



PRELIMINARY SITE INVESTIGATION

PROPOSED REZONING AND DWELLING ENTITLEMENT

December 2023

Prepared For: Scott Pearson

Lot 1 DP 818394
Clothiers Creek Road
Bogangar NSW

HMC2023.627.02

RE: Lot 1 DP 818394, Clothiers Creek Road, Bogangar NSW.

HMC Environmental Consulting Pty Ltd is pleased to present our report for a Preliminary Site Investigation for the abovementioned site.

We trust this report meets with your requirements. If you require further information, please contact HMC Environmental Consulting directly on the numbers provided.

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Enquiries should be addressed to HMC Environmental Consulting Pty Ltd.

EXECUTIVE SUMMARY

BACKGROUND

A residential rezoning is proposed for the site located at Lot 1 DP 818394, Clothiers Creek Road, Bogangar NSW. It is proposed to rezone the vacant property currently zoned as a Deferred Matter (DM) in order to receive a dwelling entitlement on the property to allow for the construction of a future dwelling.

To address potential site contamination associated with current and former land use, HMC Environmental Consulting (HMC) was commissioned by (Planner) on behalf of the proponent (Scott Pearson) to undertake the required investigation in accordance with State Environmental Policy (Resilience and Hazards) 2021 (SEPP 2021).

A Preliminary Site Investigation (PSI) including a desktop assessment of available information, and a detailed site inspection was completed.

OBJECTIVES

The objectives of the Preliminary Site Investigation are to:

- Assess the current and former land use on the investigation area for potentially contaminating activities.
- Based on potentially contaminating activities associated with the current and former land use, assess the suitability of the investigation area for the proposed land use.

SCOPE OF WORKS

The scope of work undertaken during the investigation included the following:

- A desktop assessment of current and former land use on the site including search of available records.
- A detailed site inspection.
- Preparation of a Preliminary Site Investigation report including:
 - review of available land use history information, and results of the site inspection.
 - assessment of potentially contaminating activities, potential contaminants of concern (PCoC) and areas of concern (AoC).
 - conclusions and recommendations including suitability of the site for future residential development and need for further investigation and remediation.

CONCLUSIONS/RECOMMENDATIONS

The Preliminary Site Investigation conclusions are based on the information described in this report and Appendices and should be read in conjunction with the complete report, including Section 9 Limitations.

Rezoning and a dwelling entitlement is proposed for the vacant site located at Lot 1 DP 818394, Clothiers Creek Road, Bogangar NSW. A review of available information, and a detailed site inspection did not show that any potentially contaminating activities have occurred on the site.

Based on the information presented, in relation to potential site contamination, the site located at Lot 1 DP 818394, Clothiers Creek Road, Bogangar NSW, as shown in Appendix 1 of this report, is considered suitable for the proposed rezoning and dwelling entitlement.

Based on the information presented, in relation to potential site contamination associated with the current and former land use, no further investigation or remediation is required for the proposed rezoning and dwelling entitlement for the property located at Lot 1 DP 818394, Clothiers Creek Road, Bogangar NSW, as shown in Appendix 1 of this report.

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ABBREVIATIONS/ ACRONYMS

ACM	Asbestos containing material
ANZECC	Australian and New Zealand Environment and Conservation Council
AoC	Area of concern
ARMCANZ	Agricultural and Resource Management Council of Australia and New Zealand
AS	Australian Standard
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999 (amended 2013)
Client	Scott Pearson
CLM Act	<i>Contaminated Land Management Act 1997</i>
CSM	Conceptual site model
DQO	Data quality objective
DSI	Detailed Site Investigation
EIL	Ecological Investigation Level
EPA	Environment Protection Authority
HIL	Health Investigation Level
HMC	HMC Environmental Consulting
Investigation Area	Proposed development area
mBGL	Metres below ground level
PCoC	Potential Contaminants of Concern
PSI	Preliminary Site Investigation
Site	Lot 1 DP 818394, Clothiers Creek Road, Bogangar NSW
TLEP 2014	Tweed Local Environmental Plan 2014

1 INTRODUCTION

1.1 BACKGROUND

A residential rezoning is proposed for the site located at Lot 1 DP 818394, Clothiers Creek Road, Bogangar NSW. It is proposed to rezone the vacant property currently zoned as a **Deferred Matter (DM)** in order to receive a dwelling entitlement on the property to allow for the construction of a future dwelling.

To address potential site contamination associated with current and former land use, HMC Environmental Consulting (HMC) was commissioned by Newton Denny Chapelle (Planner) on behalf of the proponent (Scott Pearson) to undertake the required investigation in accordance with *State Environmental Policy (Resilience and Hazards) 2021 (SEPP 2021)*.

A Preliminary Site Investigation (PSI) including a desktop assessment of available information, and a detailed site inspection was completed.

1.2 PROJECT DESCRIPTION

It is proposed to rezone the vacant site located at Lot 1 DP 818394, Clothiers Creek Road, Bogangar NSW. The property is currently zoned as a deferred matter (DM) under the Tweed Local Environmental Plan 2014. The rezoning would be to gain a dwelling entitlement for the future construction of a dwelling (subject to council approval).

For the purposes of this report, as the proposal is for the rezoning of the property, the *investigation area* is the entire property.

1.3 OBJECTIVE OF THE INVESTIGATION

The objectives of the Preliminary Site Investigation are to:

- Assess the current and former land use on the investigation area for potentially contaminating activities.
- Based on potentially contaminating activities associated with the current and former land use, assess the suitability of the investigation area for the proposed land use.

1.4 SCOPE OF WORKS

The scope of work undertaken during the investigation included the following:

- A desktop assessment of current and former land use on the site including search of available records.
- A detailed site inspection.
- Preparation of a Preliminary Site Investigation report including:
 - review of available land use history information, and results of the site inspection.
 - assessment of potentially contaminating activities, potential contaminants of concern (PCoC) and areas of concern (AoC).
 - conclusions and recommendations including suitability of the site for future residential development and need for further investigation and remediation.

2 SITE INFORMATION

2.1 SITE IDENTIFICATION

Table 1 - Site Identification Summary

Street Address		Clothiers Creek Road, Bogangar NSW
Allotment Description		Lot 1 DP 818394
Allotment size		6.10 Ha
Property Number		113196
Local Government		Tweed Shire
Parish		Cudgen
County		Rous
Geographical Coordinates (MGA Zone 56)		Easting: -28.332782m E Northing: 153.558954m S (Approximate centre of site).
Zoning		DM – Deferred Matter
Land use - Existing		Vacant, agricultural
Land use - Proposed		Residential rural living
Site Services		Electricity, Onsite Sewage System, Non-reticulated water
Surround Land Uses	North	Clothiers Creek Road, Vacant land with uncleared bushland, canals
	East	Vacant uncleared bushland
	South	Urban residential, commercial (Cabarita Beach Bowls and Sports Club)
	West	Cudgen Nature Reserve with uncleared bushland
Closest Sensitive Environment		Surface runoff would flow generally north towards the nearby canals, which would discharge into Cudgen Lake

Table 2 – Site Characteristics

Topography	Landform: Mid to low slopes of Round Mountain Aspect: Generally North Slope: Moderate to gentle Gradient: 5-15% Elevation: Approximately 2 - 50m AHD across the property
Regional Geology	Carboniferous Sedimentary Rocks A wide range of sedimentary rocks, including feldspar-rich sandstone, siltstone, mudstone, and conglomerate units.
Soil Landscape	Burringbar (bu) landscape: High rolling to steep hills on metamorphics of the Neranleigh-Fernvale Group. Soils: Shallow to moderately deep, moderately well-drained stony Grey Earths on crests and some slopes; deep, moderately well-drained Red Podzolic Soils on slopes of deeply weathered. siltstone/mudstone/shale; shallow, poorly drained Yellow Podzolic Soils on slopes of quartzite/phylite; deep, moderately well-drained Red Earths on foot slopes/lower slopes; imperfectly drained stony Yellow Podzolic Soils on old coastline. Geology: Jurassic Neranleigh-Fernvale Group. Predominantly phyllitic siltstones and shales, slaty in part. Quartzites and siliceous sandstones and siltstones are also present. Greywacke and argillite may occur in places.

Australian Soil Classification	Kurosols (KU) Soils with strong texture contrast between A horizons and strongly acidic B horizons. Many of these soils have some unusual subsoil chemical features (high magnesium, sodium, and aluminium).
Regional Hydrogeology	Groundwater vulnerability is not mapped for the site. The property is located nearby to Cudgen Lake; however, it is on the elevated slopes of Round Mountain, and therefore is not expected to have shallow groundwater.
Groundwater Database Search	The online NSW Office of Water groundwater mapping (http://allwaterdata.water.nsw.gov.au/water.stm) shows the nearest mapped registered groundwater bore is GW306942, located approximately 350m east of the site. The bore is registered as a test bore.

3 SITE HISTORY

3.1 OWNERSHIP

As of the search date, the property is currently owned by Scott & Grace Pearson. A review of the title information via the online Land and Property Information portal on the 28th of November 2023 provides the following information:

Table 3 – Property Ownership

Folio Description	Date of Folio	Search Date	Ownership Details
1/818394	24/10/2022	28/11/2023	Scott Nicholas Pearson Grace Pearson <i>As Joint Tenants</i>

3.2 AERIAL PHOTOGRAPH INTERPRETATION

A summary of the reviewed historic aerial photography is shown in Table 4.

Table 4 – Historic Aerial Photography Summary

Year	Source	Comments	Areas of Potential Concern Yes/No
1961	NSW Government (Historical Imagery) ⁽¹⁾	The subject site appears to be generally covered by native vegetation or re-growth. There are no structures visible on site. Clothiers Creek Road does not appear to be extending to the west, however there are vehicle tracks visible to the east of the site (now Bogangar). A track is seen extending onto the subject site. No other intensive land uses are visible including any agricultural activities.	NO Investigation area (proposed development area and immediate surrounds) clear of any intensive land uses from 1961 to present. The property has remained vacant during this time.
1971		Large portions of the subject site have been cleared of native vegetation. No structures or intensive land uses are visible. Development is visible to the east within the Bogangar township, including the partial construction of the canals.	
1978		Similar to 1971. Potentially a small structure is visible at the end of the existing vehicle track. No other structures or land uses are noted.	
1986		Significant vegetation re-growth is visible across the site. The existing vehicle track is now barely visible. No other changes are noted.	

1990		The existing dam is now visible on the northern portion of the site. Some vegetation clearing has occurred along the vehicle track	
1996		Similar to 1990. No significant changes noted.	
2009-2023	Google Earth	Increased vegetation has occurred over the property in subsequent years. There are no visible land uses or structures on the heavily vegetated site in the aerials over this period, including any agricultural uses.	

- (1) <https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccddda8075238cb>

Table 5 – Statutory Searches

Search	Comment
NSW EPA Contaminated Land Public Record http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx	No records (orders, notices) for the site were discovered.
Australian Department of Defence Unexploded Ordnance Contaminated Sites http://www.defence.gov.au/uxo/where_is_uxo/UXOSearch.asp?State=NSW	No UXO sites are located near the investigation area.
Cattle dip site locator http://www.dpi.nsw.gov.au/agriculture/livestock/health/specific/cattle/ticks/cattle-dip-site-locator	The nearest mapped cattle dip is Cupitts Dip (Demolished) approximately 1200m southwest of the site.

3.3 HISTORIC PARISH MAPS & TOPOGRAPHIC MAPS

A summary of the available historic parish and topographic mapping information is shown in Table 6.

Table 6 – Historic Parish and Topographic Map Summary

Search	Comment
Historic Cudgen Parish Maps 1913, 1920, 1928, 1942, 1969 https://hlrv.nswlrs.com.au/	Maps do not record land use. Cudgen parish maps 1913 to 1969 show the subject site as part of the larger historic lot 189 (300 acres). No changes were noted during the 1913-1959 period.

Topographic Maps	
<ul style="list-style-type: none"> Topographic Map Australian Section of the Imperial General Staff (1942), N°224 Zone 8 Norries Head, Topographic Map 	<p>The existing lot boundaries are not mapped. Clothiers Creek Road and the surrounding developed area including Bogangar are not yet existing. Vegetation is mapped on the slopes of Round Mountain, and the surrounding area is mapped as swamp/marsh. There are no structures or land uses mapped for the subject site.</p>
<ul style="list-style-type: none"> Department of Lands NSW (1974), 1:25000 9641-III-N Cudgen, Topographic Map 	<p>The southern portion of the site is mapped as medium timber, and the northern portion as scattered timber. Clothiers Creek Road (and surrounding road networks) is now mapped. A vehicle track is shown extending from Clothiers Creek Road to the top of the knoll on the site. An intermittent watercourse is shown flowing through the western portion of the site.</p>
<ul style="list-style-type: none"> Central Mapping Authority of NSW (1986), 1:25000 9641-3-N Cudgen, Topographic Map 	<p>Similar to 1974.</p>
<ul style="list-style-type: none"> NSW Land & Property Information (2002), 1:25000 9641-3N Cudgen, Topographic Map 	<p>Similar to 1986. The existing lot boundaries are now mapped. There are no structures or land uses mapped, with the majority of the property shown to be vegetated.</p>
<ul style="list-style-type: none"> NSW Land & Property Information (2016), 1:25000 9641-3N Cudgen, GeoPDF 	<p>Similar to 2002. A dam is now mapped on the northern portion of the site. The existing vehicle track onsite is now labelled as "Donkey Trail".</p>

3.4 TWEED SHIRE COUNCIL – INFORMAL INFORMATION REQUEST

An informal request for information was submitted by HMC on 28th of November 2023.

Tweed Shire Council has advised that a search of the available records found no information on this block.

3.5 OWNER INTERVIEW

An interview was conducted by HMC with the current owner Mr Scott Pearson on the 14th of November 2023. The information gathered is as follows:

- The property was purchased in 2022 from the Hansen family. The Hansen family had owned the property for over 50 years.
- At the time of purchase there were no structures existing onsite, aside from small garden locker sheds adjacent to the cattle/horse yards on the northwestern boundary. There was also a small shipping container which has now been removed.
- There is a large concrete slab at the top of the driveway which he believes used to be the town's water tower.
- The property has not been developed since purchase. The driveway was upgraded by National Parks in 2023 with soil and road base material.

- There has not been any cropping or intensive land use having occurred on the site nor of any bulk storage or chemicals and fuel. To the best of his knowledge there has not been any fill, farm dumps or groundwater bores located on site.

An interview was conducted by HMC with the former owner Mr Lance Hansen on the 4th of December 2023. The information gathered is as follows:

- He sold the property to the owners approximately 18 months ago. The Hansen family bought the property in 1969, from who he believes was the original developers of the surrounding estate to the east.
- During his family's ownership since 1969, the property has always remained vacant, and was only used as a donkey paddock for the donkeys that were used in the Cudgen Lake Resort. The only structures to have existed on site were garden sheds used for the donkey equipment and feed storage, and the donkey yards.
- The council concrete water reservoir was located on the property, however, has since been removed.

4 SITE INSPECTION

A site inspection was undertaken by Helen Tunks of HMC on 1 December 2023. The property is accessed via a driveway access from Clothiers Creek Road to the north. The soil and road base driveway extends up to the top of a knoll on the southeastern portion of the site. The majority of the property is heavily vegetated with mature trees. There are patches of cleared areas on the northwestern portion of the site, including adjacent to the dam and the former donkey yards, with grass cover. The property has moderate to gentle slopes from Round Mountain in the southwest towards Clothiers Creek Road to the north.

The property is currently vacant of any structures or intensive land use. A small garden locker shed is located on the northwestern portion of the site, adjacent to the former donkey paddock and yards. There was no visible soil staining inside or surrounding the small shed and appeared to be used for feed storage. A large circular concrete slab is existing at the end of the driveway on the eastern portion of the property. The slab was the former location of the town water reservoir.

There were no indications of any historic cropping on the investigation area, nor any historic structures or other intensive land uses.

4.1 SUMMARY OF SITE CONDITIONS

Table 7 provides a summary of observations during the site inspection.

4.2 SITE PHOTOGRAPHS

See Appendix 9.

4.3 POTENTIAL CONTAMINANT SOURCES AND POTENTIAL OFF-SITE EFFECTS

A detailed desktop assessment, including a review of historic topographic mapping from 1942 and historic aerial photography from 1961 to present, has not recorded any intensive land use (i.e. cropping) or other potentially contaminating activity across the investigation area.

No potential off-site effects likely to have impacted the subject property.

4.4 SITE LAYOUT

The details of the site inspections are shown in Table 7.

5 POTENTIAL AREAS OF ENVIRONMENTAL CONCERN

Table 7 - Site Features Indicating Potential Contamination

Features of Contamination	Comments
Disturbed, discoloured, or stained soil	None observed during the inspection
Disturbed or distressed vegetation	None observed during the inspection
Surface water quality	The onsite dam appeared to be of good water quality
Agrichemical Storage/Use	None observed during the inspection
Other chemical/fuel storage	None observed during the inspection
Waste storage	None observed during the inspection
Asbestos Waste or Use in Structures	None observed during the inspection
Fill from unapproved source	None observed during the inspection
Other	

6 CONCEPTUAL SITE MODEL

Table 8 – Conceptual Site Model

Table 3 – Conceptual Site Model				
POTENTIAL SOURCE	PATHWAY	EXPOSURE ROUTE	RECEPTOR	OUTCOME
Vacant agricultural land	Surface water runoff	Chemical/sediment entering local water ways	Ecological receptors	No areas of concern identified. Site does not appear to have been subject to potentially contaminating activities or off-site impacts.
	Exposed surface soil	Dermal contact to exposed soil during earthworks, proposed infrequent use	Site worker, Occupier, Visitor	
	Atmospheric dispersion	Inhalation of soil exposed during earthworks and in exposed bare soil areas		
	Leaching to groundwater	Groundwater movement off-site to beneficial users or ecological receptors	Beneficial users/Ecological receptor	

7 DISCUSSION

The review of available information, a detailed site inspection and interview with the former owner indicated that the property appears to have been vacant since prior to 1961. The property has generally remained heavily vegetated, located adjacent to the Cudgen Nature Reserve and Round Mountain, with intermittent clearing visible, particularly in the 1971 historic aerial photography. The investigation, including a search of council records, has failed to find any historic structures having existed on the property.

There is a small existing garden shed and remnants of livestock yards on the north-western portion of the property. The interviews with the previous owner Mr Hansen revealed that these were used as part of a paddock which housed the donkeys used by the nearby Cudgen Lake Resort. This is supported by the existing vehicle track being named "Donkey Trail". Mr Hansen stated that the shed was only ever used for the storage

of donkey equipment and feed, and never the bulk storage of fuel and chemicals. A large concrete slab is existing at the end of the driveway access, which is the former location of the town water reservoir which has been removed.

A review of historic aerial photography and topographic mapping did not show any intensive agricultural use occurring on the site during the period 1942-2023. No other areas of concern were identified and does not appear to have been subjected to any potentially contaminating activities.

8 CONCLUSIONS AND RECOMMENDATIONS

The Preliminary Site Investigation conclusions are based on the information described in this report and Appendices and should be read in conjunction with the complete report, including Section 9 Limitations.

Rezoning and a dwelling entitlement is proposed for the vacant site located at Lot 1 DP 818394, Clothiers Creek Road, Bogangar NSW. A review of available information, and a detailed site inspection did not show that any potentially contaminating activities have occurred on the site.

Based on the information presented, in relation to potential site contamination, the site located at Lot 1 DP 818394, Clothiers Creek Road, Bogangar NSW, as shown in Appendix 1 of this report, is considered suitable for the proposed rezoning and dwelling entitlement.

Based on the information presented, in relation to potential site contamination associated with the current and former land use, no further investigation or remediation is required for the proposed rezoning and dwelling entitlement for the property located at Lot 1 DP 818394, Clothiers Creek Road, Bogangar NSW, as shown in Appendix 1 of this report.

9 LIMITATIONS

Any conclusions presented in this report are relevant to the site condition at the time of inspection and legislation enacted as at date of this report. Actions or changes to the site after time of inspection or in the future will void this report as will changes in relevant legislation.

The findings of this report are based on the objectives and scope of work outlined in Section 1. HMC Environmental has performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties or guarantees expressed or implied, are given. This report does not comment on any regulatory issues arising from the findings, for which a legal opinion should be sought. This report relates only to the objectives and scope of work stated and does not relate to any other works undertaken for the client. The report and conclusions are based on the information obtained at the time of the assessment.

The site history and associated uses, areas of use, and potential contaminants were determined based on the activities described in the scope of work. Additional site information held by the client, regulatory authorities or in the public domain, which was not provided to HMC Environmental or was not sourced by HMC Environmental under the scope of work, may identify additional uses, areas of use and/or potential contaminants. The information sources referenced have been used to determine the site history.

Whilst HMC Environmental has used reasonable care to avoid reliance on data and information that is inaccurate and unsuitable, HMC Environmental is not able to verify the accuracy or completeness of all information and data made available. Further chemicals or categories of chemicals may exist at the sites, which were not identified in the site history, and which may not be expected at the site. The absence of any identified hazardous or toxic materials on the subject land should not be interpreted as a warranty or guarantee that such materials do not exist on the site. If additional certainty is required, additional site history or desktop studies, or environmental sampling and analysis should be commissioned.

The results of this assessment are based upon site inspections and fieldwork conducted by HMC Environmental personnel and information provided by the client. All conclusions regarding the property area are the professional opinions of the HMC Environmental personnel involved with the project, subject to the qualifications made above. HMC Environmental assume no responsibility or liability for errors in any data obtained from regulatory agencies, information from sources outside of HMC Environmental, or developments resulting from situations outside the scope of this project.

10 SIGNATURE

This report has been prepared by Mark Tunks of HMC Environmental Consulting, a suitably qualified environmental consultant, in accordance with the NSW EPA (2020) *Consultants reporting on contaminated land – Contaminated land guidelines*. Note that HMC Environmental Consulting holds current Professional Indemnity Insurance to 4th August 2024.

.....


Mark Tunks
Principal

20 December 2023
Completion Date

11 REFERENCES

Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (ANZECC guidelines) published by the Australian and New Zealand Environment and Conservation Council/National Health and Medical Research Council, January 1992

Hashimoto T.R & Troedson A.I. 2008 *Tweed Heads 1:100 000 and 1:25 000, Coastal Quaternary Geology Map Series*. Geological Survey of New South Wales, Maitland

Morand, D.T., Soil Landscapes of the Murwillumbah-Tweed Heads 1:100 000 Sheet, 1996

NEPC, 2013. National Environment Protection (Assessment of Site Contamination) Measure 1999 Schedule B (1) Guideline on the Investigation Levels for Soil and Groundwater, National Environment Protection Council Service Corporation, as amended 16 May 2013

NSW Environment Protection Authority (2020) *Consultants reporting on contaminated land - Contaminated land guidelines*

State Environmental Planning Policy (Resilience and Hazards) 2021

12 GLOSSARY

Conceptual site model (CSM) is a description of a site including the environmental setting, geological, hydrogeological and soil characteristics together with the nature and distribution of contaminants. Potentially exposed populations and exposure pathways are identified. Presentation is usually graphical or tabular with accompanying explanatory text.

Contamination means the condition of land or water where any chemical substance or waste has been added as a direct or indirect result of human activity at above background level and represents, or potentially represents, an adverse health or environmental impact.

Investigation levels and **screening levels** are the concentrations of a contaminant above which further appropriate investigation and evaluation will be required. Investigation and screening levels provide the basis of Tier 1 risk assessment.

Multiple-lines-of-evidence approach is the process for evaluating and integrating information from different sources of data and uses best professional judgement to assess the consistency and plausibility of the conclusions which can be drawn.

Screening is the process of comparison of site data to screening criteria to obtain a rapid assessment of contaminants of potential concern.

Tier 1 assessment is a risk-based analysis comparing site data with investigation and screening levels for various land uses to determine the need for further assessment or development of an appropriate management strategy.

13 APPENDICES

See following pages

APPENDIX 1 - LOCATION MAPS



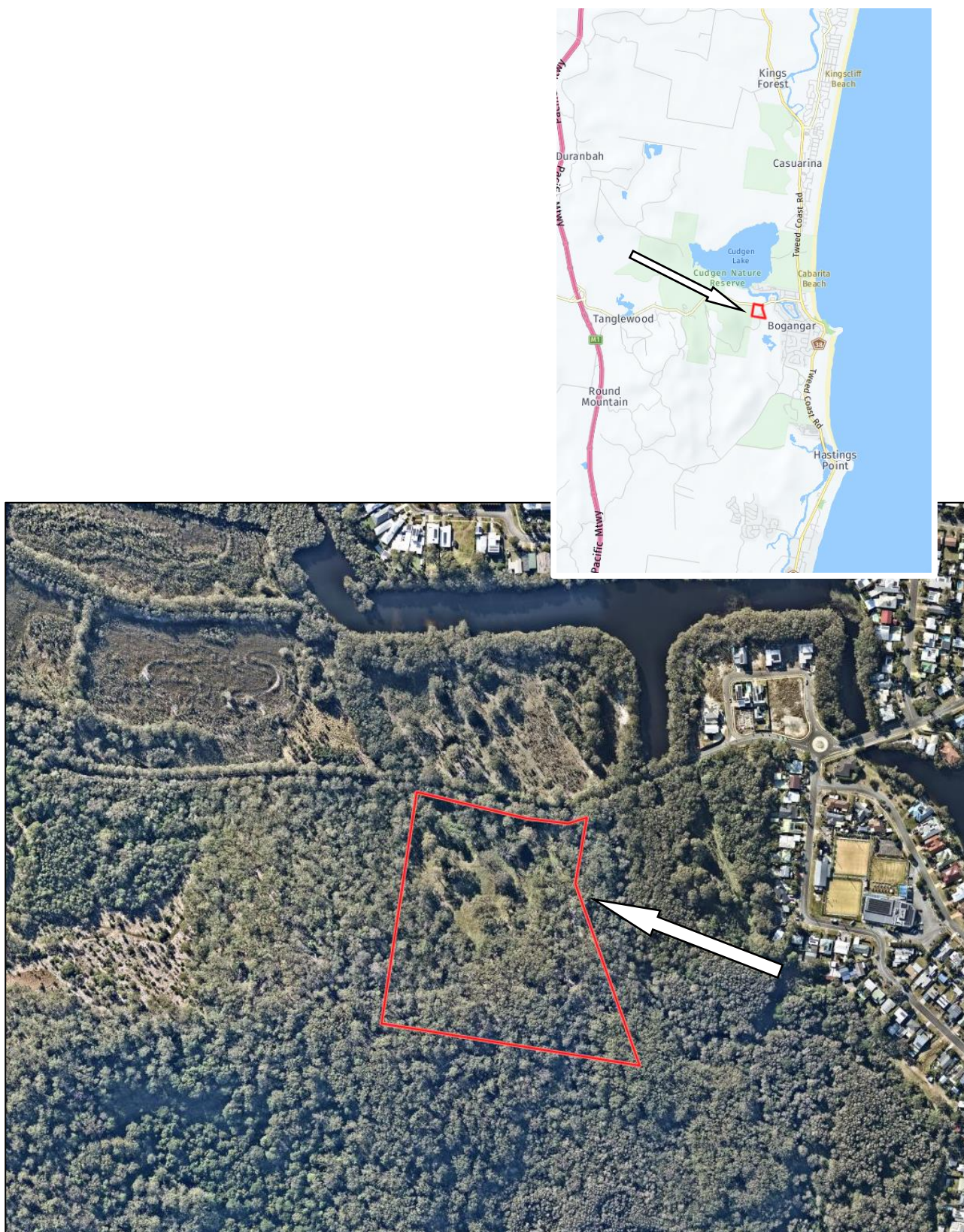


Figure 1 - Surrounding Area (Source: Nearmap, 2023)



Figure 2 – Subject Site (Source: Nearmap, 2023)

APPENDIX 2 - GEOLOGY AND SOIL LANDSCAPE

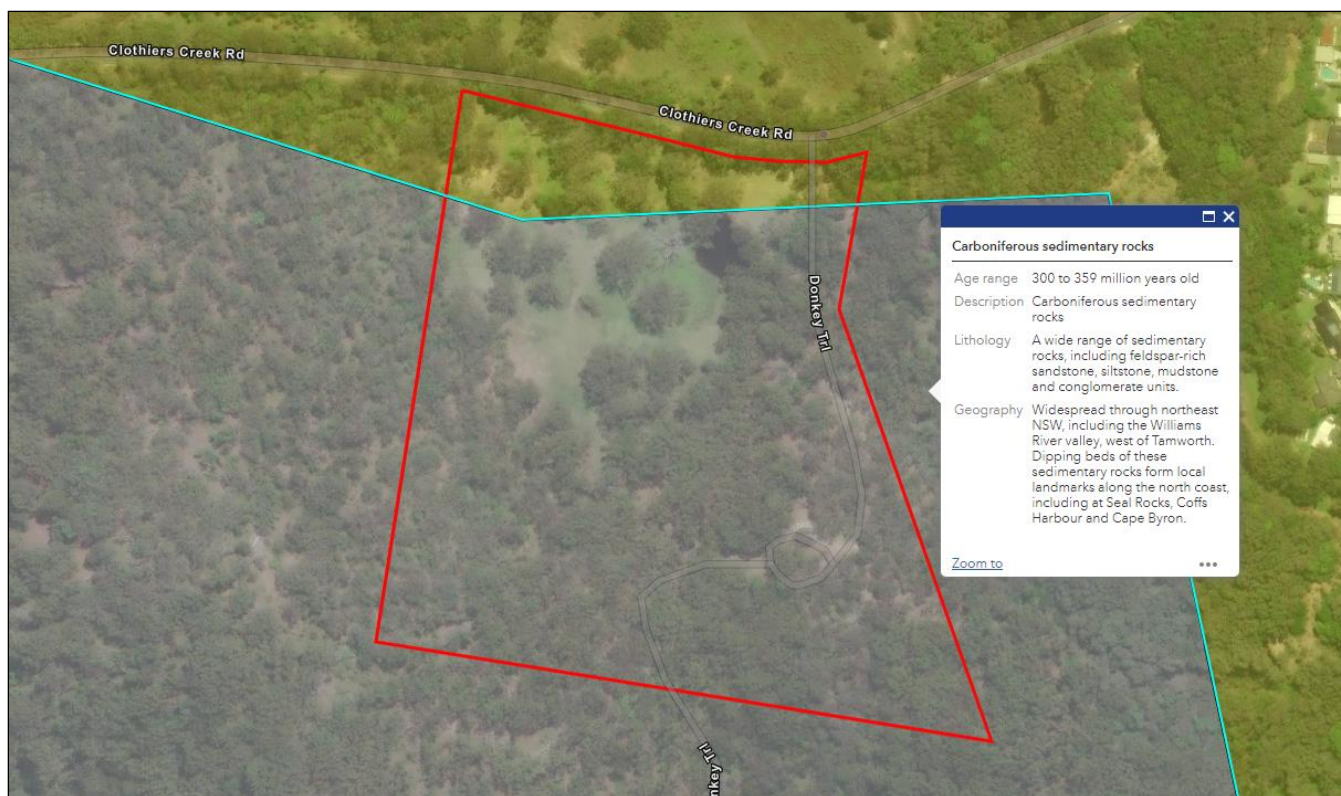


Figure 3 - Geology Map (Source: Geoscience Australia)



Figure 4 - Soil Landscape (Source: eSPADE NSW)

APPENDIX 3 - LICENSED GROUNDWATER BORES





Figure 5 – Groundwater Bore Locations (Source: <http://allwaterdata.water.nsw.gov.au/water.stm>)

APPENDIX 4 - CATTLE DIP SITES

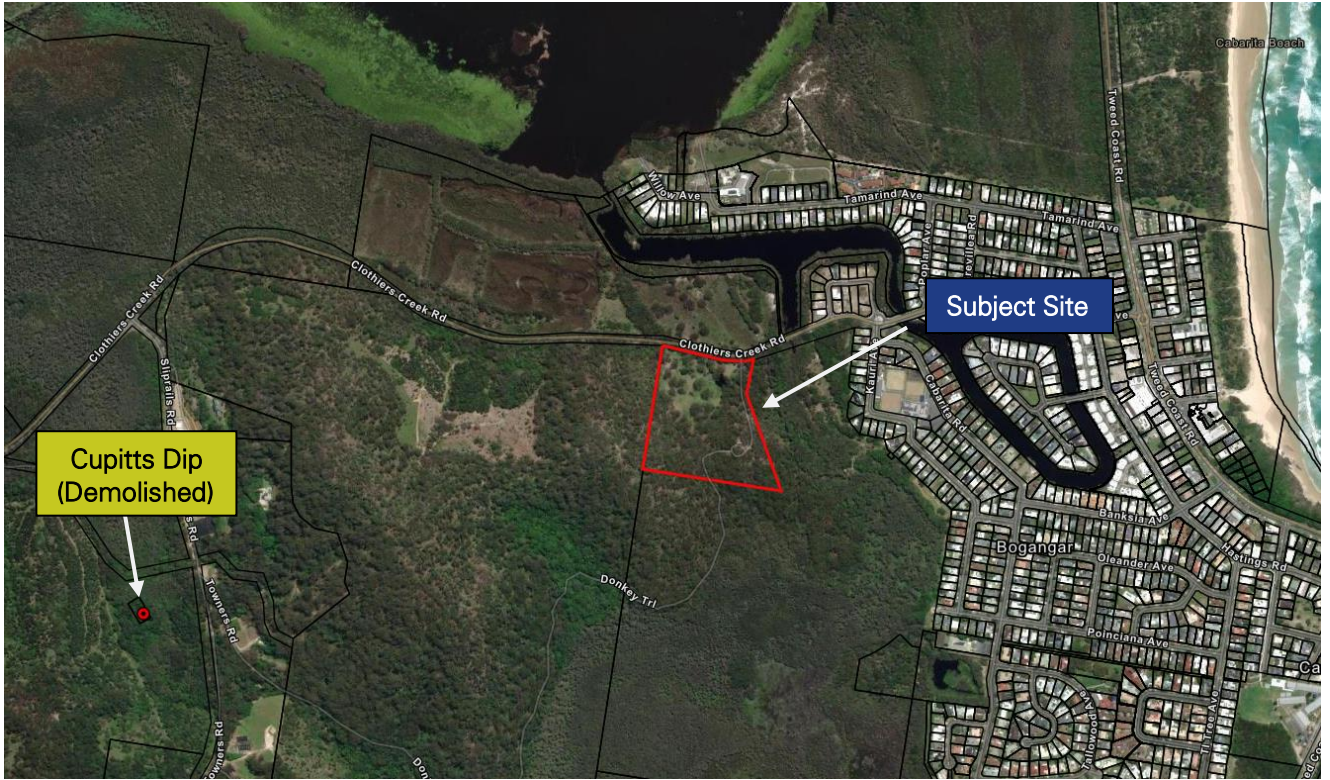


Figure 6 – Cattle Dip Location (Source: DPI NSW)

APPENDIX 5 - HISTORICAL AERIAL PHOTOGRAPHY





Figure 7 - Historical Aerial 1961 (NSW Spatial Services Historical Imagery <https://portal.spatial.nsw.gov.au>)



Figure 8 - Historical Aerial 1971 (NSW Spatial Services Historical Imagery <https://portal.spatial.nsw.gov.au>)



Figure 9 - Historical Aerial 1978 (NSW Spatial Services Historical Imagery <https://portal.spatial.nsw.gov.au>)



Figure 10 - Historical Aerial 1986 (NSW Spatial Services Historical Imagery <https://portal.spatial.nsw.gov.au>)



Figure 11 - Historical Aerial 1990 (NSW Spatial Services Historical Imagery <https://portal.spatial.nsw.gov.au>)



Figure 12 - Historical Aerial 1996 (NSW Spatial Services Historical Imagery <https://portal.spatial.nsw.gov.au>)



Figure 13 - Historical Aerial 2009 (Google Earth)



Figure 14 - Historical Aerial 2016 (Google Earth)



Figure 15 - Historic Aerial 2022 (Google Earth)

APPENDIX 6 - HISTORIC PARISH MAPS

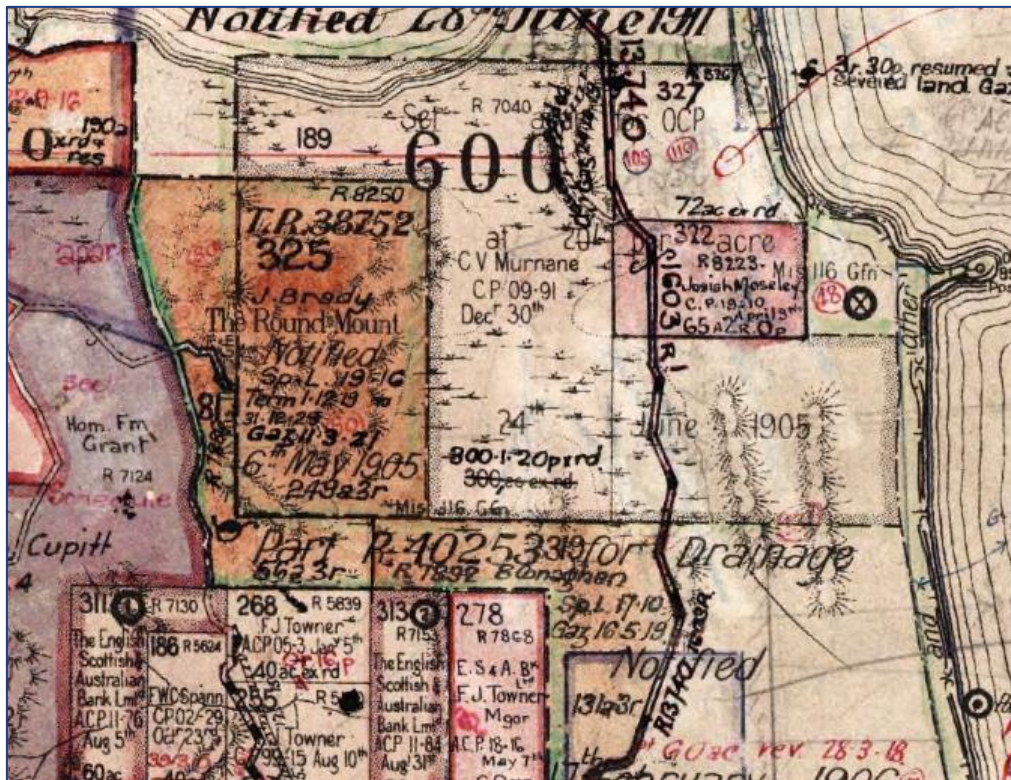


Figure 16 – 1913 Cudgen Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)

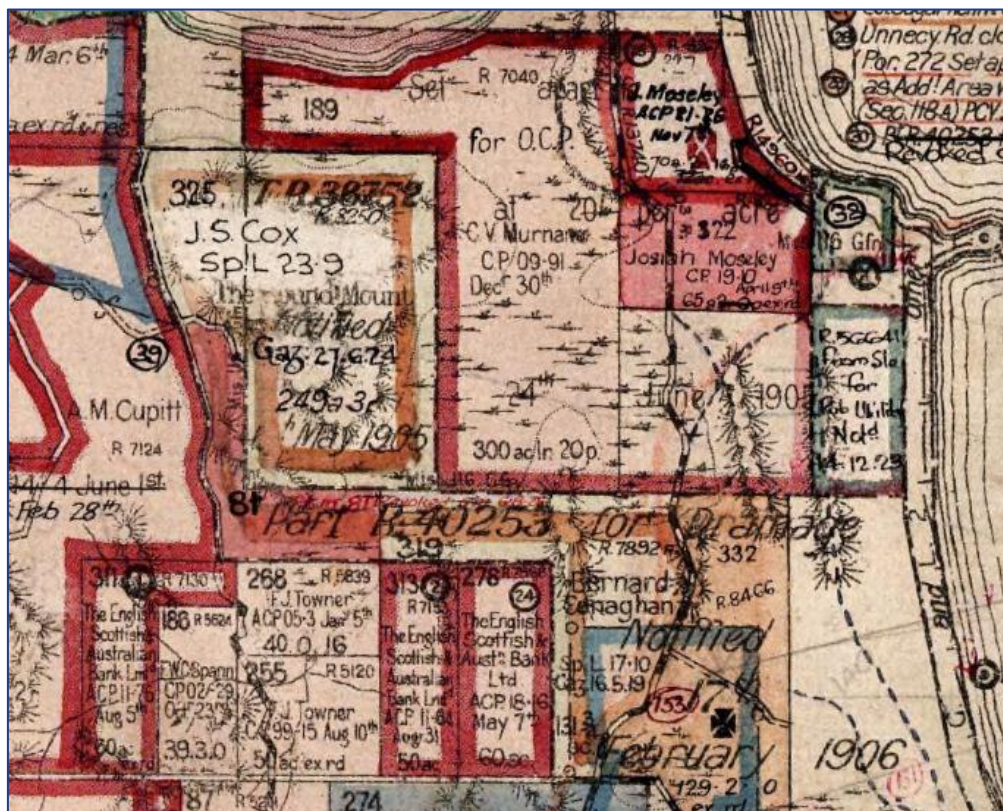


Figure 17 - 1920 Cudgen Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)

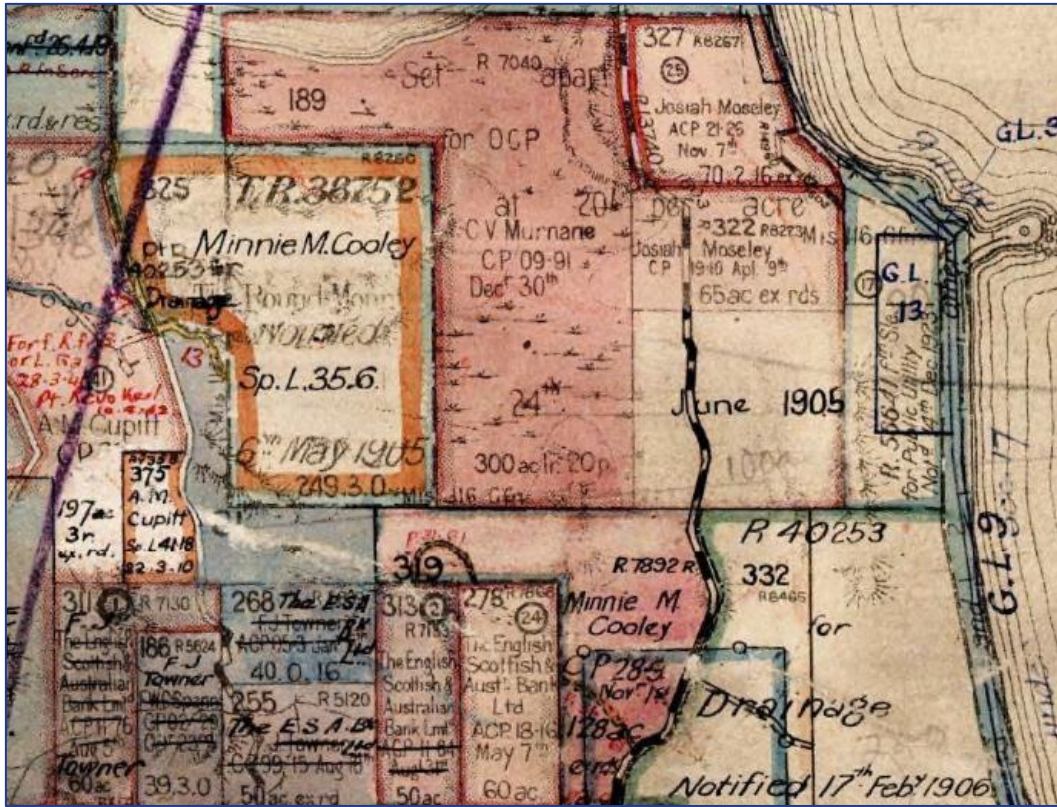


Figure 18 – 1928 Cudgen Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)

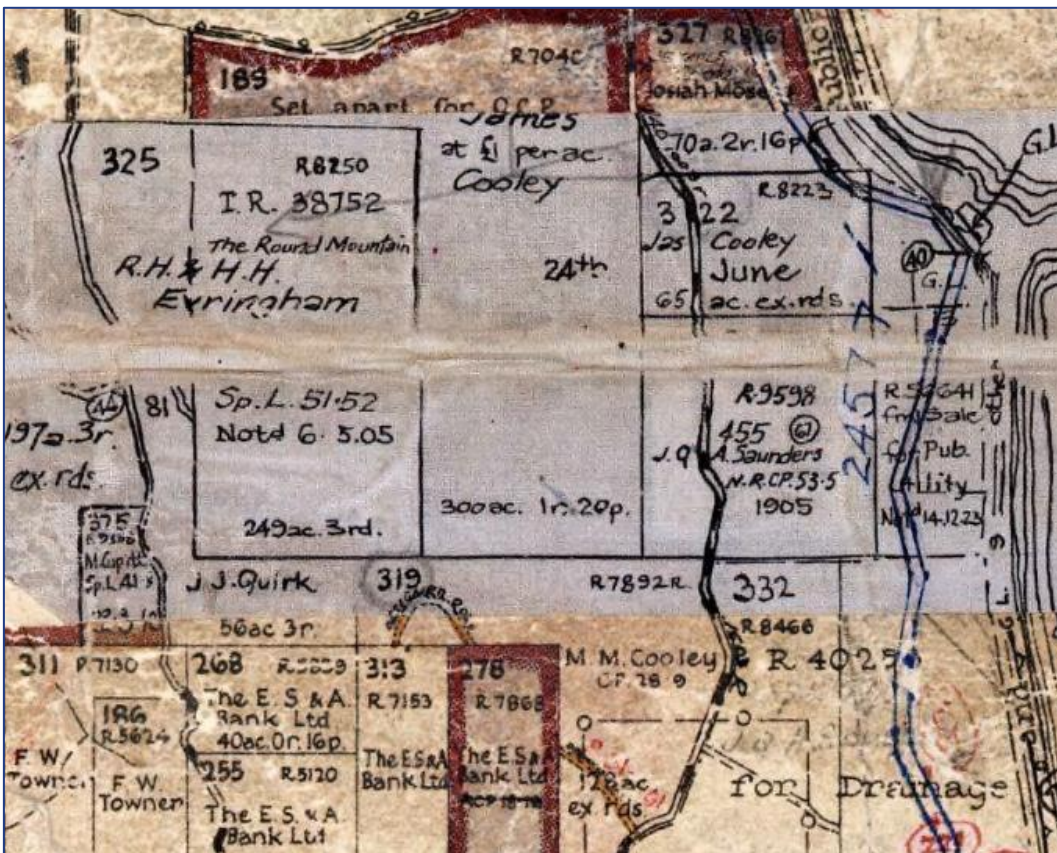


Figure 19 – 1942 Cudgen Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)

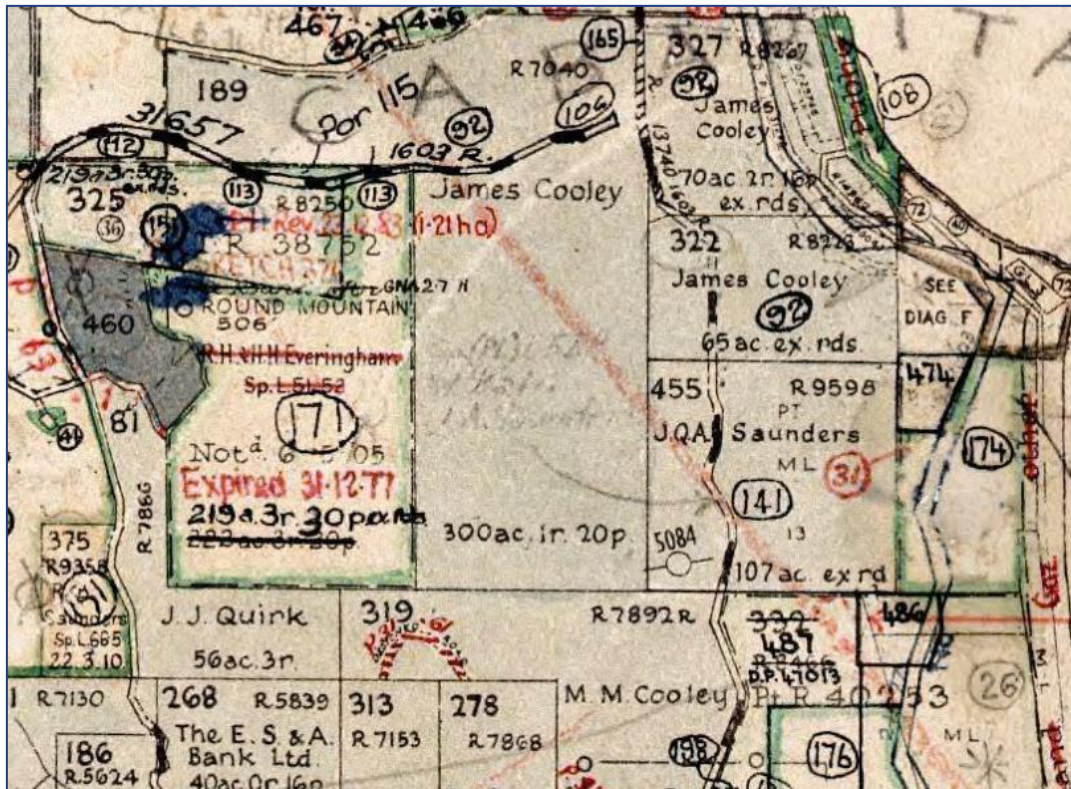


Figure 20 – 1969 Cudgen Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)

APPENDIX 7 - HISTORIC TOPOGRAPHIC MAPS

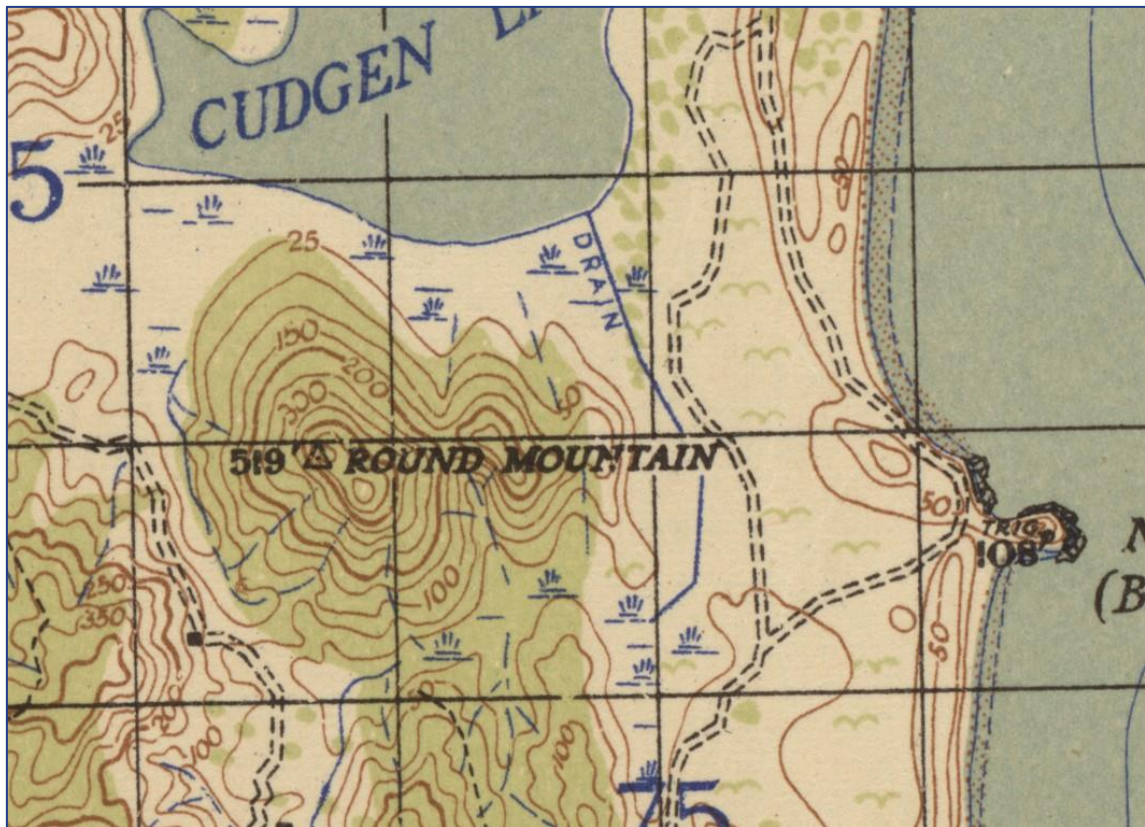


Figure 21 – 1942 *Norries Head* Topographical Map extract.

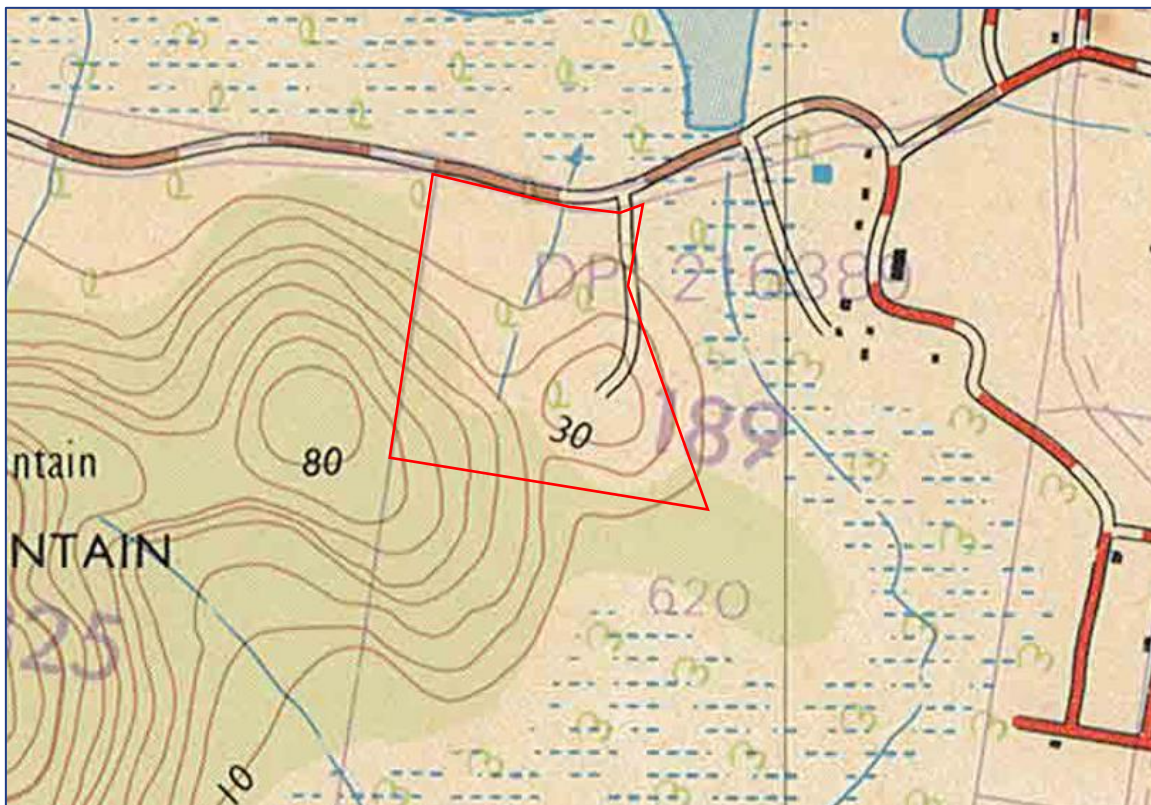


Figure 22 – 1974 *Cudgen* Topographical Map extract.

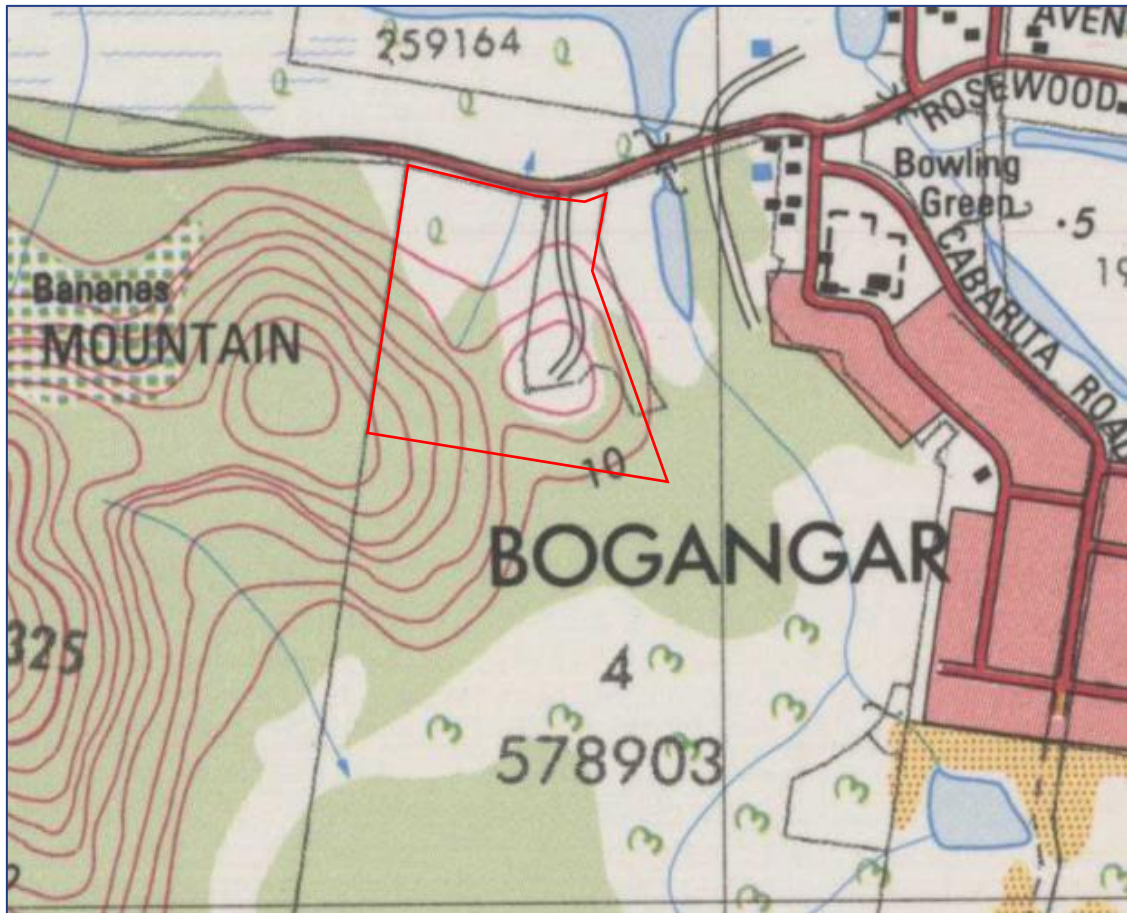


Figure 23 – 1986 *Cudgen* Topographical Map extract.

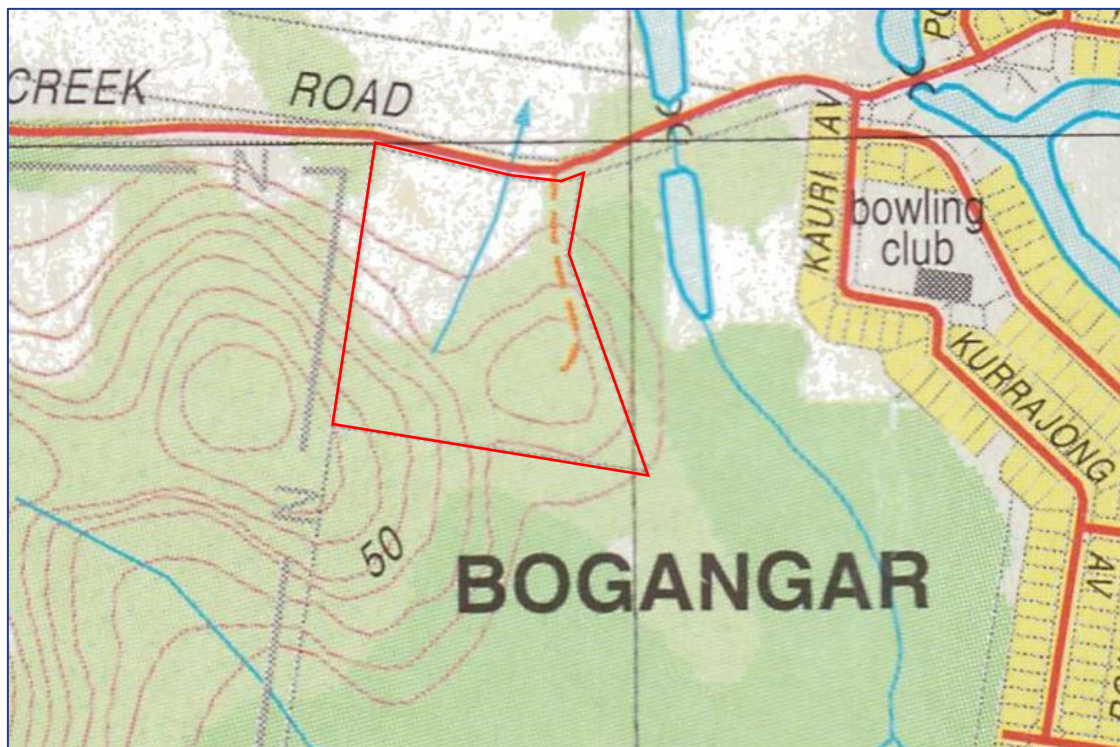


Figure 24 – 2002 *Cudgen* Topographical Map extract.

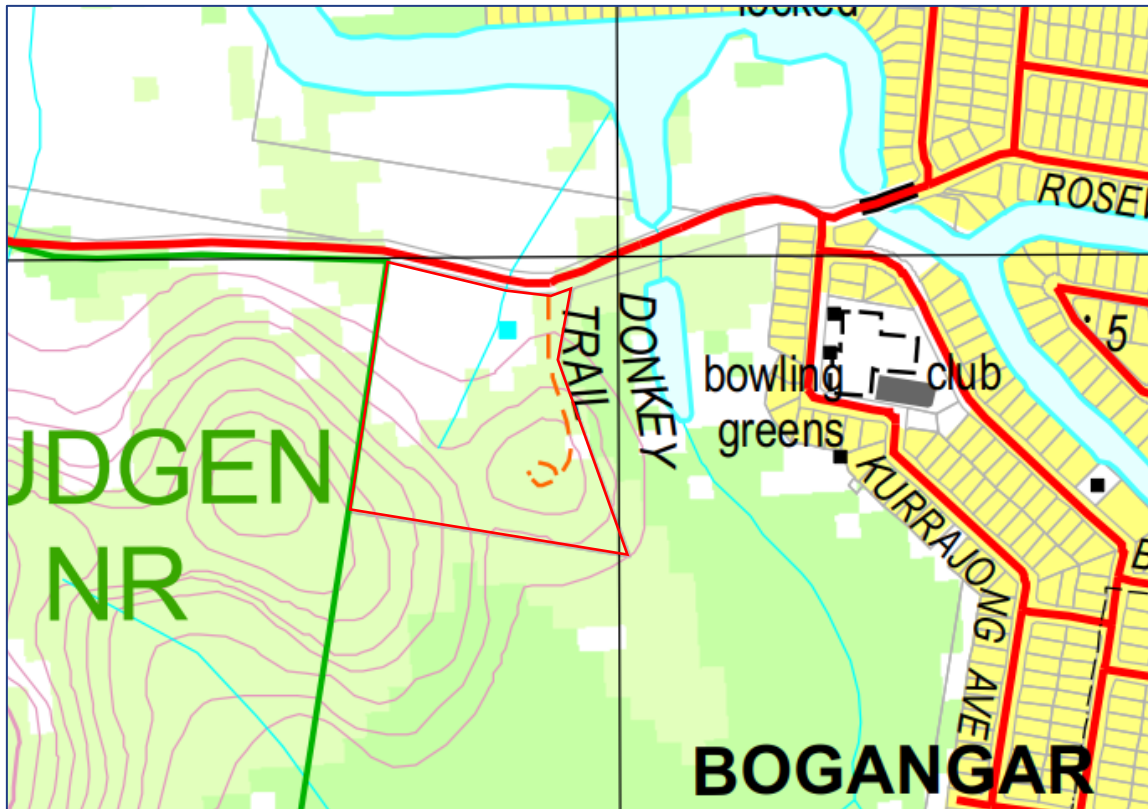


Figure 25 – 2016 *Cudgen* Topographical Map extract

APPENDIX 8 - ZONE MAPPING

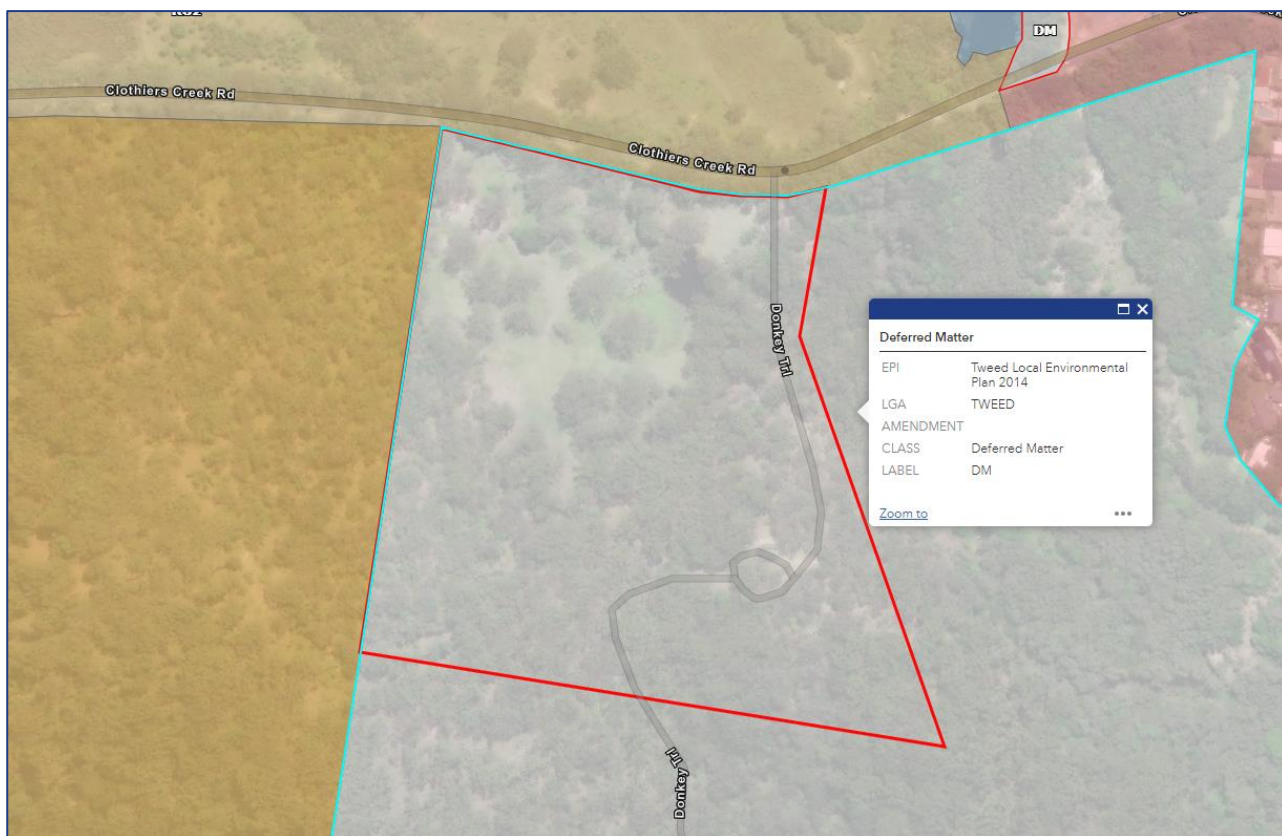


Figure 26 – NSW Legislation Zone Plan

(Source: <http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+177+2014+cd+0+N>)

APPENDIX 9 - PHOTOGRAPHIC LOG

Photo No. 1	Date
	01.12.2023

Description:

View south along the existing vehicle access from Clothiers Creek Road



Photo No. 2	Date
	01.12.2023

Description:

View west overlooking the former donkey yards.



Photo
No. 3

Date
01.12.2023

Description:

View of the small existing shed on the northwestern corner of the property.



Photo
No. 4

Date
01.12.2023

Description:

View inside the empty garden shed showing the pallets previous used for the donkey feed storage.



Photo No.	Date
5	01.12.2023

Description:

View northeast overlooking the partially cleared land on the northern portion of the property, and the existing dam.



Photo No.	Date
6	01.12.2023

Description:

View of the large existing slab where the former town water reservoir was located.

