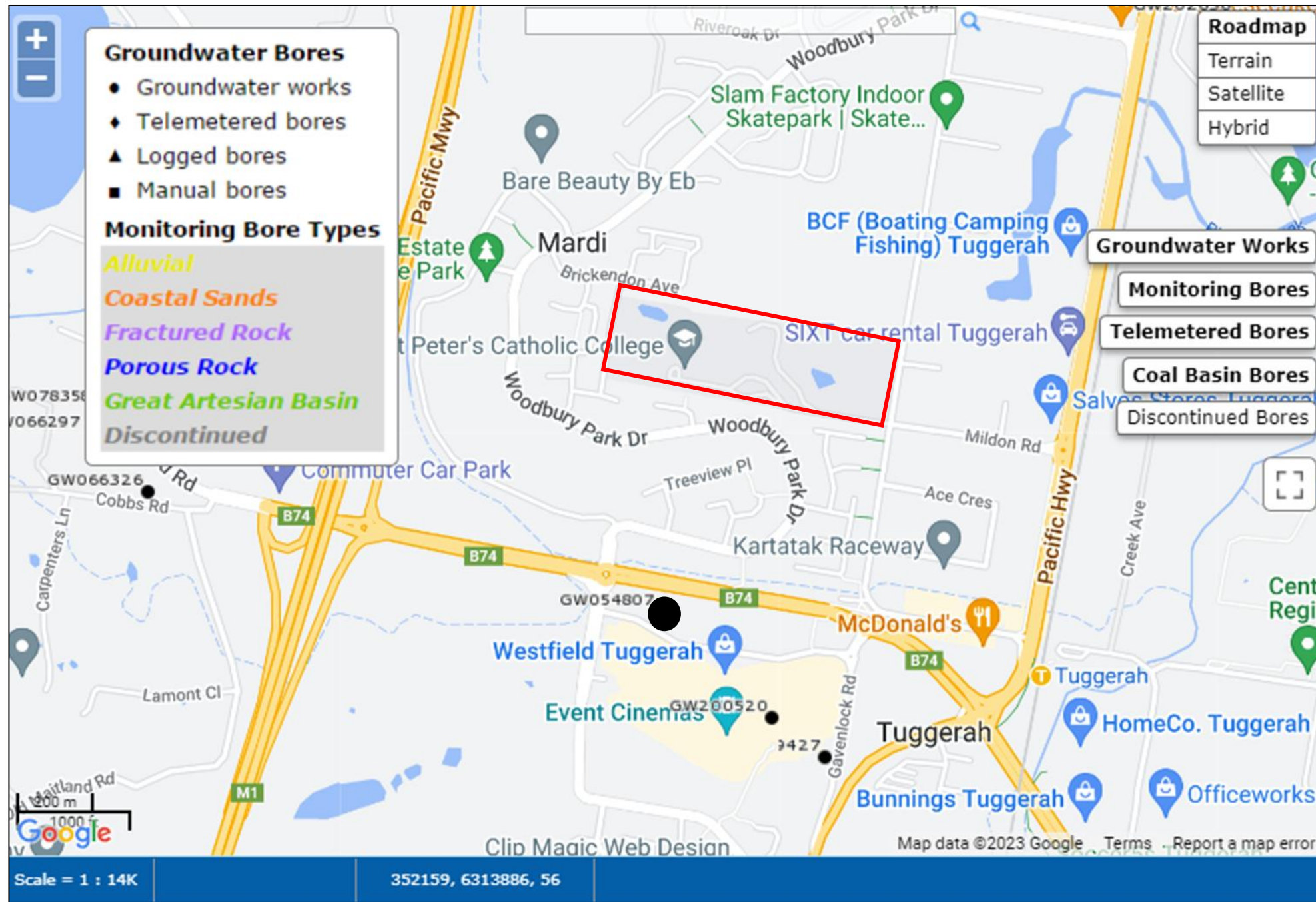
Groundwater
Bore (GW)

Figure 4:

Groundwater Bore Map

Project:

Preliminary Site Investigation.
84 Gavenlock Road, Mardi,
NSW 2259.



Acid Sulfate Soil Risk Map



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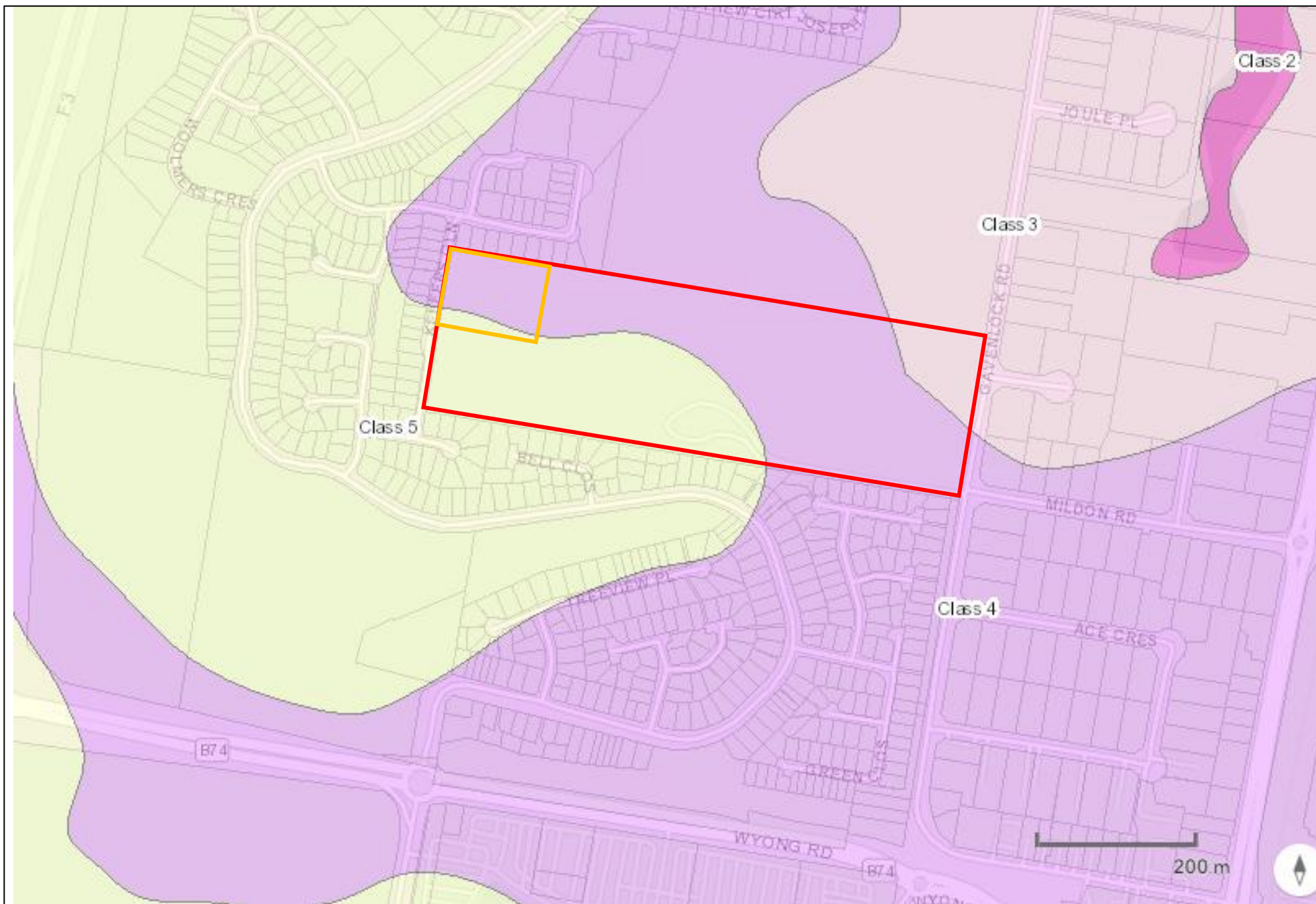
Site Location



Site Investigation
Area

Figure 5:
Acid Sulfate Soils Map

Project:
Preliminary Site Investigation.
84 Gavenlock Road, Mardi,
NSW 2259.



Historical Aerial Photographs

1965



1975



1983



1989



1997

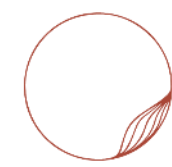


2005





Appendix B: Site Photographs



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Photo 1: Overview of the investigation area, looking north-east. Vegetation surrounding the surface water body and sheds in the background.



Photo 2: Overview of the investigation area, looking east.



Photo 3: Overview of the site, looking west. Detail for concrete structure in front and surface water body on the right.



Photo 4: Sand pit found within 50m west from the sheds.



Photo 5: Picture showing the sheds present on site. Looking north-west.



Photo 6: Picture showing the slope down from the rear of the sheds towards the investigation area.