

Maules Creek Continuation Project

Environmental Impact Statement

Appendix L
Land Contamination Assessment





Ground Doctor Pty Ltd

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24 March 2025

Tony Dwyer
Maules Creek Coal Pty Limited
PO Box 56,
Boggabri NSW 2382

Dear Tony,

**RE: MAULES CREEK CONTINUATION PROJECT,
PRELIMINARY SITE INVESTIGATIONS**

The Maules Creek Coal Mine (MCCM) is an open cut coal mine located approximately 17 kilometres (km) north-east of Boggabri, New South Wales (NSW). MCCM is a joint venture between Aston Coal 2 Pty Ltd (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75 percent [%]), ICRA MC Pty Ltd (a wholly owned subsidiary of Itochu Corporation) (15%) and J-Power Australia Pty Ltd (a wholly owned subsidiary of Electric Power Development Co. Ltd) (10%). MCCM is operated by Maules Creek Coal Pty Ltd (MCC).

MCC is seeking approval to continue open cut mining operations within the MCCM mining and exploration tenements for a further 10 years (from 2035 to 2044). Development Consent for the Maules Creek Continuation Project (the Project) is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979*.

Ground Doctor Pty Ltd (Ground Doctor) was engaged by MCC to conduct a Preliminary Site Investigation (PSI) for the Project, in accordance with the *State Environmental Planning Policy (Resilience and Hazards) 2021*. The PSI was prepared in three separate reports:

- *Maules Creek Continuation Project – Mine Site – Preliminary Site Investigation (Attachment A);*
- *Maules Creek Continuation Project – Water Transfer Pipeline – Preliminary Site Investigation (Attachment B); and*
- *Maules Creek Continuation Project – Landscape Revegetation Zones – Preliminary Site Investigation (Attachment C).*

Based on the conclusions in these reports, the Project site is considered to be suitable for the Project, subject to the implementation of the recommendations contained in the above reports.

Kind Regards

Mr James Morrow
Environmental Engineer
Certified Environmental Practitioner No.: 1194
Site Contamination Specialist No.: SC41087



Attachment A

**Maules Creek Continuation Project
Mine Site
Preliminary Site Investigation**



Ground Doctor Pty Ltd

Maules Creek Continuation Project Mine Site Preliminary Site Investigation

~

**On Behalf Of:
Maules Creek Coal Pty Limited**



**24 March 2025
2023-GD010-RP1-FINAL**

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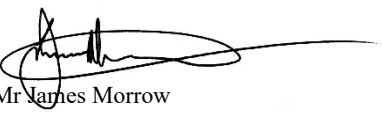


| Report Details | |
|------------------------|---|
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| Approved By: | <p> Mr James Morrow Environmental Engineer Certified Environmental Practitioner No.: 1194 Site Contamination Specialist No.: SC41087</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> |
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Executive Summary

ES1 - Introduction

The Maules Creek Coal Mine (MCCM) is an open cut coal mine located approximately 17 kilometres (km) north-east of Boggabri, New South Wales (NSW). MCCM is a joint venture between Aston Coal 2 Pty Ltd (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75 per cent [%]), ICRA MC Pty Ltd (a wholly owned subsidiary of Itochu Corporation) (15%) and J-Power Australia Pty Ltd (a wholly owned subsidiary of Electric Power Development Co. Ltd) (10%). MCCM is operated by Maules Creek Coal Pty Ltd (MCC).

Mining operations at MCCM are currently approved until 31 December 2034 with a coal extraction rate of up to 13 million tonnes per annum (Mtpa) in accordance with Project Approval (PA) 10_0138 (as modified). The existing MCCM comprises a single open cut pit, Northern Emplacement and Southern Emplacement areas, and Mine Infrastructure Area (MIA). The MIA includes the Coal Handling and Preparation Plant, run-of-mine coal stockpiles, product coal stockpiles, train load-out infrastructure, workshops and administration buildings, hardstand and laydown areas, car parking, wash bays, and other associated infrastructure.

Development Consent for the Maules Creek Continuation Project (the Project) is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979*. The Project includes:

- continuation of open cut mining operations within the MCCM mining and exploration tenements for a further 10 years (from 2035 to 2044);
- establishment of Landscape Revegetation Zones; and
- construction and operation of a water transfer pipeline between the MCCM water pipeline network and the approved Vickery Coal Mine to Tarrawonga Coal Mine pipeline network.

A detailed description of the Project is provided in Section 3 of the Environmental Impact Statement (EIS). The proposed general arrangement of the Project is shown in *Figure 2 of Annexure A*.

Ground Doctor Pty Ltd (Ground Doctor) was engaged by MCC to conduct a Preliminary Site Investigation (PSI) for the Project in accordance with the NSW *State Environmental Planning Policy (Resilience and Hazards) 2021* (the Resilience and Hazards SEPP). The PSI will form part of the EIS for the Project.

This PSI assesses the relevant parts of the mine site component of the Project. Separate PSIs have been prepared to assess potential land contamination within the water transfer pipeline and revegetation areas associated with the Project.

ES2 - PSI Objectives

The primary objective of the PSI was to assess whether land within the Study Area is suitable for the Project, with respect to land contamination, consistent with the requirements of the Resilience and Hazards SEPP.

The Resilience and Hazards SEPP stipulates that a consent authority must consider the contamination status of land prior to issuing consent.

Section 4.6 of the Resilience and Hazards SEPP states:

4.6 Contamination and remediation to be considered in determining development application.

(1) A consent authority must not consent to the carrying out of any development on land unless—

- (a) it has considered whether the land is contaminated, and*
- (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
- (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*

In accordance with the Resilience and Hazards SEPP, the objectives of the PSI were to:

- identify past and present land uses within the Study Area and within adjoining land;
- identify potential sources of land contamination associated with past or present use of the Study Area and associated potential contaminants of concern;
- assess the Project, the development setting, and subsurface conditions at the site and the surrounding environment to identify potential human health and environmental receptors and potential exposure pathways; and
- use the previously mentioned information to assess the suitability of the Study Area for the Project, and recommend remediation works or appropriate environmental controls where the project may pose an unacceptable risk to human health or the environment.

ES3 - Scope of Work

Ground Doctor completed the following work as part of the PSI:

- Conducted an inspection of accessible parts of the Study Area to establish current conditions, existing land uses, surrounding land uses and potential human and environmental receptors located within or near the Study Area.
- Reviewed and presented historical aerial photography of the Study Area (presented in *Annexure C*).
- Conducted a search of NSW Environment Protection Authority (EPA) database for notices pertaining to the Study Area under section 60 of the *NSW Contaminated Land Management Act 1997* (NSW EPA, 2024a).
- Conducted a search of the NSW EPA public register of licences, applications and notices made under the *NSW Protection of the Environment Operations Act 1997*, or records of EPA regulated activities that do not require a licence, related to the Study Area (NSW EPA, 2024b).
- Reviewed information presented in *Maules Creek Coal Project Environmental Assessment* (Hansen Bailey, 2011) to help establish the Study Area history and setting.
- Conducted a search of the WaterNSW registered groundwater works database to identify registered groundwater works located within 1 km of the Study Area.

- Reviewed available soil and geology maps to assess subsurface conditions within the Study Area.
- Developed a conceptual site model (CSM) for use in assessing the suitability of the Study Area with respect to potential land contamination. The CSM considered historical use of the Study Area, the Study Area setting and proposed future land use proposed by the Project.
- Prepared this report, which outlines the works undertaken and presents the findings of the PSI.

ES4 - Study Area

The Study Area is located on the eastern side of the existing MCCM. It is situated approximately 17km north-east of Boggabri and approximately 43km south-east of Narrabri.

The northern boundary followed Back Creek. The eastern boundary was a straight line and following the eastern boundary of the mining lease area. The western boundary followed the boundary of the existing MCCM operations. The Study Area had an area of approximately 5.3 square kilometres.

Most of the Study Area is occupied by Leard State Forest. The northern portion of the Study Area was comprised of land that was formerly part of two larger agricultural properties referred to as “Wollondilly” and “Warriahdool”. These agricultural properties extended at least 3km north of Back Creek and were accessed from Harparary Road.

The Study Area is within Narrabri Shire Council Local Government Area.

The *Narrabri Local Environmental Plan 2012* (Narrabri LEP) indicates that land within the Study Area is zoned “RU1 – Primary Production” and “RU3 – Forestry”. Zone RU1 allows for a wide range of development with consent, including extractive industries and open cut mining. Zone RU3 allows uses authorised under the *Forestry Act 2012* or under Part 5B (Private native forestry) of the *Local Land Services Act 2013*.

ES5 - Conclusion

A review of the site history indicated that the majority of the Study Area was part of Leard State Forest. Ground Doctor did not identify any potential sources of contamination within parts of the Study Area occupied by Leard State Forest.

Parts of the Study Area situated between Back Creek and Leard State Forest were part of two freehold properties (“Wollondilly” and “Warriahdool”) that extend more than 2km north of the Study Area. Part of the freehold land located in the north-west corner of the Study Area was cleared circa 1965 and appeared to be used for dryland cropping and livestock grazing. The remainder of the freehold land appeared to be used for livestock grazing. There was no major infrastructure identified within the freehold land.

Potentially contaminating activities within the freehold parts of the Study Area were limited to potential application of herbicides, pesticides and fertilisers within the previously cropped area. Application of common pesticides, herbicides and fertilisers in accordance with manufacturer instructions are unlikely to have resulted in significant land contamination. The activities of potential concern typically occur in dryland cropping zones throughout NSW and Australia, including agricultural land which covers an extensive area immediately north of the Study Area.

If contamination did exist, the potential human health exposure pathways would be incomplete most of the time for the following reasons.

- Part of the previously cropped paddock would not be disturbed as part of the Project and therefore there would be little if any potential for human contact with soil during the life of the Project.
- Near surface soil would be stripped from parts of the cropped paddock located within the footprint of the proposed waste rock emplacement area. Stripped topsoil would be used during future rehabilitation works, consistent with the measures described in the MCCM Rehabilitation Management Plan (MCC, 2023).
- Direct contact with contaminated soil (if present) would only be possible during stages of the development where near surface soil is stripped and stockpiled, or used in progressive rehabilitation. Any risks to human health during these stages of work would be adequately managed using typical health, safety and environmental controls. For example, use of air-conditioned machinery for earthworks, suppress dust by applying water to exposed soil during disturbance, and minimise erosion during mining operations and in the post-mining landform.

Stripped soil would be used to rehabilitate the post-mining landscape and is likely to end up close to or at the ground surface. Rehabilitated areas would become part of future woodland or biodiversity conservation area where public access would be minimal. Soil would be stabilised in accordance with stabilisation measures described in the MCCM Rehabilitation Management Plan (MCC, 2023). Observations during the Study Area inspection indicated that native trees and pasture in the previously cropped part of the Study Area were in good condition, indicating the soil would be suitable for future use in site rehabilitation.

The Resilience and Hazards SEPP requires the consent authority for a proposed development to consider whether the land is contaminated. If the land is contaminated, the consent authority needs to be satisfied that the land is suitable in its contaminated state for the purpose in which the development is proposed. Based on the information reviewed as part of this PSI, there is low potential for land within the Study Area to be contaminated. Ground Doctor believes the Study Area is suitable for the Project in its current state.

It is possible that additional areas of concern would be identified during soil stripping and site preparation works. For example, illegally dumped rubbish may be identified in parts of the Study Area located within Leard State Forest. Impacts of this nature would be minor when considered in relation to the scale of the Project and could be adequately managed by implementing work health, safety and environmental management controls (including protocols to assess and/or manage unexpected finds as required), consistent with the existing MCCM Environmental Management Strategy (MCC, 2024) at the commencement of the Project.

1 Introduction

The Maules Creek Coal Mine (MCCM) is an open cut coal mine located approximately 17 kilometres (km) north-east of Boggabri, New South Wales (NSW) (*Figure 1 of Annexure A*). MCCM is a joint venture between Aston Coal 2 Pty Ltd (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75 percent [%]), ICRA MC Pty Ltd (a wholly owned subsidiary of Itochu Corporation) (15%) and J-Power Australia Pty Ltd (a wholly owned subsidiary of Electric Power Development Co. Ltd) (10%). MCCM is operated by Maules Creek Coal Pty Ltd (MCC).

Mining operations at MCCM are currently approved until 31 December 2034 with a coal extraction rate of up to 13 million tonnes per annum (Mtpa) in accordance with Project Approval (PA) 10_0138 (as modified). The existing MCCM comprises a single open cut pit, Northern Emplacement and Southern Emplacement areas, and Mine Infrastructure Area (MIA). The MIA includes the Coal Handling and Preparation Plant, run-of-mine coal stockpiles, product coal stockpiles, train load-out infrastructure, workshops and administration buildings, hardstand and laydown areas, car parking, wash bays, and other associated infrastructure.

Development Consent for the Maules Creek Continuation Project (the Project) is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project includes:

- continuation of open cut mining operations within the MCCM mining and exploration tenements for a further 10 years (from 2035 to 2044);
- establishment of Landscape Revegetation Zones; and
- construction and operation of a water transfer pipeline between the MCCM water pipeline network and the approved Vickery Coal Mine to Tarrawonga Coal Mine pipeline network.

A detailed description of the Project is provided in Section 3 of the Environmental Impact Statement (EIS). The proposed general arrangement of the Project is shown in *Figure 2 of Annexure A*.

Ground Doctor Pty Ltd (Ground Doctor) was engaged by MCC to conduct a Preliminary Site Investigation (PSI) for the Project in accordance with the NSW *State Environmental Planning Policy (Resilience and Hazards) 2021* (the Resilience and Hazards SEPP). The PSI will form part of the EIS for the Project.

This PSI assesses the relevant parts of the mine site component of the Project. Separate PSIs have been prepared to assess potential land contamination within the water transfer pipeline and revegetation areas associated with the Project.

The general arrangement of the mine site component of the Project is shown in *Figure 3 of Annexure A*.

1.1 The Study Area

The Resilience and Hazards SEPP requires the PSI to consider areas where a change of use is proposed. The Study Area for this PSI therefore includes the Project area that extends outside the approved Project Approval (PA) 10_0138 area (i.e. the area inside the provisional Mining Lease Application Area – refer *Figure 3 in Annexure A*). Additionally, the Study Area for this PSI also conservatively includes the area associated with the continuation of open cut mining operations within approved Project Approval (PA) 10_0138 area. The area associated with an access track extension within the approved Project Approval (PA) 10_0138 area has not however been included in the Study Area.

Section 2 provides further discussion on the Study Area.

The regional context of the Study Area is shown in *Figure 4 of Annexure A*, and the local context is provided in *Figure 5 of Annexure A*.

1.2 PSI Objectives

The Resilience and Hazards SEPP stipulates that a consent authority must consider the contamination status of land prior to issuing consent.

Section 4.6 of the Resilience and Hazards SEPP states:

4.6 Contamination and remediation to be considered in determining development application.

- (1) A consent authority must not consent to the carrying out of any development on land unless—*
 - (a) it has considered whether the land is contaminated, and*
 - (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
 - (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*
- (2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subsection (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.*
- (3) The applicant for development consent must carry out the investigation required by subsection (2) and must provide a report on it to the consent authority. The consent authority may require the applicant to carry out, and provide a report on, a detailed investigation (as referred to in the contaminated land planning guidelines) if it considers that the findings of the preliminary investigation warrant such an investigation.*
- (4) The land concerned is—*
 - (a) land that is within an investigation area,*
 - (b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,*
 - (c) to the extent to which it is proposed to carry out development on it for residential, educational, recreational or childcare purposes, or for the purposes of a hospital—land—*
 - (i) in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and*
 - (ii) on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge).*

The objectives of the PSI were to:

- identify past and present land uses within the Study Area and within adjoining land;
- identify potential sources of land contamination associated with past or present use of the Study Area and associated potential contaminants of concern;
- assess the Project, the development setting, and subsurface conditions at the site and the surrounding environment to identify potential human health and environmental receptors and potential exposure pathways; and
- use the previously mentioned information to assess the suitability of the Study Area for the Project, or recommend remediation works or appropriate environmental controls where the Project may pose an unacceptable risk to human health or the environment.

1.3 Scope of Work

Ground Doctor completed the following work:

- Conducted an inspection of accessible parts of the Study Area to establish current conditions, existing land uses, surrounding land uses and potential human and environmental receptors located within or near the Study Area.
- Reviewed and presented historical aerial photography of the Study Area (presented in *Annexure C*).
- Conducted a search of NSW Environment Protection Authority (EPA) database for notices pertaining to the Study Area under section 60 of the NSW *Contaminated Land Management Act 1997* (CLM Act).
- Conducted a search of the NSW EPA public register of licences, applications and notices made under the NSW *Protection of the Environment Operations Act 1997* (POEO Act), and records of EPA regulated activities that do not require a licence, related to the Study Area.
- Reviewed information presented in the Maules Creek Coal Project, Environmental Assessment (Hansen Bailey, 2011) to help establish the Study Area history and setting.
- Conducted a search of the WaterNSW registered groundwater works database to identify registered groundwater works located within 1 km of the Study Area.
- Reviewed available soil and geology maps to assess subsurface conditions within the Study Area.
- Developed a conceptual site model (CSM) for use in assessing the suitability of the Study Area for the Project with respect to potential land contamination. The CSM considered historical use of the Study Area, the Study Area setting and proposed future land use proposed as part of the Project.
- Prepared this report, which outlines the works undertaken and presents the findings of the PSI.

1.4 Limitations of this Report

The findings of this report are based on the Scope of Work outlined in *Section 1.3*. Ground Doctor performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental consulting profession. No warranties, expressed or implied are made.

Some areas of the Study Area were not available for on-ground inspection. Ground Doctor used aerial imagery to assess inaccessible parts of the Study Area and has made some general assumptions about the likely nature and use of the Study Area from inspection of aerial photography only. Ground cover may have obscured some Study Area features that have potential to be of concern. It is possible that this PSI has not identified all potential areas of concern. A recommendation of this PSI is that an unexpected finds protocol be adopted prior to commencement of on-ground works that form part of the development.

All conclusions and recommendations regarding the Study Area are the professional opinions of Ground Doctor personnel involved with the assessment, subject to the qualifications made above. While normal assessments of data reliability have been made, Ground Doctor assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Ground Doctor, or developments resulting from situations outside the scope of this assessment.

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2 Study Area Description

2.1 Study Area

The Study Area is located on the eastern side of the existing MCCM. It is situated approximately 17km north-east of Boggabri and 43km south-east of Narrabri.

The regional setting of the Study Area is shown in *Figure 4 of Annex A*. The boundaries of the Study Area are shown relative to local features in *Figure 5 of Annex A*.

The northern boundary was situated approximately 150-200m south of Back Creek. The eastern boundary is a straight line and following the eastern boundary of the mining lease area. The western boundary follows the boundary of the existing MCCM operations. The Study Area has an area of approximately 5.3 square kilometres (km²).

Most of the Study Area is occupied by Leard State Forest. The northern portion of the Study Area is comprised of land that was formerly part of two larger agricultural properties referred to as “Wollondilly” and “Warriahdool”. These agricultural properties extended at least 3km north of Back Creek and were accessed from Harparary Road.

The Study Area is within Narrabri Shire Council Local Government Area.

The *Narrabri Local Environmental Plan 2012* (Narrabri LEP) indicates land within the Study Area is zoned as “RU1 – Primary Production” and “RU3 – Forestry”. Zone RU1 allows for a wide range of development with consent, including extractive industries and open cut mining. Zone RU3 allows uses authorised under the *Forestry Act 2012* or under Part 5B (Private native forestry) of the *Local Land Services Act 2013*.

Details of the Study Area are summarised in *Table 1*.

Table 1: Summary of Study Area Details

| Detail | Description |
|--|---|
| Addresses and Cadastral Identifiers: (Source: NSW Spatial Information Exchange, 2023) | Part of “Wollondilly”, 2703 Harparary Road, Maules Creek, NSW 2382 Comprising: Lot 32 DP754940 Part of Lot 11 DP611290 Part of Lot 55 DP754940 Part of Lot 3 DP1144479 Part of “Warriahdool”, 2490 Harparary Road, Maules Creek, NSW 2382 Comprising: Part of Lot 3 DP754924 Part of Lot 65 DP 754924 Part of Lot 35 DP 754940 Part of Lot 1 DP 114793 Part of Leard State Forest, Leard State Forest Road, Maules Creek, NSW 2382 Comprising: Part of Lot 38 DP 1211027 |
| Area: | Approximately 5.3 km ² |
| Local Government Areas: | Narrabri Shire Council |
| Narrabri LEP Zoning: | RU1-Primary Production (former agricultural properties) RU3-Forestry (Leard State Forest) |

2.2 Existing Land Uses

2.2.1 Study Area

Parts of the Study Area located within the Leard State Forest are used for forestry. Leard Forest Road traverses the forest from east to west. The remainder of forested areas were free of obvious infrastructure. Historical aerial photographs indicate that temporary access tracks have been made through parts of the forest for exploration drilling. Ground Doctor inspected some of the former access tracks and drilling sites on 14 June 2023 and found that they were largely indistinguishable from undisturbed areas. Historical aerial photographs are discussed in *Section 3.2*.

Former agricultural properties located in the northern portion of the Study Area appear to have been used primarily for livestock grazing. The former agricultural areas were located on lower lying areas on the southern side of Back Creek. The majority of the area was wooded; however, tree density was comparatively less than that observed in adjacent areas of the Leard State Forest. There were patches of more open grassland which may be indicative of some previous thinning to promote pasture growth. The vegetation density may also have related to positioning in the landscape, with colluvial and/or alluvial soil existing in the relatively level ground adjacent to Back Creek.

The north-west corner of the Study Area was cleared of woody vegetation and appeared to have previously been used for cropping. At the time of the site inspection this area was open pasture.

2.2.2 Surrounding Land Uses

Surrounding land uses at the time of the Study Area field inspection include:

- Back Creek is located approximately 150-200m north of the Study Area. Land between the northern Study Area boundary and Back Creek included cleared and partially cleared areas used for livestock grazing and dryland cropping. Land to the north-west, north and north-east of Back Creek was freehold land that appeared to be used for a mix of livestock grazing and dryland cropping.
- Leard State Forest is located to the east of the Study Area.
- Boggabri Coal Mine is located to the south of the Study Area. At the time of the Study Area field inspection, the land immediately south of the Study Area was a forested area located within the Leard State Forest. The Boggabri Coal open cut is located approximately 600 metres (m) south of the Study Area. There was evidence of exploration drilling in the forested areas between the Study Area and Boggabri Coal open cut.
- MCCM is located to the west of the Study Area. More specifically, a waste rock emplacement is located adjacent to the western boundary in the north. During the site inspection, it was noted that approximately midway along the western boundary, there was an area of cleared vegetation associated with land stripping prior to MCCM open cut mining operations. Forested areas were situated between the existing extent of the MCCM open cut and the southern parts of the western Study Area boundary. The existing MCCM includes open cut mining in this area.

2.3 Topography and Hydrology

A topographic map of the Study Area and surrounds is presented as *Figure 6 of Annexure A*.

The northern boundary close to Back Creek is the lowest part of the Study Area. The surface elevation is lowest (approximately 290m Australian Height Datum [AHD]) in the north-west corner of the Study Area. Former agricultural land adjoining Back Creek is relatively flat and is likely underlain by alluvial and/or colluvial soil associated with Back Creek.

Parts of the Study Area within Leard State Forest have greater vertical relief and reach a maximum elevation of approximately 450m AHD. The topography of the more elevated parts of the Study Area generally consists of hillslopes and low rises, with slopes ranging up to approximately 30% in these areas. The highest elevation occurs approximately 1km from the southern extent of the Study Area.

Surface water flow occurs in a general northerly direction on the northern side of the high point. Drainage on the southern side of the high point is toward the east.

The Study Area is part of the Back Creek catchment. Back Creek is ephemeral in the vicinity of the Study Area. Back Creek flows in a westerly direction and joins Maules Creek approximately 9km west of the Study Area. Maules Creek joins the Namoi River approximately 14km west of the Study Area.

The Namoi River is the major regional drainage feature. Namoi River has an elevation of approximately 230m AHD at its junction with Maules Creek. The Namoi River Valley has an overall regional gradient toward the north-west.

2.4 Geology and Soils

Figure 7 of Annexure A shows the Study Area marked over an extract of the interpreted surface geology published in the “Manilla 1:250,000 Geological Series Sheet SH 56-9” (Chesnut et.al., 1973).

The mapping indicates that the Study Area is underlain by the Conadilly Formation and Vickery Formation. The Conadilly Formation is described as “shale, labile sandstone, polymictic conglomerate” (Chesnut et.al., 1973). The Vickery Formation is described as “polymictic conglomerate, shale, labile sandstone” (Chesnut et.al., 1973).

The Study Area is underlain by sedimentary coal measures forming part of the Gunnedah Basin, which is part of the larger Sydney-Bowen Basin. The coal measures are underlain by volcanic basement, which is described as “Boggabri Volcanics” in the vicinity of the Study Area.

The Boggabri Volcanics were subject to extensive erosion and weathering during the early Permian resulting in the formation of a palaeo-valley where the sedimentary coal measures were laid.

Later descriptions of the coal measures refer to the “Maules Creek Formation” (Australian Groundwater and Environmental Consultants Pty Limited [AGE], 2021). AGE (2021) states:

Sediments of the Maules Creek Formation generally dip between 2° and 5° to the east, thickening in this direction to a maximum depth between 745 m and 1,135 m near the Mooki Thrust System (Cowan 1995). Coal seams are interpreted to have developed on a weathered palaeo-surface of varying topography, with seams in the eastern half of the basin highly split relative to mining areas of the BTM Complex.

The Study Area is generally situated on a regional outcrop of the Maules Creek Formation. In areas to the north of the Study Area, near surface geology is largely covered by alluvium associated with Maules Creek and its tributaries, which include Back Creek at the northern Study Area boundary. The most significant alluvial floodplains in the region are associated with the Namoi River, which is located approximately 14km west of the Study Area.

2.5 Hydrogeology

2.5.1 Previous Studies

The contemporary hydrogeological setting in the vicinity of the Study Area is outlined by:

- *Boggabri, Tarrawonga, Maules Creek Complex Groundwater Model Update* (AGE, 2021); and
- *Maules Creek Coal Mine Water Management Plan* (Whitehaven, 2023).

The hydrogeological regime proximal to the Project consists of the following hydrostratigraphic units (Whitehaven, 2023):

- Quaternary alluvium associated with river and creek flood plains that form productive aquifer systems, typically in deeper and coarser grained sediments;
- Weathered bedrock (regolith) that is generally unsaturated in the mining areas, but acts as a temporary water store and pathway during sustained wet periods;
- Permian conglomerate/sandstone/siltstone/shale interburden that act as an aquitard;
- Permian coal seams of the Maules Creek Formation that form a low yielding aquifer; and
- Permian Boggabri Volcanics that typically acts as an aquiclude/aquitard.

AGE (2021) indicated the regolith comprises surficial soils and weathered bedrock. The depth of weathering is variable and dependent on factors such as the extent and frequency of fracturing. The average depth of weathering was approximately 25m below ground level but was identified to depths of up to 60m below ground level. Sandstones and conglomerates are most affected by the weathering process (Whitehaven, 2023). Finer grain sediments form an effective barrier to the weathering process and can locally reduce the weathering depth. Deeper weathering profiles are found along fracture and potential fault zones (AGE, 2021).

The regolith is largely dry in the more elevated areas of the Leard State Forest but acts as a temporary water store during sustained wet periods and provides a source for recharge to the underlying fresh rock (Whitehaven, 2023).

AGE (2021) characterised the Permian strata into the following hydrogeological units:

- hydrogeologically “tight” and hence very low yielding to essentially dry sandstone, and conglomerate that comprise the majority of the Maules Creek Formation strata;
- low to moderately permeable coal seams, which are the prime water bearing strata within the Maules Creek Formation; and
- the underlying Boggabri Volcanics, that act as a low permeability basement to the sedimentary units.

2.5.2 Registered Groundwater Works

Ground Doctor reviewed registered groundwater works records available on the WaterNSW online database (WaterNSW, 2023) for works located within 1km of the Study Area. A map of registered bores identified within the database are presented as *Figure 8 of Annex A*.

Six registered groundwater works were identified within the Study Area, and a further eight were identified within a 1km radius of the Study Area.

Details of the registered groundwater works identified within the search area are summarised in *Table 2*. Groundwater work summary forms for the identified groundwater works are presented as *Annex H*.

Table 2: Summary of Registered Groundwater Works within 1km of Study Area

| Work ID | Registered Use | Bore Depth (m) | Yield (L/s) | SWL (mbgl) | Water Bearing Zones | Distance from Study Area |
|----------|----------------------------|----------------|-------------|------------|---|--------------------------|
| GW969679 | Monitoring | 72.0 | - | 50 | - | Inside |
| GW969680 | Monitoring | 59.0 | - | 27.5 | - | Inside |
| GW969771 | Stock, Domestic Irrigation | 77.7 | - | 10.4 | 31-36m sand and gravel 52-58m sand 64-76m sand and gravel | Inside |
| GW970694 | Monitoring - VWP | 354.0 | - | - | - | Inside |
| GW970695 | Monitoring - VWP | 391.5 | - | - | - | Inside |
| GW970696 | Monitoring | 245.0 | - | - | - | Inside |
| GW001869 | Stock | 63.1 | 0.3 | 33.5 | 63.1m sandstone | 20m |
| GW003466 | Stock | 50.0 | 1.1 | 9.1 | 25m conglomerate 45.4m sandstone | 56m |
| GW969673 | Monitoring - VWP | 299.0 | - | - | - | 77m |
| GW970693 | Monitoring - VWP | 324.4 | - | - | - | 80m |
| GW969674 | Monitoring - VWP | 318.2 | - | - | - | 204m |
| GW970681 | Monitoring | 10.0 | - | - | - | 250m |
| GW970680 | Monitoring | 189.4 | - | 35.2 | - | 250m |
| GW969678 | Monitoring | 164.0 | 0.1 | 97.7 | - | 953m |

Note: L/s = litres per second; mbgl = metres below ground level; SWL = standing water level.

Three of the identified groundwater works were registered for beneficial use. These groundwater works were located within former agricultural land within, or immediately adjacent to, the northern portion of the Study Area. They were situated in the relatively low lying areas less than 500m from Back Creek. The registered uses of these groundwater works included livestock watering, domestic use and irrigation. Groundwater bearing strata in these groundwater works was described as sandstone, conglomerate, sand and/or gravel.

A bore was identified close to the northeast corner of the Study Area during the site inspection in the marked location of GW001869. Groundwater monitoring bores GW970695 and GW970696 were also identified during the site inspection close to the road within Leard State Forest.

Where recorded, groundwater quality was described as “good” and “fresh”.

AGE (2021) describes the identified monitoring bores in greater detail and indicate that monitoring bores typically targeted water bearing coal seams at depth.

Recorded standing water levels (SWLs) ranged from 9m to 98m below ground level where recorded on the groundwater work summary form. The lowest SWLs were in two of the registered works in the northern portion of the Study Area, in the relatively low-lying area on the southern side of Back Creek.

The nearest registered groundwater work used for beneficial purposes that was not within the Study Area was GW003478, which is located approximately 1.9km northwest of the Study Area. The groundwater work was registered for “general use”.

2.6 Naturally Occurring Asbestos

Ground Doctor reviewed publicly available NSW Government mapping of Naturally Occurring Asbestos in the vicinity of the Study Area (NSW Resources and Geoscience, 2023). The Study Area underlain by the Maules Creek formation is a sedimentary unit and therefore is not a risk area for naturally occurring asbestos. The nearest naturally occurring risk area occurs approximately 50km east of the Study Area. Based on the available NSW mapping, the Study Area is not within a naturally occurring asbestos risk area.

2.7 Acid Sulphate Soils

The Lotsearch property report (*Annexure D*) includes mapping of acid sulphate soil risks within and proximal to the Study Area. The Lotsearch property report indicates that the Study Area has “extremely low risk” of containing acid sulphate soils.

Relevant mapping indicates that the nearest site with a high probability of occurrence of acid sulphate soil is more than 100km from the Study Area (Department of Planning, Industry and Environment, 1998).

2.8 Sensitive Environments

There were no dwellings located within the Study Area. The nearest dwelling was located approximately 2km west of the Study Area.

Back Creek was the nearest surface water receptor to the Study Area and was located approximately 150m north of the northern Study Area boundary. Back Creek is part of the Namoi River catchment. Surface water is used to supplement domestic supplies throughout the catchment.

Three registered groundwater works used for beneficial purposes were located within or less than 100m from the Study Area.

The nearest public recreation area was Leard State Forest, which was within the Study Area and continued to the south and east of the Study Area.

The nearest school was situated approximately 6km north-west of the Study Area at Maules Creek.

The nearest privately-owned dwelling to the approved MCCM is situated approximately 3km west of the Study Area.

3 Site History and Relevant Information

3.1 Study Area Inspection

Ground Doctor inspected easily accessible parts of the Study Area on 14 June 2023. The inspection included traversing the former agricultural properties in the northern portion of the Study Area in a vehicle, as well as traversing some areas on foot.

Ground Doctor personnel did not identify any infrastructure within the former agricultural properties comprising the northern portion of the Study Area with the exception of unsealed tracks and paddock fencing. Contour banks were also present in the cleared paddock in the north west corner of the Study Area.

The review of historical aerial photography indicated that the former agricultural properties comprising the northern portion of the Study Area were free of significant infrastructure.

In aerial photographs from 1990 onwards there are a network of cut tracks and small clearings within the Leard State Forest. These are inferred to be exploration drilling sites and access tracks. Ground Doctor personnel traversed part of one of the main tracks and associated side tracks on foot. The tracks were overgrown such that they were not easily distinguishable from the surrounding undisturbed areas of Leard State Forest. Ground Doctor personnel passed approximately 10 former drilling sites where clearing was more substantial than single vehicle tracks. The remains of polyvinyl chloride (PVC) borehole collars were observed sticking up approximately 0.3m above ground level. The former drill sites appeared to have been regularly spaced along the overgrown tracks that were inspected. Each of the inspected former drill sites appeared to have been well remediated. There was no rubbish evident on the ground surface. The former drill sites were free of obvious ground disturbance around the observed borehole collars. Regrowth was encroaching into the previously cleared areas.

An unsealed road traversed the northern part of Leard State Forest within the Study Area. Areas of the State Forest adjacent to the road were largely free of infrastructure with the exception of two groundwater monitoring bores, which were identified as metal stickup monuments. Ground Doctor personnel did not observe any evidence of illegal rubbish disposal along the road.

The southern portion of the Study Area was largely inaccessible and was not inspected. Based on observations in the northern part of the Leard Forest, it is assumed former drill sites would have been left clean, tidy and free of rubbish and debris, as required by conditions of relevant tenements issued under the NSW *Mining Act 1992*.

An object is visible in the north-east corner of the Study Area in all aerial photographs dated between 1977 and 2011. This location was inspected closely and was found to contain a groundwater bore and pile of milled timber, which was likely the remains of a small building. The building may have been a small animal shelter, stockman's shelter or feed storage shed. Structures are visible in all aerial photographs reviewed as part of the PSI.

The only potential source of land contamination identified during the Study Area inspection was past use of some of the northern portion of the Study Area for livestock grazing and dryland cropping.

3.2 Aerial Photography Review

Historical aerial photographs of the Study Area taken in 1955, 1965, 1977, 1990, 1996, 2011 and 2021 were supplied by Lotsearch and are presented chronologically in *Annex C*.

3.2.1 The Study Area

Leard State Forest

The extent of the Leard State Forest remains unchanged in all aerial photographs. In the 1955 aerial photograph, there is no evidence of any development within the State Forest. The area appears to be bushland. There are no obvious roads or tracks within the State Forest.

In the 1965 aerial photograph, an unsealed road has been constructed through the Leard State Forest in an approximate east to west orientation across the Study Area. This road is present in all subsequent aerial photographs and remained at the time of the Study Area inspection (refer to *Section 3.1*).

In the 1977 aerial photograph, there appear to be some minor vehicle tracks through the State Forest. The additional tracks appear to be informal and are likely access tracks for forestry or public recreation. There is no other significant or obvious disturbance in parts of the Study Area occupied by the State Forest.

In the 1990 aerial photograph, there is a grid patterned network of vehicle tracks in the northern portion of Leard State Forest. There are regular clearings at regular spacing along the tracks. The pattern of disturbance is inferred to be associated with an exploration drilling program. Additional tracks and clearings are evident in other parts of the Leard State Forest; however, these are less formal than the grid pattern present in the northern portion and the spacing of suspected drill sites is also much larger.

Parts of the Study Area within Leard State Forest show no significant changes between the 1990 and the 1996 aerial photograph. The tracks that were first evident in the 1990 aerial photograph are less apparent indicating they were no longer in use.

In the 2011 aerial photograph, vehicle tracks are even less obvious than they appear in the 1996 aerial photograph. The unsealed road, which traverses through Leard State Forest and the Study Area, remains. A second well-worn road is visible in the 2011 photo. This road heads in a south-westerly direction off the original road and appears to provide access to the MCCM site to the east of the Study Area.

In the 2021 aerial photo, the former grid of vehicle tracks and cleared exploration drilling locations are well vegetated and much less apparent. The two roads that were visible in the 2011 photo remain and were present at the time of the Study Area inspection.

2490 Harparary Road

The north-west corner of the Study Area is comprised of land within part of 2490 Harparary Road, Maules Creek, NSW.

In the 1955 aerial photo, this part of the Study Area remains heavily wooded. The remaining woody vegetation appears less dense when compared to adjacent vegetation within Leard State Forest, which indicates some thinning had likely occurred. There are obvious linear patterns in vegetation cover consistent with the existing cadastral boundaries indicating the land is fenced and most likely used for livestock grazing.

In the 1965 aerial photograph, most of the area has been cleared of woody vegetation. There are windrows of vegetation spaced regularly across the cleared area indicating the area had been recently cleared.

In the 1977 aerial photograph, the cleared area (apparent in the 1965 aerial photo) appears have been cropped. There are patterns of wear in the cropped area indicative of livestock grazing indicating the area was likely used for growing of fodder crops for livestock. There are no other notable changes to the former agricultural land in the 1977 aerial photo.

In the 1990 aerial photo, the cleared paddock appears to be in use for cropping. Contour banks are evident for the first time in the 1990 photo. A small farm dam has been constructed along the western boundary of the Study Area.

There is little change to the appearance in the 1996 aerial photo. There is a small track evident in the north-west corner of the Study Area immediately adjacent to Back Creek. This may be an informal circuit for motorbike use (or similar).

In the 2011 aerial photograph, the area appears consistent with the 1996 photo with the exception of the track immediately south of Back Creek, which is no longer present and the area appears to be under crop.

There are no apparent changes to the land in the 2021 aerial photograph with the exception of a small decrease in cropping area immediately south of Back Creek. This area appears to be the subject of revegetation works.

2703 Harparary Road

The north-east portion of the Study Area is comprised of land within part of 2703 Harparary Road, Maules Creek, NSW.

In the 1955 aerial photo, parts of the Study Area within 2703 Harparary Road appear to be used for livestock grazing. The north-east corner of the Study Area is mostly cleared of vegetation. The remainder of 2703 Harparary Road remains heavily wooded. This remaining woody vegetation appears less dense when compared to adjacent vegetation within Leard State Forest, which indicates some thinning had likely occurred. Fencelines are apparent in some areas.

In the 1965 and 1977 aerial photos, there are no significant changes to land within 2703 Harparary Road when compared against the 1955 photo.

The only notable changes in the 1990 photo are that the wooded vegetation appeared to have been thinned out and informal vehicle tracks are visible.

In the 1996 aerial photo, parts of 2703 Harparary Road located within the Study Area appear consistent with the 1990 aerial photo. In the 2011 and 2021 aerial photographs, there appears to be regrowth of low shrubs between the mature woody vegetation suggesting that the intensity of livestock grazing had decreased.

3.2.2 Adjoining Land

In aerial photographs spanning 1955 to 2011, Leard State Forest surrounds the Study Area on the eastern, southern and western sides with the exception of the northern portion of the Study Area, which is surrounded by agricultural land.

Use of Leard State Forest in areas surrounding the Study Area are consistent with use within the Study Area. There is no obvious development within the State Forest in photos between 1955 and 1977 with the exception of a single unsealed road traversing the Study Area and adjoining parts of the Leard State Forest to the east and west of the Study Area.

In the 1990 aerial photo, exploration drilling work is evident in the form of tracks with a grid pattern, which extend into areas of the Forest on the western side of the Study Area. There is also evidence of exploration drilling (albeit with less dense drill site spacings) in areas on the east and west of the southern tip of the Study Area.

The field of view is limited in the aerial photographs supplied by Lotsearch. Accessible historical aerial imagery published on Google Earth indicated Boggabri Coal Mine had commenced disturbance activities on land to the south of the Study Area circa 2009. At the time of this assessment, the Boggabri Coal Mine open cut was located approximately 600m south of the Study Area at its closest point.

Major ground disturbance associated with the MCCM appears to commence circa 2014. Vegetation stripping appears to have occurred along the western boundary of the Study Area by 2018 with subsequent advancement of the open cut toward the western Study Area boundary. The waste rock emplacement, which borders the Study Area along the northern third of the western boundary, was commenced circa 2018.

At the southern end of the Study Area, the Leard State Forest remained largely intact immediately west of the boundary throughout the aerial photo record.

Back Creek is present throughout the aerial photograph record. Land use in areas to the north of Back Creek appear relatively unchanged throughout the aerial photo record. Land appears to be utilised for livestock grazing and cropping throughout the aerial photo record with minimal change observed between 1955 and 2021.

Evidence of previous built development was identified in the area immediately north of the north-east corner of the Study Area. A round object, inferred to be an above ground water tank, is visible in several of the reviewed aerial photographs. This is the area in which a groundwater bore and milled timber ruin was identified during the site inspection (see *Section 3.1*).

3.3 Section 10.7 Planning Certificates

Ground Doctor obtained a copy of the section 10.7 Planning Certificates (issued by Narrabri Shire Council under the provisions of section 10.7 of the EP&A Act) for the two private freehold properties within the Study Area, 2490 Harparary Road and 2703 Harparary Road, Maules Creek, NSW.

The Planning Certificates issued on 24 May 2023 are presented as *Annex E*.

The Planning Certificates indicate:

- Council has no record that the land within the Study Area is significantly contaminated land at the date or the issue of this certificate.
- Council has no record that the land within the Study Area is subject to a management order within the meaning of that Act at the date of the issue of this certificate.
- Council has no record that the land within the Study Area is the subject of an approved voluntary management proposal within the meaning of that Act at the date of the issue of this certificate.
- Council has no record that the land within the Study Area is the subject of an ongoing maintenance order within the meaning of that Act at the date of the issue of this certificate.
- Council has no record that the land within the Study Area is the subject of a site audit statement within the meaning of that Act at the date of the issue of this certificate.

3.4 Council Document Review

A Government Information Public Access (GIPA) request was made to Narrabri Shire Council on 16 May 2023 to access Council records for “Warriahdool” (2490 Harparary Road, Maules Creek, NSW) and “Wollondilly” (2703 Harparary Road, Maules Creek, NSW), which were the two freehold properties partially located within the Study Area.

Narrabri Shire Council would not hold records for Leard State Forest as it is State-owned land.

Narrabri Shire Council provided a combined response to the GIPA search requests dated 30 May 2023. The response indicated that a total of six documents were identified relevant to “Wollondilly” and “Warriahdool”. The documents identified are summarised in *Table 3*.

The identified documents applied to proposed works in parts of the freehold properties that were located a significant distance from the Study Area.

Table 3: Summary of Narrabri Council Property Records

| Council Reference No. | Date | Description |
|------------------------------|-----------------|---|
| Doc ID: 2065792 P99/03059 | 24 April 2008 | Letter from Council regarding access and drainage issues at “Warriahdool”. The letter appears to reference proposed construction of a culvert at the property access from Harparary Road (outside the Study Area) and is therefore not relevant to the PSI. |
| Doc ID: 2065792 P99/03059 | 4 December 2003 | Wollondilly Flood Plain Management Study. The document is a floodplain study referring to parts of the “Wollondilly” close to Oakey Creek and Harparary Road. The plan describes the property as mixed use farming and indicates the farm includes a small area under irrigation. The area under irrigation is located close to Oakey Creek and Harparary Road, a significant distance from the Study Area. |
| Doc ID: 2065792 P99/03059 | 15 April 2004 | Letter from the Department of Infrastructure Planning and Natural Resources regarding advertisement of application for approval of Controlled Works. The letter refers to proposed works on a floodplain associated with a proposed irrigation earthworks on the Oakey Creek floodplain. The floodplain study described above was prepared to support the proposed controlled works. The correspondence does not contain any information relevant to the Study Area. |
| Doc ID: 2065792 P99/03059 | 3 May 2004 | Letter from Council regarding Application for Controlled Works – Ref No. 90CW810923. The letter relates to the proposed controlled works on the floodplain of Oakey Creek as outlined above and is not relevant to land within the Study Area. |
| Doc ID: 2065792 P99/03059 | 30 August 2004 | Correspondence regarding Application for Controlled Works – Ref No. 90CW810923. The letter relates to the proposed controlled works on the floodplain of Oakey Creek as outlined above and is not relevant to land within the Study Area. |
| Doc ID: 2065792 P99/03059 | 27 June 2007 | Letter from Council regarding Notice of Rating Sub-Categories for Irrigable properties in the Narrabri Shire. The letter outlines proposed rate increases for “Wollondilly” on the basis that parts of the property were irrigated. Other correspondence shows that the irrigated parts of “Wollondilly” were located adjacent to Harparary Road and were a significant distance from the Study Area. |

3.5 Dangerous Goods Storage Search

NSW SafeWork conducted a search of their database for records pertaining to the storage of dangerous goods within two properties which comprised the freehold parts of the Study Area. The search was requested for 2490 Harparary Road and 2703 Harparary Road, Maules Creek, NSW. These properties occupy the northern portion of the Study Area but also comprise significant area extending at least 2km to the north of the Study Area. The search requests were submitted on 15 May 2023.

NSW SafeWork indicated that as of 16 June 2023 the dangerous goods licensing archives did not contain any records pertaining to either of the searched addresses. Results of the search are presented in *Annexure G*.

The Lotsearch (2023) property report conducted a search of the National Liquid Fuel Facilities database. There were no recorded liquid fuel storage facilities within the Study Area or within a 1km radius of the Study Area.

3.6 NSW EPA Notified Contaminated Sites

Ground Doctor conducted a search of the NSW EPA list of sites notified under section 60 of the CLM Act. The search was conducted on 28 August 2023, at which time the NSW EPA had published a list of notified sites as at 8 August 2023. There were no notifications listed for the Study Area or within a 1 km radius of the Study Area.

Ground Doctor conducted a search of the NSW EPA list of sites for which orders or notices have been made under section 58 of the CLM Act. The search was conducted on 28 August 2023. There were no records identified for the Study Area or the area within a 1km radius of the Study Area.

3.7 Protection of the Environment Operations Act 1997 Licensed Activities

The NSW EPA maintains a list of activities that are licensed under the POEO Act. There were three licensed activities within the Study Area.

The licences were for ‘mining for coal’, ‘coal works’ and ‘crushing, grinding or separating’. These activities were licenced within the MCCM, under Environment Protection Licence 20221.

An additional three licensed activities were identified within a 1km radius of the Study Area. The licences were for ‘mining for coal’, ‘coal works’ and ‘crushing grinding or separating’. These activities were licensed within the Boggabri Coal Mine on land immediately south of the Study Area and MCCM.

There was one activity regulated under the POEO Act identified within the Study Area or within a 1km radius of the Study Area that has been surrendered. This was for ‘logging operations’ within Leard State Forest.

Three former licensed activities were identified within the Study Area or within a 1km buffer of the Study Area. The identified former licensed activities applied to State-wide (NSW) spraying of herbicides along waterways.

3.8 Historical Business Directory Listings

The Lotsearch (2023) property report presents results of a Universal Business Directory (UBD) archive search for the Study Area and within a 1km radius of the Study Area. The archives hold records from the UBD for the period spanning 1950-1991. There were no UBD listings identified within the search area.

3.9 Other Searches Relevant to Contaminated Land Assessment

The Lotsearch Property Report (presented as *Annex D*) included an assessment of a number of relevant databases. The report provided the following information relevant to this assessment:

- No former gasworks were found within the Study Area or within 1km of the Study Area.
- The Study Area was not within an NSW EPA, Department of Defence or Air Services Australia PFAS Investigation Area.

3.10 Summary of Site History

The majority of the Study Area is occupied by bushland within Leard State Forest. Historical aerial photography indicates development within the Leard State Forest component of the Study Area has been limited to:

- Construction of one formal unsealed road across the northern section of the Leard State Forest.
- Clearing of temporary access tracks and work sites for exploration or investigation drilling equipment, forestry management and/or timber harvesting.
- Temporary use of parts of the State Forest for exploration drilling and for environmental monitoring.

An inspection of the Study Area indicated that accessible areas along the existing roads were free of rubbish or evidence of inappropriate waste disposal. Roads appeared to be constructed of naturally occurring materials sourced from the immediate surrounds.

Former exploration drill sites inspected on foot did not contain obvious signs of disturbance or evidence of improper waste disposal. The only evidence that remained of exploration drilling use were stickup PVC collars left in-situ to mark the former borehole locations. Only a small number of former drill sites were inspected but the absence of any significant impacts indicates that significant contamination is unlikely at all former drill sites.

Historical aerial photographs indicated there has been limited vehicular access to the Leard State Forest making it unlikely that potentially contaminating activity has occurred in the State Forest. Given the remote location of the forest, it is possible that some illegal waste disposal has occurred. If this had occurred, it would be expected close to public access vehicle tracks. Ground Doctor did not identify any evidence of illegal waste disposal in parts of the Study Area that were inspected on 14 June 2023.

Historical aerial photography indicates that the freehold land in the Study Area was used primarily for livestock grazing. The freehold parts of the Study Area formed the southern extent of two much larger properties which extended at least 2km to the north of the Study Area. Both properties had homesteads close to Harparary Road a significant distance to the north of the Study Area. Potentially contaminating activities that can be associated with large agricultural properties such as mechanical workshops, chemical storage and mixing areas, livestock treatment areas and bulk fuel storages were likely to have been located at the homesteads (if they existed at all) and therefore would not have been within the Study Area. Notwithstanding, no evidence of potentially contaminating activities associated with livestock grazing was identified.

The only features of note within the Study Area were as follows:

- A paddock in the north-west corner of the Study Area was cleared circa 1965 and was subsequently used for dryland cropping. There was some clearing in other areas but the land remained wooded and use appeared restricted to livestock grazing.
- A groundwater bore and timber ruins were identified approximately 20m from the northern Study Area boundary close to the northeastern corner of the Study Area. In some of the historical aerial photos a circular object (believed to be a water tank) is visible in this area. Ground Doctor did not identify any evidence of livestock pest treatment (e.g. a dip site) in the area.
- A groundwater bore was recorded as being present in the north-west portion of the Study Area. Ground Doctor did not identify the bore during the site inspection. There was no significant infrastructure identified in the area during the Study Area inspection.

4 Conceptual Site Model

4.1 Overview of Proposed Development

The key components of the project for which MCC is seeking development consent are as follows:

- Removal of vegetation and stockpiling for reuse as mulch.
- Stripping of near surface soil and stockpiling for later use in mine rehabilitation.
- Stripping of overburden with subsequent creation of waste rock storages or placements.
- Excavation and recovery of coal for processing and sale.
- Progressive rehabilitation of disturbed areas and waste rock emplacements to create a stable final landform suitable for future forestry and/or biodiversity conservation use.

Figure 10 of Annexure A shows the proposed use of the Study Area during the proposed development. The majority of the Study Area will become an open cut mine. A corridor approximately 130-250m wide will remain relatively undisturbed on the southern side of Back Creek. The north-western corner of the Study Area will become a waste rock emplacement, which will be a continuation of the existing waste rock emplacement which is located immediately adjacent to the north-west boundary of the Study Area.

A detailed description of the Project is provided in Section 3 of the EIS.

4.2 Potential Sources

Ground Doctor did not identify any potential sources of contamination within parts of the Study Area occupied by Leard State Forest. Large parts of the Study Area were not inspected as part of the assessment. Based on the information reviewed parts of the Leard State Forest are largely inaccessible to vehicular traffic and therefore have low potential of significant disturbance of contamination. There is possibility of illegal waste disposal (dumping) by the public. No evidence of dumping was identified during the Study Area inspection.

Freehold land located in the north west corner of the Study Area was cleared in approximately 1965 and had since been used for dryland cropping and livestock grazing. It was possible that herbicides, pesticides and/or fertilisers had been applied to land to support cropping. Application of common pesticides, herbicides and fertilisers in accordance with manufacturers instruction would not be expected to result in significant land contamination. The cropped part of the Study Area was part of a much larger property with homestead situated at least 2km to the north. Storage or mixing of chemical within the Study Area was unlikely.

Other parts of the freehold land appeared to be used for livestock grazing and were free of significant infrastructure. Potential sources of contamination were not identified in these parts of the Study Area.

4.2.1 Potential Chemicals of Concern

Potential contaminants of concern associated with cropping activity which occurred in the north west corner of the site include the following:

- Pesticides (organochlorine pesticides and organophosphorus pesticides).
- Herbicides.
- Metals.

4.2.2 Fate of Contaminants of Concern

Organic contaminants (including pesticides and herbicides) typically degrade in the environment to less harmful compounds by processes which can include volatilisation, chemical degradation, microbial degradation and/or photodegradation. Pesticides and herbicides generally only pose a problem to the environment where excessive loss or application has occurred.

Inorganic and organic contaminants applied in accordance with manufacturers instructions would be expected to be taken up by plant foliage or adsorb to the outside of soil grains at or near the surface and become immobile. Favourable conditions for adsorption includes fine grained soil (such as clay) and soil with higher organic content. These conditions exist within part of the Study Area that was formerly cropped.

Soil properties also affect the absorption and adsorption of inorganic substances in the subsurface. Groundwater geochemistry can also influence behaviour of inorganic compounds in groundwater.

Where excess pesticides or herbicide have been lost to the environment, they can potentially leach through soil to the water table, or can be partly dissolved into water which leaches to the water table, and impact groundwater quality. However, soil impacts are considered unlikely and therefore groundwater impacts even more unlikely.

4.3 Receptors

Existing (pre-development) land uses within the Study Area includes forestry, public recreation and agriculture.

The Project would change the land use from forestry, public recreation and agriculture into the less sensitive land use of primary production (coal mining). There would be no public access to the mine site whilst it is operational. Potential exposure to contaminants in soil and water (if these exist) would be occupational only, limited primarily to exposure that could occur during operation of earthmoving machinery or conducting tasks such as revegetation works during rehabilitation.

The Project would result in significant changes to the pre-development landform across the Study Area with the exception of the area within an approximate 130-250m wide corridor on the southern side of Back Creek.

The post mining landscape would be rehabilitated in a form suitable for biodiversity conservation. The post mining land use would be largely the same as the pre-mining land use, with respect to potential exposure pathways to contaminants in soil and groundwater.

The Project does not represent a change of use in the context of assessment of potential human health risks associated with land contamination. The Project (i.e. coal mining) is a less sensitive use than existing agricultural, public recreation and forestry use.

4.4 Pathways

4.4.1 Human Health

The site history indicates that the risk of significant contamination within the Study Area is very low and most likely constrained to near surface soil in the small portion of the Study Area that was previously cropped.

If soil contamination exists within the Study Area, mine employees could potentially be exposed to contaminants via the following exposure routes:

- Direct contact with soil.
- Inhalation of dust.
- Ingestion of dust or soil.

The nature of the Project is such that the potential human health exposure pathways would be incomplete most of the time for the following reasons.

- Part of the previously cropped paddock would not be disturbed as part of the Project and therefore there would be little if any potential for human contact with soil during the life of the Project.
- Near surface soil would be stripped from parts of the cropped paddock located within the footprint of the proposed waste rock emplacement area. Stripped topsoil would be used during future rehabilitation works, consistent with the measures described in the MCCM Rehabilitation Management Plan (MCC, 2023).
- Direct contact with contaminated soil (if present) would only be possible during stages of the development where near surface soil is stripped and stockpiled, or used in progressive rehabilitation. Any risks to human health during these stages of work would be adequately managed using typical health, safety and environmental controls. For example, use of air-conditioned machinery for earthworks, suppress dust by applying water to exposed soil during disturbance, and minimise erosion during mining operations and in the post-mining landform.

Stripped soil would be used to rehabilitate the post mining landscape and is likely to end up close to or at the ground surface. Rehabilitated areas would become part of future woodland or biodiversity conservation area where public access would be minimal. Soil would be stabilised in accordance with stabilisation measures described in the MCCM Rehabilitation Management Plan (MCC, 2023). Construction work is temporary and is recommended to occur with appropriate health, safety and environmental controls to make risks to human health and the environment acceptable (see Section 5).

4.4.2 Environment

Impacts to biodiversity values associated with the Project are presented in the Biodiversity Development Assessment Report (Appendix D of the EIS). The Project (open cut mining) represents a significant impact to the terrestrial environment within the proposed disturbance footprint. Potential impacts posed to flora and fauna by the presence of contaminants of concern in soil are not relevant to the mining stage of the Project.

At the time of the Study Area inspection the formerly cropped paddock was supporting pasture growth and the remnant native trees appeared healthy. This indicates that any contamination in soil (if any) does not pose an unacceptable risk to vegetation and therefore would be suitable for later use in rehabilitation works in an area proposed for future primary production and/or conservation of biodiversity.

4.5 Outcome

Assessment of the Study Area identified former agricultural cropping as the only potential source of contamination.

The contamination status of land within the Study Area has not been characterised by sampling and analysis of soil or water. However, assessment of the identified potential area of concern at the conceptual level indicates that the land is suitable for the Project irrespective of its contamination status. The results of this PSI indicate that detailed site investigation is not warranted. Any unquantified risks to human health and the environment can be adequately controlled during the Project by adopting controls which limit human exposure to dust and direct contact with soil as well as controls which limit migration of near surface soil from disturbed areas.

5 Conclusions and Recommendations

A review of the site history indicated that the majority of the Study Area was part of Leard State Forest. Ground Doctor did not identify any potential sources of contamination within parts of the Study Area occupied by Leard State Forest.

Parts of the Study Area situated between Back Creek and Leard State Forest were part of two freehold properties (“Wollondilly” and “Warriahdool”) that extend more than 2km north of the Study Area. Part of the freehold land located in the north-west corner of the Study Area was cleared circa 1965 and appeared to be used for dryland cropping and livestock grazing. The remainder of the freehold land appeared to be used for livestock grazing. There was no major infrastructure identified within the freehold land.

Potentially contaminating activities within the freehold parts of the Study Area were limited to potential application of herbicides, pesticides and fertilisers within the previously cropped area. The application of common pesticides, herbicides and fertilisers in accordance with manufacturer instructions are unlikely to have resulted in significant land contamination. The activities of potential concern typically occur in dryland cropping zones throughout NSW and Australia, including agricultural land, which covers an extensive area immediately north of the Study Area.

If contamination did exist, the potential human health exposure pathways would be incomplete most of the time for the following reasons:

- Part of the previously cropped paddock would not be disturbed as part of the Project and therefore there would be little if any potential for human contact with soil during the life of the Project.
- Near surface soil would be stripped from parts of the cropped paddock located within the footprint of the proposed waste rock emplacement area. Stripped topsoil would be used during future rehabilitation works, consistent with the measures described in the MCCM Rehabilitation Management Plan (MCC, 2023).
- Direct contact with contaminated soil (if present) would only be possible during stages of the development where near surface soil is stripped and stockpiled, or used in progressive rehabilitation. Any risks to human health during these stages of work would be adequately managed using typical health, safety and environmental controls. For example, use of air-conditioned machinery for earthworks, suppress dust by applying water to exposed soil during disturbance, and minimise erosion during mining operations and in the post-mining landform.

Stripped soil would be used to rehabilitate the post-mining landscape and is likely to end up close to or at the ground surface. Rehabilitated areas would become part of future forest or biodiversity conservation area where public access would be minimal. Soil would be stabilised in accordance with stabilisation measures described in the MCCM Rehabilitation Management Plan (MCC, 2023). Observations during the Study Area inspection indicated that native trees and pasture in the previously cropped part of the Study Area were in good condition, indicating the soil would be suitable for future use in site rehabilitation.

The Resilience and Hazards SEPP requires the consent authority for a proposed development to consider whether the land is contaminated. If the land is contaminated, the consent authority needs to be satisfied that the land is suitable in its contaminated state for the purpose in which the development is proposed. Based on the information reviewed as part of this PSI, there is low potential for land within the Study Area to be contaminated. Ground Doctor believes the Study Area is suitable for the Project in its current state.

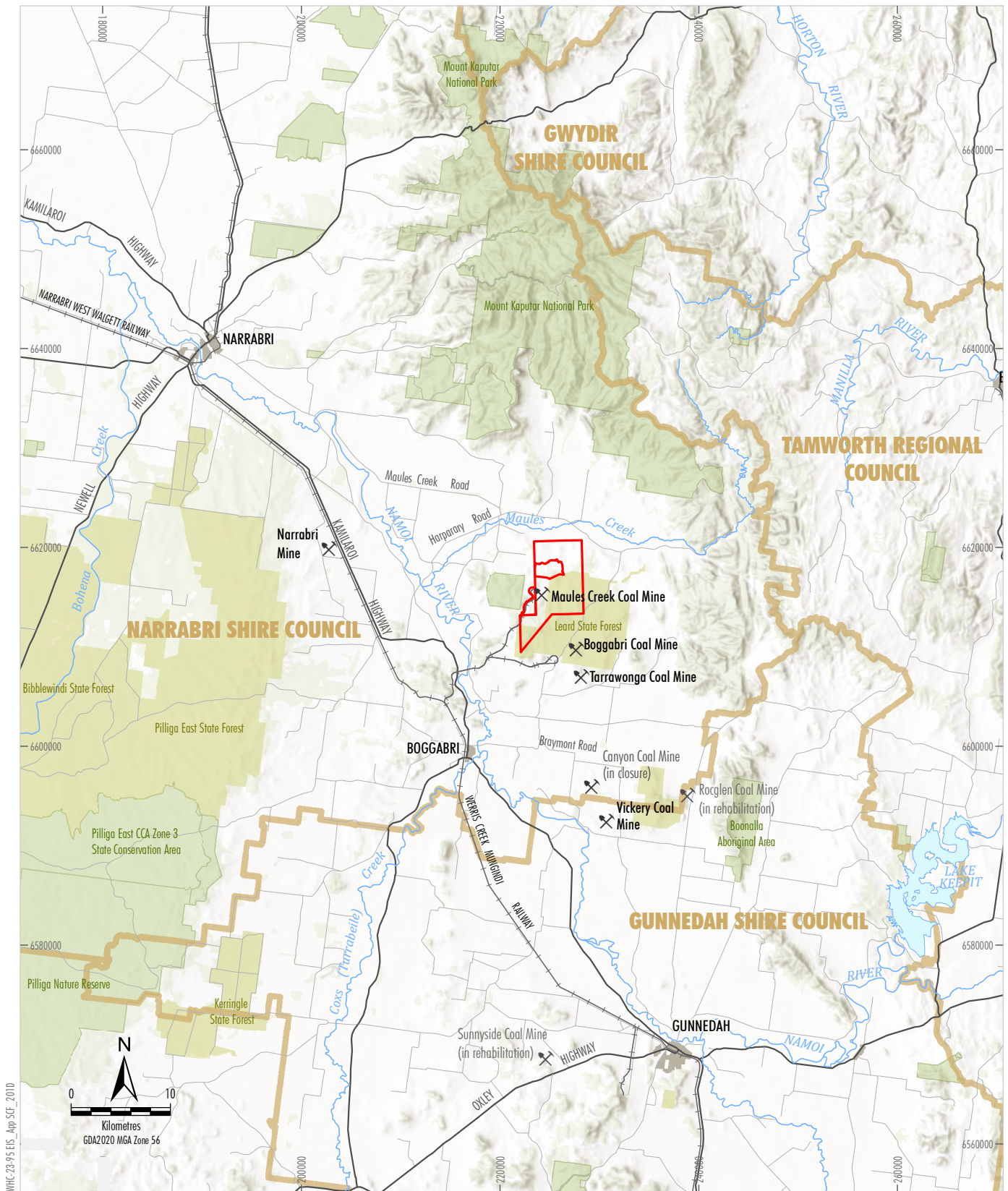
It is possible, although unlikely, that additional areas of concern would be identified during soil stripping and site preparation works. For example, illegally dumped rubbish may be identified in parts of the Study Area located within Leard State Forest. Impacts of this nature would be minor when considered in relation to the scale of the Project and could be adequately managed by implementing work health, safety and environmental management controls (including protocols to assess and/or manage unexpected finds as required), consistent with the existing MCCM Environmental Management Strategy (MCC, 2023) at the commencement of the Project.

6 References

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Accessed: 18 August 2023
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Annexure A

Figures



WMC-23-95 EIS_Appl SCF 2010

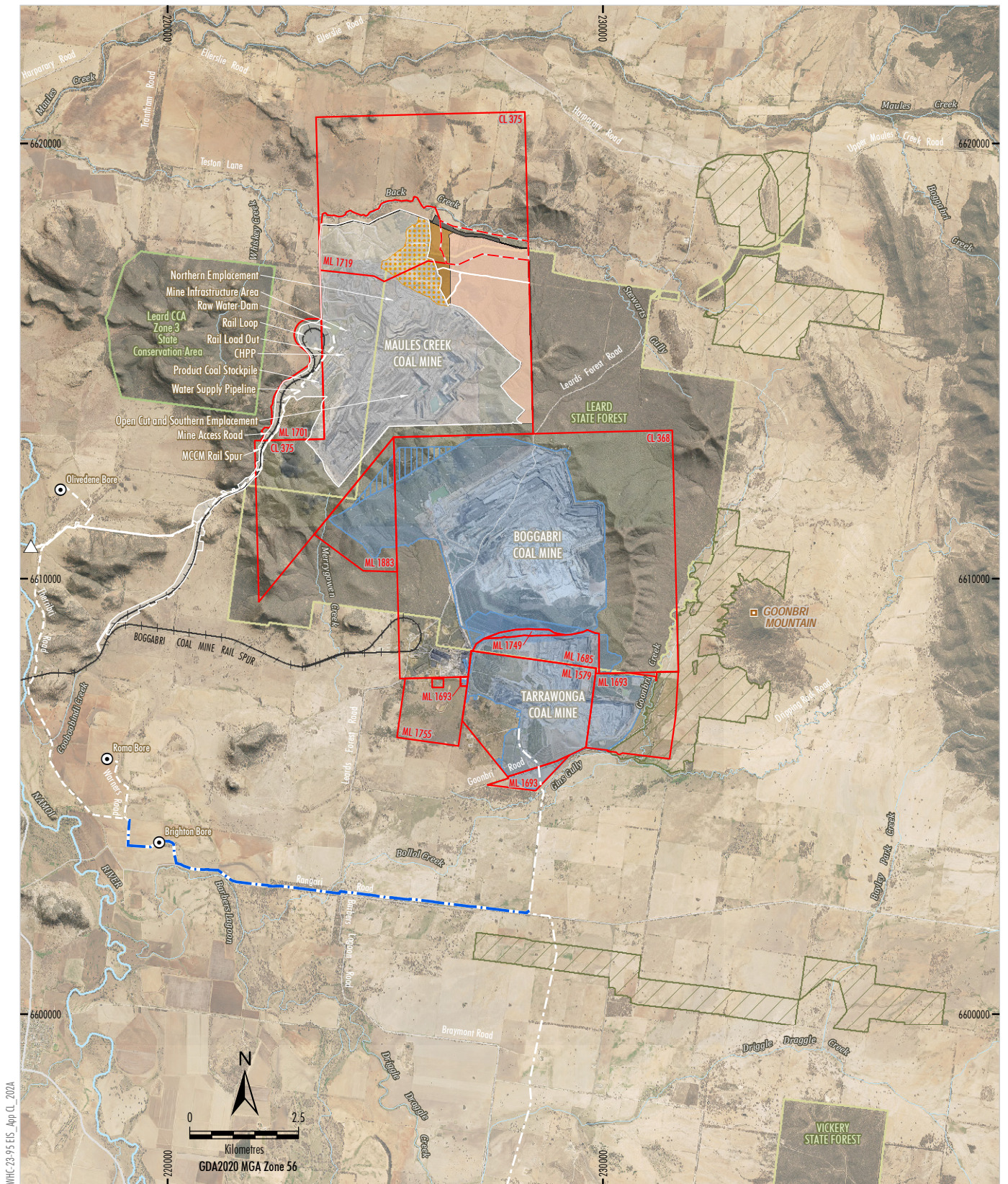
Source: NSW Spatial Services (2023);
Geoscience Australia (2011)



- LEGEND**
- MCM Mining Tenement Boundary (CL and ML)
 -  Mine Site
 - Local Government Boundary
 - State Forest
 - State Conservation Area, Aboriginal Area
 - Rail Line

Whitehaven
MAULES CREEK CONTINUATION PROJECT
Project Location

Figure 1



WHC-23-95 EIS_Apr CL 2024

- LEGEND**
- Rail Line
 - State Conservation Area
 - State Forest
 - Mining Tenement Boundary (ML and CL)
 - Provisional Mining Lease Application Area
 - Other Mining Operation *
 - Other Mining Operation - Proposed *
 - VCM to TCM Water Transfer Pipeline
 - Existing/Approved MCCM Development
 - Approximate Extent of Existing/Approved Surface Development
 - MCCM Water Supply Pipeline
 - MCCM Groundwater Supply Bore
 - MCCM Namoi River Pump Station

- Maules Creek Continuation Project**
- Indicative Go-line, Access and Infrastructure Area
 - Indicative Open Cut Extension Area
 - Indicative Overburden Emplacement Extension
 - Existing Overburden Rehabilitation to be Disturbed
 - Indicative Landscape Revegetation Zones#
 - Indicative Water Transfer Pipeline (Proposed)

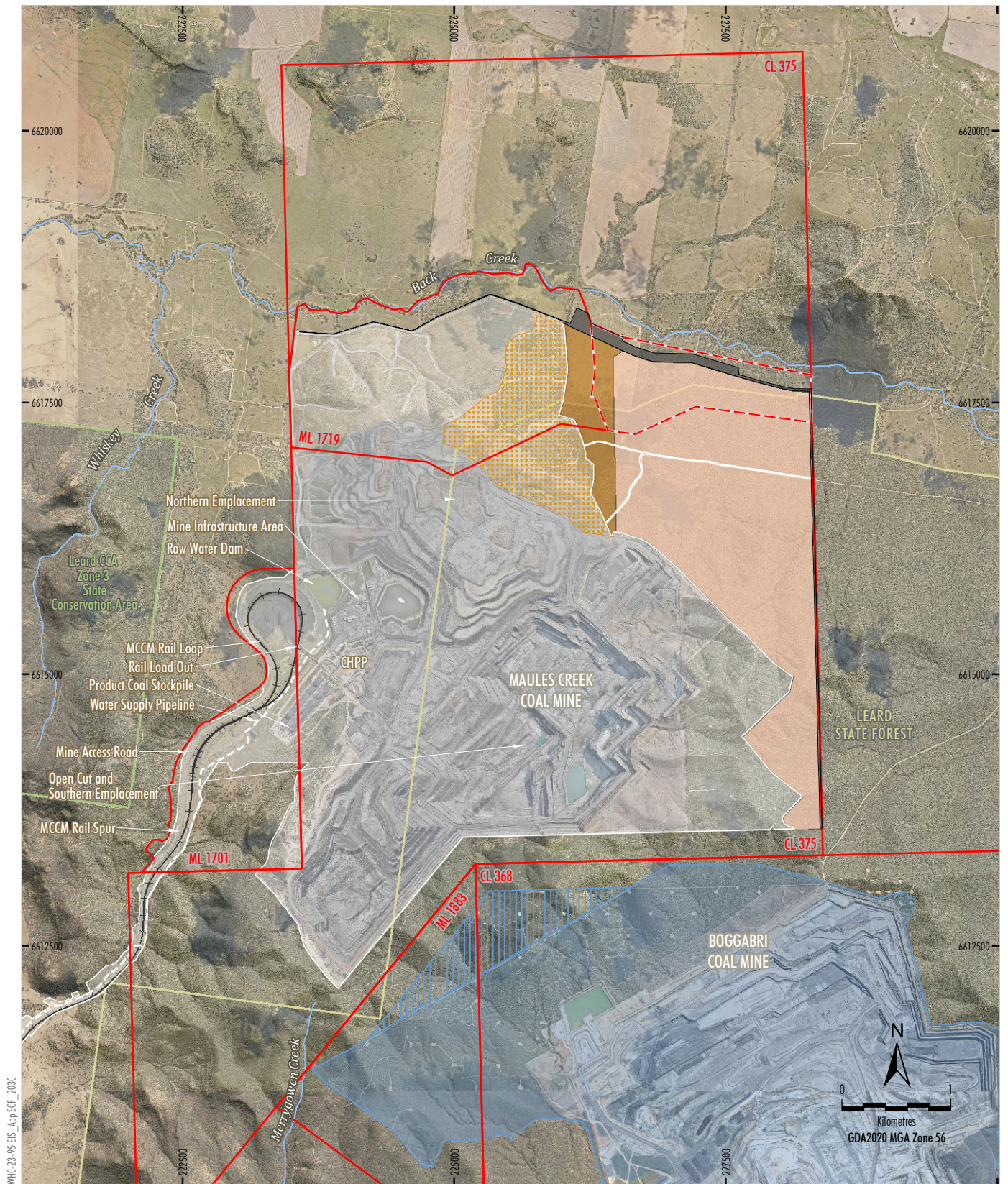
Source: NSW Spatial Services (2024)
Orthophoto Mosaic: Whitehaven (2019-2024)

Whitehaven
MAULES CREEK CONTINUATION PROJECT
General Arrangement of the Project

* BCM boundary digitised from Figure 1 of the BCM Modification 10 Scoping Letter.

#Landscape Revegetation Zones shown on this figure are approximate extents only.

Figure 2



WMC-23-95 EIS App SCF 208C

LEGEND

- Rail Line
- State Conservation Area
- State Forest
- Provisional Mining Lease Application Area
- Mining Tenement Boundary (ML and CL)
- Other Mining Operation *
- Other Mining Operation - Proposed *
- Existing/Approved MCCM Development
- Approximate Extent of Existing/Approved Surface Development
- MCCM Water Supply Pipeline

Maules Creek Continuation Project

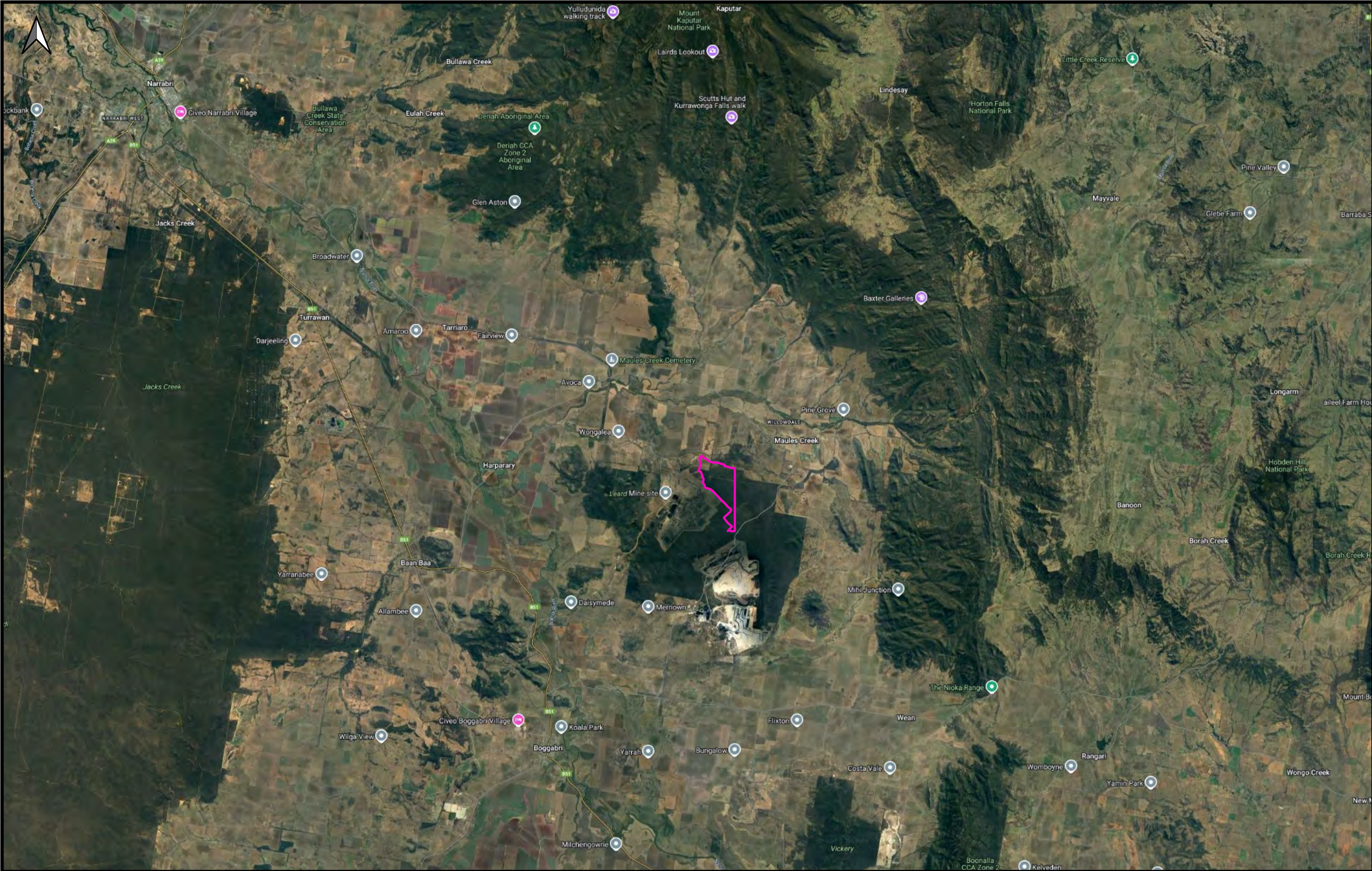
- Indicative Go-line, Access and Infrastructure Area
- Indicative Open Cut Extension Area
- Indicative Overburden Emplacement Extension
- Existing Overburden Rehabilitation to be Disturbed

* BCM boundary digitised from Figure 1 of the BCM Modification 10 Scoping Letter

Source: NSW Spatial Services (2024)
Orthophoto Mosaic: Whitehaven (2022-2024)

Whitehaven
MAULES CREEK CONTINUATION PROJECT
General Arrangement of the Project Mining Area

Figure 3





Ground Doctor

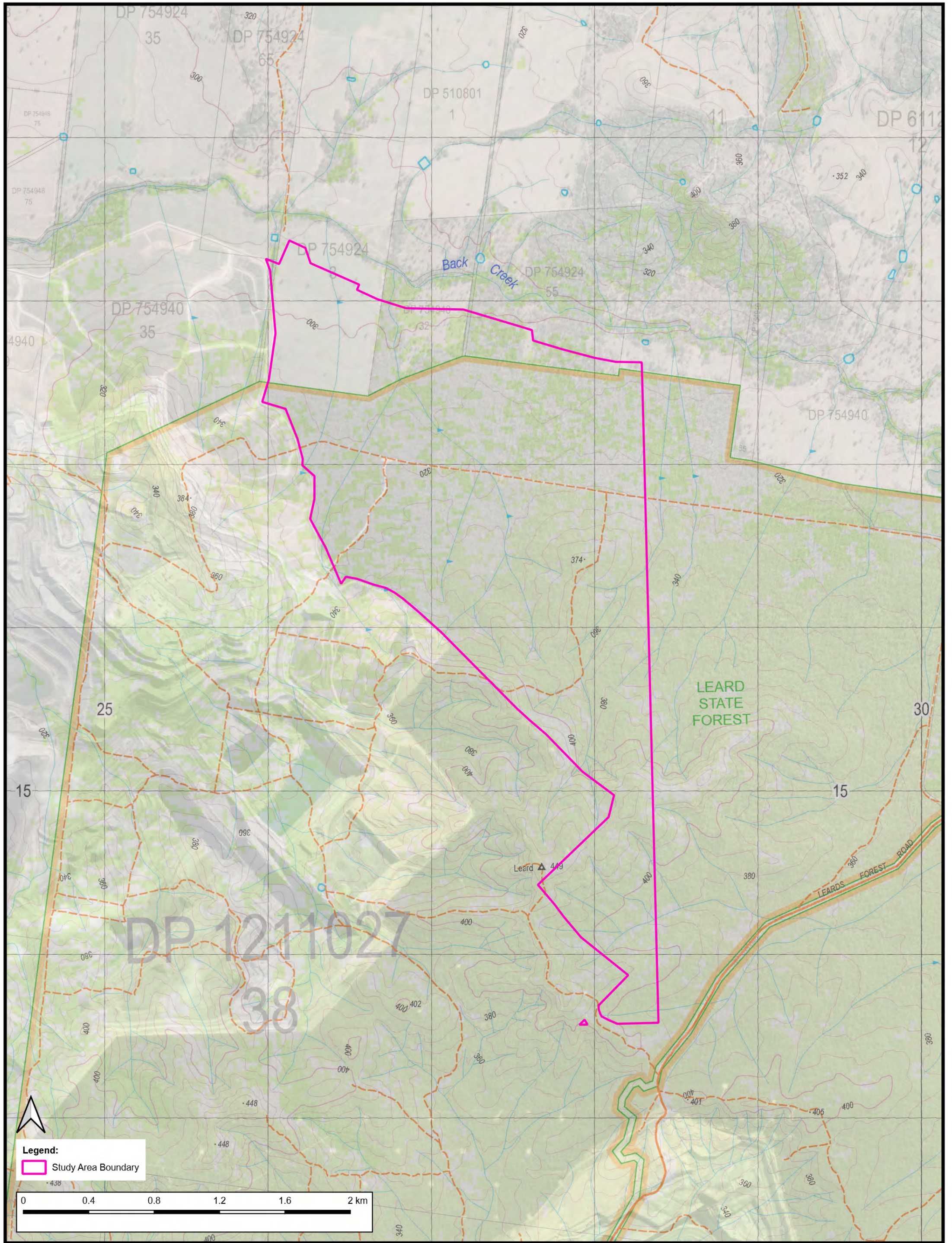
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Dubbo NSW 2830

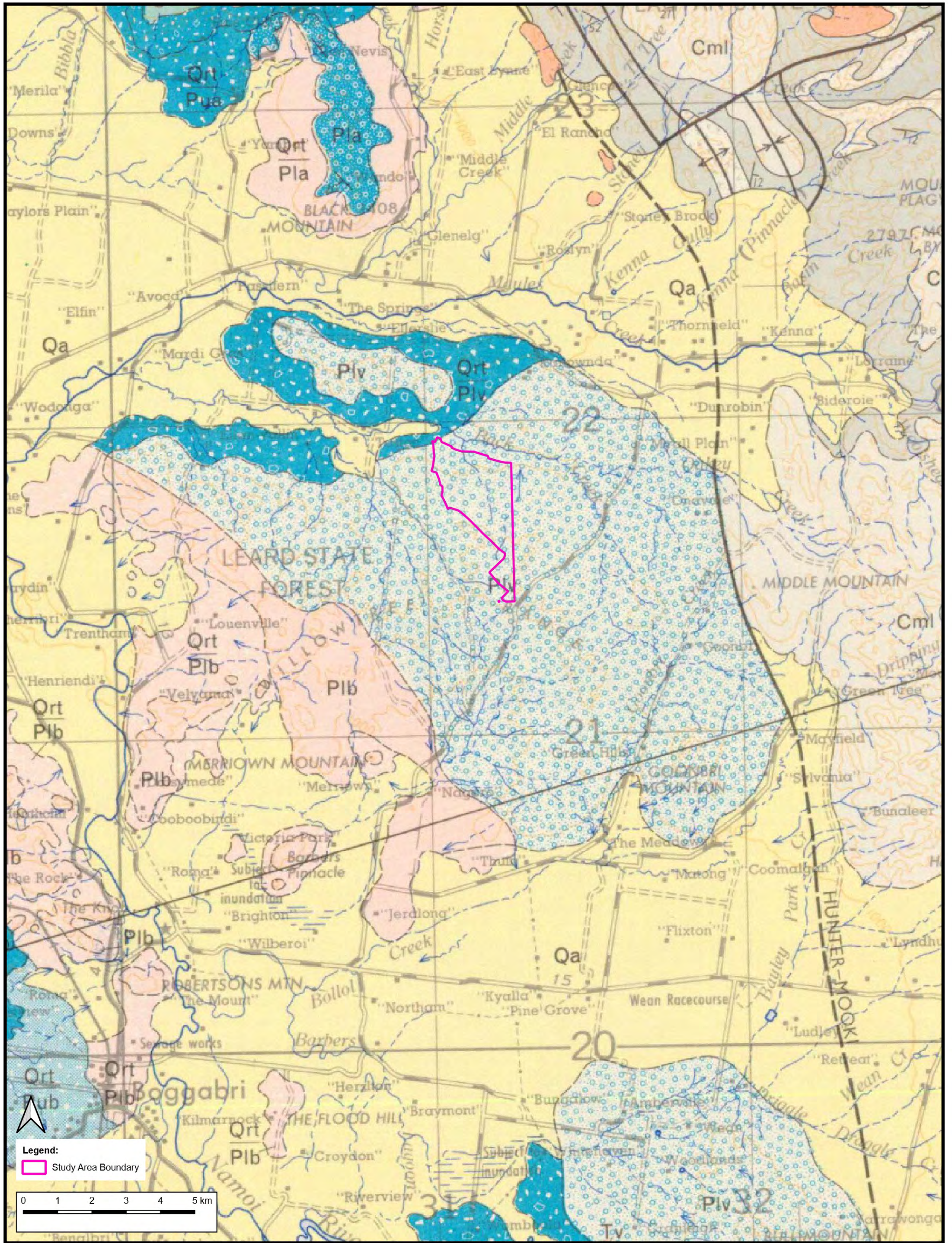
Ph: 0407 875 302
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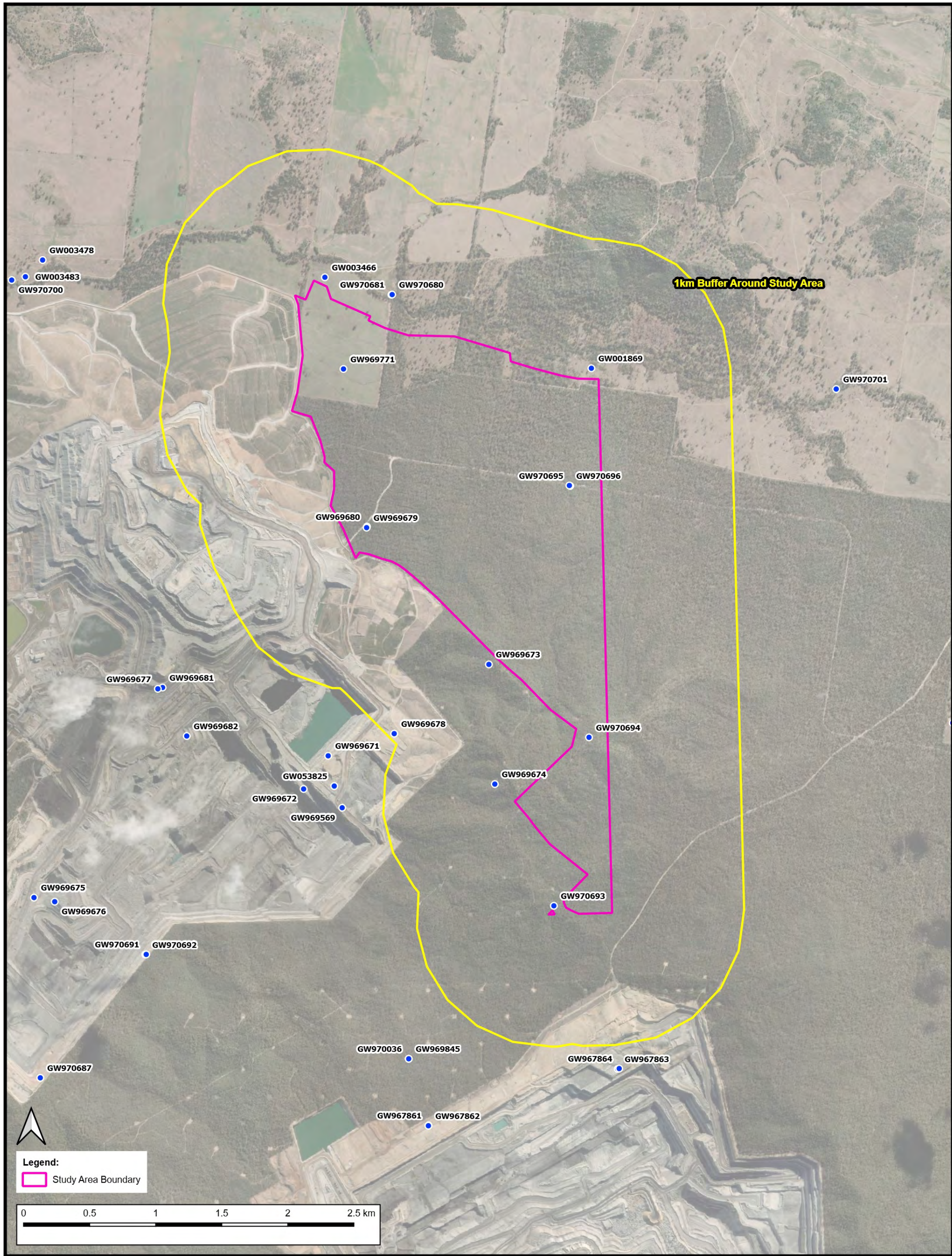
Figure 5: Study Area Boundary and Local Setting

Job Name: Preliminary Site Investigation - Maules Creek Continuation Project, Baan Baa, NSW

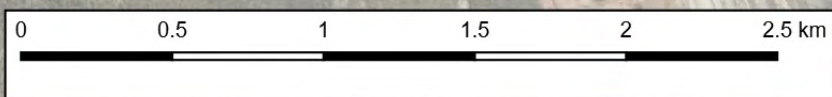
Job Number: 2023-GD010







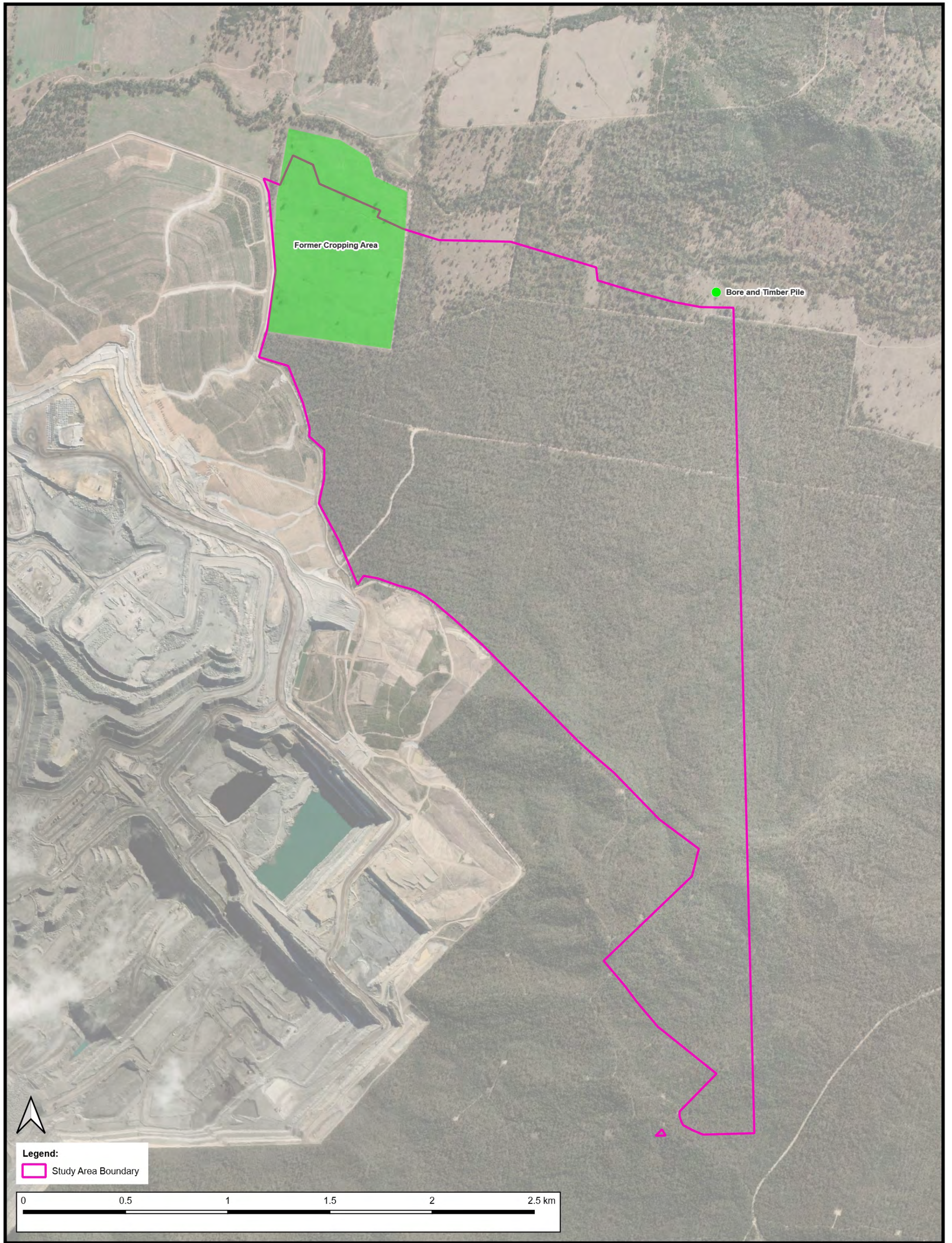
Legend:
Study Area Boundary



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Figure 8: Registered Groundwater Works Locations
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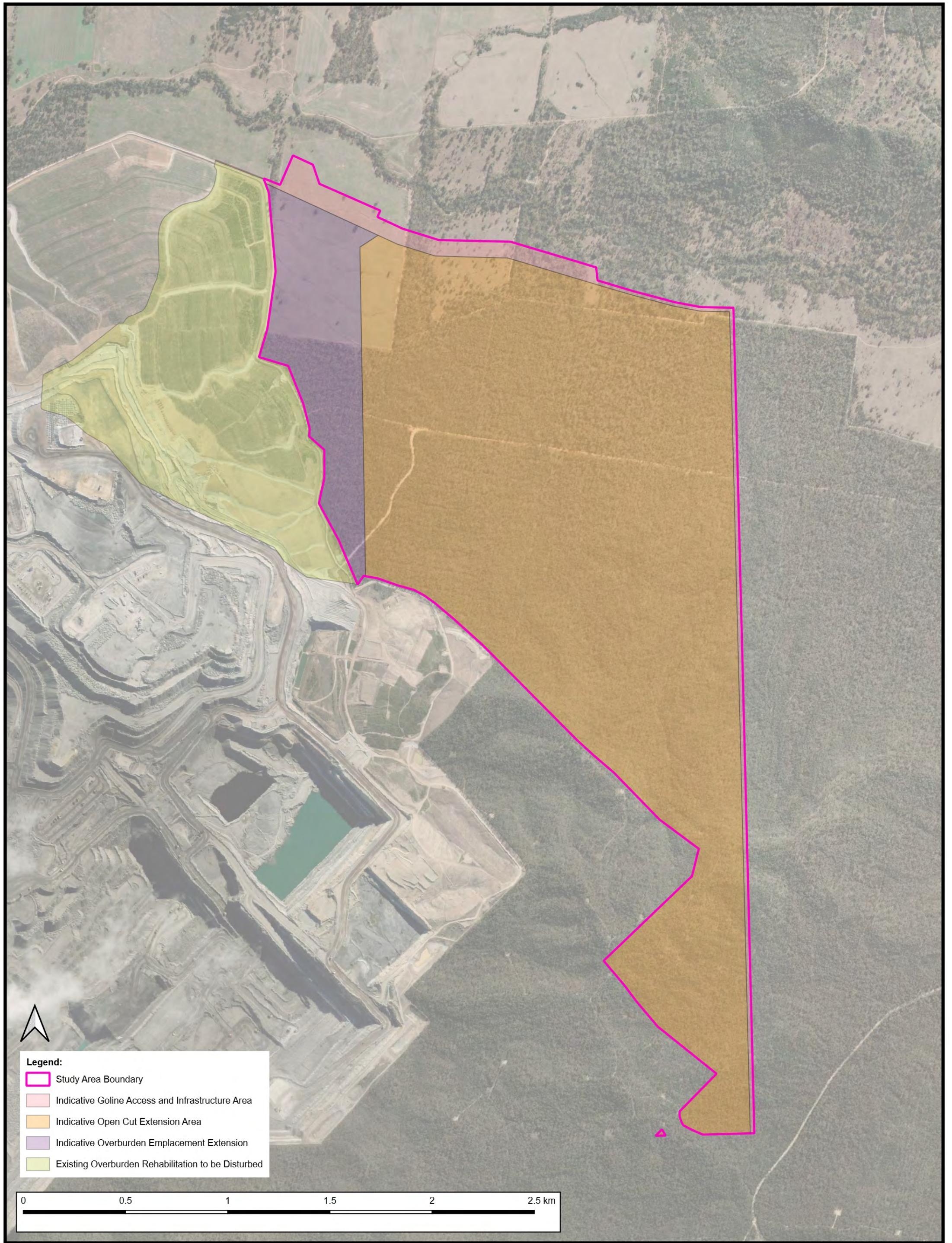
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Figure 9: Identified Study Area Features

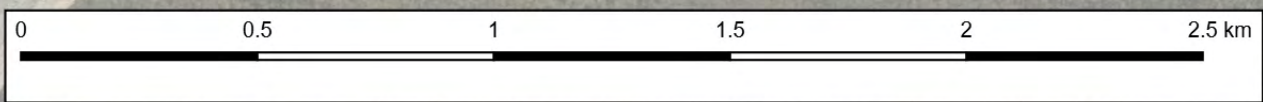
Job Name: Preliminary Site Investigation - Maules Creek Continuation Project, Baan Baa, NSW

Job Number: 2023-GD010



Legend:

-  Study Area Boundary
-  Indicative Goline Access and Infrastructure Area
-  Indicative Open Cut Extension Area
-  Indicative Overburden Emplacement Extension
-  Existing Overburden Rehabilitation to be Disturbed



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Figure 10: Indicative Layout of Study Area During Development

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Job Number: 2023-GD010

Annexure B

Study Area Inspection Photographs



Looking in a north easterly direction over the Study Area from the waste rock emplacement located adjacent to the north west corner of the Study Area. The photo shows the north west corner of the Study Area as a cleared paddock formerly used for cropping. The Leard State Forest occupies the majority of the Study Area.





Looking in an easterly direction over the Study Area from the waste rock emplacement located adjacent to the north west corner of the Study Area. The majority of the Study Area is part of the Leard State Forest.



The most elevated part of the Study Area is visible in the distance in this photograph looking in a south easterly direction from the waste rock emplacement located adjacent to the north west corner of the Study Area.



Looking across cleared land in the north west of the Study Area. This area was formerly used for dryland cropping. The hill in the background is the waste rock emplacement on the adjacent MCCM site.





Looking northwards across the former cropping area. Back Creek is situated in the stand of trees north of the cleared paddock.



The top of a groundwater bore identified immediately adjacent to the north east corner of the Study Area. A pile of timber was identified nearby. These were the only signs of built infrastructure identified within former agricultural land within or immediately adjacent to the Study Area.





PVC borehole collars were identified at former exploration drilling sites within Leard State Forest. The former drill sites were tidy and vegetation was reestablishing in the drill sites and associated access tracks.



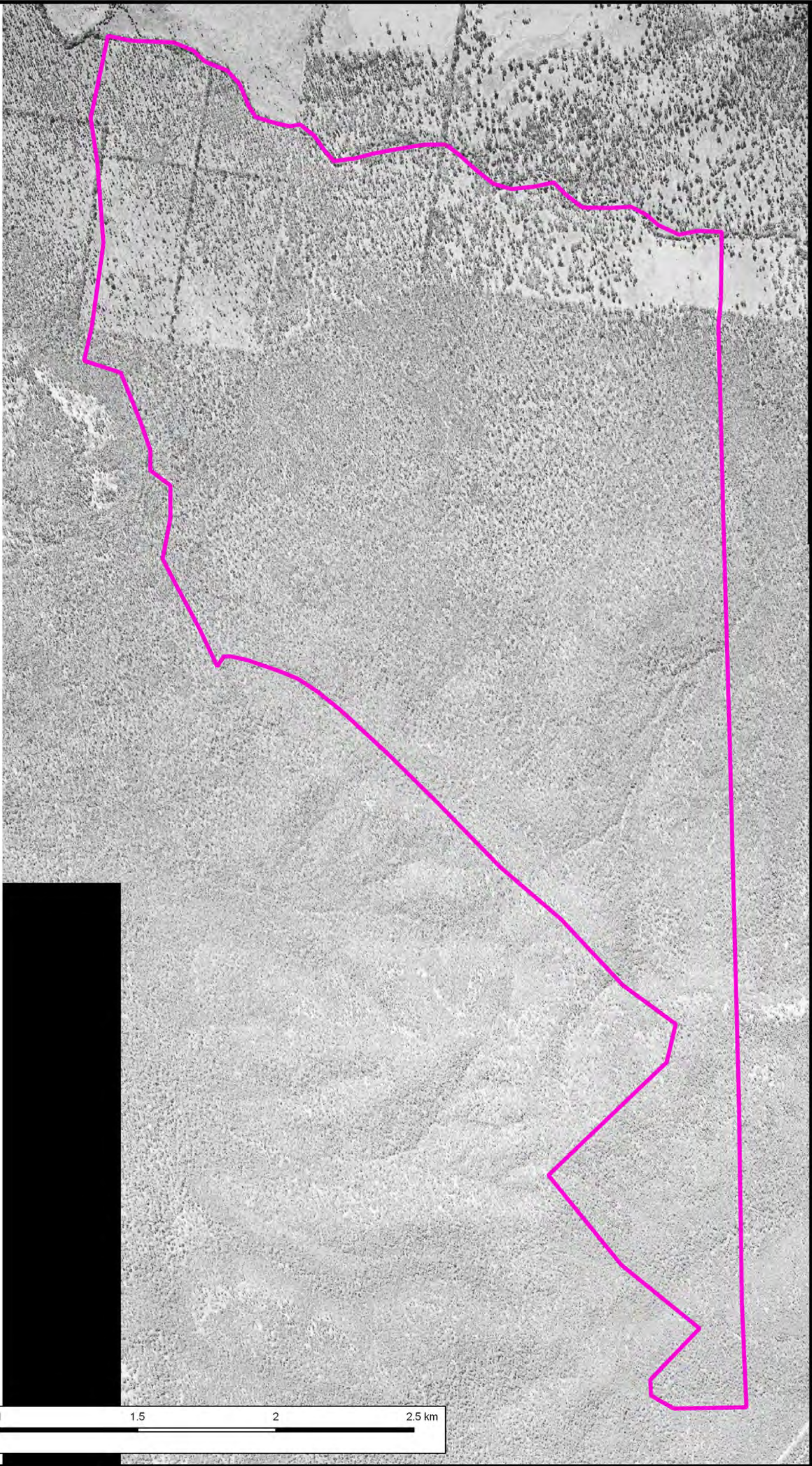



PVC borehole collars were identified at former exploration drilling sites within Leard State Forest. The former drill sites were tidy and vegetation was reestablishing in the drill sites and associated access tracks.



Annexure C

Historical Aerial Photographs



Legend:
 StudyArea



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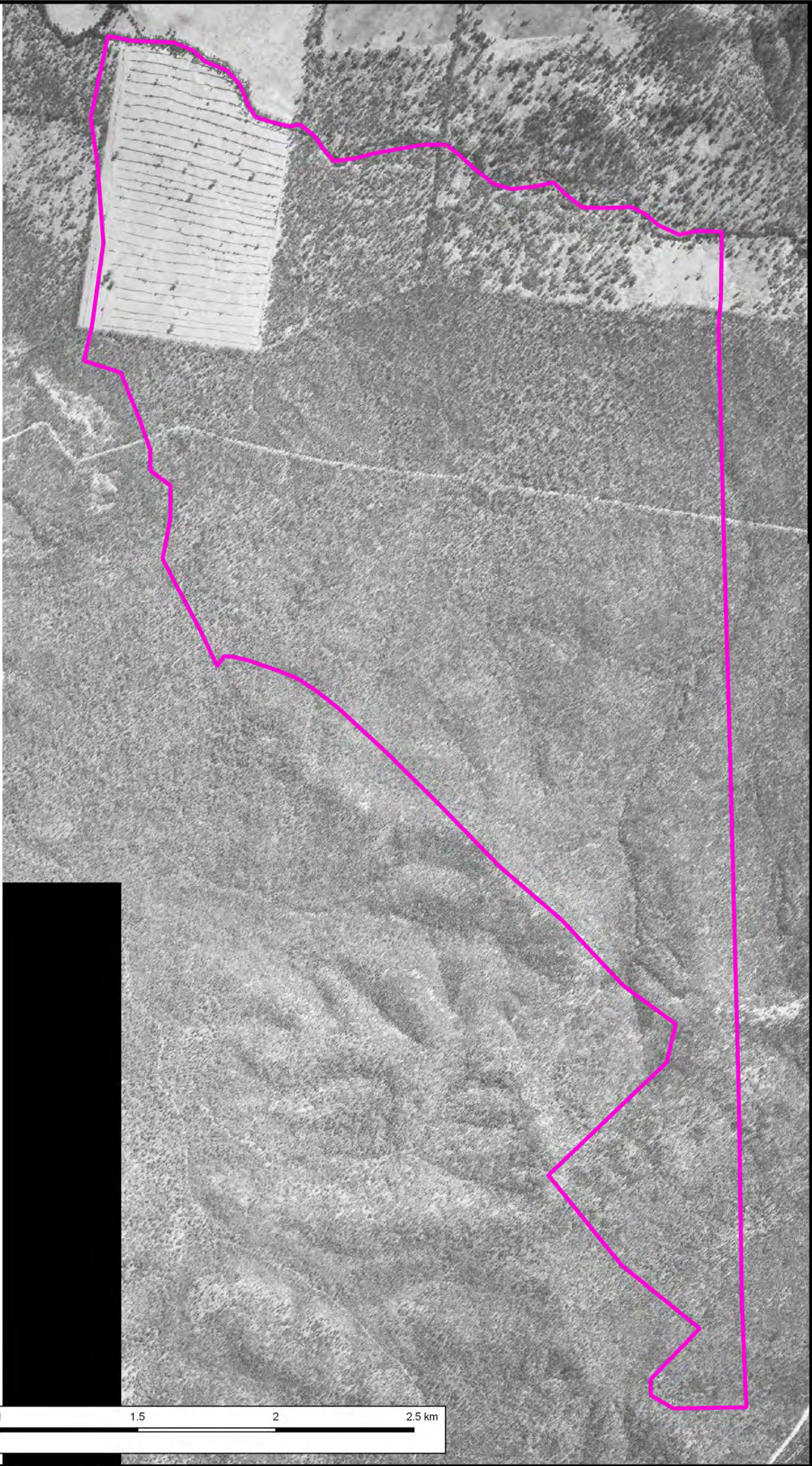
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1955 Aerial Photograph of the Study Area

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Job Number: 2023-GD010



Legend:
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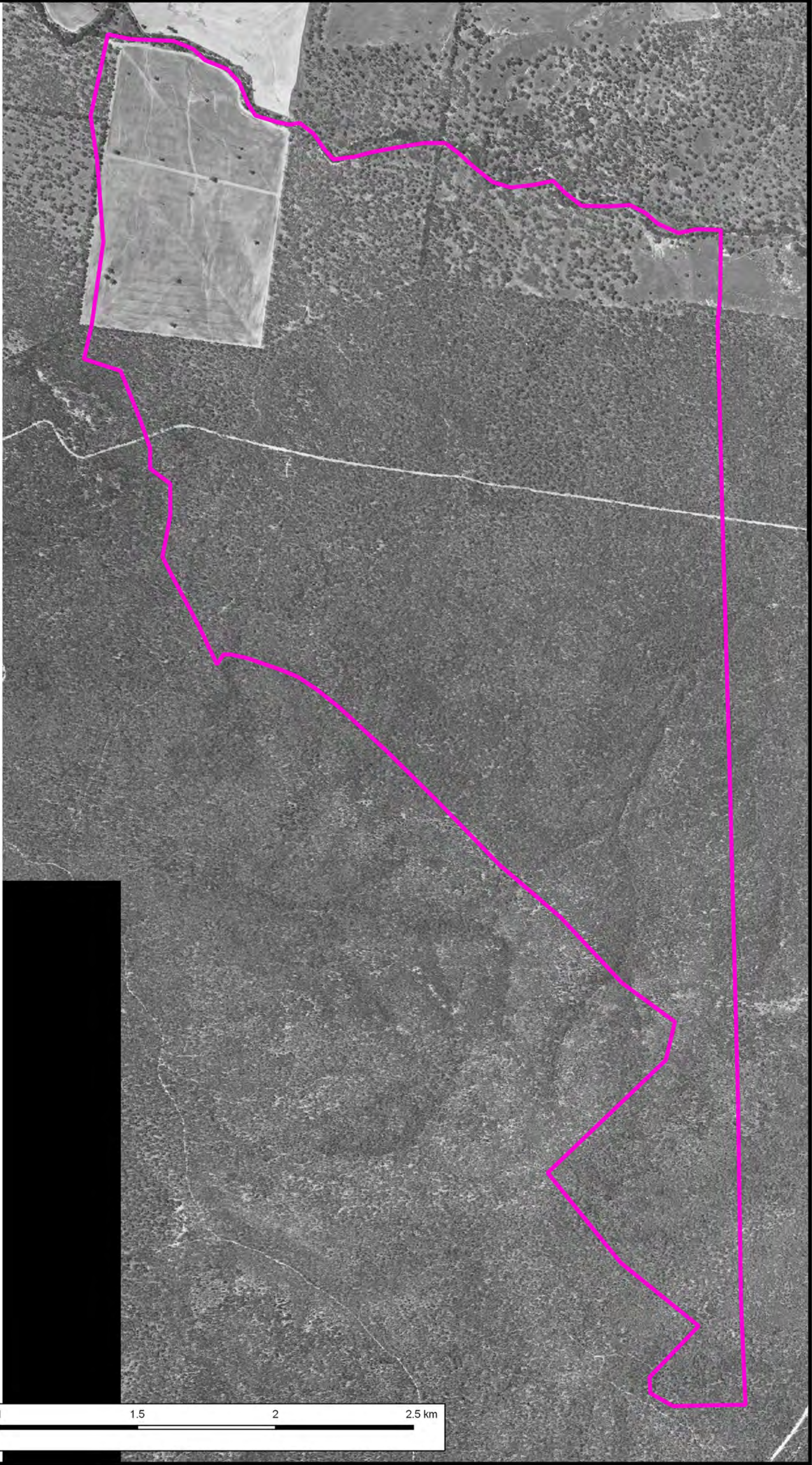



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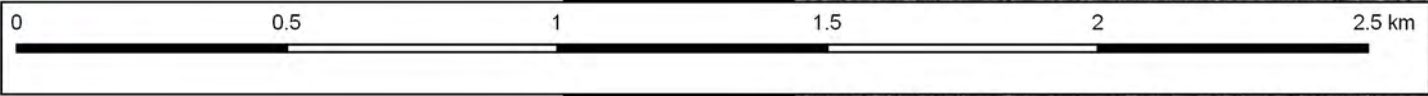
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1965 Aerial Photograph of the Study Area
Job Name: Preliminary Site Investigation - Maules Creek Continuation Project, Baan Baa, NSW
Job Number: 2023-GD010



Legend:
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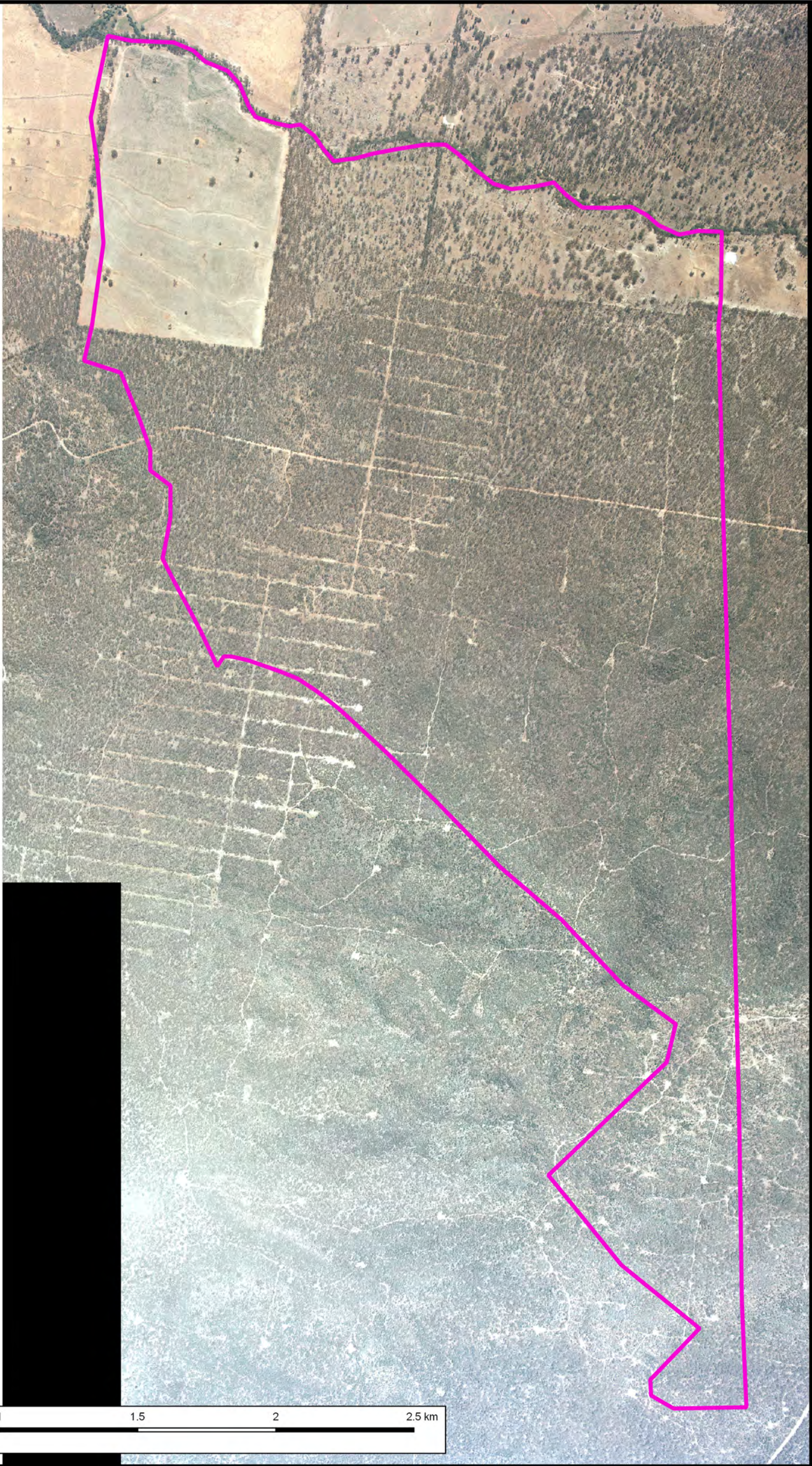



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1977 Aerial Photograph of the Study Area
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Job Number: 2023-GD010



Legend:
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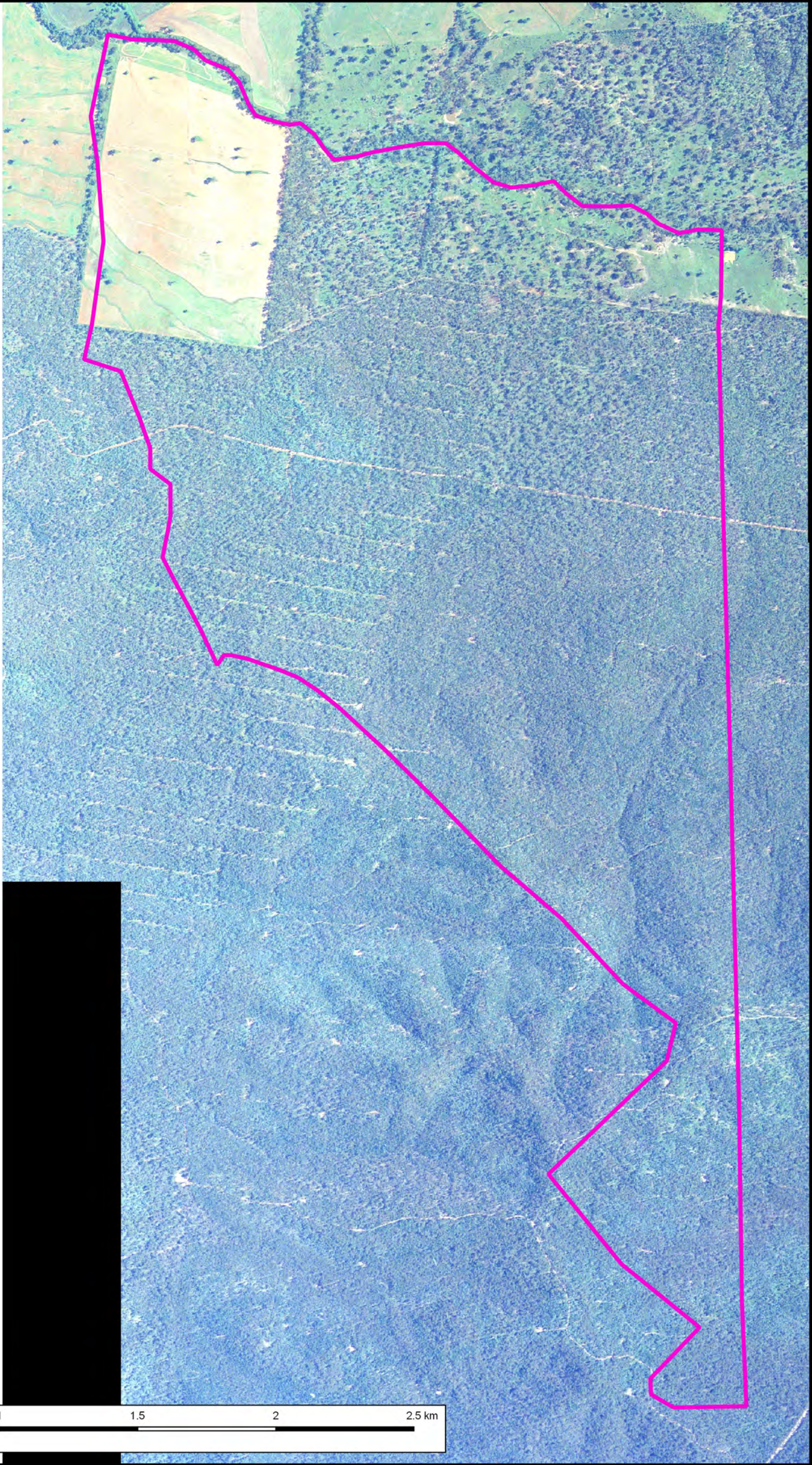



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1990 Aerial Photograph of the Study Area
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Job Number: 2023-GD010



Legend:
 StudyArea



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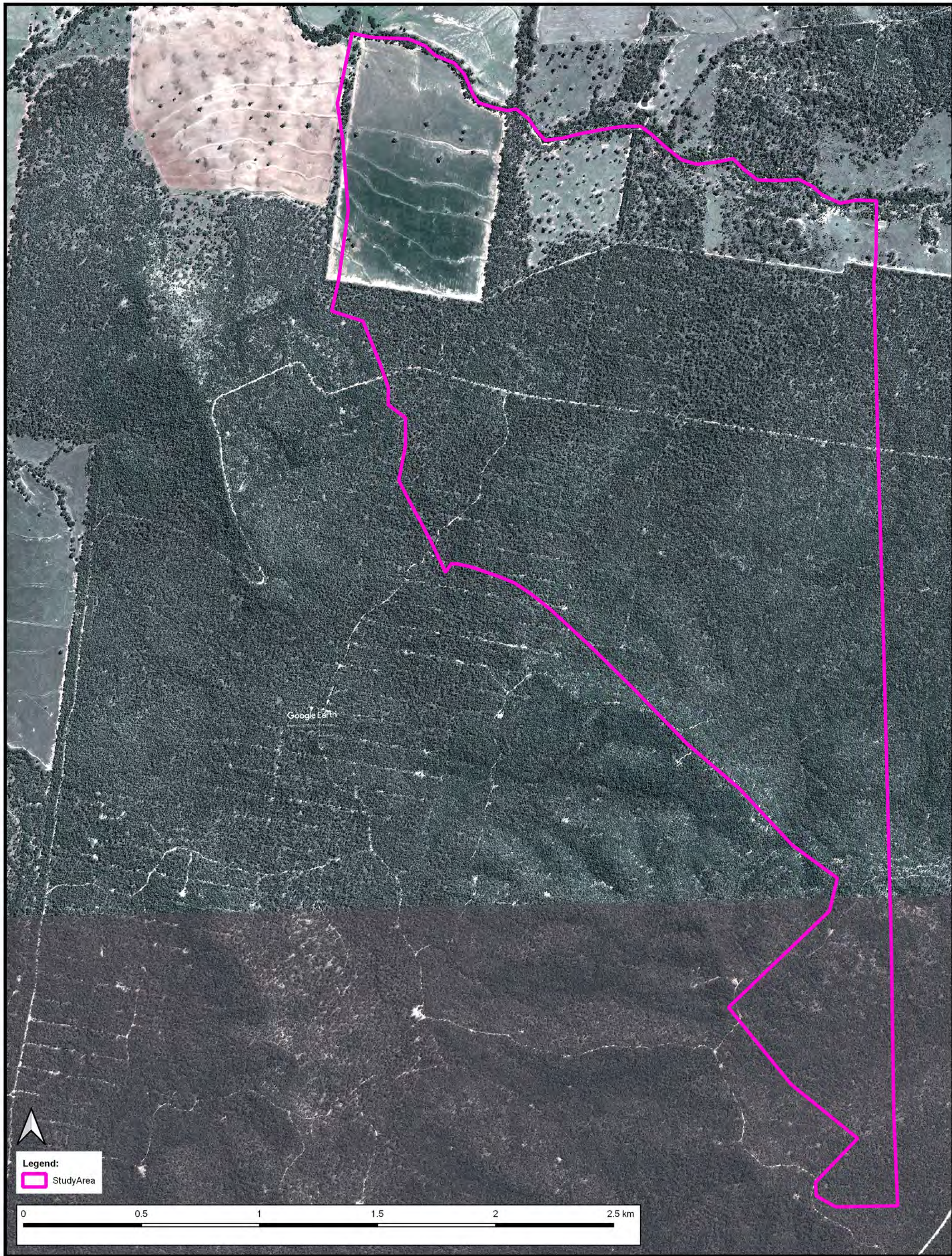
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1996 Aerial Photograph of the Study Area

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Job Number: 2023-GD010



Legend:
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0 0.5 1 1.5 2 2.5 km



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2011 Aerial Photograph of the Study Area

Job Name: Preliminary Site Investigation - Maules Creek Continuation Project, Baan Baa, NSW

Job Number: 2023-GD010



Legend:
 StudyArea



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2021 Aerial Photograph of the Study Area

Job Name: Preliminary Site Investigation - Maules Creek Continuation Project, Baan Baa, NSW

Job Number: 2023-GD010

Annexure D

Lotsearch Property Report



LOTSEARCH

LOTSEARCH ENVIRO LITE

Date: 05 Jun 2023 09:45:28

Reference: LS044429 EL

Address: Large Site, Baan Baa, NSW 2390

Disclaimer:

The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features.

You should obtain independent advice before you make any decision based on the information within the report.

The detailed terms applicable to use of this report are set out at the end of this report.

Dataset Listing

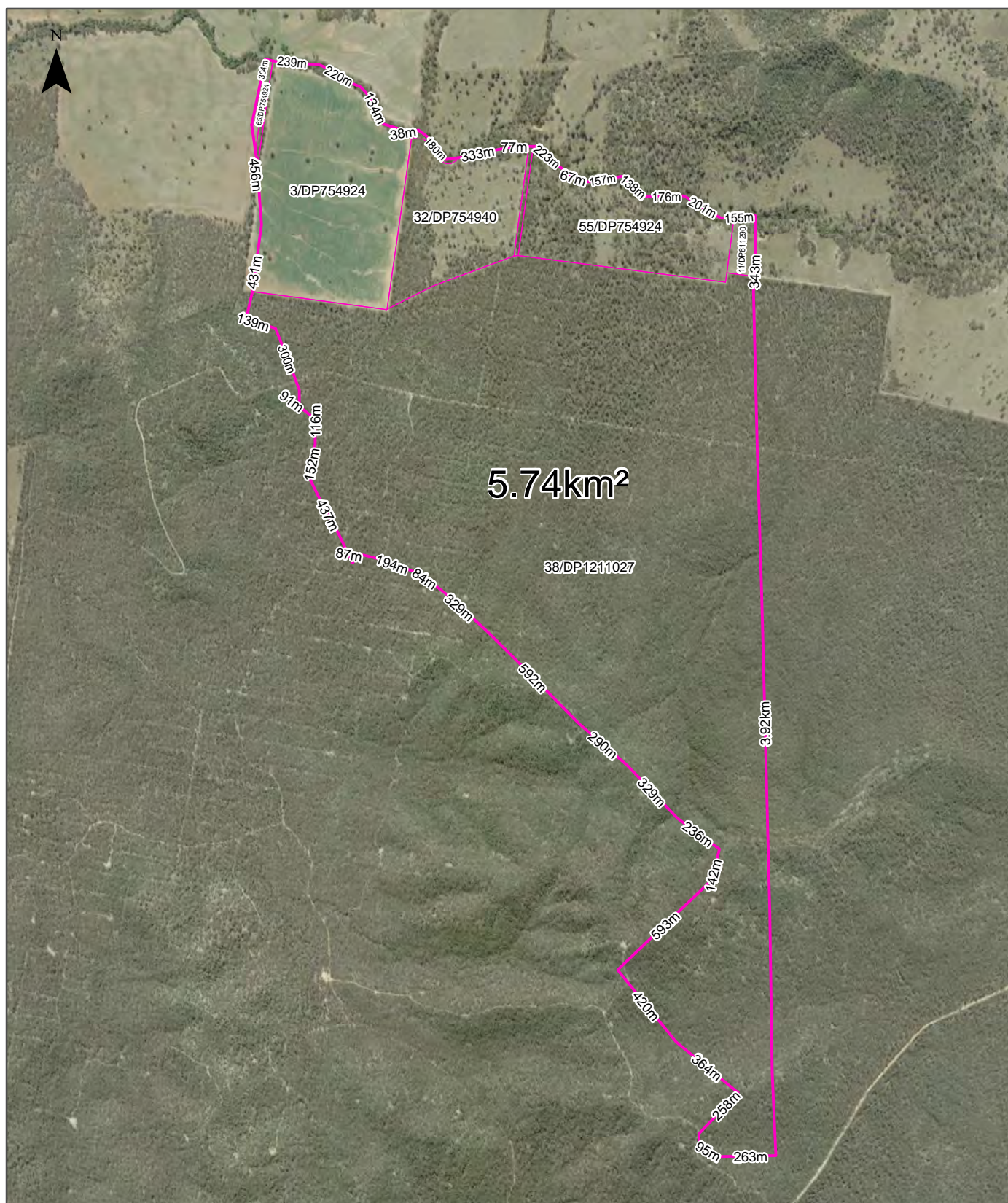
Datasets contained within this report, detailing their source and data currency:

| Dataset Name | Custodian | Supply Date | Currency Date | Update Frequency | Dataset Buffer (m) | No. Features On-site | No. Features within 100m | No. Features within Buffer |
|---|---|-------------|---------------|------------------|--------------------|----------------------|--------------------------|----------------------------|
| Cadastre Boundaries | NSW Department of Customer Service - Spatial Services | 17/05/2023 | 17/05/2023 | Quarterly | - | - | - | - |
| Topographic Data | NSW Department of Customer Service - Spatial Services | 22/08/2022 | 22/08/2022 | Annually | - | - | - | - |
| List of NSW contaminated sites notified to EPA | Environment Protection Authority | 02/05/2023 | 11/04/2023 | Monthly | 1000m | 0 | 0 | 0 |
| Contaminated Land Records of Notice | Environment Protection Authority | 04/05/2023 | 04/05/2023 | Monthly | 1000m | 0 | 0 | 0 |
| Former Gasworks | Environment Protection Authority | 10/05/2023 | 14/07/2021 | Quarterly | 1000m | 0 | 0 | 0 |
| National Waste Management Facilities Database | Geoscience Australia | 26/05/2022 | 07/03/2017 | Annually | 1000m | 0 | 0 | 0 |
| National Liquid Fuel Facilities | Geoscience Australia | 23/08/2022 | 13/07/2012 | Annually | 1000m | 0 | 0 | 0 |
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| Defence PFAS Investigation & Management Program - Investigation Sites | Department of Defence | 09/05/2023 | 09/05/2023 | Monthly | 2000m | 0 | 0 | 0 |
| Defence PFAS Investigation & Management Program - Management Sites | Department of Defence | 09/05/2023 | 09/05/2023 | Monthly | 2000m | 0 | 0 | 0 |
| Airservices Australia National PFAS Management Program | Airservices Australia | 09/05/2023 | 09/05/2023 | Monthly | 2000m | 0 | 0 | 0 |
| Defence 3 Year Regional Contamination Investigation Program | Department of Defence | 02/09/2022 | 02/09/2022 | Quarterly | 2000m | 0 | 0 | 0 |
| EPA Other Sites with Contamination Issues | Environment Protection Authority | 16/02/2022 | 13/12/2018 | Annually | 1000m | 0 | 0 | 0 |
| Licensed Activities under the POEO Act 1997 | Environment Protection Authority | 04/05/2023 | 04/05/2023 | Monthly | 1000m | 3 | 3 | 6 |
| Delicensed POEO Activities still regulated by the EPA | Environment Protection Authority | 04/05/2023 | 04/05/2023 | Monthly | 1000m | 1 | 1 | 1 |
| Former POEO Licensed Activities now revoked or surrendered | Environment Protection Authority | 04/05/2023 | 04/05/2023 | Monthly | 1000m | 3 | 3 | 3 |
| UBD Business Directories (Premise & Intersection Matches) | Hardie Grant | | | Not required | 150m | 0 | 0 | 0 |
| UBD Business Directories (Road & Area Matches) | Hardie Grant | | | Not required | 150m | - | 0 | 0 |
| UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches) | Hardie Grant | | | Not required | 500m | 0 | 0 | 0 |
| UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches) | Hardie Grant | | | Not required | 500m | - | 0 | 0 |
| Points of Interest | NSW Department of Customer Service - Spatial Services | 19/10/2022 | 19/10/2022 | Quarterly | 1000m | 0 | 0 | 0 |
| Tanks (Areas) | NSW Department of Customer Service - Spatial Services | 19/10/2022 | 19/10/2022 | Quarterly | 1000m | 0 | 0 | 0 |
| Tanks (Points) | NSW Department of Customer Service - Spatial Services | 19/10/2022 | 19/10/2022 | Quarterly | 1000m | 0 | 0 | 0 |
| Major Easements | NSW Department of Customer Service - Spatial Services | 23/05/2023 | 23/05/2023 | Quarterly | 1000m | 0 | 0 | 0 |
| State Forest | Forestry Corporation of NSW | 16/08/2022 | 14/08/2022 | Annually | 1000m | 1 | 1 | 1 |
| NSW National Parks and Wildlife Service Reserves | NSW Office of Environment & Heritage | 16/02/2023 | 31/12/2022 | Annually | 1000m | 0 | 0 | 0 |
| Hydrogeology Map of Australia | Commonwealth of Australia (Geoscience Australia) | 29/08/2022 | 19/08/2019 | As required | 1000m | 2 | 2 | 2 |
| Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018 | NSW Department of Planning, Industry and Environment | 09/05/2023 | 23/02/2018 | Annually | 1000m | 0 | 0 | 0 |
| National Groundwater Information System (NGIS) Boreholes | Bureau of Meteorology; Water NSW | 18/04/2023 | 13/07/2022 | Annually | 2000m | 8 | 12 | 29 |

| Dataset Name | Custodian | Supply Date | Currency Date | Update Frequency | Dataset Buffer (m) | No. Features On-site | No. Features within 100m | No. Features within Buffer |
|---|--|-------------|---------------|------------------|--------------------|----------------------|--------------------------|----------------------------|
| NSW Seamless Geology Single Layer: Rock Units | Department of Regional NSW | 17/02/2022 | 01/05/2021 | Annually | 1000m | 3 | 3 | 4 |
| NSW Seamless Geology – Single Layer: Trendlines | Department of Regional NSW | 17/02/2022 | 01/05/2021 | Annually | 1000m | 0 | 0 | 0 |
| NSW Seamless Geology – Single Layer: Geological Boundaries and Faults | Department of Regional NSW | 17/02/2022 | 01/05/2021 | Annually | 1000m | 0 | 0 | 0 |
| Naturally Occurring Asbestos Potential | NSW Dept. of Industry, Resources & Energy | 04/12/2015 | 24/09/2015 | Unknown | 1000m | 0 | 0 | 0 |
| Atlas of Australian Soils | Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES) | 19/05/2017 | 17/02/2011 | As required | 1000m | 2 | 2 | 2 |
| Environmental Planning Instrument Acid Sulfate Soils | NSW Department of Planning, Industry and Environment | 28/02/2023 | 02/12/2022 | Monthly | 500m | 0 | - | - |
| Atlas of Australian Acid Sulfate Soils | CSIRO | 19/01/2017 | 21/02/2013 | As required | 1000m | 1 | 1 | 1 |
| Dryland Salinity - National Assessment | National Land and Water Resources Audit | 18/07/2014 | 12/05/2013 | None planned | 1000m | 0 | 0 | 0 |
| Mining Subsidence Districts | NSW Department of Customer Service - Subsidence Advisory NSW | 15/05/2023 | 15/05/2023 | Quarterly | 1000m | 0 | 0 | 0 |
| Current Mining Titles | NSW Department of Industry | 10/05/2023 | 10/05/2023 | Monthly | 1000m | 4 | 4 | 5 |
| Mining Title Applications | NSW Department of Industry | 10/05/2023 | 10/05/2023 | Monthly | 1000m | 0 | 0 | 0 |
| Historic Mining Titles | NSW Department of Industry | 10/05/2023 | 10/05/2023 | Monthly | 1000m | 5 | 6 | 9 |
| Environmental Planning Instrument SEPP State Significant Precincts | NSW Department of Planning, Industry and Environment | 15/11/2021 | 07/12/2018 | Monthly | 1000m | 0 | 0 | 0 |
| Environmental Planning Instrument Land Zoning | NSW Department of Planning, Industry and Environment | 15/12/2022 | 02/12/2022 | Monthly | 1000m | 2 | 2 | 2 |
| Commonwealth Heritage List | Australian Government Department of the Agriculture, Water and the Environment | 03/06/2022 | 13/04/2022 | Annually | 1000m | 0 | 0 | 0 |
| National Heritage List | Australian Government Department of the Agriculture, Water and the Environment | 03/06/2022 | 13/04/2022 | Annually | 1000m | 0 | 0 | 0 |
| State Heritage Register - Curtilages | NSW Department of Planning, Industry and Environment | 18/10/2022 | 01/07/2022 | Quarterly | 1000m | 0 | 0 | 0 |
| Environmental Planning Instrument Local Heritage | NSW Department of Planning, Industry and Environment | 28/02/2023 | 17/02/2023 | Monthly | 1000m | 0 | 0 | 0 |
| Bush Fire Prone Land | NSW Rural Fire Service | 05/06/2023 | 25/10/2022 | Weekly | 1000m | 2 | 2 | 2 |
| Eastern Bushland Database (North Region) | NSW Office of Environment & Heritage | 24/07/2016 | 01/01/1991 | Annually | 1000m | 3 | 3 | 3 |
| Ramsar Wetlands of Australia | Australian Government Department of Agriculture, Water and the Environment | 09/05/2023 | 01/11/2022 | Annually | 1000m | 0 | 0 | 0 |
| Groundwater Dependent Ecosystems | Bureau of Meteorology | 28/10/2022 | 26/10/2022 | Annually | 1000m | 2 | 2 | 3 |
| Inflow Dependent Ecosystems Likelihood | Bureau of Meteorology | 28/10/2022 | 26/10/2022 | Annually | 1000m | 7 | 7 | 10 |
| NSW BioNet Species Sightings | NSW Office of Environment & Heritage | 05/06/2023 | 05/06/2023 | Weekly | 10000m | - | - | - |

Site Diagram

Large Site, Baan Baa, NSW 2390



Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 5.74km²

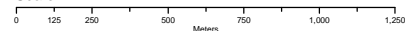
Total Perimeter: 13.68km

Disclaimers:

Measurements are approximate only and may have been simplified or smaller lengths removed for readability.

Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.

Scale:



Data Sources: Aerial Imagery:
© NSW Department of Finance, Services & Innovation

Coordinate System:
GDA 1994 MGA Zone 56

Date: 06 June 2023

Contaminated Land

Large Site, Baan Baa, NSW 2390

List of NSW contaminated sites notified to EPA

Records from the NSW EPA Contaminated Land list within the dataset buffer:

| Map Id | Site | Address | Suburb | Activity | Management Class | Status | Location Confidence | Dist | Direction |
|--------|----------------------|---------|--------|----------|------------------|--------|---------------------|------|-----------|
| N/A | No records in buffer | | | | | | | | |

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

| EPA site management class | Explanation |
|---|---|
| Contamination being managed via the planning process (EP&A Act) | The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment. |
| Contamination currently regulated under CLM Act | The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record of Notices. |
| Contamination currently regulated under POEO Act | The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register. |
| Contamination formerly regulated under the CLM Act | The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act. |
| Contamination formerly regulated under the POEO Act | The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the Protection of the Environment Operations Act 1997 (POEO Act). |
| Contamination was addressed via the planning process (EP&A Act) | The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act). |
| Ongoing maintenance required to manage residual contamination (CLM Act) | The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record of Notices. |
| Regulation being finalised | The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised. |
| Regulation under the CLM Act not required | The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required. |
| Under assessment | The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order. |

NSW EPA Contaminated Land List Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Contaminated Land

Large Site, Baan Baa, NSW 2390

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

| Map Id | Name | Address | Suburb | Notices | Area No | Location Confidence | Distance | Direction |
|--------|----------------------|---------|--------|---------|---------|---------------------|----------|-----------|
| N/A | No records in buffer | | | | | | | |

Contaminated Land Records of Notice Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority
Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit
<http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm>

Former Gasworks

Former Gasworks within the dataset buffer:

| Map Id | Location | Council | Further Info | Location Confidence | Distance | Direction |
|--------|----------------------|---------|--------------|---------------------|----------|-----------|
| N/A | No records in buffer | | | | | |

Former Gasworks Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Waste Management & Liquid Fuel Facilities

Large Site, Baan Baa, NSW 2390

National Waste Management Site Database

Sites on the National Waste Management Site Database within the dataset buffer:

| Site Id | Owner | Name | Address | Suburb | Class | Landfill | Reprocess | Transfer | Comments | Loc Conf | Dist | Direction |
|---------|----------------------|------|---------|--------|-------|----------|-----------|----------|----------|----------|------|-----------|
| N/A | No records in buffer | | | | | | | | | | | |

Waste Management Facilities Data Source: Geoscience Australia
Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

National Liquid Fuel Facilities

National Liquid Fuel Facilities within the dataset buffer:

| Map Id | Owner | Name | Address | Suburb | Class | Operational Status | Operator | Revision Date | Loc Conf | Dist | Direction |
|--------|----------------------|------|---------|--------|-------|--------------------|----------|---------------|----------|------|-----------|
| N/A | No records in buffer | | | | | | | | | | |

National Liquid Fuel Facilities Data Source: Geoscience Australia
Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

PFAS Investigation & Management Programs

Large Site, Baan Baa, NSW 2390

EPA PFAS Investigation Program

Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

| Map ID | Site | Address | Loc Conf | Dist | Dir |
|--------|----------------------|---------|----------|------|-----|
| N/A | No records in buffer | | | | |

EPA PFAS Investigation Program: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Defence PFAS Investigation Program

Sites being investigated by the Department of Defence for PFAS contamination within the dataset buffer:

| Map ID | Base Name | Address | Loc Conf | Dist | Dir |
|--------|----------------------|---------|----------|------|-----|
| N/A | No records in buffer | | | | |

Defence PFAS Investigation Program Data Custodian: Department of Defence, Australian Government

Defence PFAS Management Program

Sites being managed by the Department of Defence for PFAS contamination within the dataset buffer:

| Map ID | Base Name | Address | Loc Conf | Dist | Dir |
|--------|----------------------|---------|----------|------|-----|
| N/A | No records in buffer | | | | |

Defence PFAS Management Program Data Custodian: Department of Defence, Australian Government

Airservices Australia National PFAS Management Program

Sites being investigated or managed by Airservices Australia for PFAS contamination within the dataset buffer:

| Map ID | Site Name | Impacts | Loc Conf | Dist | Dir |
|--------|----------------------|---------|----------|------|-----|
| N/A | No records in buffer | | | | |

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

Large Site, Baan Baa, NSW 2390

Defence 3 Year Regional Contamination Investigation Program

Sites which have been assessed as part of the Defence 3 Year Regional Contamination Investigation Program within the dataset buffer:

| Property ID | Base Name | Address | Known Contamination | Loc Conf | Dist | Dir |
|-------------|----------------------|---------|---------------------|----------|------|-----|
| N/A | No records in buffer | | | | | |

Defence 3 Year Regional Contamination Investigation Program, Data Custodian: Department of Defence, Australian Government

EPA Other Sites with Contamination Issues

Large Site, Baan Baa, NSW 2390

EPA Other Sites with Contamination Issues

This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

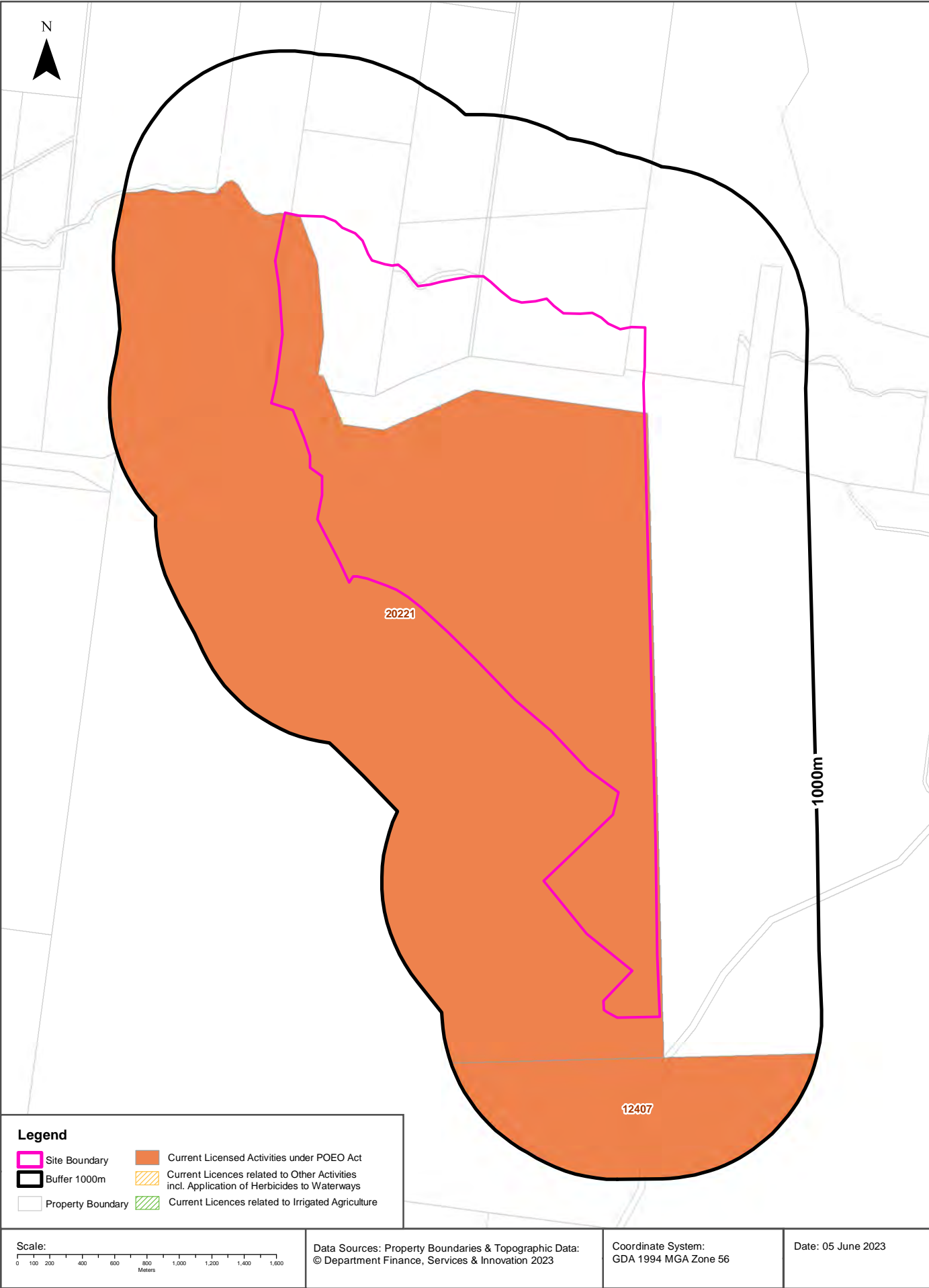
Sites within the dataset buffer:

| Site Id | Site Name | Site Address | Dataset | Comments | Location Confidence | Distance | Direction |
|---------|----------------------|--------------|---------|----------|---------------------|----------|-----------|
| N/A | No records in buffer | | | | | | |

EPA Other Sites with Contamination Issues: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Current EPA Licensed Activities

Large Site, Baan Baa, NSW 2390



EPA Activities

Large Site, Baan Baa, NSW 2390

Licensed Activities under the POEO Act 1997

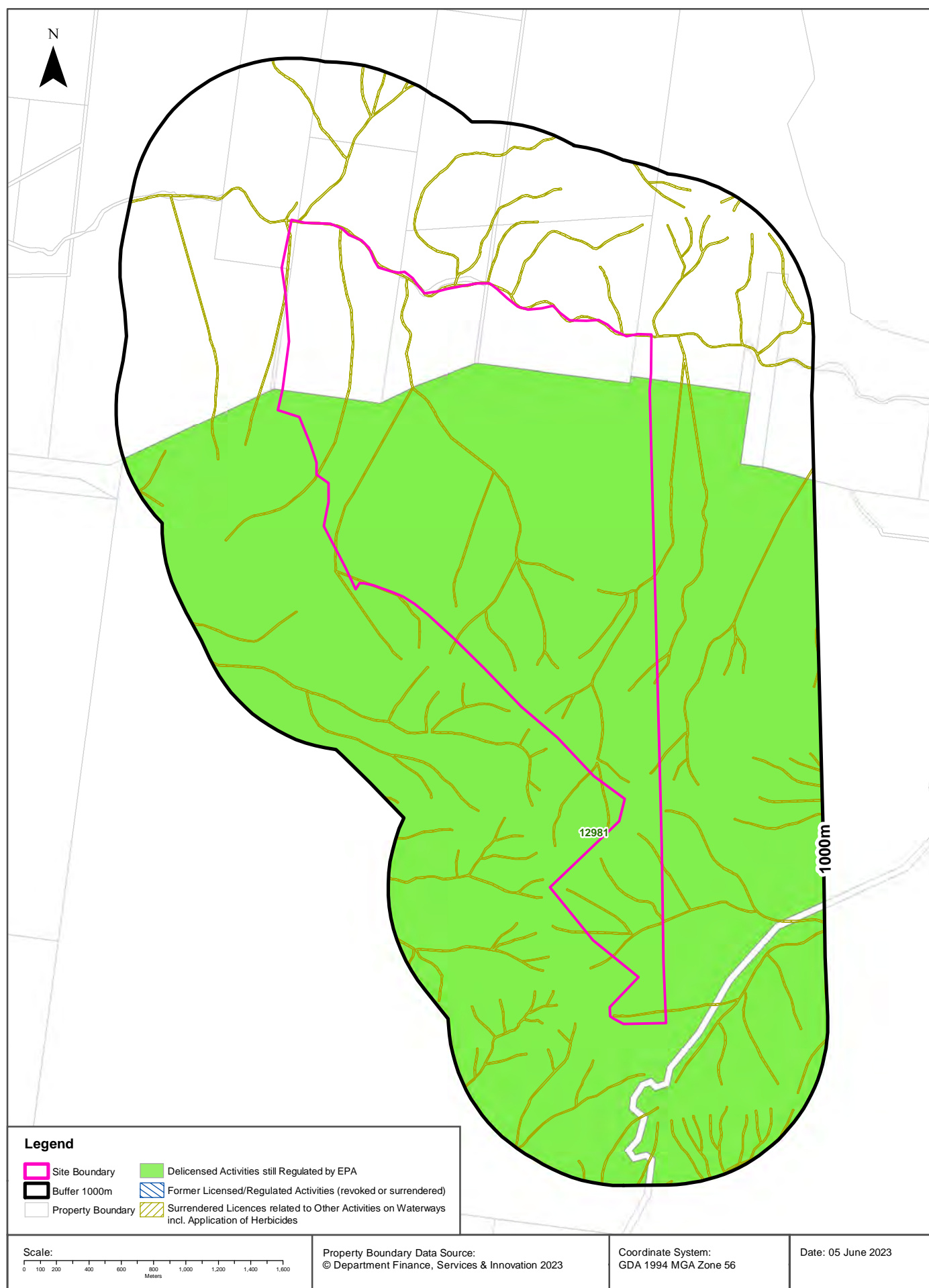
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

| EPL | Organisation | Name | Address | Suburb | Activity | Loc Conf | Distance | Direction |
|-------|----------------------------------|------------------------|-----------------------|----------|----------------------------------|---------------|----------|-----------|
| 20221 | Maules Creek Coal Pty Ltd | Maules Creek Coal Mine | Therribri Road | BOGGABRI | Coal works | Area Match | 0m | On-site |
| 20221 | Maules Creek Coal Pty Ltd | Maules Creek Coal Mine | Therribri Road | BOGGABRI | Mining for coal | Area Match | 0m | On-site |
| 20221 | Maules Creek Coal Pty Ltd | Maules Creek Coal Mine | Therribri Road | BOGGABRI | Crushing, grinding or separating | Area Match | 0m | On-site |
| 12407 | BOGGABRI COAL OPERATIONS PTY LTD | Boggabri Coal Mine | 386 Leard Forest Road | BOGGABRI | Mining for coal | Premise Match | 253m | South |
| 12407 | BOGGABRI COAL OPERATIONS PTY LTD | Boggabri Coal Mine | 386 Leard Forest Road | BOGGABRI | Crushing, grinding or separating | Premise Match | 253m | South |
| 12407 | BOGGABRI COAL OPERATIONS PTY LTD | Boggabri Coal Mine | 386 Leard Forest Road | BOGGABRI | Coal works | Premise Match | 253m | South |

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Large Site, Baan Baa, NSW 2390



EPA Activities

Large Site, Baan Baa, NSW 2390

Delicensed Activities still regulated by the EPA

Delicensed activities still regulated by the EPA, within the dataset buffer:

| Licence No | Organisation | Name | Address | Suburb | Activity | Loc Conf | Distance | Direction |
|------------|---|------|---|--------|--------------------|---------------------|----------|-----------|
| 12981 | FORESTRY CORPORATION OF NEW SOUTH WALES | | Brigalow and Nandewar Community Conservation Area | | Logging operations | Network of Features | 0m | On-site |

Delicensed Activities Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

| Licence No | Organisation | Location | Status | Issued Date | Activity | Loc Conf | Distance | Direction |
|------------|---|--|-------------|-------------|---|---------------------|----------|-----------|
| 4653 | LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD | WATERWAYS THROUGHOUT NSW | Surrendered | 06/09/2000 | Other Activities / Non Scheduled Activity - Application of Herbicides | Network of Features | 0m | On-site |
| 4838 | Robert Orchard | Various Waterways throughout New South Wales - SYDNEY NSW 2000 | Surrendered | 07/09/2000 | Other Activities / Non Scheduled Activity - Application of Herbicides | Network of Features | 0m | On-site |
| 6630 | SYDNEY WEED & PEST MANAGEMENT PTY LTD | WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148 | Surrendered | 09/11/2000 | Other Activities / Non Scheduled Activity - Application of Herbicides | Network of Features | 0m | On-site |

Former Licensed Activities Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Historical Business Directories

Large Site, Baan Baa, NSW 2390

Business Directory Records 1950-1991 Premise or Road Intersection Matches

Universal Business Directory records from years 1991, 1982, 1970, 1961 & 1950, mapped to a premise or road intersection within the dataset buffer:

| Map Id | Business Activity | Premise | Ref No. | Year | Location Confidence | Distance to Property Boundary or Road Intersection | Direction |
|--------|----------------------|---------|---------|------|---------------------|--|-----------|
| N/A | No records in buffer | | | | | | |

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Business Directory Records 1950-1991 Road or Area Matches

Universal Business Directory records from years 1991, 1982, 1970, 1961 & 1950, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

| Map Id | Business Activity | Premise | Ref No. | Year | Location Confidence | Distance to Road Corridor or Area |
|--------|----------------------|---------|---------|------|---------------------|-----------------------------------|
| N/A | No records in buffer | | | | | |

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Historical Business Directories

Large Site, Baan Baa, NSW 2390

Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a premise or road intersection, within the dataset buffer.

| Map Id | Business Activity | Premise | Ref No. | Year | Location Confidence | Distance to Property Boundary or Road Intersection | Direction |
|--------|----------------------|---------|---------|------|---------------------|--|-----------|
| N/A | No records in buffer | | | | | | |

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Dry Cleaners, Motor Garages & Service Stations Road or Area Matches

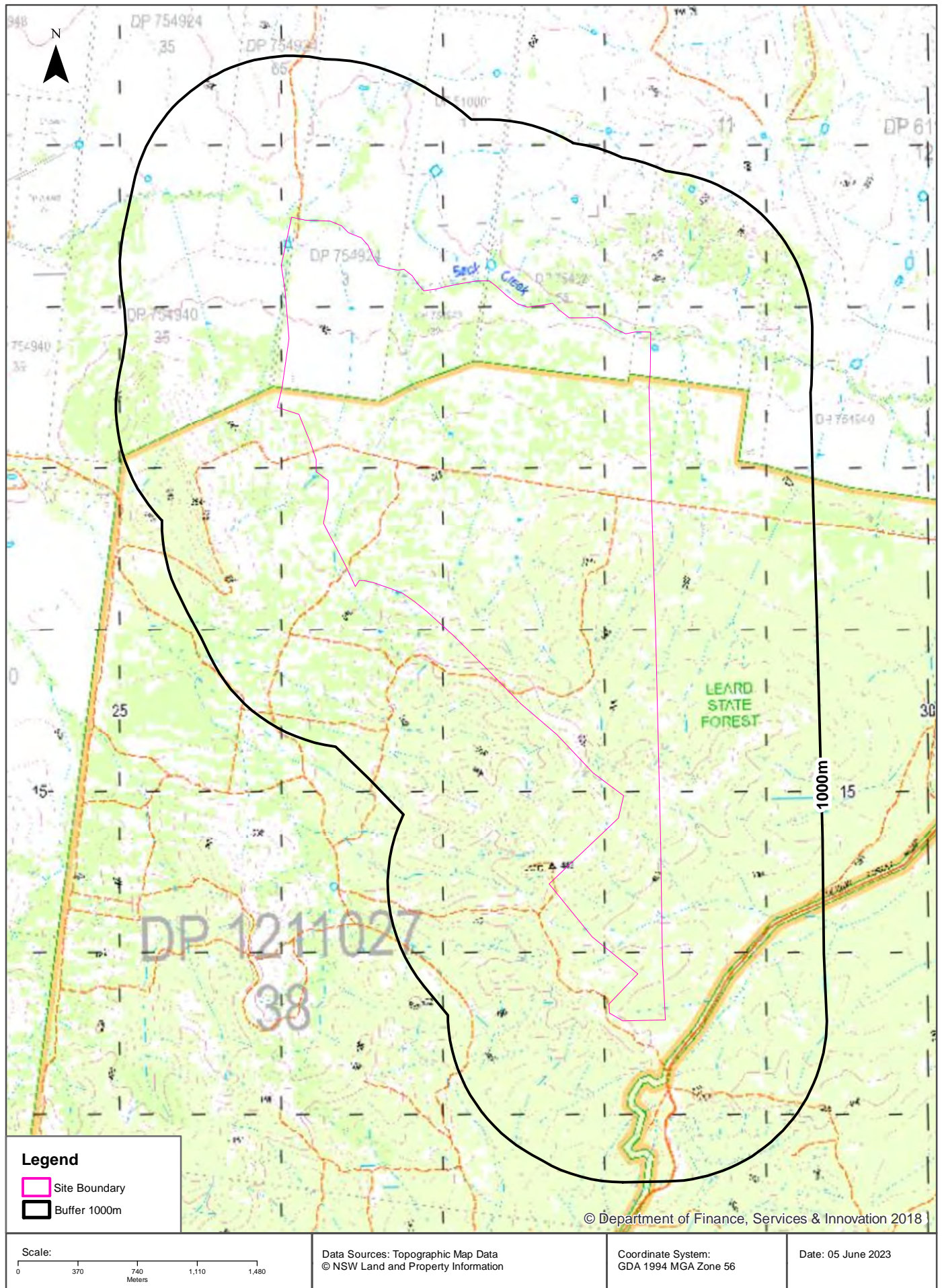
Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

| Map Id | Business Activity | Premise | Ref No. | Year | Location Confidence | Distance to Road Corridor or Area |
|--------|----------------------|---------|---------|------|---------------------|-----------------------------------|
| N/A | No records in buffer | | | | | |

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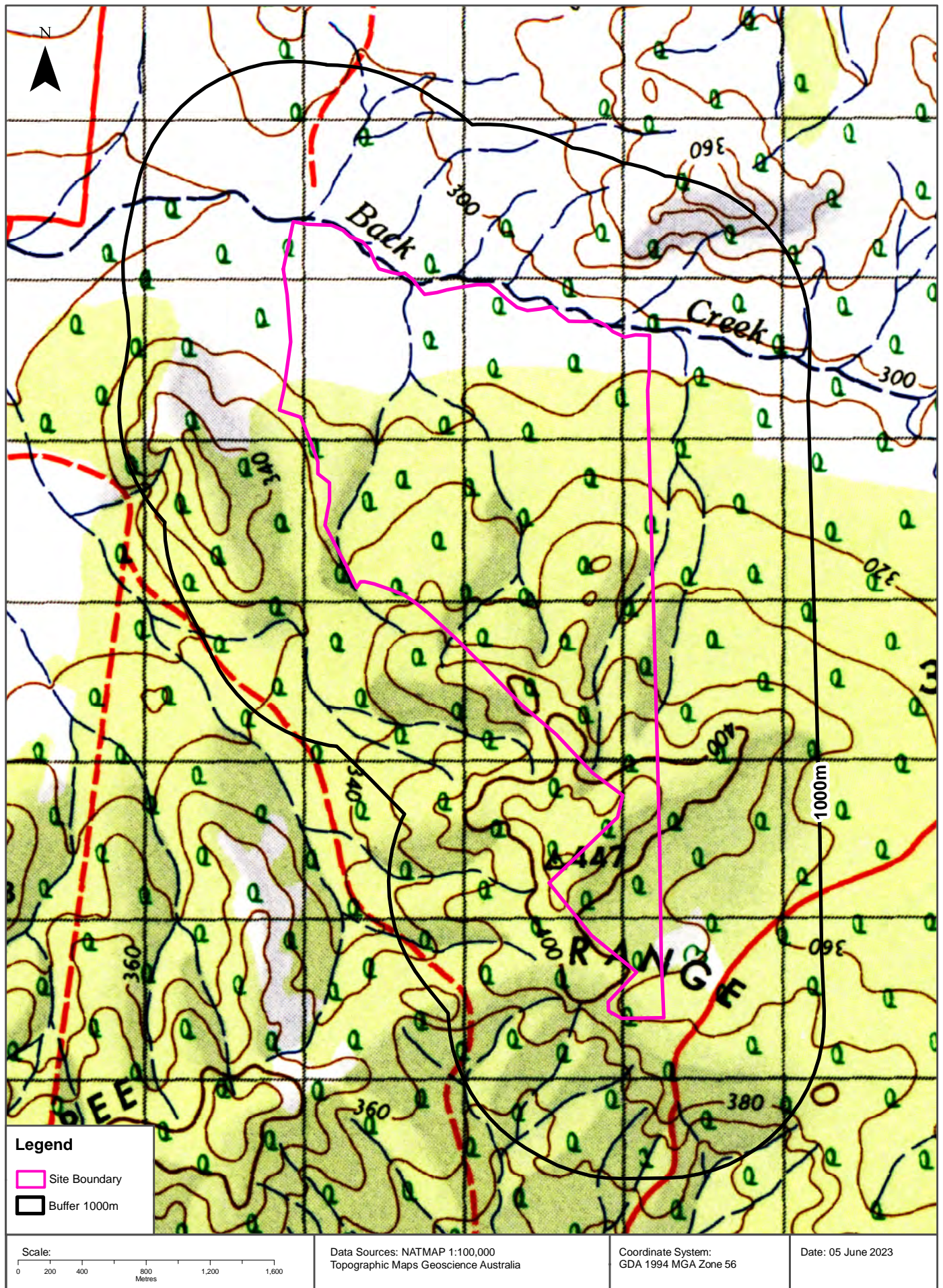
Topographic Map 2015

Large Site, Baan Baa, NSW 2390



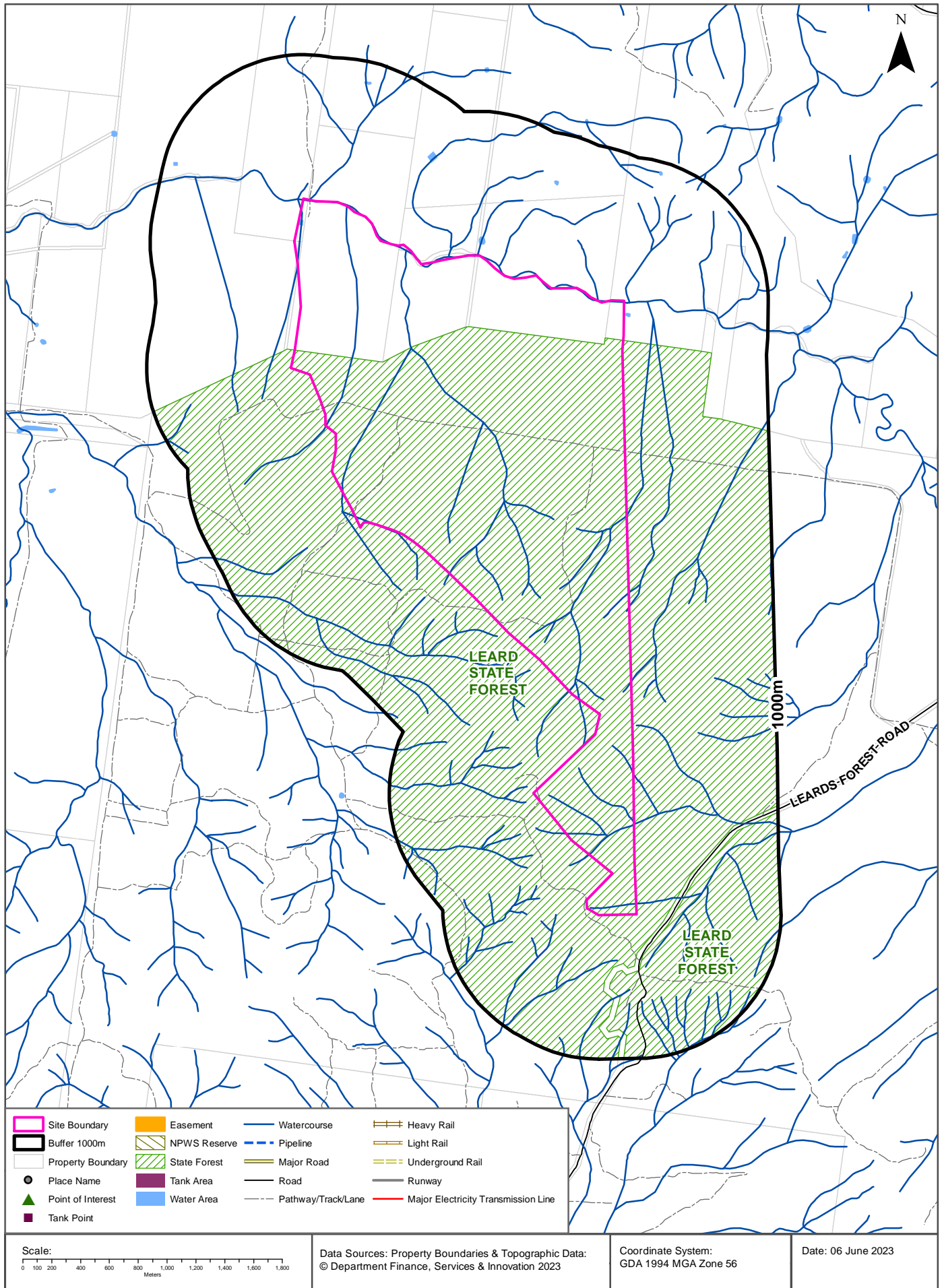
Historical Map 1969

Large Site, Baan Baa, NSW 2390



Topographic Features

Large Site, Baan Baa, NSW 2390



Topographic Features

Large Site, Baan Baa, NSW 2390

Points of Interest

What Points of Interest exist within the dataset buffer?

| Map Id | Feature Type | Label | Distance | Direction |
|--------|----------------------|-------|----------|-----------|
| N/A | No records in buffer | | | |

Topographic Data Source: © Land and Property Information (2015)

Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

Topographic Features

Large Site, Baan Baa, NSW 2390

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?

Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

| Map Id | Tank Type | Status | Name | Feature Currency | Distance | Direction |
|--------|----------------------|--------|------|------------------|----------|-----------|
| N/A | No records in buffer | | | | | |

Tanks (Points)

What are the Tank Points located within the dataset buffer?

Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

| Map Id | Tank Type | Status | Name | Feature Currency | Distance | Direction |
|--------|----------------------|--------|------|------------------|----------|-----------|
| N/A | No records in buffer | | | | | |

Tanks Data Source: © Land and Property Information (2015)

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Major Easements

What Major Easements exist within the dataset buffer?

Note. Easements provided by LPI are not at the detail of local governments. They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water & Significant subterranean pipelines (gas, water etc.).

| Map Id | Easement Class | Easement Type | Easement Width | Distance | Direction |
|--------|----------------------|---------------|----------------|----------|-----------|
| N/A | No records in buffer | | | | |

Easements Data Source: © Land and Property Information (2015)

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Topographic Features

Large Site, Baan Baa, NSW 2390

State Forest

What State Forest exist within the dataset buffer?

| State Forest Number | State Forest Name | Distance | Direction |
|---------------------|-------------------|----------|-----------|
| 420 | LEARD | 0m | On-site |

State Forest Data Source: © NSW Department of Finance, Services & Innovation (2018)
Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

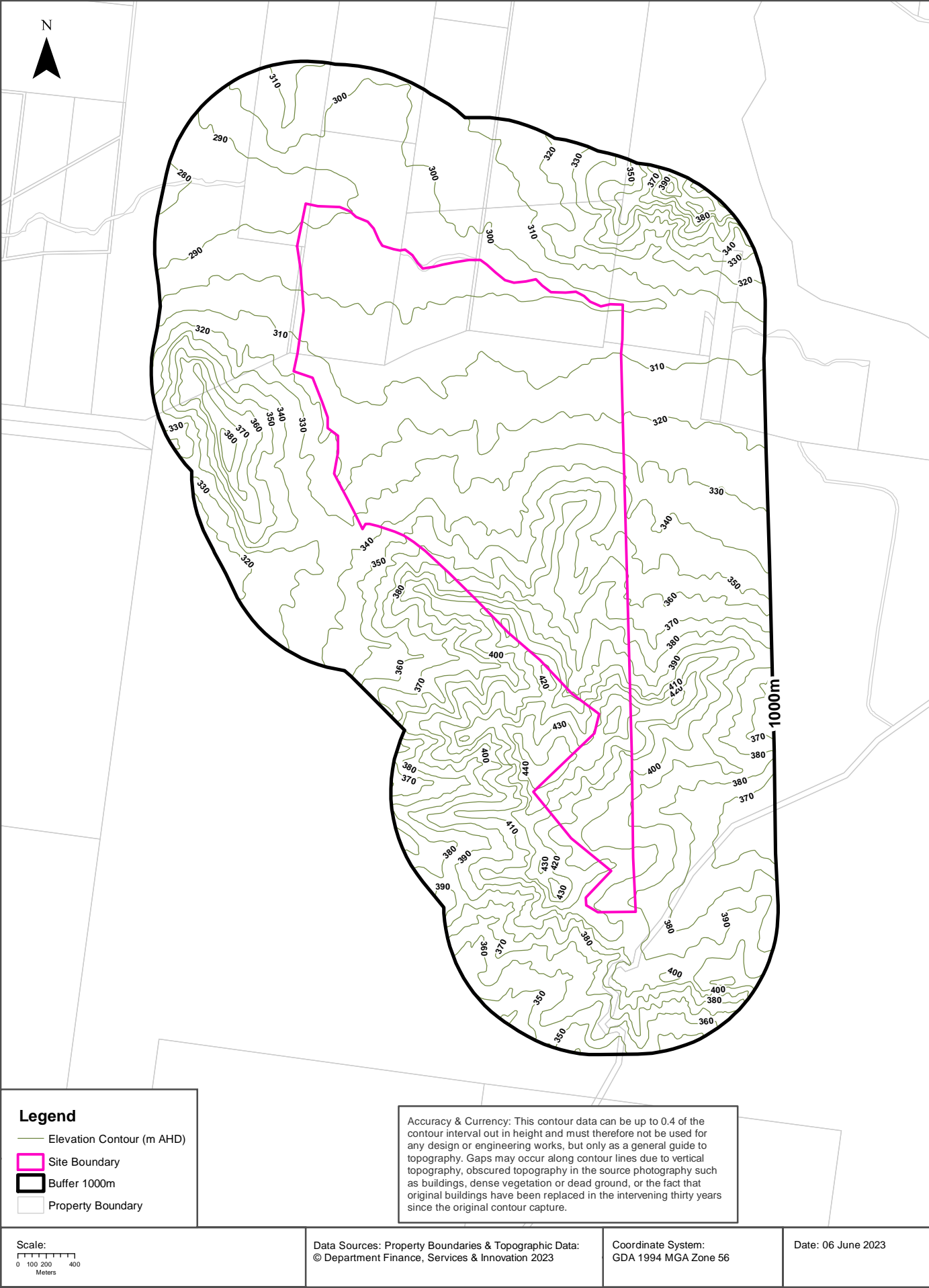
National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

| Reserve Number | Reserve Type | Reserve Name | Gazetted Date | Distance | Direction |
|----------------|----------------------|--------------|---------------|----------|-----------|
| N/A | No records in buffer | | | | |

NPWS Data Source: © NSW Department of Finance, Services & Innovation (2018)
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Elevation Contours (m AHD)
Large Site, Baan Baa, NSW 2390



Hydrogeology & Groundwater

Large Site, Baan Baa, NSW 2390

Hydrogeology

Description of aquifers within the dataset buffer:

| Description | Distance | Direction |
|---|----------|-----------|
| Fractured or fissured, extensive aquifers of low to moderate productivity | 0m | On-site |
| Porous, extensive highly productive aquifers | 0m | On-site |

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)

Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018

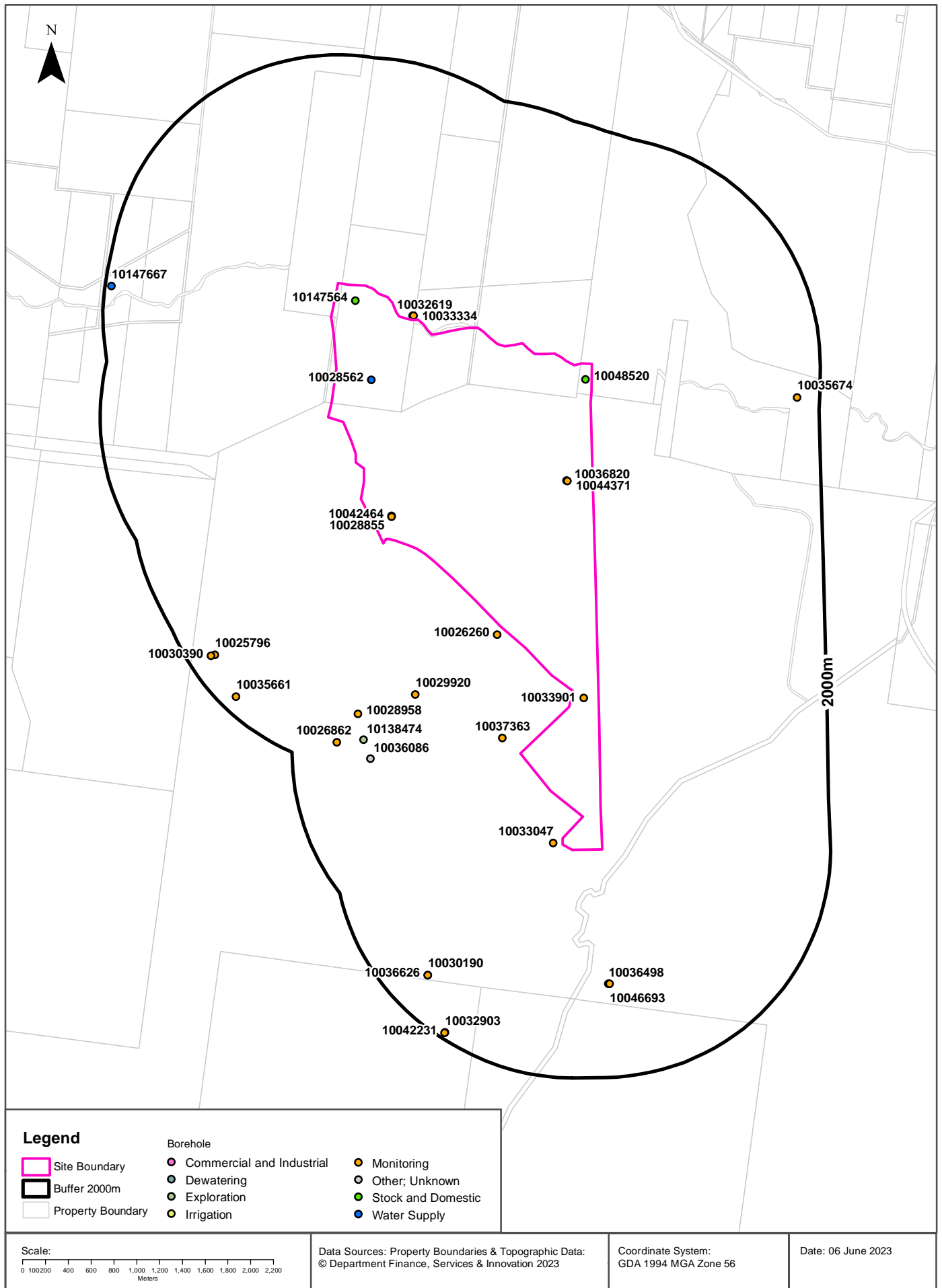
Temporary water restrictions relating to the Botany Sands aquifer within the dataset buffer:

| Prohibition Area No. | Prohibition | Distance | Direction |
|----------------------|----------------------|----------|-----------|
| N/A | No records in buffer | | |

Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018 Data Source : NSW Department of Primary Industries

Groundwater Boreholes

Large Site, Baan Baa, NSW 2390



Hydrogeology & Groundwater

Large Site, Baan Baa, NSW 2390

Groundwater Boreholes

Boreholes within the dataset buffer:

| NGIS Bore ID | NSW Bore ID | Bore Type | Status | Drill Date | Bore Depth (m) | Reference Elevation | Height Datum | Salinity (mg/L) | Yield (L/s) | SWL (mbgl) | Distance | Direction |
|--------------|-------------|--------------------|-------------|------------|----------------|---------------------|--------------|-----------------|-------------|------------|----------|------------|
| 10028562 | GW969771 | Water Supply | Unknown | 15/02/2011 | 77.70 | | AHD | | | 10.40 | 0m | On-site |
| 10028855 | GW969680 | Monitoring | Functional | 10/10/2010 | 59.00 | | AHD | | | 27.50 | 0m | On-site |
| 10033901 | GW970694 | Monitoring | Functional | 12/01/2014 | 354.00 | | AHD | | | | 0m | On-site |
| 10036820 | GW970696 | Monitoring | Functional | 12/01/2014 | 245.00 | | AHD | | | | 0m | On-site |
| 10042464 | GW969679 | Monitoring | Functional | 14/10/2010 | 72.00 | | AHD | | | 50.00 | 0m | On-site |
| 10044371 | GW970695 | Monitoring | Functional | 21/01/2014 | 391.50 | | AHD | | | | 0m | On-site |
| 10048520 | GW001869 | Stock and Domestic | Unknown | 01/08/1962 | 63.10 | | AHD | Good | | | 0m | On-site |
| 10147564 | GW003466 | Stock and Domestic | Abandoned | 01/01/1937 | 50.00 | | AHD | Fresh | | | 0m | On-site |
| 10032619 | GW970681 | Monitoring | Functional | 04/12/2013 | 10.00 | | AHD | | | | 33m | North |
| 10033334 | GW970680 | Monitoring | Functional | 11/12/2013 | 189.44 | | AHD | | | 35.20 | 34m | North |
| 10026260 | GW969673 | Monitoring | Functional | 15/10/2010 | 299.00 | | AHD | | | | 77m | South |
| 10033047 | GW970693 | Monitoring | Functional | 19/12/2013 | 324.44 | | AHD | | | | 80m | South |
| 10037363 | GW969674 | Monitoring | Functional | 15/10/2010 | 318.20 | | AHD | | | | 204m | South |
| 10029920 | GW969678 | Monitoring | Functional | 12/10/2010 | 164.00 | | AHD | | 0.120 | 97.70 | 953m | South |
| 10046693 | GW967864 | Monitoring | Unknown | 09/06/2006 | 91.00 | | AHD | | | | 1182m | South |
| 10036498 | GW967863 | Monitoring | Unknown | 01/09/2006 | 160.00 | | AHD | | | | 1185m | South |
| 10036086 | GW969569 | Unknown | Functioning | 11/06/2010 | 64.00 | | AHD | | 0.200 | 16.00 | 1312m | South West |
| 10138474 | GW053825 | Exploration | Unknown | 01/01/1981 | 257.00 | | AHD | 1001-3000 ppm | | | 1376m | South West |
| 10028958 | GW969671 | Monitoring | Functional | 14/10/2010 | 98.50 | | AHD | | 0.500 | | 1428m | South West |
| 10026862 | GW969672 | Monitoring | Functional | 15/10/2010 | 231.00 | | AHD | | 2.000 | 25.00 | 1606m | South West |
| 10030190 | GW970036 | Unknown | Unknown | | | | AHD | | 5.000 | 59.50 | 1647m | South |
| 10036626 | GW969845 | Monitoring | Functional | 18/03/2010 | 114.00 | | AHD | | 5.000 | 59.50 | 1647m | South |
| 10025796 | GW969681 | Monitoring | Functional | 14/10/2010 | 64.00 | | AHD | | | 41.00 | 1769m | South West |
| 10030390 | GW969677 | Monitoring | Functional | 12/10/2010 | 93.00 | | AHD | | | 40.00 | 1804m | South West |
| 10035674 | GW970701 | Monitoring | Functional | 04/12/2013 | 9.75 | | AHD | | | | 1806m | East |
| 10035661 | GW969682 | Monitoring | Functional | 15/10/2010 | 186.20 | | AHD | | | | 1865m | South West |
| 10147667 | GW003478 | Water Supply | Unknown | 01/02/1937 | 33.80 | | AHD | Fresh | | | 1940m | North West |
| 10032903 | GW967861 | Monitoring | Unknown | 07/06/2006 | 59.00 | | AHD | | | | 1948m | South |
| 10042231 | GW967862 | Monitoring | Unknown | 06/06/2006 | 85.00 | | AHD | | | | 1951m | South |

Borehole Data Source: Bureau of Meteorology; Water NSW. Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

Hydrogeology & Groundwater

Large Site, Baan Baa, NSW 2390

Driller's Logs

Drill log data relevant to the boreholes within the dataset buffer:

| NGIS Bore ID | Drillers Log | Distance | Direction |
|--------------|---|----------|-----------|
| 10028562 | 0.00m-0.90m Topsoil, brown 0.90m-5.20m Silty Clay, brown 5.20m-6.10m Sand, brown & Gravel, fine to coarse 6.10m-14.30m Clay, brown & grey 14.30m-21.90m Sand, brown & Gravel, fine to coarse 21.90m-22.60m Clay, brown & grey 22.60m-32.60m Sand, brown & Gravel, fine to coarse 32.60m-51.20m Clay, brown & grey 51.20m-58.20m Sand, brown, fine-coarse 58.20m-63.70m Clay, grey 63.70m-64.60m Sand & Clay bands 64.60m-65.50m Sand, grey, fine-coarse 65.50m-67.10m Sandy Clay 67.10m-75.90m Sand & Gravel, fine-coarse 75.90m-78.00m Clay, brown & grey 78.00m-79.20m Clay, coloured, with basalt bands | 0m | On-site |
| 10028855 | 0.00m-0.50m soil, dark brown weathered organic oxidized 0.50m-142.00m rock, sedimentary, interbedded sandstone, siltstone, with various coal structures 142.00m-146.26m rock, volcanic, light reddish purple, strong | 0m | On-site |
| 10042464 | 0.00m-1.00m soil, very weathered conglomerate, dark brown oxidised 1.00m-136.00m rock, sedimentary, interbedded sandstone, siltstone, various coal structures, and conglomerate 136.00m-144.20m rock, volcanic, light reddish green, strong | 0m | On-site |
| 10048520 | 0.00m-4.27m Clay Yellow Sandy 4.27m-18.90m Clay Gravel Mixed 18.90m-32.31m Gravel Coarse 32.31m-33.53m Clay White 33.53m-34.75m Gravel 34.75m-54.86m Conglomerate 54.86m-57.30m Shale 57.30m-63.09m Sandstone Water Supply | 0m | On-site |
| 10147564 | 0.00m-0.91m Soil 0.91m-5.18m Clay 5.18m-8.23m Gravel 8.23m-12.50m Clay 12.50m-16.15m Conglomerate 16.15m-25.30m Conglomerate Hard 25.30m-31.09m Conglomerate Soft 25.30m-31.09m Shale Coal Bands 31.09m-41.45m Shale Hard Bands 41.45m-44.81m Sandstone Fine 44.81m-45.72m Sandstone Hard Water Supply 45.72m-47.85m Coal 47.85m-49.99m Shale Hard | 0m | On-site |
| 10032619 | 0.00m-1.00m Soil; weathered, residual, brown 1.00m-10.00m Alluvials, light brown, weathered | 33m | North |
| 10033334 | 0.00m-20.00m Alluvials, light 20.00m-43.50m Siltstone; grey, weathered 43.50m-46.00m Coal; black 46.00m-53.00m Siltstone; grey, fresh 53.00m-56.00m Coal; black 56.00m-73.60m Siltstone; grey, fresh 73.60m-76.00m Coal; black 76.00m-143.00m Sandstone/Conglomerate; grey, fresh, coarse-granular 143.00m-145.00m Coal; black 145.00m-177.00m Sandstone/Siltstone; grey, fresh 177.00m-179.00m Coal; black 179.00m-185.00m Sandstone; grey 185.00m-186.00m Coal; black 186.00m-189.44m Siltstone; grey | 34m | North |
| 10026260 | 0.00m-35.00m conglomerate, greyish brown, slightly weathered some sandstone and siltstone 35.00m-290.00m claystone, various coal seams, and conglomerate 290.00m-299.00m rock, volcanic, greenish grey/purple | 77m | South |

| NGIS Bore ID | Drillers Log | Distance | Direction |
|--------------|---|----------|------------|
| 10037363 | 0.00m-25.00m sandstone, fine to coarse grained, with conglomerate, minor tuff and siltstone weathered 25.00m-59.00m sandstone, fine to coarse grained, firm 59.00m-315.00m rock, sedimentary structures of sandstone, siltstone, claystone, various coal seams and conglomerate 315.00m-318.20m rock, volcanic, greenish, grey/purple | 204m | South |
| 10029920 | 0.00m-13.50m conglomerate, mottled orange grey weathered medium 13.50m-180.30m rock, sedimentary, interbedded sandstone, claystone, various coal structures | 953m | South |
| 10046693 | 0.00m-1.00m topsoil 1.00m-5.50m conglomerate 5.50m-7.00m sandstone 7.00m-8.00m siltstone 8.00m-9.00m sandstone 9.00m-24.00m conglomerate 24.00m-26.20m siltstone 26.20m-26.40m coal 26.40m-28.00m siltstone 28.00m-29.00m sandstone 29.00m-29.80m coal 29.80m-31.00m shale 31.00m-33.00m siltstone 33.00m-34.00m sandstone 34.00m-35.00m siltstone 35.00m-41.50m conglomerate 41.50m-46.00m siltstone 46.00m-68.00m conglomerate 68.00m-69.00m sandstone 69.00m-75.00m sandstone 75.00m-80.00m sandstone 80.00m-85.70m coal 85.70m-87.00m shale 87.00m-91.00m conglomerate | 1182m | South |
| 10036498 | 0.00m-0.50m topsoil 0.50m-4.50m conglomerate 4.50m-6.00m conglomerate 6.00m-8.50m sandstone 8.50m-15.00m sandstone 15.00m-16.00m siltstone 16.00m-25.00m conglomerate 25.00m-26.50m siltstone 26.50m-28.80m shale 28.80m-30.20m coal 30.20m-33.00m shale 33.00m-36.00m sandstone 36.00m-37.00m conglomerate 37.00m-40.00m sandstone 40.00m-42.00m conglomerate 42.00m-46.00m shale 46.00m-47.00m sandstone 47.00m-81.00m conglomerate 81.00m-86.30m coal 86.30m-90.00m shale 90.00m-91.00m sandstone 91.00m-113.00m conglomerate 113.00m-116.00m sandstone 116.00m-117.00m siltstone 117.00m-118.00m sandstone 118.00m-118.20m shale 118.20m-121.50m sandstone 121.50m-125.20m coal 125.20m-125.70m siltstone 125.70m-127.00m sandstone 127.00m-128.00m siltstone 128.00m-129.00m sandstone 129.00m-154.20m conglomerate 154.20m-154.70m shale 154.70m-155.00m shale 155.00m-157.20m coal 157.20m-158.00m sandstone 158.00m-160.00m conglomerate | 1185m | South |
| 10036086 | 0.00m-6.00m Topsoil, large rock 6.00m-10.00m Rock, red 10.00m-11.00m Mudstone, grey 11.00m-12.00m Coal 12.00m-14.00m Mudstone, grey 14.00m-16.00m Coal 16.00m-17.00m Mudstone, grey 17.00m-18.00m Coal 18.00m-28.50m Mudstone, grey 28.50m-30.00m Coal 30.00m-36.00m Mudstone, grey 36.00m-63.00m Rock, broken 63.00m-64.00m Coal, no water | 1312m | South West |
| 10138474 | 0.00m-257.37m Sandstone Shale Sandy Sandstone Coares Shale Sandy Coal Nominal | 1376m | South West |

| NGIS Bore ID | Drillers Log | Distance | Direction |
|--------------|---|----------|------------|
| 10028958 | 0.00m-18.00m sand, and silt gravel very weathered conglomerate, rusty brown 18.00m-231.00m rock, sedimentary structures interbedded strata of sandstone, shale, coal, siltstone, and conglomerate | 1428m | South West |
| 10026862 | 0.00m-25.00m sandstone, fine to coarse grained, with conglomerate, minor tuff and siltstone weathered 25.00m-225.00m rock, sedimentary structures of sandstone, siltstone, claystone, various coal seams and conglomerate 225.00m-231.00m rock, volcanic, greenish, grey/purple | 1606m | South West |
| 10030190 | 0.00m-1.00m Soil, light yellowish-grey, earthy, gravelly, clayey, sandy, friable 1.00m-2.00m Sandstone, light yellowish-grey, fine grained, pebbly 2.00m-3.00m Sandstone; light pinkish-grey, fine grained, pebbly 3.00m-4.00m Sandstone; light grey, fine to coarse grained, earthy, oxidised pebbly 4.00m-5.00m Sandstone; light reddish-grey, fine grained, pebbly oxidised 5.00m-6.00m Sandstone; light grey, coarse to very fine grained, pebbly 6.00m-7.00m Sandstone; light reddish-grey, fine grained 7.00m-8.00m Sandstone; light yellowish-grey, fine grained 8.00m-9.00m Sandstone; light yellowish-grey, coarse to very fine grained, pebbly 9.00m-10.00m Claystone; light to mid grey 10.00m-11.00m Claystone; light yellowish-grey 11.00m-12.00m Claystone; light to mid yellowish-grey, oxidised 12.00m-13.00m Claystone; light to mid grey, pebbly 13.00m-16.00m Claystone; light to mid yellowish-grey 16.00m-20.00m Sandstone; light to mid yellowish-grey, fine to coarse grained, pebbly 20.00m-23.00m Claystone; light to mid grey, pebbly 23.00m-24.00m Sandstone; light to mid yellowish-grey, fine grained, pebbly oxidised 24.00m-25.00m Claystone; light to mid yellowish-grey, pebbly 25.00m-26.00m Claystone; light yellowish-grey, pebbly 26.00m-27.00m Sandstone; light to mid yellowish-grey, fine grained, pebbly oxidised 27.00m-29.00m Sandstone; light to mid grey, fine grained, pebbly 29.00m-30.00m Sandstone; light to mid reddish-grey, fine grained, pebbly oxidised 30.00m-33.00m Conglomerate; light to mid grey, clayey 33.00m-34.00m Sandstone; light to mid grey, coarse to very coarse grained 34.00m-36.00m Conglomerate; light to mid grey, sandy ***Base of Weathering*** 36.00m-38.00m Conglomerate; light to mid grey, sandy 38.00m-40.00m Claystone; light to mid grey, pebbly 40.00m-41.00m Sandstone; light to mid grey, coarse to very coarse grained, pebbly 41.00m-42.00m Conglomerate; light to mid grey 42.00m-43.00m Claystone; light to mid grey 43.00m-44.00m Claystone; light to mid grey, carbonaceous 44.00m-45.00m Claystone/Carbonaceous Claystone; Claystone (50%); dark grey, Carbonaceous Claystone (50%), dark grey 45.00m-46.00m Claystone, Carbonaceous/Coal; Carbonaceous Claystone (70%), dark grey, Coal, undifferentiated (30%) 46.00m-49.00m Coal; undifferentiated 49.00m-50.00m Coal/Claystone; Coal, undifferentiated (50%), Claystone (50%), mid grey 50.00m-51.00m Claystone, mid grey 51.00m-52.00m Claystone; dark grey, carbonaceous 52.00m-54.00m Sandstone; light to mid grey, fine grained, pebbly 54.00m-55.00m Claystone; mid grey 55.00m-57.00m Sandstone; light to mid grey, fine grained, pebbly 57.00m-63.00m Conglomerate; light to mid grey 63.00m-64.00m Claystone; light to mid grey 64.00m-70.00m Conglomerate; light to mid grey, sandy 70.00m-77.00m Conglomerate; light to mid grey 77.00m-79.00m Sandstone; light to mid grey, fine grained, pebbly 79.00m-80.00m Sandstone; light to mid grey, fine grained 80.00m-82.00m Claystone; light to mid grey 82.00m-83.00m Coal/Claystone; Coal, undifferentiated (65%); inferior coal, Claystone (35%), light to mid grey 83.00m-84.00m Claystone; dark grey, carbonaceous 84.00m-87.00m Coal; undifferentiated, inferior coal 87.00m-88.00m Claystone; light to mid grey, pebbly 88.00m-89.00m Conglomerate; light to mid grey 89.00m-96.00m Claystone; mid grey 96.00m-100.00m Sandstone; light to mid grey, fine to coarse grained, clayey 100.00m-101.00m Claystone; light to mid grey 101.00m-102.00m Conglomerate; light to mid grey 102.00m-103.00m Sandstone; light to mid grey, fine to coarse grained, pebbly 103.00m-105.00m Conglomerate; light to mid grey 105.00m-106.00m Claystone; light to mid grey 106.00m-107.00m Claystone; light to mid grey, pebbly sandy 107.00m-110.00m Coal; undifferentiated 110.00m-111.00m Claystone; dark grey, carbonaceous 111.00m-112.00m Claystone; dark grey 112.00m-114.00m Claystone; mid grey, sandy | 1647m | South |

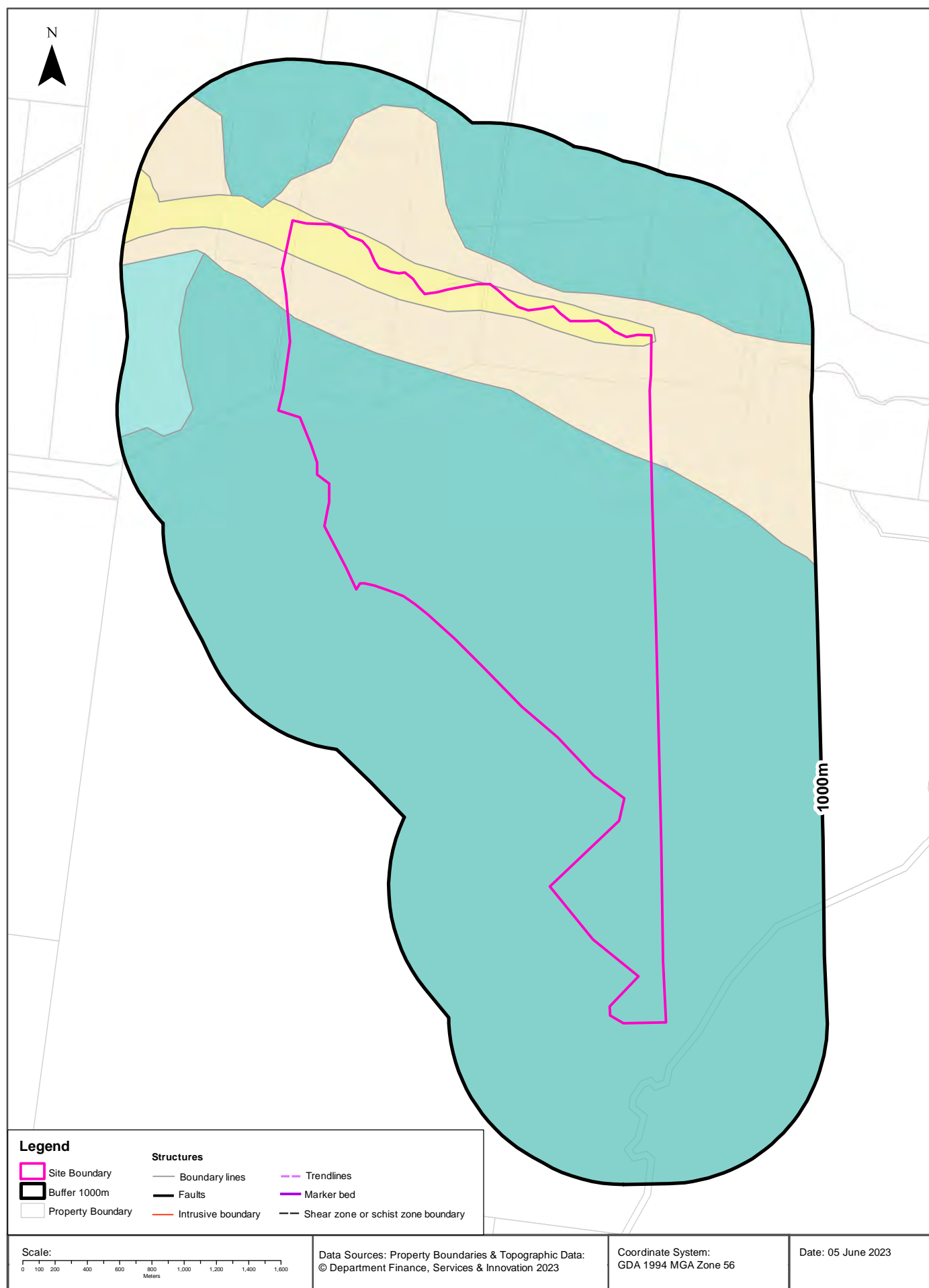
| NGIS Bore ID | Drillers Log | Distance | Direction |
|--------------|---|----------|------------|
| 10036626 | 0.00m-1.00m Soil; light yellowish-grey, earthy, gravelly, clayey, sandy, friable 1.00m-2.00m Sandstone; light yellowish-grey, fine grained, pebbly 2.00m-3.00m Sandstone; light pinkish-grey, fine grained, pebbly 3.00m-4.00m Sandstone; light grey, fine to coarse grained, earthy, oxidised pebbly 4.00m-5.00m Sandstone; light reddish-grey, fine grained, pebbly oxidised 5.00m-6.00m Sandstone; light grey, coarse to very fine grained, pebbly 6.00m-7.00m Sandstone; light reddish-grey, fine grained 7.00m-8.00m Sandstone; light yellowish-grey, coarse to very fine grained, pebbly 8.00m-9.00m Sandstone; light yellowish-grey, coarse to very fine grained, pebbly 9.00m-10.00m Claystone; light to mid grey 10.00m-11.00m Claystone; light yellowish-grey 11.00m-12.00m Claystone; light to mid yellowish-grey, oxidised 12.00m-13.00m Claystone; light to mid grey, pebbly 13.00m-16.00m Claystone; light to mid yellowish-grey 16.00m-20.00m Sandstone; light to mid yellowish-grey, fine to coarse grained, pebbly 20.00m-23.00m Claystone; light to mid grey, pebbly 23.00m-24.00m Sandstone; light to mid yellowish-grey, fine grained, pebbly oxidised 24.00m-25.00m Claystone; light to mid yellowish-grey, pebbly 25.00m-26.00m Claystone; light yellowish-grey, pebbly 26.00m-27.00m Sandstone; light to mid yellowish-grey, fine grained, pebbly oxidised 27.00m-29.00m Sandstone; light to mid grey, fine grained, pebbly 29.00m-30.00m Sandstone; light to mid reddish-grey, fine grained, pebbly oxidised 30.00m-33.00m Conglomerate; light to mid grey, clayey 33.00m-34.00m Sandstone; light to mid grey, coarse to very coarse grained 34.00m-36.00m Conglomerate; light to mid grey, sandy 36.00m-38.00m Conglomerate; light to mid grey, sandy 38.00m-40.00m Claystone; light to mid grey, pebbly 40.00m-41.00m Sandstone; light to mid grey, coarse to very coarse grained, pebbly 41.00m-42.00m Conglomerate; light to mid grey 42.00m-43.00m Claystone; light to mid grey 43.00m-44.00m Claystone; light to mid grey, carbonaceous 44.00m-45.00m Claystone (50%); dark grey, carbonaceous, Carbonaceous Claystone (50%); dark grey 45.00m-46.00m Carbonaceous Claystone (70%); dark grey, Coal; undifferentiated (30%) 46.00m-49.00m Coal; undifferentiated 49.00m-50.00m Coal; undifferentiated (50%). Claystone (50%); mid grey 50.00m-51.00m Claystone; mid grey 51.00m-52.00m Claystone; dark grey, carbonaceous 52.00m-54.00m Sandstone; light to mid grey, fine grained, pebbly 54.00m-55.00m Claystone; mid grey 55.00m-57.00m Sandstone; light to mid grey, fine grained, pebbly 57.00m-63.00m Conglomerate; light to mid grey 63.00m-64.00m Claystone; light to mid grey 64.00m-70.00m Conglomerate; light to mid grey, sandy 70.00m-77.00m Conglomerate; light to mid grey 77.00m-79.00m Sandstone; light to mid grey, fine grained, pebbly 79.00m-80.00m Sandstone; light to mid grey, fine grained 80.00m-82.00m Claystone; light to mid grey 82.00m-83.00m Coal; undifferentiated (65%); inferior coal. Claystone (35%); light to mid grey 83.00m-84.00m Claystone; dark grey, carbonaceous 84.00m-87.00m Coal; undifferentiated, inferior coal 87.00m-88.00m Claystone; light to mid grey, pebbly 88.00m-89.00m Conglomerate; light to mid grey 89.00m-96.00m Claystone; mid grey 96.00m-100.00m Sandstone; light to mid grey, fine to coarse grained, clayey 100.00m-101.00m Claystone; light to mid grey 101.00m-102.00m Conglomerate; light to mid grey 102.00m-103.00m Sandstone; light to mid grey, fine to coarse grained, pebbly 103.00m-105.00m Conglomerate; light to mid grey 105.00m-106.00m Claystone; light to mid grey 106.00m-107.00m Claystone; light to mid grey, pebbly sandy 107.00m-110.00m Coal; undifferentiated 110.00m-111.00m Claystone; dark grey, carbonaceous 111.00m-112.00m Claystone; dark grey 112.00m-114.00m Claystone; mid grey, sandy | 1647m | South |
| 10025796 | 0.00m-1.00m soil, dark brown reddish very weathered sandstone 1.00m-7.00m sandstone, coarse, very weathered, brownish grey 7.00m-91.00m rock, sedimentary, interbedded sandstone, siltstone, conglomerate with various coal structures | 1769m | South West |
| 10030390 | 0.00m-1.00m soil, dark reddish brown, weathered sandstone weak 1.00m-83.70m rock, interbedded sedimentary structures with coal seams, and conglomerate 83.70m-97.60m bedrock, volcanic, light green purplish, fine grained | 1804m | South West |
| 10035661 | 0.00m-49.50m conglomerate, weathered light orange/grey with sandstone, claystone and siltstone 49.50m-72.00m conglomerate, light orange/grey 72.00m-176.00m rock, sedimentary structures of sandstone, siltstone, claystone and various coal seams 176.00m-186.20m rock, volcanic, greenish grey | 1865m | South West |
| 10147667 | 0.00m-0.61m Soil 0.61m-7.62m Clay 7.62m-17.98m Basalt Soft 17.98m-18.90m Basalt Hard 18.90m-31.09m Basalt Soft Water Supply 31.09m-33.53m Basalt Fairly Hard 33.53m-33.83m Basalt Hard | 1940m | North West |

| NGIS Bore ID | Drillers Log | Distance | Direction |
|--------------|---|----------|-----------|
| 10032903 | 0.00m-19.00m not logged 19.00m-21.50m coal 21.50m-23.00m coal 23.00m-27.00m shale 27.00m-51.70m conglomerate 51.70m-51.90m shale 51.90m-52.00m coal 52.00m-52.60m mudstone 52.60m-55.80m coal 55.80m-57.00m mudstone 57.00m-58.00m siltstone 58.00m-59.00m conglomerate | 1948m | South |
| 10042231 | 0.00m-1.00m topsoil 1.00m-3.00m conglomerate 3.00m-4.00m siltstone 4.00m-9.00m sandstone 9.00m-18.00m sandstone 18.00m-20.00m sandstone 20.00m-20.50m coal 20.50m-21.00m coal 21.00m-21.50m coal 21.50m-22.00m coal 22.00m-23.50m coal 23.50m-26.00m shale 26.00m-27.00m siltstone 27.00m-47.80m conglomerate 47.80m-48.00m siltstone 48.00m-51.50m conglomerate 51.50m-51.80m coal 51.80m-53.00m siltstone 53.00m-56.00m coal 56.00m-57.00m siltstone 57.00m-58.00m siltstone 58.00m-80.00m conglomerate 80.00m-82.00m coal 82.00m-82.70m shale 82.70m-85.00m conglomerate | 1951m | South |

Drill Log Data Source: Bureau of Meteorology; Water NSW. Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

Geology

Large Site, Baan Baa, NSW 2390



Geology

Large Site, Baan Baa, NSW 2390

Geological Units

What are the Geological Units within the dataset buffer?

| Unit Code | Unit Name | Description | Unit Stratigraphy | Age | Dominant Lithology | Distance |
|-----------|---------------------------------|--|--|--|--------------------|----------|
| Pbem | Maules Creek Formation | Basal carbonaceous claystone, pelletoidal clay sandstone, minor coal; passing upwards into upward-fining cycles of sandstone, thinly bedded siltstone/sandstone and coal. Conglomerate dominant towards top. | /Bellata Group//Maules Creek Formation// | Artinskian (base) to Kungurian (top) | Carbonate mudstone | 0m |
| Q_cr | Colluvial and residual deposits | Undifferentiated colluvial and residual deposits. | /Colluvium//Colluvial and residual deposits// | Quaternary (base) to Pleistocene (top) | Clastic sediment | 0m |
| Q_av | Alluvial valley deposits | Silt, clay, (fluviially deposited) lithic to quartz-lithic sand, gravel. | /Alluvium//Alluvial valley deposits// | Quaternary (base) to Now (top) | Clastic sediment | 0m |
| Putg | Boggabri Volcanics | Rhyolite and dacitic (emplaced as lavas), tuff (emplaced as ash flows) with interbedded shale. Rare trachyte and andesite. | /Ungrouped Permian units//Boggabri Volcanics// | Asselian (base) to Sakmarian (top) | Rhyolite | 494m |

Linear Geological Structures

What are the Dyke, Sill, Fracture, Lineament and Vein trendlines within the dataset buffer?

| Map ID | Feature Description | Map Sheet Name | Distance |
|-------------|---------------------|----------------|----------|
| No Features | | | |

What are the Faults, Shear zones or Schist zones, Intrusive boundaries & Marker beds within the dataset buffer?

| Map ID | Boundary Type | Description | Map Sheet Name | Distance |
|-------------|---------------|-------------|----------------|----------|
| No Features | | | | |

Geological Data Source: Statewide Seamless Geology v2.1, Department of Regional NSW

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Naturally Occurring Asbestos Potential

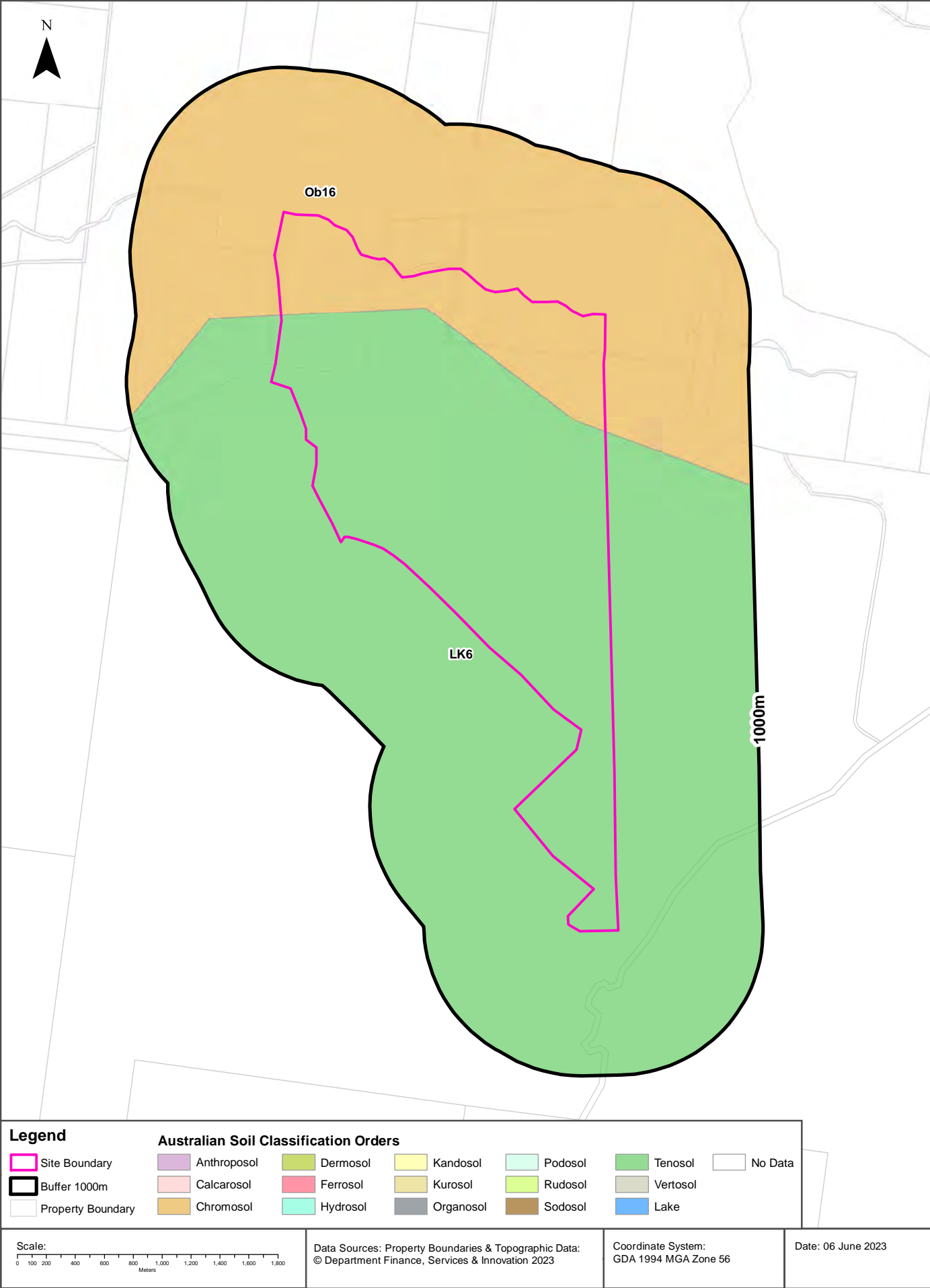
Large Site, Baan Baa, NSW 2390

Naturally Occurring Asbestos Potential

Naturally Occurring Asbestos Potential within the dataset buffer:

| Potential | Sym | Strat Name | Group | Formation | Scale | Min Age | Max Age | Rock Type | Dom Lith | Description | Dist | Dir |
|----------------------|-----|------------|-------|-----------|-------|---------|---------|-----------|----------|-------------|------|-----|
| No records in buffer | | | | | | | | | | | | |

Naturally Occurring Asbestos Potential Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy



Soils

Large Site, Baan Baa, NSW 2390

Atlas of Australian Soils

Soil mapping units and Australian Soil Classification orders within the dataset buffer:

| Map Unit Code | Soil Order | Map Unit Description | Distance | Direction |
|---------------|------------|---|----------|-----------|
| LK6 | Tenosol | Hilly to steep hilly areas, often with waterworn gravels through the soil: similar to unit LK5 but soils may be shallower. | 0m | On-site |
| Ob16 | Chromosol | Broken topography--undulating to low hilly terrain broken by steeply sloping cuesta-like ridges: chief soils of the undulating to low hilly areas are hard alkaline red soils (Dr2.23) and sometimes (Dr2.33). Associated are steep ridges with bare rock walls on their east-facing slopes, and various soils, including (Uc2.2), (Dy5.42), and (Gn2.15), usually covered with waterworn gravels on their gentler slopes. As mapped, areas of unit Kc1 are included. Data are limited. | 0m | On-site |

Atlas of Australian Soils Data Source: CSIRO

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Acid Sulfate Soils

Large Site, Baan Baa, NSW 2390

Environmental Planning Instrument - Acid Sulfate Soils

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

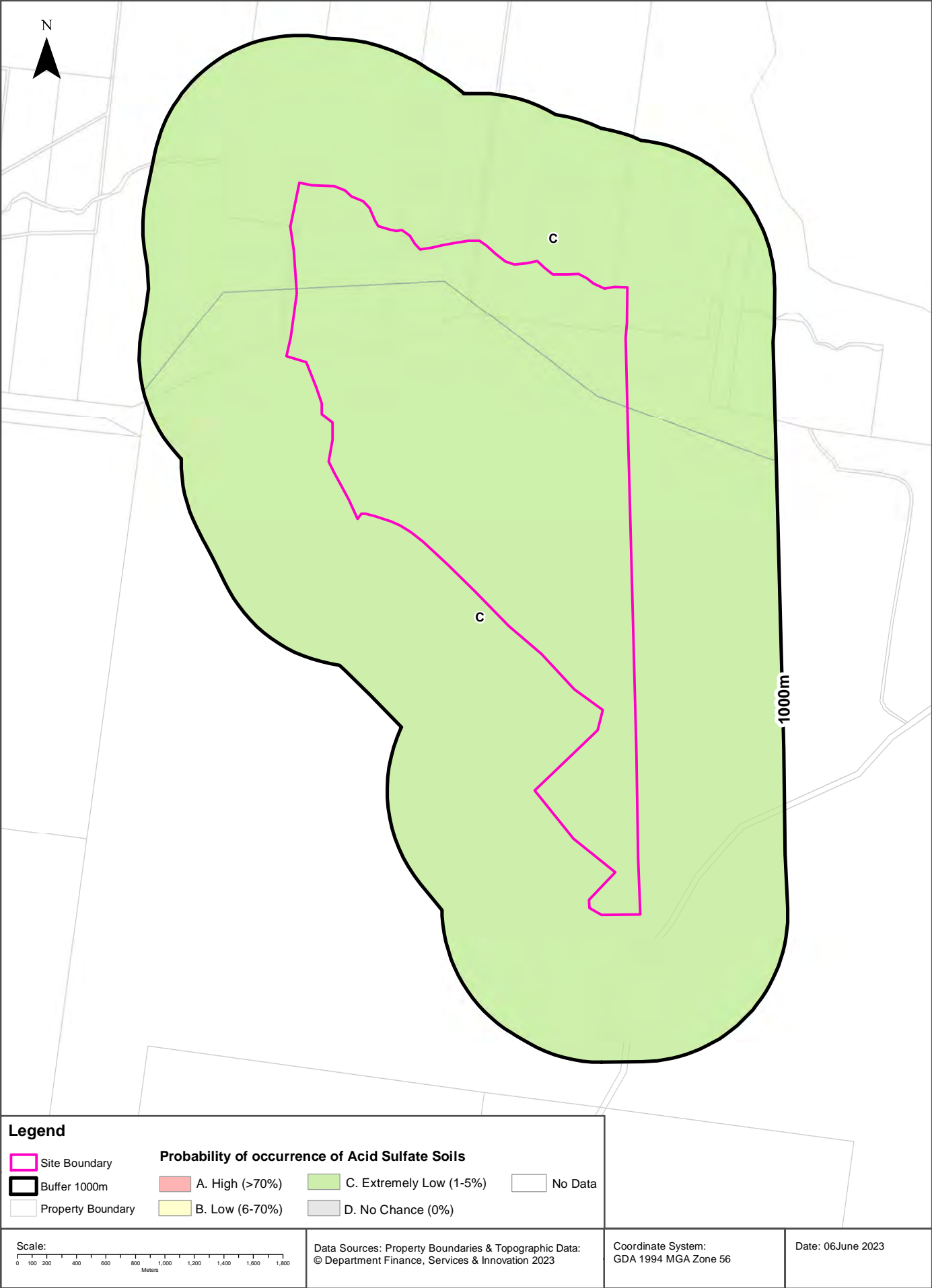
| Soil Class | Description | EPI Name |
|------------|-------------|----------|
| N/A | | |

If the on-site Soil Class is 5, what other soil classes exist within 500m?

| Soil Class | Description | EPI Name | Distance | Direction |
|------------|-------------|----------|----------|-----------|
| N/A | | | | |

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Acid Sulfate Soils

Large Site, Baan Baa, NSW 2390

Atlas of Australian Acid Sulfate Soils

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

| Class | Description | Distance | Direction |
|-------|---|----------|-----------|
| C | Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas. | 0m | On-site |

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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Dryland Salinity

Large Site, Baan Baa, NSW 2390

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

Is there Dryland Salinity - National Assessment data within the dataset buffer?

No

What Dryland Salinity assessments are given?

| Assessment 2000 | Assessment 2020 | Assessment 2050 | Distance | Direction |
|-----------------|-----------------|-----------------|----------|-----------|
| N/A | N/A | N/A | | |

Dryland Salinity Data Source : National Land and Water Resources Audit

The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

Any persons using this information do so at their own risk.

In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Mining

Large Site, Baan Baa, NSW 2390

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

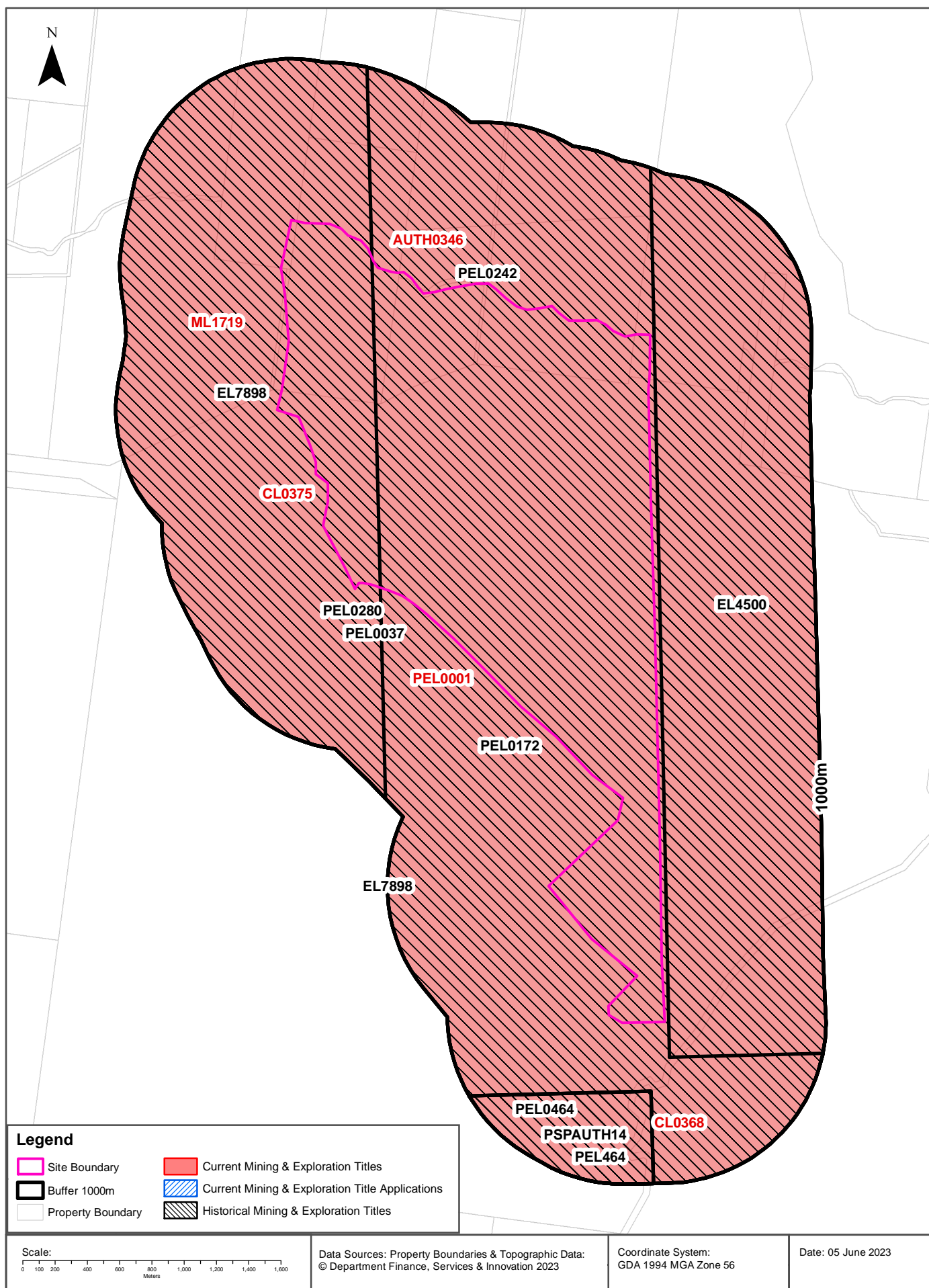
| District | Distance | Direction |
|---|----------|-----------|
| There are no Mining Subsidence Districts within the report buffer | | |

Mining Subsidence District Data Source: © Land and Property Information (2016)

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Mining & Exploration Titles

Large Site, Baan Baa, NSW 2390



Mining

Large Site, Baan Baa, NSW 2390

Current Mining & Exploration Titles

Current Mining & Exploration Titles within the dataset buffer:

| Title Ref | Holder | Grant Date | Expiry Date | Last Renewed | Operation | Resource | Minerals | Dist | Dir |
|-----------|--|------------|-------------|--------------|-----------|-----------|-----------------|------|---------|
| PEL0001 | AUSTRALIAN COALBED METHANE PTY LIMITED; SANTOS QNT PTY.LTD. | 11/02/1993 | 12/04/2028 | 20220412 | EXPLORING | PETROLEUM | Petroleum | 0m | On-site |
| CL0375 | ASTON COAL 2 PTY LTD; ICRA MC PTY LTD; J-POWER AUSTRALIA PTY LTD | 04/06/1991 | 04/06/2033 | 20130509 | MINING | COAL | Coal, Petroleum | 0m | On-site |
| AUTH0346 | ASTON COAL 2 PTY LTD; ICRA MC PTY LTD; J-POWER AUSTRALIA PTY LTD | 28/02/1984 | 28/02/2027 | 20220330 | EXPLORING | COAL | Group 9 | 0m | On-site |
| ML1719 | ASTON COAL 2 PTY LTD; ICRA MC PTY LTD; J-POWER AUSTRALIA PTY LTD | 11/11/2015 | 11/11/2036 | 20151111 | MINING | COAL | Nil Minerals | 0m | On-site |
| CL0368 | BOGGABRI COAL PTY LIMITED; CHUGOKU ELECTRIC POWER AUSTRALIA RESOURCES PTY. LTD.; NS BOGGABRI PTY LIMITED | 15/11/1990 | 14/11/2032 | 20171117 | MINING | COAL | Coal | 253m | South |

Current Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

Current Mining & Exploration Title Applications

Current Mining & Exploration Title Applications within the dataset buffer:

| Application Ref | Applicant | Application Date | Operation | Resource | Minerals | Dist | Dir |
|-----------------|----------------------|------------------|-----------|----------|----------|------|-----|
| N/A | No records in buffer | | | | | | |

Current Mining & Exploration Title Applications Data Source: © State of New South Wales through NSW Department of Industry

Mining

Large Site, Baan Baa, NSW 2390

Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

| Title Ref | Holder | Start Date | End Date | Resource | Minerals | Dist | Dir |
|-----------|---|------------|----------|-----------|-----------|------|------------|
| EL7898 | PINNACLE GOLD PTY LTD | 20120209 | 20130125 | MINERALS | | 0m | On-site |
| PEL0037 | MID-EASTERN OIL NL | | | PETROLEUM | Petroleum | 0m | On-site |
| PEL0242 | SION RESOURCES AUSTRALIA LTD | 19810110 | 19841210 | PETROLEUM | Petroleum | 0m | On-site |
| PEL0280 | TASMAN GAS PTY LTD, GOLDCHARGE MINING PTY LTD | 19910306 | 19930206 | PETROLEUM | Petroleum | 0m | On-site |
| PEL0172 | | | | PETROLEUM | Petroleum | 0m | On-site |
| EL4500 | NOVACOAL AUSTRALIA PTY. LIMITED | 19930511 | 19950515 | COAL | Coal | 24m | South East |
| PEL464 | DART ENERGY (APOLLO) PTY LTD | 20081022 | 20130215 | MINERALS | | 428m | South |
| PSPAUTH14 | MACQUARIE ENERGY PTY LTD | 20070803 | 20080703 | PETROLEUM | Petroleum | 428m | South |
| PEL0464 | DART ENERGY (APOLLO) PTY LTD | 20091010 | 20150603 | PETROLEUM | Petroleum | 428m | South |

Historical Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

State Environmental Planning Policy

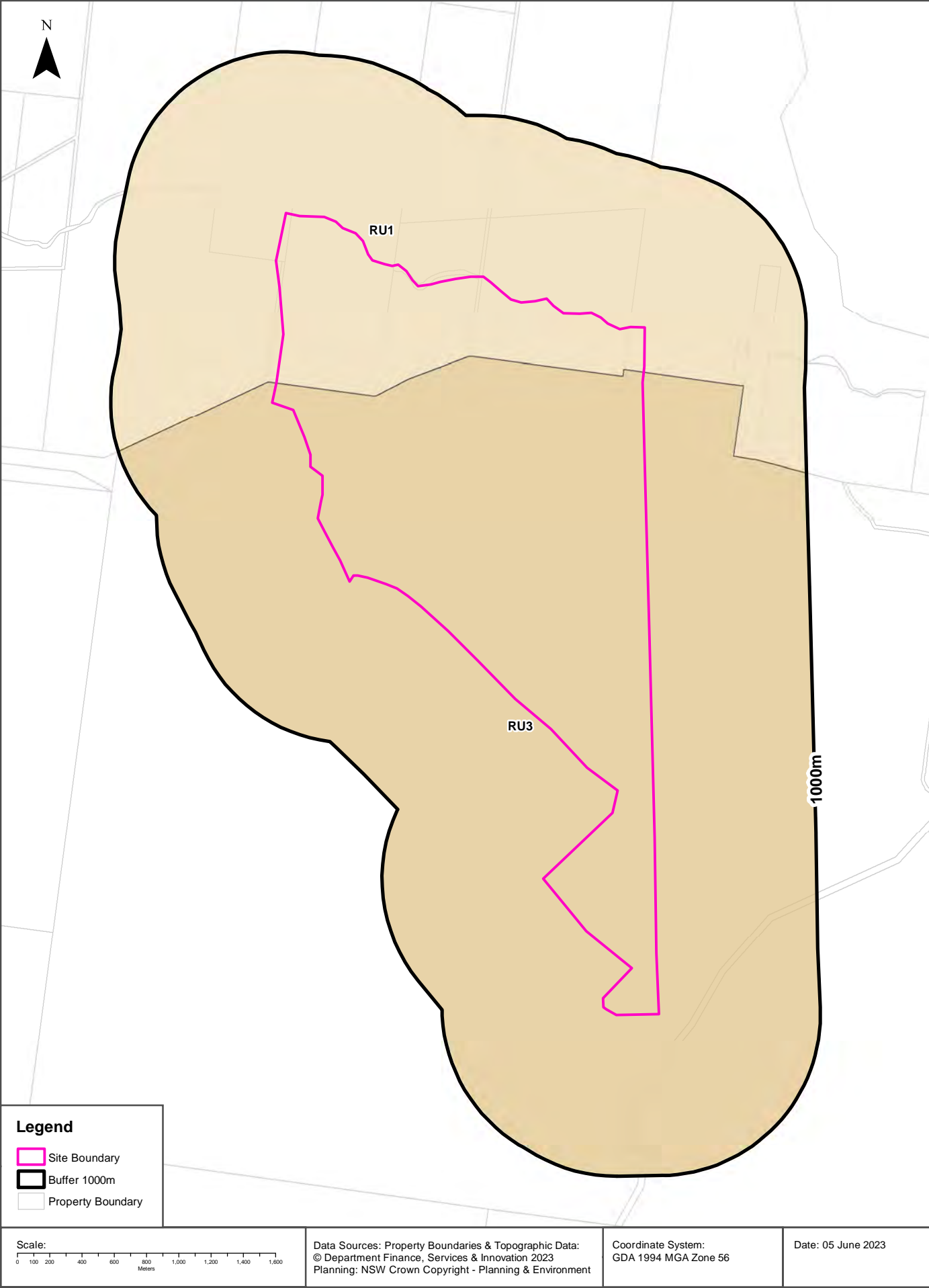
Large Site, Baan Baa, NSW 2390

State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

| Map Id | Precinct | EPI Name | Published Date | Commenced Date | Currency Date | Amendment | Distance | Direction |
|--------|----------------------|----------|----------------|----------------|---------------|-----------|----------|-----------|
| N/A | No records in buffer | | | | | | | |

State Environment Planning Policy Data Source: NSW Crown Copyright - Planning & Environment
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Environmental Planning Instrument

Large Site, Baan Baa, NSW 2390

Land Zoning

What EPI Land Zones exist within the dataset buffer?

| Zone | Description | Purpose | EPI Name | Published Date | Commenced Date | Currency Date | Amendment | Distance | Direction |
|------|--------------------|---------|--|----------------|----------------|---------------|-----------------|----------|-----------|
| RU1 | Primary Production | | Narrabri Local Environmental Plan 2012 | 21/05/2021 | 21/05/2021 | 02/12/2022 | Amendment No 16 | 0m | On-site |
| RU3 | Forestry | | Narrabri Local Environmental Plan 2012 | 21/12/2012 | 21/12/2012 | 02/12/2022 | | 0m | On-site |

Environmental Planning Instrument Data Source: NSW Crown Copyright - Planning & Environment
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Heritage

Large Site, Baan Baa, NSW 2390

Commonwealth Heritage List

What are the Commonwealth Heritage List Items located within the dataset buffer?

| Place Id | Name | Address | Place File No | Class | Status | Register Date | Distance | Direction |
|----------|----------------------|---------|---------------|-------|--------|---------------|----------|-----------|
| N/A | No records in buffer | | | | | | | |

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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National Heritage List

What are the National Heritage List Items located within the dataset buffer?

Note. Please click on Place Id to activate a hyperlink to online website.

| Place Id | Name | Address | Place File No | Class | Status | Register Date | Distance | Direction |
|----------|----------------------|---------|---------------|-------|--------|---------------|----------|-----------|
| N/A | No records in buffer | | | | | | | |

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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State Heritage Register - Curtilages

What are the State Heritage Register Items located within the dataset buffer?

| Map Id | Name | Address | LGA | Listing Date | Listing No | Plan No | Distance | Direction |
|--------|----------------------|---------|-----|--------------|------------|---------|----------|-----------|
| N/A | No records in buffer | | | | | | | |

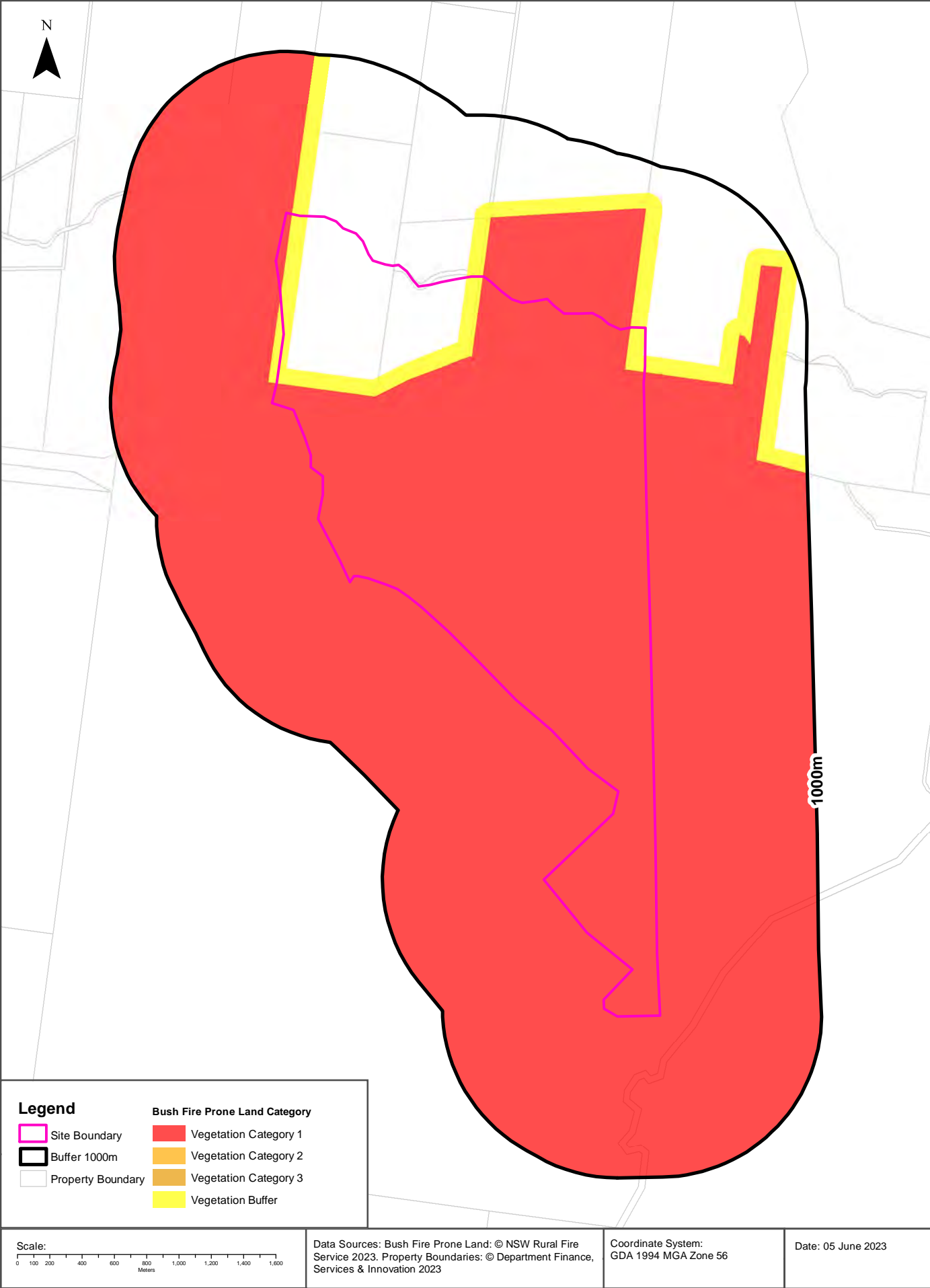
Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage
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Environmental Planning Instrument - Heritage

What are the EPI Heritage Items located within the dataset buffer?

| Map Id | Name | Classification | Significance | EPI Name | Published Date | Commenced Date | Currency Date | Distance | Direction |
|--------|----------------------|----------------|--------------|----------|----------------|----------------|---------------|----------|-----------|
| N/A | No records in buffer | | | | | | | | |

Heritage Data Source: NSW Crown Copyright - Planning & Environment
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Natural Hazards

Large Site, Baan Baa, NSW 2390

Bush Fire Prone Land

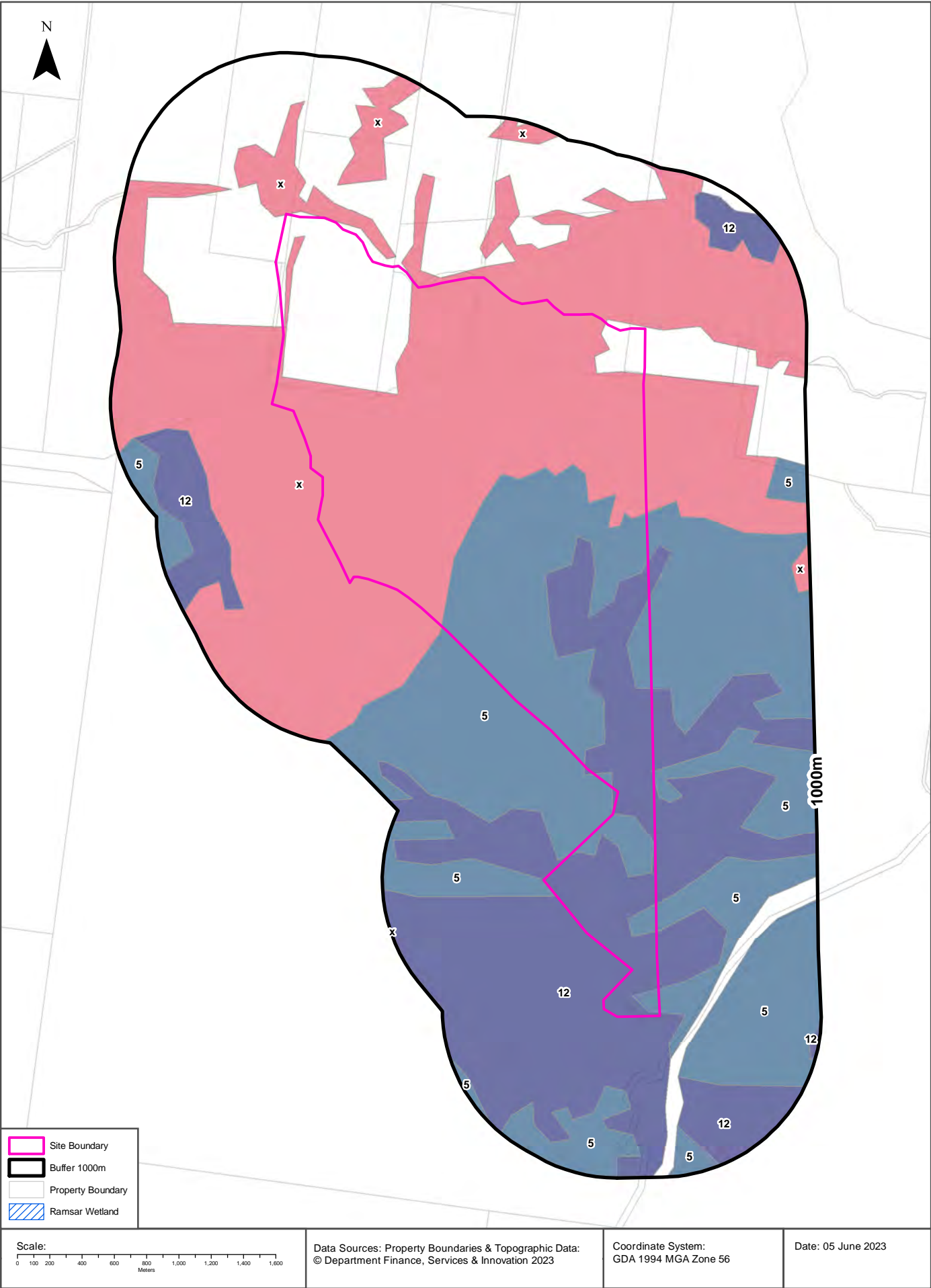
What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

| Bush Fire Prone Land Category | Distance | Direction |
|-------------------------------|----------|-----------|
| Vegetation Category 1 | 0m | On-site |
| Vegetation Buffer | 0m | On-site |

NSW Bush Fire Prone Land - © NSW Rural Fire Service under Creative Commons 4.0 International Licence

Ecological Constraints - Vegetation & Ramsar Wetlands

Large Site, Baan Baa, NSW 2390



Ecological Constraints

Large Site, Baan Baa, NSW 2390

Vegetation - Eastern Bushland Database (North Region)

What Vegetation exists within the dataset buffer?

| Veg Code | Veg Desc | NVISCode | NVISDesc | Distance | Direction |
|----------|---------------------------|----------|---------------------------|----------|-----------|
| 5 | woodland | 20 | Woodland system | 0m | On-site |
| 12 | white cypress pine | 19 | White cypress pine system | 0m | On-site |
| x | disturbed forest woodland | 23 | Disturbed bushland | 0m | On-site |

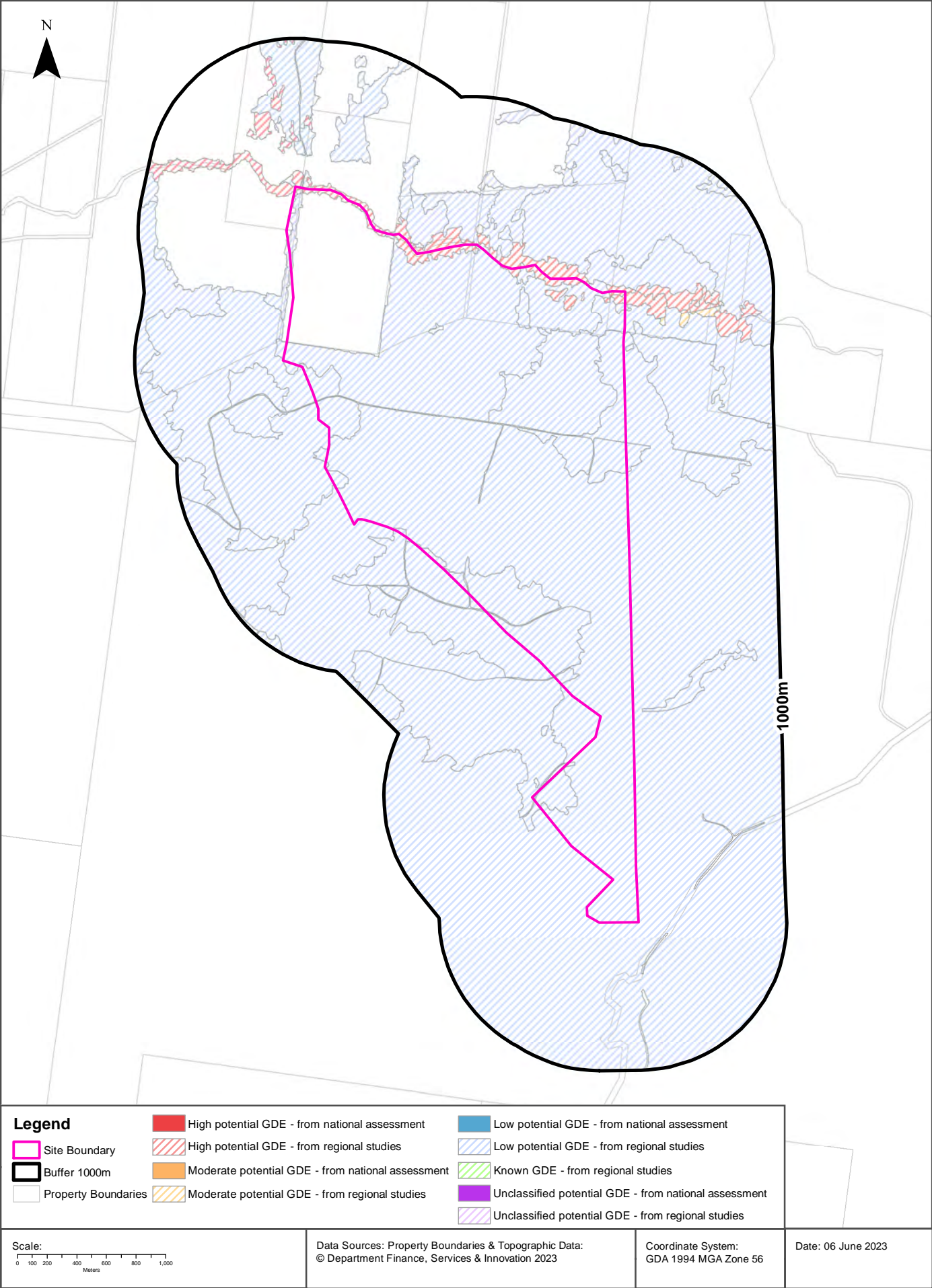
Vegetation Eastern Bushland Database Data Source: NSW Office of Environment and Heritage
Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

| Map Id | Ramsar Name | Wetland Name | Designation Date | Source | Distance | Direction |
|--------|----------------------|--------------|------------------|--------|----------|-----------|
| N/A | No records in buffer | | | | | |

Ramsar Wetlands Data Source: © Commonwealth of Australia - Department of Agriculture, Water and the Environment



Ecological Constraints

Large Site, Baan Baa, NSW 2390

Groundwater Dependent Ecosystems Atlas

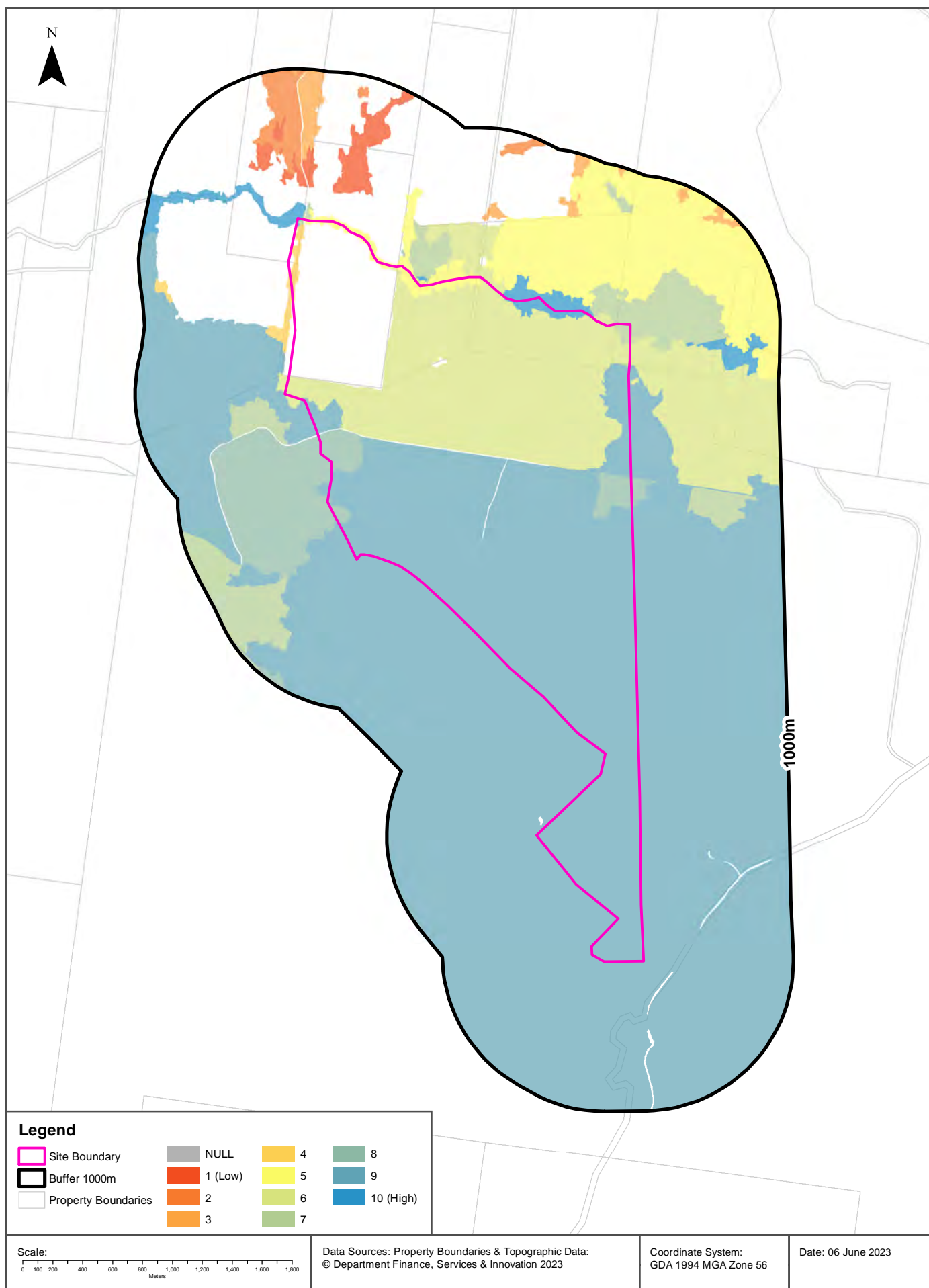
| Type | GDE Potential | Geomorphology | Ecosystem Type | Aquifer Geology | Distance | Direction |
|-------------|--|--------------------------|----------------|-----------------|----------|------------|
| Terrestrial | Low potential GDE - from regional studies | Dissected volcanic pile. | Vegetation | | 0m | On-site |
| Terrestrial | High potential GDE - from regional studies | Dissected volcanic pile. | Vegetation | | 0m | On-site |
| Terrestrial | Moderate potential GDE - from regional studies | Dissected volcanic pile. | Vegetation | | 228m | North East |

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology

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Ecological Constraints - Inflow Dependent Ecosystems Likelihood

Large Site, Baan Baa, NSW 2390



Ecological Constraints

Large Site, Baan Baa, NSW 2390

Inflow Dependent Ecosystems Likelihood

| Type | IDE Likelihood | Geomorphology | Ecosystem Type | Aquifer Geology | Distance | Direction |
|-------------|----------------|--------------------------|----------------|-----------------|----------|------------|
| Terrestrial | 8 | Dissected volcanic pile. | Vegetation | | 0m | On-site |
| Terrestrial | 5 | Dissected volcanic pile. | Vegetation | | 0m | On-site |
| Terrestrial | 10 | Dissected volcanic pile. | Vegetation | | 0m | On-site |
| Terrestrial | 4 | Dissected volcanic pile. | Vegetation | | 0m | On-site |
| Terrestrial | 9 | Dissected volcanic pile. | Vegetation | | 0m | On-site |
| Terrestrial | 6 | Dissected volcanic pile. | Vegetation | | 0m | On-site |
| Terrestrial | 7 | Dissected volcanic pile. | Vegetation | | 0m | On-site |
| Terrestrial | 1 | Dissected volcanic pile. | Vegetation | | 192m | North |
| Terrestrial | 2 | Dissected volcanic pile. | Vegetation | | 296m | North West |
| Terrestrial | 3 | Dissected volcanic pile. | Vegetation | | 370m | North |

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

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Ecological Constraints

Large Site, Baan Baa, NSW 2390

NSW BioNet Atlas

Species on the NSW BioNet Atlas that have a NSW or federal conservation status, a NSW sensitivity status, or are listed under a migratory species agreement, and are within 10km of the site?

| Kingdom | Class | Scientific | Common | NSW Conservation Status | NSW Sensitivity Class | Federal Conservation Status | Migratory Species Agreements |
|----------|----------|------------------------------------|---|-------------------------|-----------------------|-----------------------------|------------------------------|
| Animalia | Amphibia | Neobatrachus pictus | Painted Burrowing Frog | Endangered | Not Sensitive | Not Listed | |
| Animalia | Aves | Anthochaera phrygia | Regent Honeyeater | Critically Endangered | Not Sensitive | Critically Endangered | |
| Animalia | Aves | Artamus cyanopterus cyanopterus | Dusky Woodswallow | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Calyptorhynchus lathami | Glossy Black-Cockatoo | Vulnerable | Category 2 | Vulnerable | |
| Animalia | Aves | Certhionyx variegatus | Pied Honeyeater | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Chthonicola sagittata | Speckled Warbler | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Circus assimilis | Spotted Harrier | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Climacteris picumnus victoriae | Brown Treecreeper (eastern subspecies) | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Columba vitiensis godmanae | White-throated Pigeon (Lord Howe Is. subsp.) | Presumed Extinct | Not Sensitive | Extinct | |
| Animalia | Aves | Daphoenositta chrysoptera | Varied Sittella | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Falco subniger | Black Falcon | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Glossopsitta pusilla | Little Lorikeet | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Grantiella picta | Painted Honeyeater | Vulnerable | Not Sensitive | Vulnerable | |
| Animalia | Aves | Hieraaetus morphnoides | Little Eagle | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Hirundapus caudacutus | White-throated Needletail | Not Listed | Not Sensitive | Vulnerable | ROKAMBA;CAMBA; JAMBA |
| Animalia | Aves | Lophoictinia isura | Square-tailed Kite | Vulnerable | Category 3 | Not Listed | |
| Animalia | Aves | Melanodryas cucullata cucullata | Hooded Robin (south-eastern form) | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Melithreptus gularis gularis | Black-chinned Honeyeater (eastern subspecies) | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Neophema pulchella | Turquoise Parrot | Vulnerable | Category 3 | Not Listed | |
| Animalia | Aves | Ninox connivens | Barking Owl | Vulnerable | Category 3 | Not Listed | |
| Animalia | Aves | Petroica boodang | Scarlet Robin | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Petroica phoenicea | Flame Robin | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Pomatostomus temporalis temporalis | Grey-crowned Babbler (eastern subspecies) | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Stagonopleura guttata | Diamond Firetail | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Aves | Stictonetta naevosa | Freckled Duck | Vulnerable | Not Sensitive | Not Listed | |

| Kingdom | Class | Scientific | Common | NSW Conservation Status | NSW Sensitivity Class | Federal Conservation Status | Migratory Species Agreements |
|----------|----------|--------------------------------|---------------------------------|-------------------------|-----------------------|-----------------------------|------------------------------|
| Animalia | Aves | Tyto novaehollandiae | Masked Owl | Vulnerable | Category 3 | Not Listed | |
| Animalia | Mammalia | Chalinolobus dwyeri | Large-eared Pied Bat | Vulnerable | Not Sensitive | Vulnerable | |
| Animalia | Mammalia | Micronomus norfolkensis | Eastern Coastal Free-tailed Bat | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Mammalia | Miniopterus orianae oceanensis | Large Bent-winged Bat | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Mammalia | Nyctophilus corbeni | Corben's Long-eared Bat | Vulnerable | Not Sensitive | Vulnerable | |
| Animalia | Mammalia | Petaurus norfolkensis | Squirrel Glider | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Mammalia | Phascolarctos cinereus | Koala | Endangered | Not Sensitive | Endangered | |
| Animalia | Mammalia | Pteropus poliocephalus | Grey-headed Flying-fox | Vulnerable | Not Sensitive | Vulnerable | |
| Animalia | Mammalia | Saccolaimus flaviventris | Yellow-bellied Sheath-tail-bat | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Mammalia | Vespadelus baverstocki | Inland Forest Bat | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Mammalia | Vespadelus troughtoni | Eastern Cave Bat | Vulnerable | Not Sensitive | Not Listed | |
| Animalia | Reptilia | Hoplocephalus bitorquatus | Pale-headed Snake | Vulnerable | Not Sensitive | Not Listed | |
| Plantae | Flora | Cadellia pentastylis | Ooline | Vulnerable | Not Sensitive | Vulnerable | |
| Plantae | Flora | Coatesia paniculata | Axe-Breaker | Endangered | Not Sensitive | Not Listed | |
| Plantae | Flora | Cymbidium canaliculatum | Tiger Orchid | Not Listed | Category 2 | Not Listed | |
| Plantae | Flora | Dichanthium setosum | Bluegrass | Vulnerable | Not Sensitive | Vulnerable | |
| Plantae | Flora | Digitaria porrecta | Finger Panic Grass | Endangered | Not Sensitive | Not Listed | |
| Plantae | Flora | Lepidium aschersonii | Spiny Peppergrass | Vulnerable | Not Sensitive | Vulnerable | |
| Plantae | Flora | Pomaderris queenslandica | Scant Pomaderris | Endangered | Not Sensitive | Not Listed | |
| Plantae | Flora | Tylophora linearis | | Vulnerable | Not Sensitive | Endangered | |

Data does not include NSW category 1 sensitive species.

NSW BioNet: © State of NSW and Office of Environment and Heritage

Location Confidences

Where Lotsearch has had to georeference features from supplied addresses, a location confidence has been assigned to the data record. This indicates a confidence to the positional accuracy of the feature. Where applicable, a code is given under the field heading “LC” or “LocConf”. These codes lookup to the following location confidences:

| LC Code | Location Confidence |
|---------------------|--|
| Premise Match | Georeferenced to the site location / premise or part of site |
| Area Match | Georeferenced to an approximate or general area |
| Road Match | Georeferenced to a road or rail corridor |
| Road Intersection | Georeferenced to a road intersection |
| Buffered Point | A point feature buffered to x metres |
| Adjacent Match | Land adjacent to a georeferenced feature |
| Network of Features | Georeferenced to a network of features |
| Suburb Match | Georeferenced to a suburb boundary |
| As Supplied | Spatial data supplied by provider |

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Annexure E

Section 10.7 Planning Certificates

PLANNING CERTIFICATE

Issued under Section 10.7(2)
Environmental Planning and Assessment Act 1979

Applicant

James Morrow
Ground Doctor Pty Ltd
PO Box 6278
DUBBO NSW 2830

Applicant Reference: PC10.7-2023-3567

Administration

Amount Paid: \$156.00
Receipt No: D000310148
Receipt Date: 17/05/2023

Certificate Number: PC2023/0447

Description of Land

2703 Harparary Road
MAULES CREEK NSW 2382

Lot 11 DP 611290, Lot 3 DP 1144479,
Lot 2 DP 510801, Lot 32 DP 754940,
Lot 33 DP 754940, Lot 34 DP 754940,
Lot 55 DP 754940, Lot 55 DP 754924

Assessment Number: 00171-10000000

Owner

Aston Coal 2 Pty Ltd, Icra Mc Pty Ltd,
J-Power Australia Pty Limited & Others
PO Box 638
NEWCASTLE NSW 2300

NOTE: The following information is provided pursuant to Section 10.7(2) of the *Environmental Assessment Act 1979* as prescribed by Schedule 2 of the *Environmental Planning and Assessment Regulation 2021* and is applicable to the subject land as of the date of this certificate.

1 Names of relevant planning instruments and DCPs

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

Local Environmental Plan (LEP)

Narrabri Local Environmental Plan 2012

State Environmental Planning Policy (SEPP)

- **State Environmental Planning Policy (Exempt and Complying Development Codes) 2008**
- **State Environmental Planning Policy (Planning Systems) 2021**
- **State Environmental Planning Policy (Biodiversity and Conservation) 2021**
- **State Environmental Planning Policy (Resilience and Hazards) 2021**
- **State Environmental Planning Policy (Transport and Infrastructure) 2021**
- **State Environmental Planning Policy (Industry and Employment) 2021**
- **State Environmental Planning Policy (Resources and Energy) 2021**
- **State Environmental Planning Policy (Primary Production) 2021**
- **State Environmental Planning Policy (Precincts - Eastern Harbour City) 2021**
- **State Environmental Planning Policy (Precincts - Central River City) 2021**
- **State Environmental Planning Policy (Precincts - Western Parkland City) 2021**
- **State Environmental Planning Policy (Precincts – Regional) 2021**
- **State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004**

Development Control Plans

- **DCP Landfill Development**
- **DCP Notification Policy**
- **DCP Outdoor Advertising**
- **DCP Parking Code**
- **DCP Subdivision Code**
- **DCP Transportable Homes**
- **DCP Water Supply to Buildings**
- **DCP Drainage to Buildings**
- **DCP Building Line**
- **DCP Encroachment onto Public Roads**
- **DCP Building near Sewer and Stormwater mains**

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

Nil

- (3) *Subsection (2) does not apply in relation to a proposed environmental planning instrument or draft development control plan if—*
- (a) *it has been more than 3 years since the end of the public exhibition period for the proposed instrument or draft plan, or*
- (b) *for a proposed environmental planning instrument—the Planning Secretary has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved.*

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

2 Zoning and land use under relevant LEPs

The following matters for each environmental planning instrument or draft environmental planning instrument that includes the land in a zone, however described—

- (a) *the identity of the zone, whether by reference to a name (such as “Residential Zone” or “Heritage Area”) or by reference to a number (such as “Zone R1”),*

RU1 Primary Production

(b) *the purposes for which development in the zone---*

(i) *may be carried out without development consent,*

Building identification signs; Environmental protection works; Extensive agriculture; Farm buildings; Forestry; Home occupations; Intensive plant agriculture; Roads

(ii) *may not be carried out except with development consent,*

Air transport facilities; Airstrips; Animal boarding or training establishments; Aquaculture; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Camping grounds; Cellar door premises; Cemeteries; Community facilities; Depots; Dual occupancies; Dwelling houses; Environmental facilities; Extractive industries; Farm stay accommodation; Flood mitigation works; Freight transport facilities; Helipads; Home businesses; Home industries; Information and education facilities; Intensive livestock agriculture; Landscaping material supplies; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (major); Recreation facilities (outdoor); Research stations; Roadside stalls; Rural industries; Rural workers' dwellings; Signage; Turf farming; Water recreation structures; Water supply systems

(iii) *is prohibited,*

Any other development not specified in item 2(b) (i) or (ii)

(c) *whether additional permitted uses apply to the land,*

Additional uses do not apply to this land.

(d) *whether development standards applying to the land fix minimum land dimensions for the erection of a dwelling house on the land and, if so, the fixed minimum land dimensions,*

100ha

(e) *whether the land is in an area of outstanding biodiversity value under the Biodiversity Conservation Act 2016,*

The land Isn't in an area of outstanding biodiversity value under the *Biodiversity Conservation Act 2016*.

(f) *whether the land is in a conservation area, however described.*

The land Isn't in a conservation area.

(g) *whether an item of environmental heritage (however described) is situated on the land.*

There Isn't an item of environmental heritage situated on the land.

3 Contribution plans

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

- **Narrabri Shire Section 7.11 Contributions Plan**
- **Narrabri Shire Section 7.12 Fixed Development Consent Levies Contributions Plan**

Note: Both contribution plans apply to the zone, but the imposition of each Plan is dependent upon the type of development proposed.

Note: There are also Developer Servicing Plans that may be applicable for water and sewer contributions which may apply to the land.

(2) *If the land is in a special contributions area under the Act, Division 7.1, the name of the area.*

No

4 Complying Development

(1) *If the land is land on which complying development may be carried out under each of the complying development codes under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008, because of that Policy, clause 1.17A(1)(c)–(e), (2), (3) or (4), 1.18(1)(c3) or 1.19.*

Yes

If **yes** complying development may be carried out under the following Codes:

- **Part 3d Inland Code**
- **Part 4 Housing Alterations Code**
- **Part 4a General Development Code**
- **Part 5 Industrial and Business Alterations Code**
- **Part 5a Industrial and Business Buildings Code**
- **Part 6 Subdivisions Code**
- **Part 7 Demolition Code**
- **Part 8 Fire Safety Code**

Note: The opportunity for complying development to be carried out under each of these Codes may be restricted where the land is a flood control lot, within a bushfire prone area or subject to other site or zoning constraints. For more information about complying development visit the *SEPP (Exempt and Complying Development Codes) 2008* at <https://legislation.nsw.gov.au/view/html/inforce/current/epi-2008-0572>

(2) *If **no** complying development may not be carried out on the land because of the provisions of clauses 1.17A (c) and (d) and 1.19 of the SEPP, the reasons why it may not be carried out under that clause are:*

Not applicable

(3) *the council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.*

Not applicable

(4) *If the complying development codes are varied, under that Policy, clause 1.12, in relation to the land.*

Not applicable

5 Exempt development

(1) *If the land is land on which exempt development may be carried out under each of the exempt development codes under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008, because of that Policy, clause 1.16(1)(b1)–(d) or 1.16A.*

Yes

If **yes** the development may be carried out under Part 2 Division 1 of the SEPP (Exempt and Complying Development Codes)

- (2) *If exempt development may not be carried out on the land because of 1 of those clauses, the reasons why it may not be carried out under the clause.*

Not applicable

- (3) *If the council does not have sufficient information to ascertain the extent to which exempt development may or may not be carried out on the land, a statement that—*

- (a) *a restriction applies to the land, but it may not apply to all of the land, and*

Not applicable

- (b) *the council does not have sufficient information to ascertain the extent to which exempt development may or may not be carried out on the land.*

Not applicable

- (c) *If the exempt development codes are varied, under that Policy, clause 1.12, in relation to the land.*

Not applicable

6 Affected building notices and building product rectification orders

- (1) *Whether the council is aware that—*

- (a) *an affected building notice is in force in relation to the land,*

The Council Isn't aware that an affected building notice is in force in relation to the land

- (b) *a building product rectification order is in force in relation to the land that has not been fully complied with,*

The Council Isn't aware that a building product rectification order is in force in relation to the land

- (c) *a notice of intention to make a building product rectification order given in relation to the land is outstanding.*

The Council Isn't aware of a notice of intention to make a building product rectification order.

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

7 Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in section 1 makes provision in relation to the acquisition of the land by an authority of the State, as referred to in the Act, section 3.15.

Nil

8 Road widening and road realignment

Whether the land is affected by any road widening or road realignment under:

- (a) the Roads Act 1993, Part 3, Division 2, or
- (b) any environmental planning instrument, or
- (c) any resolution of the council.

No

9 Flood related development controls information

- 1) *If the land or part of the land is within the flood planning area and subject to flood related development controls.*

Unknown.

The Council does not know whether or not development on the land, or part of the land, is subject to flood related development controls. This is because the Council has not completed mapping of the area of land within 500mm of the 1:100 Annual Exceedance Probability flood level in order to determine this. The specified land may be the subject of flood related development controls set out in clause 5.21 of *Narrabri Local Environmental Plan 2012*. Prior to the completion of mapping for this location Council will require that applications for new development be accompanied by information necessary for determining the flood planning level and recommends that all necessary enquiries should be made

- 2) *If the land or part of the land is between the flood planning area and the probable maximum flood and subject to flood related development controls.*

Unknown.

The Council does not know whether or not development on the land, or part of the land, is subject to flood related development controls. This is because the Council has not completed mapping of the area of land between the flood planning area and the probable maximum flood in this location in order to determine this. The specified land may be the subject of flood related development controls set out in clause 5.21 of the *Narrabri Local Environmental Plan 2012*.

Prior to the completion of mapping in this area Council will require that applications for new development be accompanied by information necessary for determining the flood affection of the land between the flood planning area and the probable maximum flood and recommends that all necessary enquiries should be made.

- 3) *In this clause –*

Flood planning area has the same meaning as in the *Floodplain Development Manual*.

Floodplain Development Manual means the *Floodplain Development Manual* (ISBN 0 7347 5476 0) published by the NSW Government in April 2005.

Probable maximum flood has the same meaning as in the *Floodplain Development Manual*.

10 Council and other public authority policies on hazard risk restrictions

- (1) *Whether any of the land is affected by an adopted policy that restricts the development of the land because of the likelihood of land slip, bush fire, tidal inundation, subsidence, acid sulfate soils, contamination, aircraft noise, salinity, coastal hazards, sea level rise or another risk, other than flooding.*

No

- (2) *In this section—*

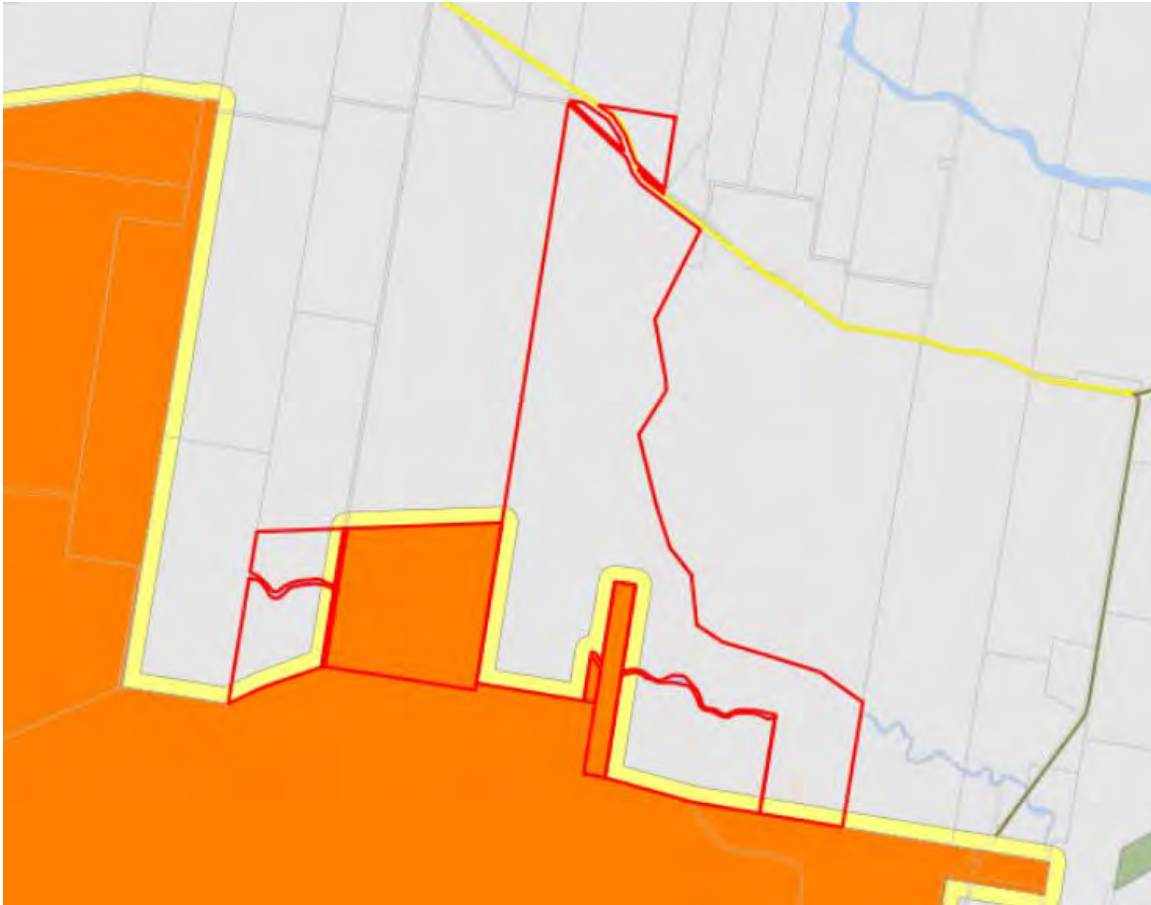
adopted policy means a policy adopted—

(a) by the council, or

(b) by another public authority, if the public authority has notified the council that the policy will be included in a planning certificate issued by the council.

11 **Bush fire prone land**

Some of the subject land is identified as being bushfire prone land, as designated by the Commissioner of the NSW Rural Fire Service under the Act, section 10.3.



12 **Loose-fill asbestos insulation**

If the land includes residential premises, within the meaning of the Home Building Act 1989, Part 8, Division 1A, that are listed on the Register kept under that Division.

The land does not include any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division.

13 **Mine subsidence**

Whether the land is declared to be a mine subsidence district, within the meaning of the Coal Mine Subsidence Compensation Act 2017.

The land isn't declared to be in a mine subsidence district within the meaning of the Coal Mine Subsidence Compensation Act 2017.

14 Paper subdivision information

(1) *The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot –*

No

(2) *The date of any subdivision order that applies to the land –*

No

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

15 Property vegetation plans

If the land is land to which a property vegetation plan approved and in force under of the Native Vegetation Act 2003 Part 4 applies (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

The Council Isn't been notified of a property vegetation plan under the Native Vegetation Act 2003 applicable to the land.

Note: This advice is based on information provided to the Council.

16 Biodiversity stewardship sites

If the land is a biodiversity stewardship site under a biodiversity stewardship agreement under the Biodiversity Conservation Act 2016, Part 5 (but only if the council has been notified of the existence of the agreement by the Biodiversity Conservation Trust

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

Council has not been notified by the Biodiversity Conservation Trust that *the land is a biodiversity stewardship site under a biodiversity stewardship agreement under the Biodiversity Conservation Act 2016, Part 5*

17 Biodiversity certified land

If the land is biodiversity certified land under the Biodiversity Conservation Act 2016, Part 8.

Note: Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016.

Council has no records that the land is biodiversity certified land under the Biodiversity Conservation Act 2016 Part 8.

18 Orders under Trees (Disputes Between Neighbours) Act 2006

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

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

Not applicable.

20 Western Sydney Aerotropolis

Not applicable.

21 Development consent conditions for seniors housing

If State Environmental Planning Policy (Housing) 2021, Chapter 3, Part 5 applies to the land, any conditions of a development consent granted after 11 October 2007 in relation to the land that are of the kind set out in that Policy, section 88(2).

Not applicable

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

There is no current site compatibility certificate (affordable rental housing) of which the council is aware, in respect of proposed development on the land.

There has been no development consent granted by Council for affordable rental housing on the land.

Contaminated Land Management Act 1997

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

- (a) *that the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,*

Not applicable

Council has no record that the land is significantly contaminated land at the date or the issue of this certificate.

- (b) *that the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,*

Council has no record that the land is subject to a management order within the meaning of that Act at the date of the issue of this certificate.

- (c) *that the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued,*

Council has no record that the land is the subject of an approved voluntary management proposal within the meaning of that Act at the date of the issue of this certificate.

- (d) *that the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,*

Council has no record that the land is the subject of an ongoing maintenance order within the meaning of that Act at the date of the issue of this certificate.

- (e) *that the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.*

Council has no record that the land is the subject of a site audit statement within the meaning of that Act at the date of the issue of this certificate.

Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009

Note. Section 26 of the *Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009* provides that a planning certificate must include advice about any exemption under section 23 or authorisation under section 24 of that Act if the council is provided with a copy of the exemption or authorisation by the Co-ordinator General under that Act.

Council is not aware of any exemption under section 23 or authorization under section 24 of the Act.

Section 10.7(5) Additional Information

The following information is provided in accordance with Section 10.7(5) of the *Environmental Planning and Assessment Act 1979*:

Tree Preservation Order

Is the land affected by a Tree Preservation Order? No

Private Native Forestry Plan

Council has **not** been notified of any Private Native Forestry Plan (PNF Plan) by Local Land Services on land subject to this planning certificate.

Obstacle Limitation Surface Map

The subject lot **isn't** on land shown on the Obstacle Limitation Surface Map for Narrabri Airport within the meaning of Section 6.3 of the Narrabri Local Environmental Plan 2012.

Offset Conservation Agreement

The land **isn't** subject to an offset conservation agreement entered under *Part 5.20 of the Biodiversity Conservation Act 2016* or *Part 4.12 of the National Parks and Wildlife Act 1974*.

Note: For further information about the registered dealing on title please contact NSW Land Registry Services.

Contaminated Land Management Act 1997

This land **has not** been notified by the EPA as being potentially contaminated.

Note: This additional information is provided in good faith but is not warranted or represented to be all of the relevant information of which the Council may be aware concerning contamination affecting the land. You must make all relevant enquiries about these matters and circumstances affecting the land and must not rely on the additional information provided as to the existence or non-existence of any relevant matter or circumstance.

Development Consents

Has any Development Consent been granted with respect to the land within previous two (2) years?
No

Note: Council shall not incur any liability in respect of any advice provided in good faith pursuant to subsection (5)



Günther Weidenmann
Development Planner

Date of Certificate: 24 May 2023

PLANNING CERTIFICATE

Issued under Section 10.7(2)
Environmental Planning and Assessment Act 1979

Applicant

James Morrow
Ground Doctor Pty Ltd
PO Box 6278
DUBBO NSW 2830

Applicant Reference: PC10.7-2023-3569

Administration

Amount Paid: \$156.00
Receipt No: D000310150
Receipt Date: 17/05/2023

Certificate Number: PC2023/0448

Description of Land

2490 Harparary Road
MAULES CREEK NSW 2382

Lot 35 DP754924, Lot 35 DP754940
Lot 53 DP654577, Lot 110 DP754924,
Lot 11 DP754924, Lot 65 DP754924,
Lot 1 DP114793, Lot 49 DP754924,
Lot 3 DP754924, Lot 34 DP754924,
Lot 2 DP1144479

Assessment Number: 00157-00000000

Owner

Aston Coal 2 Pty Ltd, Icra Mc Pty Ltd,
J-Power Australia Pty Limited & Others
PO Box 638
NEWCASTLE NSW 2300

NOTE: The following information is provided pursuant to Section 10.7(2) of the *Environmental Assessment Act 1979* as prescribed by Schedule 2 of the *Environmental Planning and Assessment Regulation 2021* and is applicable to the subject land as of the date of this certificate.

1 Names of relevant planning instruments and DCPs

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

Local Environmental Plan (LEP)

Narrabri Local Environmental Plan 2012

State Environmental Planning Policy (SEPP)

- **State Environmental Planning Policy (Exempt and Complying Development Codes) 2008**
- **State Environmental Planning Policy (Planning Systems) 2021**
- **State Environmental Planning Policy (Biodiversity and Conservation) 2021**
- **State Environmental Planning Policy (Resilience and Hazards) 2021**
- **State Environmental Planning Policy (Transport and Infrastructure) 2021**
- **State Environmental Planning Policy (Industry and Employment) 2021**
- **State Environmental Planning Policy (Resources and Energy) 2021**
- **State Environmental Planning Policy (Primary Production) 2021**
- **State Environmental Planning Policy (Precincts - Eastern Harbour City) 2021**
- **State Environmental Planning Policy (Precincts - Central River City) 2021**
- **State Environmental Planning Policy (Precincts - Western Parkland City) 2021**
- **State Environmental Planning Policy (Precincts – Regional) 2021**
- **State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004**

Development Control Plans

- **DCP Landfill Development**
- **DCP Notification Policy**
- **DCP Outdoor Advertising**
- **DCP Parking Code**
- **DCP Subdivision Code**
- **DCP Transportable Homes**
- **DCP Water Supply to Buildings**
- **DCP Drainage to Buildings**
- **DCP Building Line**
- **DCP Encroachment onto Public Roads**
- **DCP Building near Sewer and Stormwater mains**

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

Nil

- (3) *Subsection (2) does not apply in relation to a proposed environmental planning instrument or draft development control plan if—*
- (a) *it has been more than 3 years since the end of the public exhibition period for the proposed instrument or draft plan, or*
- (b) *for a proposed environmental planning instrument—the Planning Secretary has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved.*

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

2 Zoning and land use under relevant LEPs

The following matters for each environmental planning instrument or draft environmental planning instrument that includes the land in a zone, however described—

- (a) *the identity of the zone, whether by reference to a name (such as “Residential Zone” or “Heritage Area”) or by reference to a number (such as “Zone R1”),*

RU1 Primary Production

(b) *the purposes for which development in the zone---*

(i) *may be carried out without development consent,*

Building identification signs; Environmental protection works; Extensive agriculture; Farm buildings; Forestry; Home occupations; Intensive plant agriculture; Roads

(ii) *may not be carried out except with development consent,*

Air transport facilities; Airstrips; Animal boarding or training establishments; Aquaculture; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Camping grounds; Cellar door premises; Cemeteries; Community facilities; Depots; Dual occupancies; Dwelling houses; Environmental facilities; Extractive industries; Farm stay accommodation; Flood mitigation works; Freight transport facilities; Helipads; Home businesses; Home industries; Information and education facilities; Intensive livestock agriculture; Landscaping material supplies; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (major); Recreation facilities (outdoor); Research stations; Roadside stalls; Rural industries; Rural workers' dwellings; Signage; Turf farming; Water recreation structures; Water supply systems

(iii) *is prohibited,*

Any other development not specified in item 2(b) (i) or (ii)

(c) *whether additional permitted uses apply to the land,*

Additional uses do not apply to this land.

(d) *whether development standards applying to the land fix minimum land dimensions for the erection of a dwelling house on the land and, if so, the fixed minimum land dimensions,*

100ha

(e) *whether the land is in an area of outstanding biodiversity value under the Biodiversity Conservation Act 2016,*

The land Isn't in an area of outstanding biodiversity value under the *Biodiversity Conservation Act 2016*.

(f) *whether the land is in a conservation area, however described.*

The land Isn't in a conservation area.

(g) *whether an item of environmental heritage (however described) is situated on the land.*

There Isn't an item of environmental heritage situated on the land.

3 Contribution plans

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

- **Narrabri Shire Section 7.11 Contributions Plan**
- **Narrabri Shire Section 7.12 Fixed Development Consent Levies Contributions Plan**

Note: Both contribution plans apply to the zone, but the imposition of each Plan is dependent upon the type of development proposed.

Note: There are also Developer Servicing Plans that may be applicable for water and sewer contributions which may apply to the land.

(2) *If the land is in a special contributions area under the Act, Division 7.1, the name of the area.*

No

4 Complying Development

(1) *If the land is land on which complying development may be carried out under each of the complying development codes under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008, because of that Policy, clause 1.17A(1)(c)–(e), (2), (3) or (4), 1.18(1)(c3) or 1.19.*

Yes

If **yes** complying development may be carried out under the following Codes:

- **Part 3d Inland Code**
- **Part 4 Housing Alterations Code**
- **Part 4a General Development Code**
- **Part 5 Industrial and Business Alterations Code**
- **Part 5a Industrial and Business Buildings Code**
- **Part 6 Subdivisions Code**
- **Part 7 Demolition Code**
- **Part 8 Fire Safety Code**

Note: The opportunity for complying development to be carried out under each of these Codes may be restricted where the land is a flood control lot, within a bushfire prone area or subject to other site or zoning constraints. For more information about complying development visit the *SEPP (Exempt and Complying Development Codes) 2008* at <https://legislation.nsw.gov.au/view/html/inforce/current/epi-2008-0572>

(2) *If **no** complying development may not be carried out on the land because of the provisions of clauses 1.17A (c) and (d) and 1.19 of the SEPP, the reasons why it may not be carried out under that clause are:*

Not applicable

(3) *the council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.*

Not applicable

(4) *If the complying development codes are varied, under that Policy, clause 1.12, in relation to the land.*

Not applicable

5 Exempt development

(1) *If the land is land on which exempt development may be carried out under each of the exempt development codes under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008, because of that Policy, clause 1.16(1)(b1)–(d) or 1.16A.*

Yes

If **yes** the development may be carried out under Part 2 Division 1 of the SEPP (Exempt and Complying Development Codes)

(2) *If exempt development may not be carried out on the land because of 1 of those clauses, the reasons why it may not be carried out under the clause.*

Not applicable

(3) *If the council does not have sufficient information to ascertain the extent to which exempt development may or may not be carried out on the land, a statement that—*

(a) *a restriction applies to the land, but it may not apply to all of the land, and*

Not applicable

(b) *the council does not have sufficient information to ascertain the extent to which exempt development may or may not be carried out on the land.*

Not applicable

(c) *If the exempt development codes are varied, under that Policy, clause 1.12, in relation to the land.*

Not applicable

6 Affected building notices and building product rectification orders

(1) *Whether the council is aware that—*

(a) *an affected building notice is in force in relation to the land,*

The Council Isn't aware that an affected building notice is in force in relation to the land

(b) *a building product rectification order is in force in relation to the land that has not been fully complied with,*

The Council Isn't aware that a building product rectification order is in force in relation to the land

(c) *a notice of intention to make a building product rectification order given in relation to the land is outstanding.*

The Council Isn't aware of a notice of intention to make a building product rectification order.

(2) *In this section—*

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

7 Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in section 1 makes provision in relation to the acquisition of the land by an authority of the State, as referred to in the Act, section 3.15.

Nil

8 Road widening and road realignment

Whether the land is affected by any road widening or road realignment under:

- (a) the Roads Act 1993, Part 3, Division 2, or
- (b) any environmental planning instrument, or
- (c) any resolution of the council.

No

9 **Flood related development controls information**

- 1) *If the land or part of the land is within the flood planning area and subject to flood related development controls.*

Unknown.

The Council does not know whether or not development on the land, or part of the land, is subject to flood related development controls. This is because the Council has not completed mapping of the area of land within 500mm of the 1:100 Annual Exceedance Probability flood level in order to determine this. The specified land may be the subject of flood related development controls set out in clause 5.21 of *Narrabri Local Environmental Plan 2012*. Prior to the completion of mapping for this location Council will require that applications for new development be accompanied by information necessary for determining the flood planning level and recommends that all necessary enquiries should be made

- 2) *If the land or part of the land is between the flood planning area and the probable maximum flood and subject to flood related development controls.*

Unknown.

The Council does not know whether or not development on the land, or part of the land, is subject to flood related development controls. This is because the Council has not completed mapping of the area of land between the flood planning area and the probable maximum flood in this location in order to determine this. The specified land may be the subject of flood related development controls set out in clause 5.21 of the *Narrabri Local Environmental Plan 2012*.

Prior to the completion of mapping in this area Council will require that applications for new development be accompanied by information necessary for determining the flood affection of the land between the flood planning area and the probable maximum flood and recommends that all necessary enquiries should be made

- 3) *In this clause –*

Flood planning area has the same meaning as in the *Floodplain Development Manual*.

Floodplain Development Manual means the *Floodplain Development Manual* (ISBN 0 7347 5476 0) published by the NSW Government in April 2005.

Probable maximum flood has the same meaning as in the *Floodplain Development Manual*.

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

- (1) *Whether any of the land is affected by an adopted policy that restricts the development of the land because of the likelihood of land slip, bush fire, tidal inundation, subsidence, acid sulfate soils, contamination, aircraft noise, salinity, coastal hazards, sea level rise or another risk, other than flooding.*

No

- (2) *In this section—*

adopted policy means a policy adopted—

(a) by the council, or

(b) by another public authority, if the public authority has notified the council that the policy will be included in a planning certificate issued by the council.

11 Bush fire prone land

Some of the subject land is identified as being bushfire prone land, as designated by the Commissioner of the NSW Rural Fire Service under the Act, section 10.3.



12 Loose-fill asbestos insulation

If the land includes residential premises, within the meaning of the Home Building Act 1989, Part 8, Division 1A, that are listed on the Register kept under that Division.

The land does not include any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division.

13 Mine subsidence

Whether the land is declared to be a mine subsidence district, within the meaning of the Coal Mine Subsidence Compensation Act 2017.

The land isn't declared to be in a mine subsidence district within the meaning of the Coal Mine Subsidence Compensation Act 2017.

14 Paper subdivision information

(1) *The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot –*

No

(2) *The date of any subdivision order that applies to the land –*

No

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

15 Property vegetation plans

If the land is land to which a property vegetation plan approved and in force under of the Native Vegetation Act 2003 Part 4 applies (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

The Council Isn't been notified of a property vegetation plan under the Native Vegetation Act 2003 applicable to the land.

Note: This advice is based on information provided to the Council.

16 Biodiversity stewardship sites

If the land is a biodiversity stewardship site under a biodiversity stewardship agreement under the Biodiversity Conservation Act 2016, Part 5 (but only if the council has been notified of the existence of the agreement by the Biodiversity Conservation Trust

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

Council has not been notified by the Biodiversity Conservation Trust that *the land is a biodiversity stewardship site under a biodiversity stewardship agreement under the Biodiversity Conservation Act 2016, Part 5*

17 Biodiversity certified land

If the land is biodiversity certified land under the Biodiversity Conservation Act 2016, Part 8.

Note: Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016.

Council has no records that the land is biodiversity certified land under the Biodiversity Conservation Act 2016 Part 8.

18 Orders under Trees (Disputes Between Neighbours) Act 2006

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

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

Not applicable.

20 Western Sydney Aerotropolis

Not applicable.

21 Development consent conditions for seniors housing

If State Environmental Planning Policy (Housing) 2021, Chapter 3, Part 5 applies to the land, any conditions of a development consent granted after 11 October 2007 in relation to the land that are of the kind set out in that Policy, section 88(2).

Not applicable

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

There is no current site compatibility certificate (affordable rental housing) of which the council is aware, in respect of proposed development on the land.

There has been no development consent granted by Council for affordable rental housing on the land.

Contaminated Land Management Act 1997

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

- (a) *that the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,*

Not applicable

Council has no record that the land is significantly contaminated land at the date or the issue of this certificate.

- (b) *that the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,*

Council has no record that the land is subject to a management order within the meaning of that Act at the date of the issue of this certificate.

- (c) *that the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued,*

Council has no record that the land is the subject of an approved voluntary management proposal within the meaning of that Act at the date of the issue of this certificate.

- (d) *that the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,*

Council has no record that the land is the subject of an ongoing maintenance order within the meaning of that Act at the date of the issue of this certificate.

- (e) *that the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.*

Council has no record that the land is the subject of a site audit statement within the meaning of that Act at the date of the issue of this certificate.

Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009

Note. Section 26 of the *Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009* provides that a planning certificate must include advice about any exemption under section 23 or authorisation under section 24 of that Act if the council is provided with a copy of the exemption or authorisation by the Co-ordinator General under that Act.

Council is not aware of any exemption under section 23 or authorization under section 24 of the Act.

Section 10.7(5) Additional Information

The following information is provided in accordance with Section 10.7(5) of the *Environmental Planning and Assessment Act 1979*:

Tree Preservation Order

Is the land affected by a Tree Preservation Order? No

Private Native Forestry Plan

Council has not been notified of any Private Native Forestry Plan (PNF Plan) by Local Land Services on land subject to this planning certificate.

Obstacle Limitation Surface Map

The subject lot **isn't** on land shown on the Obstacle Limitation Surface Map for Narrabri Airport within the meaning of Section 6.3 of the Narrabri Local Environmental Plan 2012.

Offset Conservation Agreement

The land **isn't** subject to an offset conservation agreement entered under *Part 5.20 of the Biodiversity Conservation Act 2016* or *Part 4.12 of the National Parks and Wildlife Act 1974*.

Note: For further information about the registered dealing on title please contact NSW Land Registry Services.

Contaminated Land Management Act 1997

This land **has not** been notified by the EPA as being potentially contaminated.

Note: This additional information is provided in good faith but is not warranted or represented to be all of the relevant information of which the Council may be aware concerning contamination affecting the land. You must make all relevant enquiries about these matters and circumstances affecting the land and must not rely on the additional information provided as to the existence or non-existence of any relevant matter or circumstance

Development Consents

Has any Development Consent been granted with respect to the land within previous two (2) years? No

Note: Council shall not incur any liability in respect of any advice provided in good faith pursuant to subsection (5)



Günther Weidenmann
Development Planner

Date of Certificate: 24 May 2023

Annexure F

Council Records Search Results

Our Reference: GO2023/0078
Your Reference:
Contact Name: Governance
GIPA@narrabri.nsw.gov.au

Mr. James Morrow
Ground Doctor Pty Ltd
PO Box 6778
DUBBO NSW 2830

Via: james.morrow@grounddoc.com.au

Tuesday, 30 May 2023

Outcome of Your Informal Request for Access to Government Information

Dear James Morrow,

With reference to your Informal Request for Access to Government Information the Table on the following page outlines the decision that has been made.

You may obtain further information about your rights under the GIPA Act by contacting the IPC on freecall 1800 IPC NSW (1800 472 679) or by visiting: www.ipc.nsw.gov.au.

Should you have any questions or require any further information, please do not hesitate to contact Council's Customer Service team on (02) 6799 6866.

Yours sincerely,



Alice Gemmell-Smith
Senior Governance Advisor




Narrabri Shire Council
46 - 48 Maitland Street
PO Box 261, Narrabri NSW 2390


P. (02) 6799 6866
F. (02) 6799 6888


E. council@narrabri.nsw.gov.au
www.narrabri.nsw.gov.au

| Doc no | Date | Size | Description | Decision on access | Exemption |
|-------------------------------------|----------------|------|---|--|-----------------------------|
| Doc ID: 2065792 P99/03059 | 24 April 2008 | 1 | Letter from Council regarding access and drainage issues at Warriahdool | Released with deletions on the basis of one or more specific exemptions (including deletion of information under section 14(2) of the Government Information (Public Access) Act 2009 (NSW)) | GIPA Act s 14(2) Table 3(a) |
| Doc ID: 2065792 P99/03059 | 27 June 2007 | 3 | Letter from Council regarding Notice of Rating Sub Categories for Irrigable properties in the Narrabri Shire | Released with deletions on the basis of one or more specific exemptions (including deletion of information under section 14(2) of the Government Information (Public Access) Act 2009 (NSW)) | GIPA Act s 14(2) Table 3(a) |
| Doc ID: 2065792 P99/03059 | 30 August 2004 | 45 | Correspondence regarding Application for Controlled Works – Ref No. 90CW810923 | Released with deletions on the basis of one or more specific exemptions (including deletion of information under section 14(2) of the Government Information (Public Access) Act 2009 (NSW)) | GIPA Act s 14(2) Table 3(a) |
| Doc ID: 2065792 P99/03059 | 3 May 2004 | 1 | Letter from Council regarding Application for Controlled Work s- Ref No. 90CW810923 | Released with deletions on the basis of one or more specific exemptions (including deletion of information under section 14(2) of the Government Information (Public Access) Act 2009 (NSW)) | GIPA Act s 14(2) Table 3(a) |
| Doc ID: 2065792 P99/03059 | 15 April 2004 | 3 | Letter from the Department of Infrastructure Planning and Natural Resources regarding advertisement of application for approval of Controlled Works | Released with deletions on the basis of one or more specific exemptions (including deletion of information under section 14(2) of the Government Information (Public Access) Act 2009 (NSW)) | GIPA Act s 14(2) Table 3(a) |

| Doc no | Date | Size | Description | Decision on access | Exemption |
|-------------------------------------|-----------------|------|--|--|-----------------------------|
| Doc ID: 2065792 P99/03059 | 4 December 2003 | 45 | Wollondilly Flood Plain Management Study | Released with deletions on the basis of one or more specific exemptions (including deletion of information under section 14(2) of the Government Information (Public Access) Act 2009 (NSW)) | GIPA Act s 14(2) Table 3(a) |

Annexure G

NSW SafeWork Dangerous Goods Search Results

From: Licensing <licensing@safework.nsw.gov.au>
Sent: Friday, 16 June 2023 1:24 PM
To: James Morrow
Subject: SafeWork NSW: 00840245 –Site Search application – Result not found [ref:_00D281hl6J._500Mn581P3:ref]

Security Classification: Sensitive Personal
Please do not amend the subject line of this email

Dear James

**Re: Site Search for Schedule 11 Hazardous Chemicals on premises
Application – Result not found.**

I refer to your application for a Site Search for Schedule 11 Hazardous Chemicals on premises, received by SafeWork NSW on 15/05/2023 for the following site: 2703 Harparary Road Maules Creek NSW 2382

A search of the records held by SafeWork NSW has not located any records pertaining to the above-mentioned premises.

If you have any further information or if you have any questions, please use one of the following options, quoting the SafeWork NSW enquiry reference number: **00840245**

- Email: licensing@safework.nsw.gov.au
- Phone: 13 10 50

Kind regards

Mo Lotonuu

SafeWork NSW | Better Regulation Division

Department of Customer Service

p- 13 10 50

e- licensing@safework.nsw.gov.au | www.customerservice.nsw.gov.au

Level 3, 32 Mann Street, Gosford, NSW 2250



Customer
Service

We are always looking for ways that we can improve our services. You may be contacted by email in the next few weeks to complete a short survey and provide us with your feedback on what we did well and where we can improve. If you do not wish to participate in our surveys, please email us at: licensingQA@customerservice.nsw.gov.au and we will ensure that you are not contacted.

From: Licensing <licensing@safework.nsw.gov.au>
Sent: Friday, 16 June 2023 1:26 PM
To: James Morrow
Subject: SafeWork NSW: 00840242 –Site Search application – Result not found [ref:_00D281hl6J._500Mn57xMH:ref]

Security Classification: Sensitive Personal
Please do not amend the subject line of this email

Dear James

**Re: Site Search for Schedule 11 Hazardous Chemicals on premises
Application – Result not found.**

I refer to your application for a Site Search for Schedule 11 Hazardous Chemicals on premises, received by SafeWork NSW on 15/05/2023 for the following site: 2490 Harparary Road Maules Creek NSW 2382

A search of the records held by SafeWork NSW has not located any records pertaining to the above-mentioned premises.

If you have any further information or if you have any questions, please use one of the following options, quoting the SafeWork NSW enquiry reference number: **00840242**

- Email: licensing@safework.nsw.gov.au
- Phone: 13 10 50

Kind regards

Mo Lotonuu

SafeWork NSW | Better Regulation Division

Department of Customer Service

p- 13 10 50

e- licensing@safework.nsw.gov.au | www.customerservice.nsw.gov.au

Level 3, 32 Mann Street, Gosford, NSW 2250



Customer
Service

We are always looking for ways that we can improve our services. You may be contacted by email in the next few weeks to complete a short survey and provide us with your feedback on what we did well and where we can improve. If you do not wish to participate in our surveys, please email us at: licensingQA@customerservice.nsw.gov.au and we will ensure that you are not contacted.

Annexure H

Groundwater Works Summary Forms

WaterNSW

Work Summary

GW001869

| | |
|------------------------------|--|
| Licence: | Licence Status: |
| | Authorised Purpose(s): Intended Purpose(s): STOCK |
| Work Type: Bore | |
| Work Status: | |
| Construct.Method: Cable Tool | |
| Owner Type: Private | |
| Commenced Date: | Final Depth: 63.10 m |
| Completion Date: 01/08/1962 | Drilled Depth: 63.10 m |
| Contractor Name: (None) | |
| Driller: | |
| Assistant Driller: | |
| Property: | Standing Water Level (m): |
| GWMA: | Salinity Description: Good |
| GW Zone: | Yield (L/s): |

Site Details

| | | | |
|---|--|--|----------------|
| Site Chosen By: | | | |
| | County Form A: NANDEWAR Licensed: | Parish BERRIOYE | Cadastre 98 |
| Region: 90 - Barwon | CMA Map: 8936-4N | | |
| River Basin: 419 - NAMOI RIVER Area/District: | Grid Zone: | Scale: | |
| Elevation: 0.00 m (A.H.D.) Elevation Source: (Unknown) | Northing: 6617703.000 Easting: 228231.000 | Latitude: 30°32'32.3"S Longitude: 150°10'02.1"E | |
| GS Map: - | MGA Zone: 56 | Coordinate Source: GD.,ACC.MAP | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|----------------|----------|--------|-----------------------|----------------------|----------|---------------------|
| 1 | 1 | Casing | Threaded Steel | 0.00 | 62.20 | 152 | | | Suspended in Clamps |

Water Bearing Zones

| From (m) | To (m) | Thickness (m) | WBZ Type | S.W.L. (m) | D.D.L. (m) | Yield (L/s) | Hole Depth (m) | Duration (hr) | Salinity (mg/L) |
|----------|--------|---------------|--------------|------------|------------|-------------|----------------|---------------|-----------------|
| 63.10 | 63.10 | 0.00 | Consolidated | 33.50 | | 0.30 | | | |

Drillers Log

| From (m) | To (m) | Thickness (m) | Drillers Description | Geological Material | Comments |
|----------|--------|---------------|----------------------|---------------------|----------|
| 0.00 | 4.27 | 4.27 | Clay Yellow Sandy | Clay | |
| 4.27 | 18.90 | 14.63 | Clay Gravel Mixed | Clay | |
| 18.90 | 32.31 | 13.41 | Gravel Coarse | Gravel | |
| 32.31 | 33.53 | 1.22 | Clay White | Clay | |
| 33.53 | 34.75 | 1.22 | Gravel | Gravel | |
| 34.75 | 54.86 | 20.11 | Conglomerate | Conglomerate | |
| 54.86 | 57.30 | 2.44 | Shale | Shale | |

| | | | | | |
|-------|-------|------|------------------------|-----------|--|
| 57.30 | 63.09 | 5.79 | Sandstone Water Supply | Sandstone | |
|-------|-------|------|------------------------|-----------|--|

*** End of GW001869 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW003466

| | |
|------------------------------|--|
| Licence: | Licence Status: |
| | Authorised Purpose(s): Intended Purpose(s): STOCK |
| Work Type: Bore | |
| Work Status: Abandoned | |
| Construct.Method: Cable Tool | |
| Owner Type: Private | |
| Commenced Date: | Final Depth: 50.00 m |
| Completion Date: 01/01/1937 | Drilled Depth: 50.00 m |
| Contractor Name: (None) | |
| Driller: | |
| Assistant Driller: | |
| Property: | Standing Water Level (m): |
| GWMA: | Salinity Description: Fresh |
| GW Zone: | Yield (L/s): |

Site Details

| | | | |
|---|--|--|----------------------|
| Site Chosen By: | | | |
| | County Form A: NANDEWAR Licensed: | Parish BERRIOYE | Cadastre 3/754924 |
| Region: 90 - Barwon | CMA Map: 8936-4N | | |
| River Basin: 419 - NAMOI RIVER Area/District: | Grid Zone: | Scale: | |
| Elevation: 0.00 m (A.H.D.) Elevation Source: Unknown | Northing: 6618392.000 Easting: 226213.000 | Latitude: 30°32'08.3"S Longitude: 150°08'47.1"E | |
| GS Map: - | MGA Zone: 56 | Coordinate Source: GD.,ACC.MAP | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|----------------|----------|--------|-----------------------|----------------------|----------|---------------------|
| 1 | 1 | Casing | Threaded Steel | 0.00 | 44.60 | 152 | | | Suspended in Clamps |

Water Bearing Zones

| From (m) | To (m) | Thickness (m) | WBZ Type | S.W.L. (m) | D.D.L. (m) | Yield (L/s) | Hole Depth (m) | Duration (hr) | Salinity (mg/L) |
|----------|--------|---------------|--------------|------------|------------|-------------|----------------|---------------|-----------------|
| 25.00 | 25.00 | 0.00 | (Unknown) | 9.10 | | 0.05 | | | |
| 45.40 | 45.40 | 0.00 | Consolidated | 15.20 | | 1.01 | | | |

Drillers Log

| From (m) | To (m) | Thickness (m) | Drillers Description | Geological Material | Comments |
|----------|--------|---------------|----------------------|---------------------|----------|
| 0.00 | 0.91 | 0.91 | Soil | Soil | |
| 0.91 | 5.18 | 4.27 | Clay | Clay | |
| 5.18 | 8.23 | 3.05 | Gravel | Gravel | |
| 8.23 | 12.50 | 4.27 | Clay | Clay | |
| 12.50 | 16.15 | 3.65 | Conglomerate | Conglomerate | |
| 16.15 | 25.30 | 9.15 | Conglomerate Hard | Conglomerate | |

| | | | | | |
|-------|-------|-------|-----------------------------|--------------|--|
| 25.30 | 31.09 | 5.79 | Conglomerate Soft | Conglomerate | |
| 31.09 | 41.45 | 10.36 | Shale Hard Bands | Shale | |
| 41.45 | 44.81 | 3.36 | Sandstone Fine | Sandstone | |
| 44.81 | 45.72 | 0.91 | Sandstone Hard Water Supply | Sandstone | |
| 45.72 | 47.85 | 2.13 | Coal | Coal | |
| 47.85 | 49.99 | 2.14 | Shale Hard | Shale | |
| 25.30 | 31.09 | 5.79 | Shale Coal Bands | Shale | |

Remarks

14/11/2011: Nat Carling, 14-Nov-2011: Updated status, as new replacement bore has been drilled. See GW969771. Also updated cadastre (was entered as '3').

*** End of GW003466 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW969673

| | |
|--|---------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): MONITORING BORE | |
| Work Type: Vibrating Wire Piezometer | |
| Work Status: Equipped | |
| Construct.Method: Rotary - Percussion (Down Hole Hammer) | |
| Owner Type: Mines | |
| Commenced Date: | Final Depth: 299.00 m |
| Completion Date: 15/10/2010 | Drilled Depth: 299.00 m |
| Contractor Name: Gos Drilling | |
| Driller: Gordon Kenneth Monkman | |
| Assistant Driller: Dion Myers | |
| Property: | Standing Water Level (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): |

Site Details

| | | | | |
|--------------------------------|--|-----------------------|---------------------------------|----------|
| Site Chosen By: | | County | Parish | Cadastre |
| Form A: NANDEWAR | | LEARD | ADJ 58//754940 | |
| Licensed: | | | | |
| Region: 90 - Barwon | | CMA Map: 8936-4N | | |
| River Basin: 419 - NAMOI RIVER | | Grid Zone: | Scale: | |
| Area/District: | | | | |
| Elevation: 0.00 m (A.H.D.) | | Northing: 6615462.000 | Latitude: 30°33'44.4"S | |
| Elevation Source: Unknown | | Easting: 227455.000 | Longitude: 150°09'30.9"E | |
| GS Map: - | | MGA Zone: 56 | Coordinate Source: GPS - Global | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|----------------------|----------|--------|-----------------------|----------------------|----------|--|
| 1 | | Hole | Hole | 0.00 | 24.00 | 160 | | | Rotary - Percussion (Down Hole Hammer) |
| 1 | | Hole | Hole | 6.00 | 299.00 | 120 | | | Rotary - Percussion (Down Hole Hammer) |
| 1 | | Backfill | Cement Grout | 0.00 | 299.00 | | | | |
| 1 | 1 | Casing | Galvanised Steel | -0.80 | 0.20 | 160 | 151 | | Other |
| 1 | 1 | Casing | Gab Monitoring Point | -0.30 | 6.00 | | | | |
| 1 | 1 | Casing | Pvc Class 9 | 0.00 | 24.00 | 160 | 146 | | Cemented, Glued |

Drillers Log

| From (m) | To (m) | Thickness (m) | Drillers Description | Geological Material | Comments |
|----------|--------|---------------|--|---------------------|----------|
| 0.00 | 35.00 | 35.00 | conglomerate, greyish brown, slightly weathered some sandstone and siltstone | Conglomerate | |
| 35.00 | 290.00 | 255.00 | claystone, various coal seams, and conglomerate | Claystone | |
| 290.00 | 299.00 | 9.00 | rock, volcanic, greenish grey/purple | Rock | |

Remarks

15/10/2010: Form A Remarks:
Helen Lester: GPS provided by the driller.
MAC 267P

***** End of GW969673 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW969674

| | |
|--|---------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): MONITORING BORE | |
| Work Type: Bore | |
| Work Status: Equipped | |
| Construct.Method: Rotary - Percussion (Down Hole Hammer) | |
| Owner Type: Mines | |
| Commenced Date: | Final Depth: 318.20 m |
| Completion Date: 15/10/2010 | Drilled Depth: 318.20 m |
| Contractor Name: Gos Drilling | |
| Driller: Gordon Kenneth Monkman | |
| Assistant Driller: Dion Myers | |
| Property: | Standing Water Level (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): |

Site Details

| | | | | |
|--------------------------------|--|-----------------------|---------------------------------|----------|
| Site Chosen By: | | County | Parish | Cadastre |
| Form A: NANDEWAR | | LEARD | ADJ 58//754940 | |
| Licensed: | | | | |
| Region: 90 - Barwon | | CMA Map: 8936-4N | | |
| River Basin: 419 - NAMOI RIVER | | Grid Zone: | Scale: | |
| Area/District: | | | | |
| Elevation: 0.00 m (A.H.D.) | | Northing: 6614556.000 | Latitude: 30°34'13.9"S | |
| Elevation Source: Unknown | | Easting: 227500.000 | Longitude: 150°09'31.7"E | |
| GS Map: - | | MGA Zone: 56 | Coordinate Source: GPS - Global | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|----------------------|----------|--------|-----------------------|----------------------|----------|--|
| 1 | | Hole | Hole | 0.00 | 6.00 | 160 | | | Rotary - Percussion (Down Hole Hammer) |
| 1 | | Hole | Hole | 6.00 | 318.20 | 114 | | | Rotary - Percussion (Down Hole Hammer) |
| 1 | | Backfill | Cement Grout | 0.00 | 318.20 | | | | |
| 1 | 1 | Casing | Galvanised Steel | -0.80 | 0.20 | 160 | 151 | | Other |
| 1 | 1 | Casing | Gab Monitoring Point | -0.30 | 6.00 | | | | |
| 1 | 1 | Casing | Pvc Class 9 | 0.00 | 6.00 | 160 | 146 | | Cemented, Glued |

Drillers Log

| From (m) | To (m) | Thickness (m) | Drillers Description | Geological Material | Comments |
|----------|--------|---------------|--|---------------------|----------|
| 0.00 | 25.00 | 25.00 | sandstone, fine to coarse grained, with conglomerate, minor tuff and siltstone weathered | Sandstone | |
| 25.00 | 59.00 | 34.00 | sandstone, fine to coarse grained, firm | Sandstone | |
| 59.00 | 315.00 | 256.00 | rock, sedimentary structures of sandstone, siltstone, claystone, various coal seams and conglomerate | Rock | |
| 315.00 | 318.20 | 3.20 | rock, volcanic, greenish, grey/purple | Rock | |

Remarks

15/10/2010: Form A Remarks:
Helen Lester: GPS provided by the driller.
MAC 268P

*** End of GW969674 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW969678

| | |
|--|----------------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): MONITORING BORE | |
| Work Type: Bore | |
| Work Status: Equipped | |
| Construct.Method: | |
| Owner Type: Mines | |
| Commenced Date: | Final Depth: 164.00 m |
| Completion Date: 12/10/2010 | Drilled Depth: 180.30 m |
| Contractor Name: Gos Drilling | |
| Driller: Gordon Kenneth Monkman | |
| Assistant Driller: Dion Myers | |
| Property: | Standing Water Level 97.700 (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): 0.120 |

Site Details

| | | | |
|--------------------------------|-----------------------|---------------------------------|----------------|
| Site Chosen By: | | | |
| County | | Parish | Cadastre |
| Form A: NANDEWAR | | LEARD | ADJ 58//754940 |
| Licensed: | | | |
| Region: 90 - Barwon | | CMA Map: 8936-4N | |
| River Basin: 419 - NAMOI RIVER | Grid Zone: | | Scale: |
| Area/District: | | | |
| Elevation: 0.00 m (A.H.D.) | Northing: 6614938.000 | Latitude: 30°34'00.8"S | |
| Elevation Source: Unknown | Easting: 226738.000 | Longitude: 150°09'03.5"E | |
| GS Map: - | MGA Zone: 56 | Coordinate Source: GPS - Global | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|----------------------|----------|--------|-----------------------|----------------------|----------|---|
| 1 | | Hole | Hole | 0.00 | 6.00 | 140 | | | (Unknown) |
| 1 | | Hole | Hole | 6.00 | 180.00 | 114 | | | (Unknown) |
| 1 | | Backfill | Cement Grout | 0.00 | 70.00 | | | | |
| 1 | | Backfill | Bentonite | 70.00 | 72.00 | | | | |
| 1 | | Annulus | Waterworn/Rounded | 152.00 | 167.00 | | | | Graded, PL:Pour |
| 1 | 1 | Casing | Gab Monitoring Point | -0.80 | 163.60 | | | | |
| 1 | 1 | Casing | Pvc Class 18 | -0.80 | 160.80 | 60 | 50 | | Screw |
| 1 | 1 | Casing | Pvc Class 9 | 0.00 | 6.00 | 140 | 131 | | Cemented, Other |
| 1 | 1 | Opening | Slots - Horizontal | 158.60 | 161.60 | 60 | | 0 | Casing - Machine Slotted, PVC Class 18, Screw |

Drillers Log

| From (m) | To (m) | Thickness (m) | Drillers Description | Geological Material | Comments |
|----------|--------|---------------|--|---------------------|----------|
| 0.00 | 13.50 | 13.50 | conglomerate, mottled orange grey weathered medium | Conglomerate | |
| 13.50 | 180.30 | 166.80 | rock, sedimentary, interbedded sandstone, claystone, various coal structures | Rock | |

Remarks

12/10/2010: Form A Remarks:
Helen Lester: GPS provided by the driller.
MAC 1261
Monitoring site - S5-3

***** End of GW969678 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW969679

| | |
|--|----------------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): MONITORING BORE | |
| Work Type: Bore | |
| Work Status: Equipped | |
| Construct.Method: Rotary - Percussion (Down Hole Hammer) | |
| Owner Type: Mines | |
| Commenced Date: | Final Depth: 72.00 m |
| Completion Date: 14/10/2010 | Drilled Depth: 144.20 m |
| Contractor Name: Gos Drilling | |
| Driller: Gordon Kenneth Monkman | |
| Assistant Driller: Dion Myers | |
| Property: | Standing Water Level 50.000 (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): |

Site Details

| | | |
|--------------------------------|-----------------------|---------------------------------|
| Site Chosen By: | | |
| County | Parish | Cadastre |
| Form A: NANDEWAR | LEARD | ADJ 58//754940 |
| Licensed: | | |
| Region: 90 - Barwon | CMA Map: 8936-4N | |
| River Basin: 419 - NAMOI RIVER | Grid Zone: | Scale: |
| Area/District: | | |
| Elevation: 0.00 m (A.H.D.) | Northing: 6616497.000 | Latitude: 30°33'10.1"S |
| Elevation Source: Unknown | Easting: 226529.000 | Longitude: 150°08'57.1"E |
| GS Map: - | MGA Zone: 56 | Coordinate Source: GPS - Global |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|----------------------|----------|--------|-----------------------|----------------------|----------|--|
| 1 | | Hole | Hole | 0.00 | 6.00 | 160 | | | Rotary - Percussion (Down Hole Hammer) |
| 1 | | Hole | Hole | 6.00 | 144.20 | 114 | | | Rotary - Percussion (Down Hole Hammer) |
| 1 | | Backfill | Cement Grout | 0.00 | 62.00 | | | | |
| 1 | | Annulus | Bentonite/Grout | 63.00 | 65.00 | | | | |
| 1 | | Annulus | Waterworn/Rounded | 65.00 | 86.00 | | | | Graded |
| 1 | | Backfill | Cement Grout | 80.00 | 144.20 | | | | |
| 1 | 1 | Casing | Gab Monitoring Point | -0.80 | 72.00 | | | | |
| 1 | 1 | Casing | Pvc Class 18 | -0.80 | 69.00 | 60 | 50 | | Cemented, Screwed |
| 1 | 1 | Opening | Slots - Horizontal | 69.00 | 72.00 | 60 | | 0 | Casing - Machine Slotted, PVC Class 18, Screwed, SL: 40.0mm, A: 0.40mm |

Drillers Log

| From (m) | To (m) | Thickness (m) | Drillers Description | Geological Material | Comments |
|----------|--------|---------------|--|---------------------|----------|
| 0.00 | 1.00 | 1.00 | soil, very weathered conglomerate, dark brown oxidised | Soil | |

| | | | | | |
|--------|--------|--------|--|------|--|
| 1.00 | 136.00 | 135.00 | rock, sedimentary, interbedded sandstone, siltstone, various coal structures, and conglomerate | Rock | |
| 136.00 | 144.20 | 8.20 | rock, volcanic, light reddish green, strong | Rock | |

Remarks

14/10/2010: Form A Remarks:
Helen Lester: GPS provided by the driller.
MAC 1279
Monitoring site - M00760

*** End of GW969679 ***

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WaterNSW

Work Summary

GW969680

| | |
|--|----------------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): MONITORING BORE | |
| Work Type: Bore | |
| Work Status: Equipped | |
| Construct.Method: Rotary - Percussion (Down Hole Hammer) | |
| Owner Type: Mines | |
| Commenced Date: | Final Depth: 59.00 m |
| Completion Date: 10/10/2010 | Drilled Depth: 146.26 m |
| Contractor Name: Gos Drilling | |
| Driller: Gordon Kenneth Monkman | |
| Assistant Driller: Dion Myers | |
| Property: | Standing Water Level 27.500 (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): |

Site Details

| | | | | |
|--------------------------------|--|-----------------------|---------------------------------|----------|
| Site Chosen By: | | County | Parish | Cadastre |
| Form A: NANDEWAR | | LEARD | ADJ 58//754940 | |
| Licensed: | | | | |
| Region: 90 - Barwon | | CMA Map: 8936-4N | | |
| River Basin: 419 - NAMOI RIVER | | Grid Zone: | Scale: | |
| Area/District: | | | | |
| Elevation: 0.00 m (A.H.D.) | | Northing: 6616505.000 | Latitude: 30°33'09.8"S | |
| Elevation Source: Unknown | | Easting: 226532.000 | Longitude: 150°08'57.3"E | |
| GS Map: - | | MGA Zone: 56 | Coordinate Source: GPS - Global | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|----------------------|----------|--------|-----------------------|----------------------|----------|--|
| 1 | | Hole | Hole | 0.00 | 6.00 | 160 | | | Rotary - Percussion (Down Hole Hammer) |
| 1 | | Hole | Hole | 6.00 | 146.20 | 114 | | | Rotary - Percussion (Down Hole Hammer) |
| 1 | | Backfill | Cement Grout | 0.00 | 47.50 | | | | |
| 1 | | Annulus | Waterworn/Rounded | 49.50 | 61.50 | | | | Graded |
| 1 | | Backfill | Cement Grout | 80.00 | 146.00 | | | | |
| 1 | 1 | Casing | Galvinised Steel | -0.90 | 0.10 | 160 | 151 | | Other |
| 1 | 1 | Casing | Gab Monitoring Point | -0.80 | 59.80 | | | | |
| 1 | 1 | Casing | Pvc Class 18 | -0.80 | 56.80 | 60 | 50 | | Screwed |
| 1 | 1 | Casing | Pvc Class 9 | 0.00 | 6.00 | 160 | 150 | | Cemented, Glued |
| 1 | 1 | Opening | Slots - Horizontal | 56.80 | 59.80 | 60 | | 0 | Casing - Machine Slotted, PVC Class 18, Screwed, A: 0.40mm |

Drillers Log

| From (m) | To (m) | Thickness (m) | Drillers Description | Geological Material | Comments |
|----------|--------|---------------|------------------------------------|---------------------|----------|
| 0.00 | 0.50 | 0.50 | soil, dark brown weathered organic | Soil | |

| | | | | | |
|--------|--------|--------|---|------|--|
| | | | oxidized | | |
| 0.50 | 142.00 | 141.50 | rock, sedimentary, interbedded sandstone, siltstone, with various coal structures | Rock | |
| 142.00 | 146.26 | 4.26 | rock, volcanic, light reddish purple, strong | Rock | |

Remarks

10/10/2010: Form A Remarks:
Helen Lester: GPS provided by the driller.
MAC 1280

*** End of GW969680 ***

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WaterNSW

Work Summary

GW969771

| | |
|--|----------------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): STOCK, DOMESTIC, IRRIGATION | |
| Work Type: Bore | |
| Work Status: Replacement | |
| Construct.Method: Rot. Rev. Circ Mud | |
| Owner Type: Private | |
| Commenced Date: | Final Depth: 77.70 m |
| Completion Date: 15/02/2011 | Drilled Depth: 79.20 m |
| Contractor Name: Markham Drilling | |
| Driller: Colin James Markham | |
| Assistant Driller: Bruce Finden | |
| Property: | Standing Water Level 10.400 (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): |

Site Details

| | | | |
|--------------------------------|-----------------------|---------------------------------|----------|
| Site Chosen By: | County | Parish | Cadastre |
| | Form A: NANDEWAR | BERRIOYE | 3/754924 |
| | Licensed: | | |
| Region: 90 - Barwon | CMA Map: 8936-4N | | |
| River Basin: 419 - NAMOI RIVER | Grid Zone: | Scale: | |
| Area/District: | | | |
| Elevation: 0.00 m (A.H.D.) | Northing: 6617698.000 | Latitude: 30°32'31.0"S | |
| Elevation Source: Unknown | Easting: 226354.000 | Longitude: 150°08'51.7"E | |
| GS Map: - | MGA Zone: 56 | Coordinate Source: GPS - Global | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|---------------------|----------|--------|-----------------------|----------------------|----------|---|
| 1 | | Hole | Hole | 0.00 | 77.70 | 508 | | | Rot. Rev. Circ Mud |
| 1 | | Annulus | Waterworn/Rounded | 0.00 | 77.70 | 508 | 315 | | Graded, PL:Poured/Shovelled |
| 1 | | Backfill | Drilled Cuttings | 77.70 | 79.20 | 508 | | | |
| 1 | 1 | Casing | Pvc Class 12 | -0.30 | 77.70 | 315 | 285 | | Seated on Bottom, Suspended in Clamps, Other, S: 75.70-77.70m |
| 1 | 1 | Opening | Screen - Wedge Wire | 30.50 | 36.50 | 300 | | 0 | Stainless Steel 304, Other, A: 2.00mm |
| 1 | 1 | Opening | Screen - Wedge Wire | 51.80 | 57.80 | 300 | | 0 | Stainless Steel 304, Other, A: 2.00mm |
| 1 | 1 | Opening | Screen - Wedge Wire | 63.70 | 75.70 | 300 | | 0 | Stainless Steel 304, Other, A: 2.00mm |

Water Bearing Zones

| From (m) | To (m) | Thickness (m) | WBZ Type | S.W.L. (m) | D.D.L. (m) | Yield (L/s) | Hole Depth (m) | Duration (hr) | Salinity (mg/L) |
|----------|--------|---------------|----------|------------|------------|-------------|----------------|---------------|-----------------|
| 30.50 | 36.50 | 6.00 | Unknown | 10.40 | | | | | |
| 51.80 | 57.80 | 6.00 | Unknown | | | | | | |
| 63.70 | 75.70 | 12.00 | Unknown | | | | | | |

Drillers Log

| From (m) | To (m) | Thickness (m) | Drillers Description | Geological Material | Comments |
|----------|--------|---------------|--------------------------------------|---------------------|----------|
| 0.00 | 0.90 | 0.90 | Topsoil, brown | Topsoil | |
| 0.90 | 5.20 | 4.30 | Silty Clay, brown | Silty Clay | |
| 5.20 | 6.10 | 0.90 | Sand, brown & Gravel, fine to coarse | Sand | |
| 6.10 | 14.30 | 8.20 | Clay, brown & grey | Clay | |
| 14.30 | 21.90 | 7.60 | Sand, brown & Gravel, fine to coarse | Sand | |
| 21.90 | 22.60 | 0.70 | Clay, brown & grey | Clay | |
| 22.60 | 32.60 | 10.00 | Sand, brown & Gravel, fine to coarse | Sand | |
| 32.60 | 51.20 | 18.60 | Clay, brown & grey | Clay | |
| 51.20 | 58.20 | 7.00 | Sand, brown, fine-coarse | Sand | |
| 58.20 | 63.70 | 5.50 | Clay, grey | Clay | |
| 63.70 | 64.60 | 0.90 | Sand & Clay bands | Sand and clay bands | |
| 64.60 | 65.50 | 0.90 | Sand, grey, fine-coarse | Sand | |
| 65.50 | 67.10 | 1.60 | Sandy Clay | Sandy Clay | |
| 67.10 | 75.90 | 8.80 | Sand & Gravel, fine-coarse | Sand and clay bands | |
| 75.90 | 78.00 | 2.10 | Clay, brown & grey | Clay | |
| 78.00 | 79.20 | 1.20 | Clay, coloured, with basalt bands | Clay | |

Remarks

15/02/2011: Form A Remarks:
Nat Carling, 14-Nov-2011: GPS provided by the driller.
15/03/2012: Nat Carling, 15-Mar-2012: Updated status, as this bore has replaced GW059100.

*** End of GW969771 ***

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WaterNSW

Work Summary

GW970680

| | |
|--|----------------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): MONITORING BORE | |
| Work Type: Vibrating Wire Piezometer | |
| Work Status: Equipped | |
| Construct.Method: Rotary Air | |
| Owner Type: Mines | |
| Commenced Date: | Final Depth: 189.44 m |
| Completion Date: 11/12/2013 | Drilled Depth: 189.44 m |
| Contractor Name: Mannion Drilling | |
| Driller: Jason Roger Mannion | |
| Assistant Driller: | |
| Property: | Standing Water Level 35.200 (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): |

Site Details

| | | | |
|--------------------------------|-----------------------|---------------------------------|-------------------|
| Site Chosen By: | | | |
| Form A: Licensed: | County NANDEWAR | Parish BERRIOYE | Cadastre 3/754924 |
| Region: 90 - Barwon | CMA Map: 8936-4N | | |
| River Basin: 419 - NAMOI RIVER | Grid Zone: | Scale: | |
| Area/District: | | | |
| Elevation: 0.00 m (A.H.D.) | Northing: 6618261.000 | Latitude: 30°32'13.0"S | |
| Elevation Source: Unknown | Easting: 226723.000 | Longitude: 150°09'06.1"E | |
| GS Map: - | MGA Zone: 56 | Coordinate Source: GPS - Global | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|-------------|----------|--------|-----------------------|----------------------|----------|------------|
| 1 | | Hole | Hole | 0.00 | 79.80 | 165 | | | Rotary Air |
| 1 | | Hole | Hole | 79.80 | 189.44 | 96 | | | Rotary Mud |
| 1 | | Annulus | Cement | 0.00 | 189.44 | 96 | | | |
| 1 | 1 | Casing | Steel - Erw | 0.00 | 79.80 | 115 | 102 | | Screwed |

Drillers Log

| From (m) | To (m) | Thickness (m) | Drillers Description | Geological Material | Comments |
|----------|--------|---------------|--|---------------------|----------|
| 0.00 | 20.00 | 20.00 | Alluvials, light | Alluvium | |
| 20.00 | 43.50 | 23.50 | Siltstone; grey, weathered | Siltstone | |
| 43.50 | 46.00 | 2.50 | Coal; black | Coal | |
| 46.00 | 53.00 | 7.00 | Siltstone; grey, fresh | Siltstone | |
| 53.00 | 56.00 | 3.00 | Coal; black | Coal | |
| 56.00 | 73.60 | 17.60 | Siltstone; grey, fresh | Siltstone | |
| 73.60 | 76.00 | 2.40 | Coal; black | Coal | |
| 76.00 | 143.00 | 67.00 | Sandstone/Conglomerate; grey, fresh, coarse-granular | Sandstone | |
| 143.00 | 145.00 | 2.00 | Coal; black | Coal | |

| | | | | | |
|--------|--------|-------|----------------------------------|-----------|--|
| 145.00 | 177.00 | 32.00 | Sandstone/Siltstone; grey, fresh | Sandstone | |
| 177.00 | 179.00 | 2.00 | Coal; black | Coal | |
| 179.00 | 185.00 | 6.00 | Sandstone; grey | Sandstone | |
| 185.00 | 186.00 | 1.00 | Coal; black | Coal | |
| 186.00 | 189.44 | 3.44 | Siltstone; grey | Siltstone | |

Remarks

11/12/2013: Form A Remarks:
Nat Carling, 6-May-2014; No location was provided, based in the centre of the authorised land. Map sent to owner for true location.
13/06/2014: Nat Carling, 13-June-2014; Adjusted coordinates with GPS provided by the client.

*** End of GW970680 ***

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WaterNSW

Work Summary

GW970681

| | |
|--|---------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): MONITORING BORE | |
| Work Type: Bore | |
| Work Status: Equipped | |
| Construct.Method: Rotary Air | |
| Owner Type: Mines | |
| Commenced Date: | Final Depth: 10.00 m |
| Completion Date: 04/12/2013 | Drilled Depth: 10.00 m |
| Contractor Name: Mannion Drilling | |
| Driller: Jason Roger Mannion | |
| Assistant Driller: | |
| Property: | Standing Water Level (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): |

Site Details

| | | | |
|--------------------------------|-----------------------|--------------------------|---------------------------------|
| Site Chosen By: | | | |
| County | | Parish | Cadastre |
| Form A: NANDEWAR | | BERRIOYE | 3/754924 |
| Licensed: | | | |
| Region: 90 - Barwon | | CMA Map: 8936-4N | |
| River Basin: 419 - NAMOI RIVER | Grid Zone: | | Scale: |
| Area/District: | | | |
| Elevation: 0.00 m (A.H.D.) | Northing: 6618260.000 | Latitude: 30°32'13.0"S | |
| Elevation Source: Unknown | Easting: 226717.000 | Longitude: 150°09'05.8"E | |
| GS Map: - | | MGA Zone: 56 | Coordinate Source: GPS - Global |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|--------------------|----------|--------|-----------------------|----------------------|----------|---|
| 1 | | Hole | Hole | 0.00 | 10.00 | 165 | | | Rotary Air |
| 1 | | Annulus | Cement | 0.00 | 5.50 | 165 | 60 | | PL:Poured/Shovelled |
| 1 | | Annulus | Bentonite | 5.50 | 6.50 | 165 | 60 | | PL:Poured/Shovelled |
| 1 | | Annulus | Waterworn/Rounded | 6.50 | 10.00 | 165 | 60 | | Graded, PL:Poured/Shovelled |
| 1 | 1 | Casing | Pvc Class 18 | 0.00 | 10.00 | 60 | 50 | | Seated, Screwed |
| 1 | 1 | Opening | Slots - Horizontal | 0.00 | 10.00 | 60 | | 0 | Mechanically Slotted, PVC Class 18, Screwed, SL: 2.5mm, A: 0.50mm |

Drillers Log

| From (m) | To (m) | Thickness (m) | Drillers Description | Geological Material | Comments |
|----------|--------|---------------|-----------------------------------|---------------------|----------|
| 0.00 | 1.00 | 1.00 | Soil; weathered, residual, brown | Soil | |
| 1.00 | 10.00 | 9.00 | Alluvials, light brown, weathered | Alluvium | |

Remarks

04/12/2013: Form A Remarks:
Nat Carling, 6-May-2014; No location was provided, based in the centre of the authorised land. Map sent to client for true location.

13/06/2014: Nat Carling, 13-June-2014; Adjusted coordinates with GPS provided by the client.

***** End of GW970681 *****

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WaterNSW

Work Summary

GW970693

| | |
|--|---------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): MONITORING BORE | |
| Work Type: Vibrating Wire Piezometer | |
| Work Status: Equipped | |
| Construct.Method: Rotary Air | |
| Owner Type: Mines | |
| Commenced Date: | Final Depth: 324.44 m |
| Completion Date: 19/12/2013 | Drilled Depth: 324.44 m |
| Contractor Name: Mannion Drilling | |
| Driller: Jason Roger Mannion | |
| Assistant Driller: Sam Floss | |
| Property: | Standing Water Level (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): |

Site Details

| | | | |
|--------------------------------|-----------------------|---------------------------------|--------------------|
| Site Chosen By: | | | |
| | County | Parish | Cadastre |
| Form A: | NANDEWAR | LEARD | RES ADJ 38//754940 |
| Licensed: | | | |
| Region: 90 - Barwon | CMA Map: 8936-4N | | |
| River Basin: 419 - NAMOI RIVER | Grid Zone: | Scale: | |
| Area/District: | | | |
| Elevation: 0.00 m (A.H.D.) | Northing: 6613635.000 | Latitude: 30°34'44.1"S | |
| Elevation Source: Unknown | Easting: 227947.000 | Longitude: 150°09'47.6"E | |
| GS Map: - | MGA Zone: 56 | Coordinate Source: GPS - Global | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|--------------|----------|--------|-----------------------|----------------------|----------|-----------------------|
| 1 | | Hole | Hole | 0.00 | 6.00 | 165 | | | Rotary Air |
| 1 | | Hole | Hole | 6.00 | 151.24 | 127 | | | Rotary Air |
| 1 | | Hole | Hole | 151.24 | 324.44 | 96 | | | Rotary Mud |
| 1 | | Annulus | Cement Grout | 0.00 | 324.44 | 96 | | | PL:Reverse Circulated |
| 1 | 1 | Casing | Pvc Class 9 | 0.00 | 6.00 | 125 | 112 | | Packer |

Remarks

19/12/2013: Form A Remarks:
Nat Carling, 8-May-2014; No location was provided, based in the centre of the authorised land. Map sent to owner for true location. No lithology was provided, also requested from the owner.
13/06/2014: Nat Carling, 13-June-2014; Adjusted coordinates with GPS provided by the client.

***** End of GW970693 *****

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WaterNSW

Work Summary

GW970694

| | |
|--|---------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): MONITORING BORE | |
| Work Type: Vibrating Wire Piezometer | |
| Work Status: Equipped | |
| Construct.Method: Rotary Air | |
| Owner Type: Mines | |
| Commenced Date: | Final Depth: 354.00 m |
| Completion Date: 12/01/2014 | Drilled Depth: 354.00 m |
| Contractor Name: Mannion Drilling | |
| Driller: Jason Roger Mannion | |
| Assistant Driller: | |
| Property: | Standing Water Level (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): |

Site Details

| | | | |
|--------------------------------|-----------------------|---------------------------------|--|
| Site Chosen By: | | | |
| County | Parish | Cadastre | |
| Form A: NANDEWAR | LEARD | 38//754940 | |
| Licensed: | | | |
| Region: 90 - Barwon | CMA Map: 8936-4N | | |
| River Basin: 419 - NAMOI RIVER | Grid Zone: | Scale: | |
| Area/District: | | | |
| Elevation: 0.00 m (A.H.D.) | Northing: 6614910.000 | Latitude: 30°34'03.0"S | |
| Elevation Source: Unknown | Easting: 228213.000 | Longitude: 150°09'58.8"E | |
| GS Map: - | MGA Zone: 56 | Coordinate Source: GPS - Global | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|--------------|----------|--------|-----------------------|----------------------|----------|-----------------------|
| 1 | | Hole | Hole | 0.00 | 13.00 | 150 | | | Rotary Air |
| 1 | | Hole | Hole | 13.00 | 209.00 | 101 | | | Rotary Air |
| 1 | | Hole | Hole | 209.00 | 354.00 | 99 | | | Rotary Mud |
| 1 | | Annulus | Cement Grout | 0.00 | 354.00 | 99 | | | PL:Reverse Circulated |
| 1 | 1 | Casing | Pvc Class 9 | 0.00 | 13.00 | 150 | 136 | | Screwed |

Remarks

12/01/2014: Nat Carling, 8-May-2014; No location was provided, based in the centre of the authorised land. Map sent to owner for true location. No lithology was provided, also requested from the owner. Adjusted hole diameter to fit casing.
13/06/2014: Nat Carling, 13-June-2014; Adjusted coordinates with GPS provided by the client.

***** End of GW970694 *****

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WaterNSW

Work Summary

GW970695

| | |
|--|---------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): MONITORING BORE | |
| Work Type: Vibrating Wire Piezometer | |
| Work Status: Equipped | |
| Construct.Method: Rotary Air | |
| Owner Type: Mines | |
| Commenced Date: | Final Depth: 391.50 m |
| Completion Date: 21/01/2014 | Drilled Depth: 391.50 m |
| Contractor Name: Mannion Drilling | |
| Driller: Jason Roger Mannion | |
| Assistant Driller: Ken Clarke | |
| Property: | Standing Water Level (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): |

Site Details

| | | | |
|--------------------------------|-----------------------|---------------------------------|--------------------------------|
| Site Chosen By: | | | |
| Form A: Licensed: | County NANDEWAR | Parish LEARD | Cadastre RES ADJ 55//754924 |
| Region: 90 - Barwon | CMA Map: 8936-4N | | |
| River Basin: 419 - NAMOI RIVER | Grid Zone: | Scale: | |
| Area/District: | | | |
| Elevation: 0.00 m (A.H.D.) | Northing: 6616813.000 | Latitude: 30°33'01.1"S | |
| Elevation Source: Unknown | Easting: 228071.000 | Longitude: 150°09'55.2"E | |
| GS Map: - | MGA Zone: 56 | Coordinate Source: GPS - Global | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel
Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|--------------|----------|--------|-----------------------|----------------------|----------|-----------------------|
| 1 | | Hole | Hole | 0.00 | 231.40 | 127 | | | Rotary Air |
| 1 | | Hole | Hole | 231.40 | 368.00 | 96 | | | Rotary Mud |
| 1 | | Hole | Hole | 368.00 | 391.50 | 96 | | | Rotary Mud |
| 1 | | Annulus | Cement Grout | 0.00 | 391.50 | 96 | | | PL:Reverse Circulated |
| 1 | 1 | Casing | Pvc Class 9 | 0.00 | 48.00 | 125 | 112 | | Screwed |

Remarks

21/01/2014: Form A Remarks:
Nat Carling, 8-May-2014; No location was provided, based in the centre of the authorised land. Map sent to owner for true location. No lithology was provided, also requested from the owner.
13/06/2014: Nat Carling, 13-June-2014; Adjusted coordinates with GPS provided by the client.

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WaterNSW

Work Summary

GW970696

| | |
|--|---------------------------|
| Licence: | Licence Status: |
| Authorised Purpose(s): Intended Purpose(s): MONITORING BORE | |
| Work Type: Bore | |
| Work Status: Equipped | |
| Construct.Method: Rotary Air | |
| Owner Type: Mines | |
| Commenced Date: | Final Depth: 245.00 m |
| Completion Date: 12/01/2014 | Drilled Depth: 246.50 m |
| Contractor Name: Mannion Drilling | |
| Driller: Jason Roger Mannion | |
| Assistant Driller: Ken Clarke | |
| Property: | Standing Water Level (m): |
| GWMA: | Salinity Description: |
| GW Zone: | Yield (L/s): |

Site Details

| | | | |
|--------------------------------|-----------------------|---------------------------------|--|
| Site Chosen By: | | | |
| County | Parish | Cadastre | |
| Form A: NANDEWAR | LEARD | RES ADJ 55//754924 | |
| Licensed: | | | |
| Region: 90 - Barwon | CMA Map: 8936-4N | | |
| River Basin: 419 - NAMOI RIVER | Grid Zone: | Scale: | |
| Area/District: | | | |
| Elevation: 0.00 m (A.H.D.) | Northing: 6616816.000 | Latitude: 30°33'01.0"S | |
| Elevation Source: Unknown | Easting: 228065.000 | Longitude: 150°09'55.0"E | |
| GS Map: - | MGA Zone: 56 | Coordinate Source: GPS - Global | |

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

| Hole | Pipe | Component | Type | From (m) | To (m) | Outside Diameter (mm) | Inside Diameter (mm) | Interval | Details |
|------|------|-----------|--------------------|----------|--------|-----------------------|----------------------|----------|--|
| 1 | | Hole | Hole | 0.00 | 12.00 | 165 | | | Rotary Air |
| 1 | | Hole | Hole | 12.00 | 246.50 | 101 | | | Rotary Air |
| 1 | | Annulus | Cement | 0.00 | 219.00 | 101 | 60 | | PL:Pour |
| 1 | | Annulus | Bentonite | 219.00 | 220.00 | 101 | 60 | | PL:Pour |
| 1 | | Annulus | Waterworn/Rounded | 220.00 | 245.00 | 101 | 60 | | Graded, PL:Pour |
| 1 | | Backfill | Gravel | 245.00 | 246.50 | 101 | | | |
| 1 | 1 | Casing | Pvc Class 18 | 0.00 | 245.00 | 60 | 50 | | Seated, Screwed |
| 1 | 1 | Opening | Slots - Horizontal | 239.00 | 245.00 | 60 | | 0 | Mechanically Slotted, PVC Class 18, Screwed, SL: 25.0mm, A: 0.50mm |

Remarks

12/01/2014: Form A Remarks:
Nat Carling, 8-May-2014; No location was provided, based in the centre of the authorised land. Map sent to owner for true location. No lithology was provided, also requested from the owner.
13/06/2014: Nat Carling, 13-June-2014; Adjusted coordinates with GPS provided by the client.

***** End of GW970696 *****

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Attachment **B**

Maules Creek Continuation Project Water Transfer Pipeline Preliminary Site Investigation



Ground Doctor Pty Ltd

Maules Creek Continuation Project Water Transfer Pipeline Preliminary Site Investigation

~

**On Behalf Of:
Maules Creek Coal Pty Limited**



**24 March 2025
2023-GD010-RP2-FINAL**

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DOCUMENT CONTROLS

| Project Details | |
|--------------------------------|--|
| Project Number: | 2023-GD010-RP2 |
| Project/Document Title: | Maules Creek Continuation Project – Water Transfer Pipeline Preliminary Site Investigation |

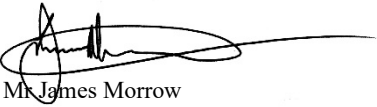


| Report Details | |
|------------------------|--|
| Prepared For: | <p>Maules Creek Coal Pty Limited ABN: 70 140 533 875 PO Box 56, Boggabri NSW 2382 Ph: +61 2 8222 1100</p> <p>Attention: Tony Dwyer General Manager – Approvals</p> |
| Prepared By: | <p>Ground Doctor Pty Ltd ABN: 32 160 178 656 PO Box 6278 22 Tamworth Street Dubbo NSW 2830</p> <p>Ph: 0407 875 302 admin@grounddoc.com.au</p> |
| Approved By: | <p> Mr James Morrow Environmental Engineer Certified Environmental Practitioner No.: 1194 Site Contamination Specialist No.: SC41087</p> <div style="display: flex; justify-content: center; align-items: center;">   </div> |
| Review Date: | 24 March 2025 |
| File Name: | 2023-GD010-RP2-FINAL |
| Report Status: | FINAL |
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Executive Summary

ES1 - Introduction

The Maules Creek Coal Mine (MCCM) is an open cut coal mine located approximately 17 kilometres (km) north-east of Boggabri, New South Wales (NSW). MCCM is a joint venture between Aston Coal 2 Pty Ltd (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75 percent [%]), ICRA MC Pty Ltd (a wholly owned subsidiary of Itochu Corporation) (15%) and J-Power Australia Pty Ltd (a wholly owned subsidiary of Electric Power Development Co. Ltd) (10%). MCCM is operated by Maules Creek Coal Pty Ltd (MCC).

Mining operations at MCCM are currently approved until 31 December 2034 with a coal extraction rate of up to 13 million tonnes per annum (Mtpa) in accordance with Project Approval (PA) 10_0138 (as modified). The existing MCCM comprises a single open cut pit, Northern Emplacement and Southern Emplacement areas, and Mine Infrastructure Area (MIA). The MIA includes the Coal Handling and Preparation Plant, run-of-mine coal stockpiles, product coal stockpiles, train load-out infrastructure, workshops and administration buildings, hardstand and laydown areas, car parking, wash bays, and other associated infrastructure.

Development Consent for the Maules Creek Continuation Project (the Project) is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979*. The Project includes:

- continuation of open cut mining operations within the MCCM mining and exploration tenements for a further 10 years (from 2035 to 2044);
- establishment of Landscape Revegetation Zones; and
- construction and operation of a water transfer pipeline between the MCCM water pipeline network and the approved Vickery Coal Mine to Tarrawonga Coal Mine pipeline network.

A detailed description of the Project is provided in Section 3 of the Environmental Impact Statement (EIS). The proposed general arrangement of the Project is shown in *Figure 2* of *Annexure A*.

Ground Doctor Pty Ltd (Ground Doctor) was engaged by MCC to conduct a Preliminary Site Investigation (PSI) for the Project in accordance with the NSW *State Environmental Planning Policy (Resilience and Hazards) 2021* (the Resilience and Hazards SEPP). The PSI will form part of the EIS for the Project.

This PSI assesses the water transfer pipeline component of the Project (i.e. the Study Area). Separate PSIs have been prepared to assess potential land contamination within the mine site and revegetation areas associated with the Project.

ES2 – PSI Objectives

The primary objective of the PSI was to assess whether land within the Study Area is suitable for the proposed water transfer pipeline component of the Project, with respect to land contamination, consistent with the requirements of the Resilience and Hazards SEPP.

The Resilience and Hazards SEPP stipulates that a consent authority must consider the contamination status of land prior to issuing consent.

Section 4.6 of the Resilience and Hazards SEPP states:

4.6 Contamination and remediation to be considered in determining development application.

(1) A consent authority must not consent to the carrying out of any development on land unless—

- (a) it has considered whether the land is contaminated, and*
- (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
- (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*

In accordance with the Resilience and Hazards SEPP, the objectives of the PSI were to:

- identify past and present land uses within the Study Area and within adjoining land;
- identify potential sources of land contamination associated with past or present uses of the Study Area and associated potential contaminants of concern;
- assess the proposed water transfer pipeline, the development setting, and subsurface conditions at the site and the surrounding environment to identify potential human health and environmental receptors and potential exposure pathways; and
- use the previously mentioned information to assess the suitability of the Study Area for the proposed water transfer pipeline, or recommend remediation works or appropriate environmental controls where the project may pose an unacceptable risk to human health or the environment.

ES3 – Scope of Work

Ground Doctor completed the following work as part of the PSI:

- Reviewed aerial photography published by NSW Government (2023) and Google Earth (2023) along the length of the Study Area to identify recent or existing activities that have potential to have caused land contamination.
- Reviewed the NSW Environment Protection Agency (EPA) list of contaminated land notified under section 60 of the *Contaminated Land Management Act 1997* to identify land in which potentially significant contamination has previously been documented (NSW EPA, 2023a).
- Reviewed the NSW EPA record of notices where land has been declared 'significantly contaminated' and regulated under the *Contaminated Land Management Act 1997* (NSW EPA, 2023b).
- Reviewed the NSW *Protection of the Environment Operations Act 1997* (POEO Act) public register to identify properties where Environment Protection License activities are conducted or have been conducted, and/or properties that have been issued penalty notices regarding breaches of the POEO Act (NSW EPA, 2023c).
- Conducted an on-ground survey of the Study Area to identify any obvious potential sources of significant subsurface contamination.

- Developed a conceptual site model of the Study Area considering pre-development and post development scenarios to identify aspects of the proposed water transfer pipeline which have potential to pose unacceptable risk to human health or the environment.
- Prepared this report presenting and summarising the findings of the PSI. Given the nature of the proposed water transfer pipeline and extent of the Study Area, the PSI has been informed by the NSW EPA (2020) *Consultants Reporting on Contaminated Sites – Contaminated Land Guidelines*, and it is considered that the overarching principles of contaminated land assessment have been followed. That is, to identify sources, receptors and pathways and establish whether any situations exist that pose an unacceptable risk to human health or the environment.

ES4 – Study Area

The water transfer pipeline is approximately 10.5km long.

From the western end, the initial 4.4km of the Study Area traverses 6852 Rangari Road, Boggabri, NSW. The Study Area closely follows Rangari Road from approximately chainage 2.2km to the Tarrawonga Coal Mine access road. The Study Area is located within the road reserve from 4.4km to 7.6km. The Study Area traverses Whitehaven-owned private property (“Kyalla”, 5747 Rangari Road, Boggabri, NSW) from 7.6km to 9.2km. The Study Area re-enters the Rangari Road reserve at 9.2km and remains within the road reserve to the western end of the Study Area at approximately 10.5km.

The Rangari Road reserve forms part of a Travelling Stock Reserve (TSR).

Land use within parts of the Study Area, which traverse private property owned by Whitehaven, are primary production consisting of cropping and livestock grazing. A 0.2km section of the Study Area passes in proximity to the homestead of 6852 Rangari Road, Boggabri, NSW. The area features a dwelling, a number of storage sheds and a cluster of above ground diesel storage tanks.

The proposed water transfer pipeline would be constructed of 355 millimetres diameter high density polyethylene (HDPE) watermain. The water transfer pipeline would be installed on-ground, into an open trench or using underboring methods.

The proposed water transfer pipeline would occupy a corridor less than 1m wide. It is anticipated that works would generally occur within 5m of the water transfer pipeline alignment.

ES5 - Conclusion

Potential areas of environmental concern identified within the Study Area included:

- Application of agricultural pesticides and fertilisers to areas used for broadacre cropping and livestock grazing.
- A cluster of above ground diesel storage tanks were identified at Brighton Homestead.
- Storage sheds and laydown areas at the Brighton Homestead that may have been used to store and mix agricultural chemicals or may have been used as maintenance workshops for farm machinery.

The Resilience and Hazards SEPP requires the consent authority to consider whether the land within the Study Area is contaminated. If the land is contaminated, the consent authority must be satisfied that the land is suitable for the proposed development in its contaminated state.

The Project would include the construction and operation of the water transfer pipeline within the Study Area.

The proposed water transfer pipeline does not pose any changes to the source or receptor components of the conceptual site model. The only potential for the proposed water transfer pipeline to change pre-existing land contamination risks would be if the proposed water transfer pipeline altered pathways in which existing contaminants (if present) could reach human receptors or the environment.

Ground Doctor believes the Study Area is suitable for the proposed water transfer pipeline, irrespective of its contamination status. Potential for changes to exposure pathways can be managed by implementing appropriate environmental, health and safety controls during construction of the water transfer pipeline, and by implementing an unexpected finds protocol to ensure any unforeseen significant contamination is not exacerbated by the water transfer pipeline construction works.

Based on the above, a detailed investigation (i.e. soil sampling and analysis) of the identified areas of potential concern is not considered necessary to assess the suitability of the land for the proposed development.

1 Introduction

The Maules Creek Coal Mine (MCCM) is an open cut coal mine located approximately 17 kilometres (km) north-east of Boggabri, New South Wales (NSW) (*Figure 1 of Annexure A*). MCCM is a joint venture between Aston Coal 2 Pty Ltd (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75 percent [%]), ICRA MC Pty Ltd (a wholly owned subsidiary of Itochu Corporation) (15%) and J-Power Australia Pty Ltd (a wholly owned subsidiary of Electric Power Development Co. Ltd) (10%). MCCM is operated by Maules Creek Coal Pty Ltd (MCC).

Mining operations at MCCM are currently approved until 31 December 2034 with a coal extraction rate of up to 13 million tonnes per annum in accordance with Project Approval (PA) 10_0138 (as modified). The existing MCCM comprises a single open cut pit, Northern Emplacement and Southern Emplacement areas, and Mine Infrastructure Area (MIA). The MIA includes the Coal Handling and Preparation Plant, run-of-mine coal stockpiles, product coal stockpiles, train load-out infrastructure, workshops and administration buildings, hardstand and laydown areas, car parking, wash bays, and other associated infrastructure.

Development Consent for the Maules Creek Continuation Project (the Project) is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project includes:

- continuation of open cut mining operations within the MCCM mining and exploration tenements for a further 10 years (from 2035 to 2044);
- establishment of Landscape Revegetation Zones; and
- construction and operation of a water transfer pipeline between the MCCM water pipeline network and the approved Vickery Coal Mine (VCM) to Tarrawonga Coal Mine (TCM) pipeline network.

A detailed description of the Project is provided in Section 3 of the Environmental Impact Statement (EIS). The proposed general arrangement of the Project is shown in *Figure 2 of Annexure A*.

Ground Doctor Pty Ltd (Ground Doctor) was engaged by MCC to conduct a Preliminary Site Investigation (PSI) for the Project in accordance with the NSW *State Environmental Planning Policy (Resilience and Hazards) 2021* (the Resilience and Hazards SEPP). The PSI will form part of the EIS for the Project.

This PSI assesses the water transfer pipeline component of the Project. Separate PSIs have been prepared to assess potential land contamination within the mine site and revegetation areas associated with the Project.

1.1 The Study Area

The Study Area subject of this assessment is the water transfer pipeline component of the Project, and is shown relative to regional features and the Project in *Figures 1 and 2 of Annexure A*. The Study Area is shown in more detail in *Figures 3 to 7 of Annexure A*. The Study Area is approximately 10.5km long. The proposed water transfer pipeline would occupy a small part of the Study Area with the final positioning subject to engineering constraints and ground conditions.

1.2 PSI Objectives

The primary objective of the PSI was to assess whether land within the Study Area is suitable for the proposed water transfer pipeline component of the Project, with respect to land contamination, consistent with the requirements of the Resilience and Hazards SEPP.

The Resilience and Hazards SEPP stipulates that a consent authority must consider the contamination status of land prior to issuing consent.

Section 4.6 of the Resilience and Hazards SEPP states:

4.6 Contamination and remediation to be considered in determining development application.

(1) A consent authority must not consent to the carrying out of any development on land unless—

(a) it has considered whether the land is contaminated, and

(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

(2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subsection (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.

(3) The applicant for development consent must carry out the investigation required by subsection (2) and must provide a report on it to the consent authority. The consent authority may require the applicant to carry out, and provide a report on, a detailed investigation (as referred to in the contaminated land planning guidelines) if it considers that the findings of the preliminary investigation warrant such an investigation.

(4) The land concerned is—

(a) land that is within an investigation area,

(b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,

(c) to the extent to which it is proposed to carry out development on it for residential, educational, recreational or childcare purposes, or for the purposes of a hospital—land—

(i) in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and

(ii) on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge).

The primary objective of the PSI was to assess whether land within the Study Area was suitable for the proposed water transfer pipeline, with respect to land contamination, consistent with the requirements of the Resilience and Hazards SEPP.

More specifically to:

- identify past and present land uses within the Study Area and within adjoining land;
- identify potential sources of land contamination associated with past or present uses of the Study Area and associated potential contaminants of concern;
- assess the proposed water transfer pipeline, the development setting, and subsurface conditions at the site and the surrounding environment to identify potential human health and environmental receptors and potential exposure pathways; and
- use the previously mentioned information to assess the suitability of the Study Area for the proposed water transfer pipeline, or recommend remediation works or appropriate environmental controls where the project may pose an unacceptable risk to human health or the environment.

1.3 Scope of Work

Ground Doctor completed the following work as part of the PSI:

- Reviewed aerial photography published by NSW Government (2023) and Google Earth (2023) along the length of the Study Area to identify recent or existing activities that have potential to have caused land contamination.
- Reviewed the NSW Environment Protection Agency (EPA) list of contaminated land notified under section 60 of the *Contaminated Land Management Act 1997* to identify land in which potentially significant contamination has previously been documented (NSW EPA, 2023a).
- Reviewed the NSW EPA record of notices where land has been declared 'significantly contaminated' and regulated under the *Contaminated Land Management Act 1997* (NSW EPA, 2023b).
- Reviewed the NSW *Protection of the Environment Operations Act 1997* (POEO Act) public register to identify properties where Environment Protect License activities are conducted or have been conducted, and/or properties that have been issued penalty notices regarding breaches of the POEO Act (NSW EPA, 2023c).
- Conducted an on-ground survey of the Study Area to identify any obvious potential sources of significant subsurface contamination.
- Developed a conceptual site model of the Study Area considering pre-development and post development scenarios to identify aspects of the proposed water transfer pipeline which have potential to pose unacceptable risk to human health or the environment.
- Prepared this report presenting and summarising the findings of the PSI. Given the nature of the proposed water transfer pipeline and extent of the Study Area, the PSI has been informed by the NSW EPA (2020) *Consultants Reporting on Contaminated Land – Contaminated Land Guidelines*, and it is considered that the overarching principles of contaminated land assessment have been followed. That is, to identify sources, receptors and pathways and establish whether any situations exist that pose an unacceptable risk to human health or the environment.

1.4 Limitations of this Report

The findings of this report are based on the Scope of Work outlined in *Section 1.3*. Ground Doctor performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental consulting profession. No warranties, expressed or implied are made.

Some areas of the Study Area were not available for on-ground inspection. Ground Doctor used aerial imagery to assess inaccessible parts of the Study Area and has made some general assumptions about the likely nature and use of the farm-related infrastructure identified in photography. It is possible that this PSI has not identified all potential areas of concern. A recommendation of this PSI is that an unexpected finds protocol be adopted prior to commencement of on-ground works that form part of the water transfer pipeline.

All conclusions and recommendations regarding the Study Area are the professional opinions of Ground Doctor personnel involved with the assessment, subject to the qualifications made above. While normal assessments of data reliability have been made, Ground Doctor assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Ground Doctor, or developments resulting from situations outside the scope of this assessment.

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2 Study Area Description

2.1 Pipeline Route

The proposed water transfer pipeline is approximately 10.5km long.

The eastern end of the proposed water transfer pipeline joins the approved VCM to TCM pipeline.

The western end of the proposed water transfer pipeline connects to an existing MCCM water pipeline network located within the “Brighton” homestead (within Lot 2 DP 1197060). The eastern end of the proposed water transfer pipeline joins the approved VCM to TCM pipeline.

From the western end, the initial 4.4km of the Study Area traverses private property (“Brighton”, 6852 Rangari Road, Boggabri, NSW). The Study Area closely follows Rangari Road from approximately chainage 2.2km to the TCM access road. The Study Area is located within the road reserve from 4.4km to 7.6km. The Study Area traverses private property (“Kyalla”, 5747 Rangari Road, Boggabri, NSW) from 7.6km to 9.2km. The Study Area re-enters the Rangari Road reserve 9.2km and remains within the road reserve to the western end of the Study Area at approximately 10.5km.

The Rangari Road reserve forms part of a Travelling Stock Reserve (TSR).

The Study Area is described in *Table 1*. Photographs of the Study Area are presented as *Annexure B*.

Table 1: Study Area Description

| Pipeline Route Chainage | Route Description | Land Uses |
|-------------------------|---|---|
| 0.0 – 1.5km | Pipeline passes through private property (6852 Rangari Road, Boggabri, NSW). | Agriculture. Cropping and livestock grazing. |
| 1.5 - 1.7km | Pipeline travels through the homestead of 6852 Rangari Road, Boggabri, NSW. | The immediate surrounds include a dwelling, storage sheds, above ground diesel storage tanks and general laydown areas. |
| 1.7 - 2.2km | Pipeline passes through private property (6852 Rangari Road, Boggabri, NSW). | Agriculture. Cropping and livestock grazing. |
| 2.2 – 4.4km | Pipeline would be located on the northern side of Rangari Road. The pipeline would be within private property (6852 Rangari Road, Boggabri, NSW) due to the narrow width of the Rangari Road reserve in this section of the Study Area. | Agriculture. Cropping and livestock grazing. |
| 4.4 – 7.6km | Pipeline travels along the Rangari Road reserve. Pipeline is located on the northern side of the road. The road reserve includes grassed open space as well as wooded areas. Pipeline crosses Leard Forest Road at approximately 5.6km. | Road reserve and travelling stock reserve. |
| 7.6 - 9.2km | Pipeline passes through private property (5747 Rangari Road, Boggabri, NSW). | Agriculture. Cropping and livestock grazing. |
| 9.2 - 10.5km | Pipeline travels along the Rangari Road reserve. Pipeline is located on the northern side of the road. The road reserve includes grassed open space as well as wooded areas. | Road reserve and travelling stock reserve. |

Land use within parts of the Study Area, which traverse private property, are primary production consisting of cropping and livestock grazing. A 0.2km section of the Study Area passes in proximity to the homestead of 6852 Rangari Road, Boggabri, NSW. The area features a dwelling, a number of storage sheds and a cluster of above ground diesel storage tanks.

2.2 Disturbance Corridor

The proposed water transfer pipeline would occupy a disturbance area less than 1m wide. It is anticipated that works would generally occur within 5 metres (m) of the water transfer pipeline alignment.

2.3 Land Use and Ownership

The Study Area spans Whitehaven-owned private property for the first 4.4km (6852 Rangari Road, Boggabri, NSW) and between chainage 7.6 – 9.2km (5747 Rangari Road, Boggabri, NSW). The remainder of the pipeline route is within the Rangari Road reserve.

2.4 Topography

A plot of surface elevation versus length of pipeline indicated the ground surface elevation along the Study Area ranges from approximately 239m Australian Height Datum (AHD) to approximately 258m AHD (Intergovernmental Committee on Surveying and Mapping, 2023).

The western end of the Study Area is situated on the floodplain of the Namoi River. The Study Area passes close to Barbers Lagoon, which is an anabranch or former channel of the Namoi River.

The surface elevation adjacent to the existing MCCM water pipeline network at the western end of the Study Area is approximately 240m AHD. Through “Brighton”, the surface elevation ranges between approximately 239m AHD and 245m AHD.

The Study Area rises above the floodplain at chainage of approximately 4.6km. From this point moving eastward along Rangari Road, the surface elevation rises gradually to a maximum of approximately 258m AHD at the TCM access road (i.e. the eastern extent of the Study Area).

2.5 Geology and Hydrogeology

Geological mapping (Chesnut W., et.al., 1973) published in the “Manilla 1:250,000 Geological Series Sheet SH 56-9” indicates that the Study Area route is situated above quaternary alluvium described as “stream alluvial deposits including riverine plain deposits, sandy to silty, minor gravels”.

The quaternary alluvium overlies “Boggabri Volcanics”, which are described as “rhyolite, rhyolitic tuff and rhyodacite”.

The water transfer pipeline would be buried in the upper 2m of the subsurface and would be situated within alluvium.

The western end of the Study Area is situated above the Upper Namoi River (Zone 4) alluvium groundwater management unit. This unit is a highly productive aquifer which supplies good quality water suitable for most beneficial purposes without treatment including domestic water supply, town water supply, stock water, irrigation and mining.

GW030470 is a government monitoring bore located approximately 100m from the existing MCCM water pipeline network at the western end of the Study Area (WaterNSW, 2023). The bore is installed in productive sand and gravels of the Namoi River alluvium groundwater unit. Groundwater elevation data for this bore spanning 1974 to 2021 indicates groundwater elevation has ranged from approximately 229 to 234m AHD. The water table within the Namoi alluvium would be expected to be relatively uniform across the floodplain as the unit is comprised of highly permeable sand and gravel water bearing zones.

The available groundwater elevation data indicates that the water transfer pipeline would be situated above the water table.

2.6 Acid Sulphate Soils

Acid sulphate soils risk mapping indicates that the nearest site with a high probability of occurrence of acid sulphate soil is more than 50km from the Study Area (Department of Planning, Industry and Environment, 1998).

2.7 Naturally Occurring Asbestos

Ground Doctor reviewed publicly available NSW government mapping of Naturally Occurring Asbestos in the vicinity of the site (NSW Resource and Geosciences, 2023). The Study Area is not within a naturally occurring asbestos risk area.

The Study Area is underlain by alluvium associated with the Namoi River and associated local tributaries and therefore is not a risk area for naturally occurring asbestos.

The nearest risk area for naturally occurring asbestos is approximately 60km east of the Study Area. The mapped risk area corresponds to the occurrence of serpentinite and other ultrabasic volcanic geology along the Peel Fault, which runs in a north-northwest to south-south eastly direction between Bingara, Barraba and Manilla.

3 Description of the Proposed Development

3.1 Project Description

MCC is seeking approval to continue open cut mining operations within the MCCM tenements for a further 10 years (from 2035 to 2044). Development Consent for the Project is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the EP&A Act.

A detailed description of the Project is provided in Section 3 of the EIS.

3.2 Pipeline Specifications

The water transfer pipeline would be installed on-ground, into an open trench or using underboring methods. Where appropriate, following installation of the water transfer pipeline the remaining void space would be backfilled with soil excavated from pipeline installation. Any excess excavated soil would be spread immediately adjacent to the water transfer pipeline.

The water transfer pipeline would be installed and operated in accordance with the *Water Supply Code of Australia* (Water Services Association of Australia, 2011).

3.3 Proposed Construction Sequence

The water transfer pipeline would be installed progressively via a combination of on-ground installation, open trenching and underboring methods.

Erosion and sediment controls would be installed and maintained prior to the start of construction activities in accordance with the NSW *Managing Urban Stormwater: Soils and Construction – Volume 1* “the Blue Book” (Landcom, 2004).

The footprint of disturbance would be minimised to the extent practicable to allow installation of the pipeline. Topsoil and excavated soil from any trench would be stockpiled adjacent to the excavated trench.

Water transfer pipeline construction would be a progressive operation with more than one work front potentially being constructed concurrently. The Study Area is situated on relatively deep alluvial soils associated with the Namoi River and, as such, bedrock should not be encountered in trenched or underbored section of the proposed water transfer pipeline. Appropriate construction techniques and safety controls would be utilised, including safety barriers, as required, for open trenches and underboring sites.

Once the pipe has been laid and joined, backfill would be placed around the pipe and compacted, typically with a hand-held vibrating plate compactor. Backfill material would comprise a combination of excavated trench material (depending on condition) and imported fill (where granular backfill is required to meet the design specifications). Excess excavated material would be spread evenly around the disturbed area.

3.4 Post Development Land Use

The proposed water transfer pipeline involves a temporary change of land use during construction of the water transfer pipeline. Once the water transfer pipeline is installed, land use would remain the same as prior to the water transfer pipeline construction. Land within private property would continue to be used for agriculture. Land within the Rangari Road reserve would continue to be used as a road reserve and TSR.

4 Potential Areas of Environmental Concern

Ground Doctor assessed the Study Area for potential sources of land contamination using the following sources of information:

- A search of NSW EPA databases relevant to a contaminated land assessment (NSW EPA, 2023a; 2023b; and 2023c). These include registers of properties where contamination has been reported based on the “Duty to Report Contamination” provisions of the *Contaminated Land Management Act 1997* and lists of sites where contamination has been regulated by the NSW EPA using its powers under the *Contaminated Land Management Act 1997*. Ground Doctor also searched the NSW EPA database for lists of properties that hold or have held licenses required by the POEO Act.
- A review of recent aerial photography of the Study Area for land uses or activities that have potential to contaminate land. Ground Doctor reviewed NSW Government aerial photography published on the spatial information exchange website (NSW Government 2023). Photographs presented on the spatial information exchange were taken in 2011. Aerial imagery published on Google Earth (5 September 2023) were also used to assess recent history of the Study Area.
- An inspection of sections of the Study Area located within public road reserves to ground truth aerial imagery and collect more information on potential areas of concern identified in the aerial imagery review.
- A review of oblique aerial photography of sections of the Study Area that were within Whitehaven-owned private land. The aerial imagery was captured by an aerial camera at the time of the site inspection.

Results of the assessment are outlined in the following sub-sections of this report.

4.1 NSW EPA Notified Contaminated Sites

Ground Doctor conducted a search of the NSW EPA list of sites notified under section 60 of the *Contaminated Land Management Act 1997*. The search was conducted on 5 September 2023. The list published on the NSW EPA website at the time of the review was last updated on 8 August 2023.

There were no notified sites located within 1km of the Study Area.

4.2 NSW EPA Licenced Activities

Ground Doctor conducted a search of the NSW EPA list of activities licensed under the POEO Act. The search was conducted on 5 September 2023. The list of all licensed activities was downloaded and sorted to display only those activities within the Narrabri Shire Council Local Government Area.

Licensed activities were identified in the vicinity of the Study Area including MCCM, VCM, Boggabri Coal Mine and TCM. The specific licensed activities included “mining for coal”, “coal works” and “crushing, grinding and separating”. Aerial photography indicated that activities licensed under the POEO Act were not located within the Study Area or in the immediate surrounds.

4.3 Aerial Photo Review and Route Inspection

Ground Doctor inspected publicly accessible parts of the Study Area on 14 June 2023 to ground truth observations made in the aerial photography review. Ground Doctor used an aerial camera to obtain oblique aerial photographs of parts of the Study Area that were within private property.

Identified potential sources of contamination are summarised in *Table 2*.

Table 2: Identified Potential Sources of Land Contamination Along Study Area

| Pipeline Route Chainage | Identified Feature |
|-------------------------|--|
| 0 – 4.4km | Private property owned by Whitehaven used for broadacre cropping and livestock grazing. |
| 1.5 – 1.65km | The Study Area passes in proximity to the homestead of “Brighton”. There are several above ground diesel storage tanks located within the Study Area at 1.6km. There are other outbuildings nearby that could potentially be used to store agricultural chemicals or fuels, or that may have been used as a workshop for farm machinery. |
| 4.4 – 7.6km | Study Area passed through the Rangari Road reserve, which is a mix of open woodlands and pasture, and is used as a TSR and at times used for livestock grazing. |
| 7.6 – 9.2km | Study Area passes through private property that appears to have been used for broadacre cropping and livestock grazing. |
| 9.2 – 10.5km | Study Area passes through the Rangari Road reserve, which is a mix of open woodlands and pasture, and is inferred to be used as a TSR and at times used for livestock grazing. |

At chainage 1.3km a control box was located within the Study Area. The control box was within private property (“Brighton”) and was inferred to be a junction box or control box for an irrigation or reticulated water system.

The Study Area passed in proximity to the homestead of “Brighton” at chainage 1.5km to 1.65km. A cluster of above ground diesel storage tanks was identified at chainage of approximately 1.6km. Other buildings located within the Study Area appeared to be used as storage sheds or machinery sheds. There were several areas within the homestead used as laydown areas for machinery and materials. Livestock yards within the homestead were situated outside the Study Area.

The only infrastructure identified along the Rangari Road reserve was a groundwater monitoring bore situated at chainage of approximately 5.8km. The bore featured a steel stickup conduit which appeared to be fitted with remote telemetry. The bore was inside a small compound fenced with chain mesh wire approximately 1.8m high.

The Study Area crossed the Leard Forest Road at chainage 5.6km. The Study Area crossed TCM access road at chainage 10.4km.

4.4 Identified Potential Sources of Contamination

Potential sources of contamination identified within or adjacent to the Study Area are summarised in *Table 3*.

Table 3: Summary of Potential Areas of Environmental Concern

| Potential Area of Concern | Summary of Issue | Potential Contaminants of Concern / Hazards | Potential Area of Impact | Discussion of Issues |
|--|---|---|---|---|
| Diesel Above Ground Storage Tanks | A cluster of above ground storage tanks that are most likely used for diesel fuel storage were identified within the Study Area at chainage of approximately 1.6km. | TRH, BTEX, PAHs, lead. | <p>Near surface soil beneath above ground storage tanks and nearby areas where fuel may have been delivered and dispensed. Depth of potential impacts would be dependent on the nature of any loss. Irregular surface spills have less chance of resulting in significant soil and/or groundwater impacts compared to a prolonged loss at a point source.</p> <p>Prolonged point source losses are unlikely as the tanks were situated above ground which would make leaks relatively easy to identify and rectify. Refuelling activity would be infrequent relative to a commercial setting (e.g. a service station).</p> <p>Groundwater impacts would only be likely if point sources were present which had lost fuel for a prolonged period, or where significant loss of containment had occurred.</p> | <p>The Study Area is approximately 20m wide in the vicinity of the above ground storage tanks. This provides room for the final pipeline location to be constructed away from the identified cluster of diesel storage tanks.</p> <p>Excavation would be limited to 2m in these areas. Contamination (if present) would most likely be identified in near surface soils. If significant contamination has occurred contamination would typically migrate downwards in a conical fashion, such that contamination would not be present in the upper 2m of the soil provided the pipeline alignment was positioned 5m+ laterally from the diesel above ground storage tanks.</p> <p>Diesel and other petroleum hydrocarbon fuels are less dense than water and therefore are typically constrained vertically within the subsurface by the water table. Farm buildings are located on elevated areas (above flood prone land) and therefore are likely to be situated in locations where the water table is greater than the proposed depth of excavation for water transfer pipeline installation (<2m).</p> <p>After the water transfer pipeline is installed, it could potentially act as a preferential pathway from contaminants that enter the surface or subsurface in close proximity to the water transfer pipeline. This potential risk could be minimised by ensuring the water transfer pipeline is situated clear of the identified potential sources.</p> <p>Diesel or petroleum hydrocarbon impacts are easily identified where they exist by discoloured and odorous soil. Potential for the water transfer pipeline construction works to impact any existing contamination (if present) could be assessed in real time during the works.</p> |
| Garages, Machinery Sheds, Workshops, Fuel Storage and Chemical Storage | <p>Farm buildings which may include machinery sheds, garages, storage sheds, fuel storages and or chemical storages were identified within the Study Area at chainage 1.50km to 1.65km.</p> <p>Machinery sheds may have been used to maintain and service machinery. There is potential for diesel, petrol, waste oils and or degreasers to be present in soil beneath maintenance sheds or within informal waste oil disposal areas.</p> | TRH, BTEX, PAHs, phenols (oil sources), pesticides, herbicides, metals. | <p>Near surface soil beneath machinery maintenance areas, or within informal waste oil disposal areas.</p> <p>Groundwater impacts would only be likely if point sources of improper waste disposal were present.</p> | <p>The Study Area is sufficiently wide enough to ensure the water transfer pipeline and associated installation activities occurs at least 5m from identified farm buildings. Excavation would be limited to 2m in these areas. Contamination (if present) would most likely be identified in near surface soils. If significant contamination has occurred, contamination would typically migrate downwards in a conical fashion, such that a contamination would not be present in the upper 2m of the soil profile and would be at least 5m laterally from the source.</p> <p>Farm buildings are typically located on elevated areas (above flood prone land) and therefore are likely to be situated in locations where the water table is greater than the proposed depth of excavation for water transfer pipeline installation (<2m).</p> |

Table 3 (Continued): Summary of Potential Areas of Environmental Concern

| Potential Area of Concern | Summary of Issue | Potential Contaminants of Concern / Hazards | Potential Area of Impact | Discussion of Issues |
|---|---|---|--|---|
| Application of Pesticides, Herbicides and Fertilisers | Application of fertilisers, pesticides and herbicides to control pests and weeds in agricultural land. More likely to occur in areas where cropping occurs. | Pesticides, herbicides, metals. | Near surface soils. The potential source is diffuse so contamination would not be expected at depth. If contamination existed it would be expected to be wide spread as the source is diffuse (crop spraying) or application of solid or liquid fertilisers evenly across broad areas of the land. | <p>Risk of significant contamination from this source is considered low.</p> <p>This potential source is likely to impact near surface soils only (if any impacts have occurred). The source is diffuse and contaminants from a source of this nature would be expected to be largely immobile as they would be fixed to the soil matrix of near surface soils.</p> <p>Groundwater contamination would not be expected. If groundwater contamination existed from these sources, it would be a problem of regional significance and the proposed development would not cause additional concern. That is, excavation of a shallow trench within a large area of groundwater impact would not significantly alter any pre-existing human health or environmental risks.</p> <p>Once the pipeline is installed, the existing use (including application of pesticides, herbicides and fertilisers where they are applied) would continue.</p> |

Note: TRH = total recoverable hydrocarbons. BTEX = benzene, toluene, ethylbenzene, xylenes. PAHs = polycyclic aromatic hydrocarbons.

4.5 Potential Unexpected Finds

4.5.1 Buried Waste / Illegal Waste Disposal

Burial of domestic and farm waste is a common practise in rural areas. Ground Doctor did not identify any obvious waste burial areas in the review of aerial photographs or inspection of the Study Area.

Ground Doctor did not identify any evidence of significant illegal waste disposal within the Rangari Road reserve (although some evidence of littering by roadside was observed).

Burial areas or illegal waste dumps would be obvious if encountered during shallow trenching or underboring works and potential human health and environmental risks could be managed at the time of works, in accordance with an unexpected finds protocol.

4.5.2 Petroleum Hydrocarbon Storages or Spill Areas

It is common for rural properties to store diesel in bulk containers (typically 1000 litre (L) - 5000L tanks). Ground Doctor identified a cluster of relatively small (estimated to be less than 2000L) above ground storage tanks within the Brighton homestead. The identified tanks were situated on stands. It is possible that the tanks could have been moved within the homestead area during their life.

Soil contaminated with petroleum hydrocarbons is easy to identify based on the presence of discolouration and odour. If petroleum hydrocarbon impacted soil is identified along the Study Area, it could be managed appropriately at the time of works, in accordance with an unexpected finds protocol.

4.5.3 Farm Chemical Storages

Ground Doctor did not identify any significant chemical storage areas along the Study Area. Farm chemicals are typically stored in retail sized containers within sheds or designated storages. Risk of significant contamination at these storage areas is low due to the small volumes of chemical stored.

There is potential for mixed chemical (i.e. chemical product added to mix water) to have been stored temporarily in spray rigs or similar storages.

Significant soil contamination should be identifiable by the presence of stained or odorous soil. If impacted soil is identified along the Study Area, it could be managed appropriately at the time of works, in accordance with an unexpected finds protocol.

4.5.4 Asbestos Containing Materials.

Structures made of cemented fibre sheeting that contain asbestos are common across Australia. Ground Doctor did not inspect buildings within the Brighton homestead during the work. It is possible that one or more of the structures identified within or close to the Study Area could be clad with asbestos containing weatherboard.

If asbestos containing material was encountered during construction works, it could be managed in accordance with an unexpected finds protocol.

5 Conceptual Site Model

5.1 Source-Pathway-Receptor

The primary objective of the PSI was to assess whether land within the Study Area was suitable for the proposed water transfer pipeline, with respect to risks posed by land contamination.

The source-pathway-receptor model is used to assess risks to human health and the environment when determining the level of acceptable contamination. For contamination to pose a risk to human health or the environment, there needs to be a source of contamination, a human or environmental receptor, and a pathway via which contaminants can reach the receptor from the source.

5.1.1 Sources

Ground Doctor has identified some potential sources of land contamination within or close to the Study Area, as outlined in *Table 2* and *Table 3*. The status of land contamination in these areas has not been assessed and is not known with any certainty. The identified potential sources of land contamination pose a relatively low risk of land contamination.

The proposed water transfer pipeline does not include activities that would be expected to create new sources of land contamination. The proponent does not intend to remove soil off-site. All soil would remain on-site after the water transfer pipeline has been installed.

The contamination status of the Study Area (if any contamination exists) would remain unchanged by the proposed water transfer pipeline.

5.1.2 Receptors

The proposed water transfer pipeline involves a temporary change of land use during construction and installation of the water transfer pipeline. The water transfer pipeline would be installed within an easement through existing public or privately owned land (i.e. the Study Area). The existing land use would continue after the water transfer pipeline has been constructed and installed, and the Study Area rehabilitated.

Occupational exposure during water transfer pipeline construction is not considered a change of use and does not change the receptor setting used to assess risks posed by any existing contamination. Construction work is temporary and can occur with appropriate health, safety and environmental controls to make risks to human health and the environment acceptable.

5.1.3 Pathways

The proposed water transfer pipeline involves minor subsurface disturbance and reinstatement.

There is potential for some minor redistribution of soil during trenching and backfilling works associated with the water transfer pipeline installation. The potential for soil to be moved is limited by the shallow depth (<2m) and narrow width (<1m of the typical water transfer pipeline trench). Any minor redistribution of soil during the proposed water transfer pipeline would not represent a significant change to potential exposure pathways of any existing soil contamination.

Granular backfill may be used to line the base of the water transfer pipeline trench. This has potential to create a preferential migration pathway in the subsurface, which could potentially change the distribution of any pre-existing liquid or gas phase contamination in the subsurface. This would only be of concern where significant contamination already existed and/or where groundwater was present in the upper 2m of the subsurface. As outlined in *Section 2.5*, groundwater is not anticipated within the relatively shallow (<2m deep) trenches within which the water transfer pipeline would be installed.

The potential sources of contamination identified within the Study Area are relatively minor and would not be expected to have caused significant non-aqueous phase impacts, the likes of which could be influenced by the proposed water transfer pipeline.

5.2 Outcome

The proposed water transfer pipeline does not pose any changes to the source or receptor components of the conceptual site model. The only potential for the water transfer pipeline to change pre-existing land contamination risks would be if the water transfer pipeline altered pathways in which existing contaminants (if present) could reach human receptors or the environment.

Provided adequate health, safety and environmental controls, including an unexpected finds protocol, are implemented during water transfer pipeline construction, Ground Doctor believes the Study Area is suitable for the proposed development, irrespective of its contamination status.

Potential for changes to exposure pathways can be managed by implementing appropriate environmental and health and safety controls during construction of the water transfer pipeline, and by implementing an unexpected finds protocol to ensure any unforeseen significant contamination is not exacerbated by water transfer pipeline construction works.

6 Conclusion and Recommendations

The Resilience and Hazards SEPP requires the consent authority to consider whether the land within the Study Area is contaminated. If the land is contaminated the consent authority has to be satisfied that the land is suitable for the proposed water transfer pipeline in its contaminated state.

The water transfer pipeline would involve temporary construction works only and does not propose to change the land use following the completion of construction activities.

The proposed water transfer pipeline does not pose any changes to the source or receptor components of the conceptual site model. The only potential for the water transfer pipeline to change pre-existing land contamination risks would be if the water transfer pipeline altered pathways in which existing contaminants (if present) could reach human receptors or the environment.

Provided adequate health, safety and environmental controls, including an unexpected finds protocol, are implemented during water transfer pipeline construction, Ground Doctor believes the Study Area is suitable for the proposed water transfer pipeline, irrespective of its contamination status.

Potential for changes to exposure pathways can be managed by implementing appropriate environmental and health and safety controls during construction of the water transfer pipeline, and by implementing an unexpected finds protocol to ensure any unforeseen significant contamination is not exacerbated by water transfer pipeline construction works.

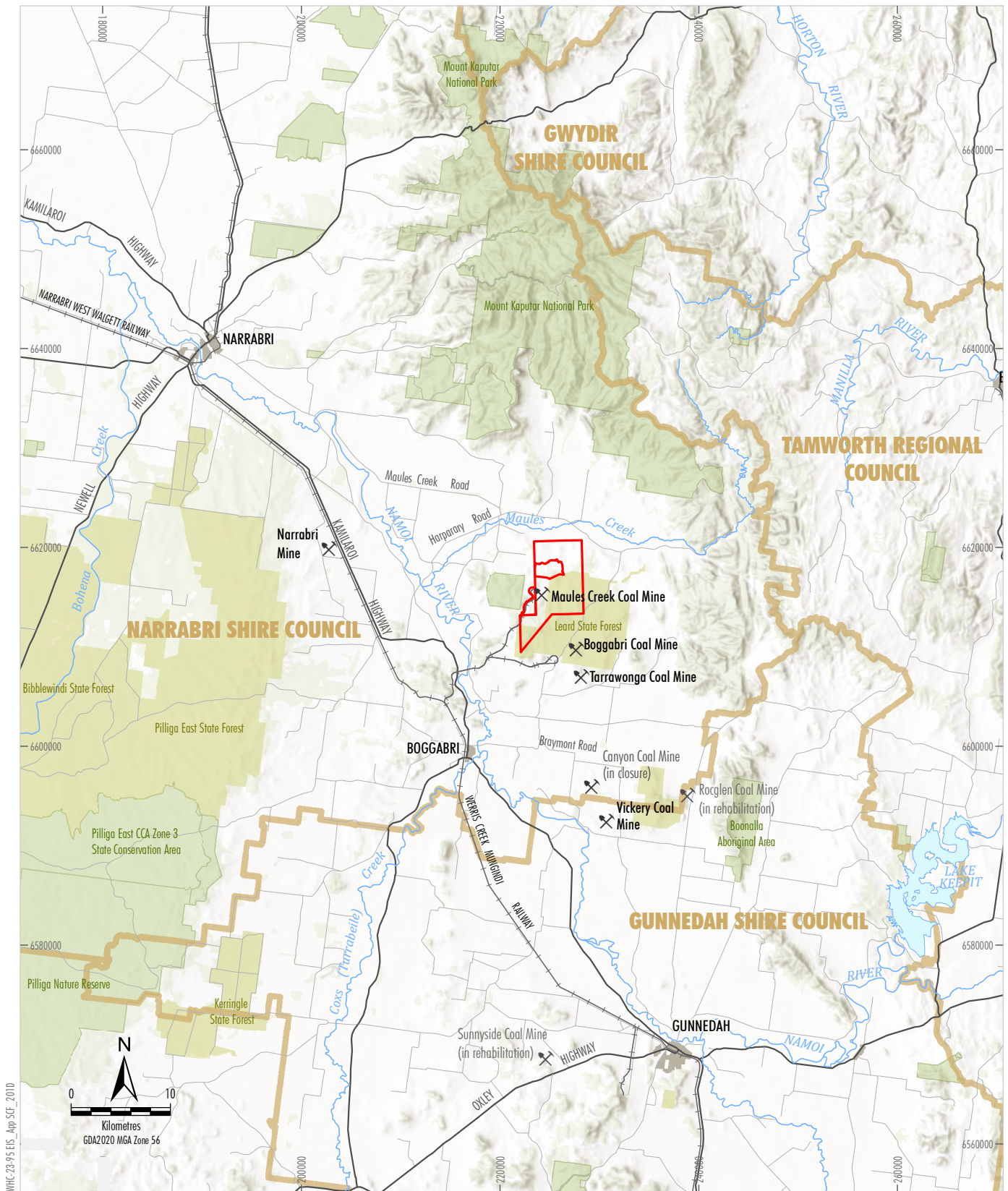
Detailed investigation (i.e. soil sampling and analysis) of the identified areas of potential concern is not considered necessary in assessing the suitability of the land for the proposed water transfer pipeline.

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Annexure A

Figures



Source: NSW Spatial Services (2023);
Geoscience Australia (2011)



- LEGEND**
- MCCM Mining Tenement Boundary (CL and ML)
 - Mine Site
 - Local Government Boundary
 - State Forest
 - State Conservation Area, Aboriginal Area
 - Rail Line

Whitehaven
MAULES CREEK CONTINUATION PROJECT
Project Location

Figure 1



Source: NSW Spatial Services (2024)
Orthophoto Mosaic: Whitehaven (2019-2024)

 **Whitehaven**
MAULES CREEK CONTINUATION PROJECT
General Arrangement of the Project

* BCM boundary digitised from Figure 1 of the BCM Modification 10 Scoping Letter.

#Landscape Revegetation Zones shown on this figure are approximate extents only.

Figure 2







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- Legend:**
-  Study Area Boundary
 -  Indicative Water Transfer Pipeline Chainage (West to East)

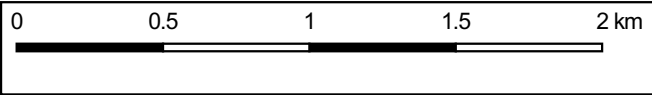


Figure 3: Water Transfer Pipeline Location and Local Context

Job Name: Preliminary Site Investigation - Maules Creek Continuation Project - Water Transfer Pipeline

Job Number: 2023-GD010-RP2









Annexure B

WSPC Inspection Photographs



Looking in a westerly direction from above Brighton homestead toward Namoi River. The two white circular tanks middle right are the header tanks for the pipeline. A water supply bore is located close to the tanks. This part of the WSPC is situated on alluvial floodplain of the Namoi River.



Looking in an approximate northerly direction toward Brighton homestead area.



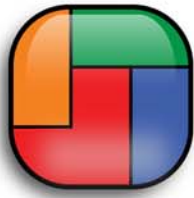
Looking in a westerly direction from above Brighton homestead. Barbers Lagoon is the waterway visible in the right side of the photo. Rangari Road is visible close to barbers lagoon and follows the tree line to the distant centre of the photo.



A groundwater monitoring bore was the only infrastructure identified within the travelling stock reserve.

Attachment **C**

Maules Creek Continuation Project Landscape Revegetation Zones Preliminary Site Investigation



Ground Doctor Pty Ltd

Maules Creek Continuation Project Landscape Revegetation Zones Preliminary Site Investigation

~

**On Behalf Of:
Maules Creek Coal Pty Limited**



**24 March 2025
2023-GD010-RP3-FINAL**

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|------------------------|---|
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Executive Summary

ES1 - Introduction

The Maules Creek Coal Mine (MCCM) is an open cut coal mine located approximately 17 kilometres (km) north-east of Boggabri, New South Wales (NSW). MCCM is a joint venture between Aston Coal 2 Pty Ltd (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75 percent [%]), ICRA MC Pty Ltd (a wholly owned subsidiary of Itochu Corporation) (15%) and J-Power Australia Pty Ltd (a wholly owned subsidiary of Electric Power Development Co. Ltd) (10%). MCCM is operated by Maules Creek Coal Pty Ltd (MCC).

Mining operations at MCCM are currently approved until 31 December 2034 with a coal extraction rate of up to 13 million tonnes per annum (Mtpa) in accordance with Project Approval (PA) 10_0138 (as modified). The existing MCCM comprises a single open cut pit, Northern Emplacement and Southern Emplacement areas, and Mine Infrastructure Area (MIA). The MIA includes the Coal Handling and Preparation Plant, run-of-mine coal stockpiles, product coal stockpiles, train load-out infrastructure, workshops and administration buildings, hardstand and laydown areas, car parking, wash bays, and other associated infrastructure.

Development Consent for the Maules Creek Continuation Project (the Project) is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project includes:

- continuation of open cut mining operations within the MCCM mining and exploration tenements for a further 10 years (from 2035 to 2044);
- establishment of Landscape Revegetation Zones; and
- construction and operation of a water transfer pipeline between the MCCM water pipeline network and the approved Vickery Coal Mine to Tarrawonga Coal Mine pipeline network.

A detailed description of the Project is provided in Section 3 of the Environmental Impact Statement (EIS). The proposed general arrangement of the Project is shown in *Figure 2* of *Annexure A*.

Ground Doctor Pty Ltd (Ground Doctor) was engaged by MCC to conduct a Preliminary Site Investigation (PSI) for the Project in accordance with the NSW *State Environmental Planning Policy (Resilience and Hazards) 2021* (the Resilience and Hazards SEPP). The PSI will form part of the EIS for the Project.

This PSI assesses the Landscape Revegetation Zones components of the Project. Separate PSIs have been prepared to assess potential land contamination within the mine site and water transfer pipeline associated with the Project.

ES2 – PSI Objectives

The primary objective of the PSI was to assess whether land within the Study Area is suitable for the proposed revegetation works, with respect to land contamination, consistent with the requirements of the Resilience and Hazards SEPP.

The Resilience and Hazards SEPP stipulates that a consent authority must consider the contamination status of land prior to issuing consent.

Section 4.6 of the Resilience and Hazards SEPP states:

4.6 Contamination and remediation to be considered in determining development application.

(1) A consent authority must not consent to the carrying out of any development on land unless—

- (a) it has considered whether the land is contaminated, and*
- (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
- (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*

In accordance with the Resilience and Hazards SEPP, the objectives of the PSI were to:

- identify past and present land uses within the Study Area and within adjoining land;
- identify potential sources of land contamination associated with past or present uses of the Study Area and associated potential contaminants of concern;
- assess the nature of the proposed development, the proposed Landscape Revegetation Zone setting, and subsurface conditions at the site and the surrounding environment to identify potential human health and environmental receptors and potential exposure pathways; and
- use the previously mentioned information to assess the suitability of the Study Area for the proposed revegetation works, or recommend remediation works or appropriate environmental controls where the project may pose an unacceptable risk to human health or the environment.

ES3 – Scope of Work

Ground Doctor completed the following work as part of the PSI:

- Reviewed aerial photography of the Study Area published by NSW Government (2025) and Google Earth (2025) to identify past and present landuse and identify activities that have potential to cause land contamination.
- Reviewed the NSW Environment Protection Agency (EPA) list of contaminated land notified under section 60 of the *Contaminated Land Management Act 1997* to identify land in which potentially significant contamination has previously been documented (NSW EPA, 2025a).
- Reviewed the NSW EPA record of notices where land has been declared 'significantly contaminated' and regulated under the *Contaminated Land Management Act 1997* (NSW EPA, 2025b).
- Reviewed the NSW *Protection of the Environment Operations Act 1997* (POEO Act) public register to identify properties where Environment Protection License activities are conducted or have been conducted, and/or properties that have been issued penalty notices regarding breaches of the POEO Act (NSW EPA, 2025c).

- Conducted an inspection of the Study Area to identify any obvious potential sources of significant subsurface contamination.
- Developed a conceptual site model of the Study Area considering pre-development and post development land use scenarios to assess whether the Landscape Revegetation Zones increase risks to human health and the environment.
- Prepared this report presenting and summarising the findings of the PSI. Given the nature of the proposed revegetation works and extent of the Study Area, the PSI has been informed by the NSW EPA (2020) *Consultants Reporting on Contaminated Land – Contaminated Land Guidelines*, and it is considered that the overarching principles of contaminated land assessment have been followed. That is, to identify sources, receptors and pathways and establish whether any situations exist that pose an unacceptable risk to human health or the environment.

ES4 – Study Area

The Study Area comprises the Landscape Revegetation Zones totalling approximately 23.8km².

There are three proposed Landscape Revegetation Zones situated proximal to the mine site component of the Project. Zone 1 is situated approximately 4km east of the mine site component of the Project. Zone 2 is situated approximately 5km south east of the mine site component of the Project and Zone 3 is situated approximately 12km south west of the mine site component of the Project.

The Study Area comprises areas of previously cleared agricultural land that has been used for cropping and/or livestock grazing. The zones are irregular in shape as they have been selected to exclude:

- parts of agricultural properties in which homesteads are located;
- areas that are already occupied by native vegetation;
- existing easements for overhead power lines;
- existing reserves for roads or travelling stock routes; and
- buffers along some major drainage lines.

Land within the Study Area is within the Narrabri Shire Council local government area and is zoned “RU1 – Primary Production”.

ES5 - Conclusion

Potential sources of contamination identified within the Study Area are:

- Potential application of pesticides, herbicides and/or fertilisers at broad scale across the Study Area as part of previous cropping or pastoral activities.
- Aboveground Storage Tanks were identified at two locations within Zone 1 and may have previously been used to store petroleum hydrocarbons.
- Two existing cattle yards within Zone 2 of the Study Area in which livestock may have been treated with pesticides.

- Two areas of gully filling within Zone 2 of the Study Area including one area where asbestos containing materials (ACMs) were identified (the volume and extent of gully fill observed to contain ACMs is relatively small).

The findings of the PSI indicate that the Study Area is suitable for the proposed Landscape Revegetation Zone works subject to the following remediation actions:

- It is recommended that the ACM fill is removed from the site and disposed at an appropriately licensed waste facility for ACM. The works should be overseen, documented and validated by a duly qualified person.
- As the identified small area of gully filling in the northern portion of Zone 2 was not inspected, it is recommended that this area be inspected, and, if required, the fill is removed from site and disposed appropriately at a licensed waste facility. If the fill is observed to potentially include chemical contaminants it may need to be sampled, analysed and classified in accordance with the NSW EPA (2014) *Waste Classification Guidelines*. The works should be overseen, documented and validated by a duly qualified person.

At the conceptual level, other identified potential sources of contamination identified by the PSI would not render the Study Area unsuitable for the proposed development. The proposed development involves minimal earthworks and therefore would not exacerbate any existing contamination. There would be limited opportunity for human contact with soil and once vegetation is established and self-supporting. Potential for dust generation and erosion would also be reduced substantially once vegetation cover is established.

Ground Doctor recommends that appropriate health and safety controls are implemented during the proposed Landscape Revegetation Zone works to mitigate risks posed by any contaminations related to former agricultural use of the Study Area.

An unexpected finds protocol should be implemented during the revegetation works which outlined a procedure for addressing unforeseen ground conditions if encountered during the proposed development.

1 Introduction

The Maules Creek Coal Mine (MCCM) is an open cut coal mine located approximately 17 kilometres (km) north-east of Boggabri, New South Wales (NSW) (*Figure 1 of Annexure A*). MCCM is a joint venture between Aston Coal 2 Pty Ltd (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75 percent [%]), ICRA MC Pty Ltd (a wholly owned subsidiary of Itochu Corporation) (15%) and J-Power Australia Pty Ltd (a wholly owned subsidiary of Electric Power Development Co. Ltd) (10%). MCCM is operated by Maules Creek Coal Pty Ltd (MCC).

Mining operations at MCCM are currently approved until 31 December 2034 with a coal extraction rate of up to 13 million tonnes per annum in accordance with Project Approval (PA) 10_0138 (as modified). The existing MCCM comprises a single open cut pit, Northern Emplacement and Southern Emplacement areas, and Mine Infrastructure Area (MIA). The MIA includes the Coal Handling and Preparation Plant, run-of-mine coal stockpiles, product coal stockpiles, train load-out infrastructure, workshops and administration buildings, hardstand and laydown areas, car parking, wash bays, and other associated infrastructure.

Development Consent for the Maules Creek Continuation Project (the Project) is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project includes:

- continuation of open cut mining operations within the MCCM mining and exploration tenements for a further 10 years (from 2035 to 2044);
- establishment of Landscape Revegetation Zones; and
- construction and operation of a water transfer pipeline between the MCCM water pipeline network and the approved Vickery Coal Mine (VCM) to Tarrawonga Coal Mine (TCM) pipeline network.

A detailed description of the Project is provided in Section 3 of the Environmental Impact Statement (EIS). The proposed general arrangement of the Project is shown in *Figure 2 of Annexure A*.

Ground Doctor Pty Ltd (Ground Doctor) was engaged by MCC to conduct a Preliminary Site Investigation (PSI) for the Project in accordance with the NSW *State Environmental Planning Policy (Resilience and Hazards) 2021* (the Resilience and Hazards SEPP). The PSI will form part of the EIS for the Project.

This PSI assesses the Landscape Revegetation Zone components of the Project. Separate PSIs have been prepared to assess potential land contamination within the mine site and water transfer pipeline associated with the Project.

1.1 The Study Area

The Study Area subject of this assessment comprises the Landscape Revegetation Zones proposed as a part of the Project. The proposed Landscape Revegetation Zones are shown relative to the regional setting in *Figure 1 of Annexure A*.

There are three proposed Landscape Revegetation Zones situated proximal to the mine site component of the Project. Zone 1 is situated approximately 4km east of the mine site component of the Project. Zone 2 is situated approximately 5km south east of the mine site component of the Project and Zone 3 is situated approximately 12km south west of the mine site component of the Project.

The extent of Landscape Revegetation Zone 1 (i.e. Zone 1) is shown in *Figure 3 of Annexure A*. The extent of Landscape Revegetation Zone 2 (i.e. Zone 2) is shown in *Figure 4 of Annexure A*. The extent of Landscape Revegetation Zone 3 (i.e. Zone 3) is shown in *Figure 5 of Annexure A*.

The Study Area is described in more detail in *Section 2*.

1.2 PSI Objectives

The Resilience and Hazards SEPP stipulates that a consent authority must consider the contamination status of land prior to issuing consent.

Section 4.6 of the Resilience and Hazards SEPP states:

4.6 Contamination and remediation to be considered in determining development application.

- (1) A consent authority must not consent to the carrying out of any development on land unless—*
 - (a) it has considered whether the land is contaminated, and*
 - (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
 - (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*
- (2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subsection (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.*
- (3) The applicant for development consent must carry out the investigation required by subsection (2) and must provide a report on it to the consent authority. The consent authority may require the applicant to carry out, and provide a report on, a detailed investigation (as referred to in the contaminated land planning guidelines) if it considers that the findings of the preliminary investigation warrant such an investigation.*
- (4) The land concerned is—*
 - (a) land that is within an investigation area,*
 - (b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,*
 - (c) to the extent to which it is proposed to carry out development on it for residential, educational, recreational or childcare purposes, or for the purposes of a hospital—land—*
 - (i) in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and*
 - (ii) on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge).*

The primary objective of the PSI was to assess whether land within the Study Area was suitable for the proposed revegetation works, with respect to land contamination, consistent with the requirements of the Resilience and Hazards SEPP.

More specifically, the objectives of this PSI were to:

- identify past and present land uses within the Study Area and within adjoining land;
- identify potential sources of land contamination associated with past or present uses of the Study Area and associated potential contaminants of concern;
- assess the Study Area setting, and subsurface conditions at the site and the surrounding environment to identify potential human health and environmental receptors and potential exposure pathways; and
- use the previously mentioned information to assess the suitability of the Study Area for the proposed revegetation works, or recommend remediation works or appropriate environmental controls where an identified source of contamination may pose an unacceptable risk to human health or the environment.

1.3 Scope of Work

Ground Doctor completed the following work as part of the PSI:

- Reviewed aerial photography of the Study Area published by NSW Government (2025) and Google Earth (2025) to identify past and present land use and identify activities that have potential to cause land contamination.
- Reviewed the NSW Environment Protection Agency (EPA) list of contaminated land notified under section 60 of the *Contaminated Land Management Act 1997* to identify land in which potentially significant contamination has previously been documented (NSW EPA, 2025a).
- Reviewed the NSW EPA record of notices where land has been declared 'significantly contaminated' and regulated under the *Contaminated Land Management Act 1997* (NSW EPA, 2025b).
- Reviewed the NSW *Protection of the Environment Operations Act 1997* (POEO Act) public register to identify properties where Environment Protection License activities are conducted or have been conducted, and/or properties that have been issued penalty notices regarding breaches of the POEO Act (NSW EPA, 2025c).
- Conducted an inspection of the Study Area to identify any obvious potential sources of significant surface and subsurface contamination.
- Developed a conceptual site model of the Study Area considering pre-development and post development land use scenarios to assess whether the proposed revegetation works increase risks to human health and the environment.
- Prepared this report presenting and summarising the findings of the PSI. Given the nature of the proposed revegetation works and extent of the Study Area, the PSI has been informed by the NSW EPA (2020) *Consultants Reporting on Contaminated Land – Contaminated Land Guidelines*, and it is considered that the overarching principles of contaminated land assessment have been followed. That is, to identify sources, receptors and pathways and establish whether any situations exist that pose an unacceptable risk to human health or the environment.

1.4 Limitations of this Report

The findings of this report are based on the Scope of Work outlined in *Section 1.3*. Ground Doctor performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental consulting profession. No warranties, expressed or implied are made.

Some areas of the Study Area were not available for on-ground inspection. Ground Doctor used aerial imagery to assess inaccessible parts of the Study Area and has made some general assumptions about the likely nature and use of the farm-related infrastructure identified in photography. It is possible that this PSI has not identified all potential areas of concern. A recommendation of this PSI is that an unexpected finds protocol be adopted prior to commencement of on-ground works that form part of the revegetation works.

All conclusions and recommendations regarding the Study Area are the professional opinions of Ground Doctor personnel involved with the assessment, subject to the qualifications made above. While normal assessments of data reliability have been made, Ground Doctor assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Ground Doctor, or developments resulting from situations outside the scope of this assessment.

This report, including the data, findings and conclusions contained within it, remains the intellectual property of Ground Doctor. A licence to use the report for the specific purpose identified is granted to MCC. Ground Doctor accepts no liability for use or interpretation by any person or body other than MCC. This report should not be reproduced without prior approval by MCC. The report should not be amended in any way without prior approval by Ground Doctor. The report should not be relied upon by other parties, who should make their own enquiries.

2 Study Area Description

The proposed Landscape Revegetation Zones exist within three zones shown in *Figure 1* of *Annexure A*.

The proposed Landscape Revegetation Zones generally comprise areas of previously cleared agricultural land that has been used for cropping and/or livestock grazing. The zones are irregular in shape as they have been selected to exclude:

- parts of agricultural properties in which homesteads are located;
- areas that are already occupied by native vegetation;
- existing easements for overhead power lines;
- existing reserves for roads or travelling stock routes; and
- buffers along some major drainage lines.

The zones are described in more detail in the following sections.

2.1 Property Identifiers

2.1.1 Zone 1

Zone 1 is situated approximately 4km east of the mine site component of the Project and covers an area of approximately 8.5km². The extent of Zone 1 is shown in *Figure 3* of *Annexure A*.

Zone 1 covers land within two property addresses. The majority of the Zone 1 is within a property referred to as “Oakleigh” and a small portion of Zone 1 is located within a property referred to as “Thornfield”. Street addresses and lot identifiers for land within Zone 1 is summarised in *Table 1*.

Table 1: Zone 1 Study Area Details

| Detail | Description |
|--|--|
| Addresses and Cadastral Identifiers: (Source: NSW Spatial Information Exchange, 2025) | Part of “Oakleigh”, 139 Upper Maules Creek Road, Maules Creek, NSW 2382 Comprising part or all of: Lot 37 DP 754924 Lot 38 DP 754924 Lot 51 DP 754924 Lot 50 DP 754924 Lot 80 DP 754924 Lot 81 DP 754924 Lot 82 DP 754924 Lot 83 DP 754924 Lot 84 DP 754924 Lot 97 DP 754924 Lot 10 DP 754927 Lot 11 DP 754927 Lot 16 DP 754927 Lot 13 DP 1192663 Lot 15 DP 1192663 Lot 121 DP 808273 Part of “Thornfield”, 97 Thornfield Crossing Road, Maules Creek, NSW 2382 Comprising: Part of Lot 121 DP808273 |
| Area: | Approximately 8.5km ² |
| Local Government Areas: | Narrabri Shire Council |
| Narrabri LEP Zoning: | RU1 – Primary Production |

Zone 1 is located within Narrabri Shire Council Local Government Area (LGA). The *Narrabri Local Environment Plan 2012* (Narrabri LEP) indicates that land within Zone 1 is zoned “RU1 – Primary Production”.

2.1.2 Zone 2

Zone 2 is situated approximately 5km south east of the mine site component of the Project and has a total area of approximately 7.7km². The extent of Zone 2 is shown in *Figure 4 of Annexure A*.

Zone 2 includes land that forms part of four property addresses. Street addresses and lot identifiers for land within Zone 2 are summarised in *Table 2*.

Table 2: Zone 2 Study Area Details

| Detail | Description |
|--|---|
| Addresses and Cadastral Identifiers: (Source: NSW Spatial Information Exchange, 2025) | <p>Part of 1006 Goonbri Road, Boggabri, NSW 2382</p> <p>Comprising part or all of:</p> <p>Lot 86 DP 754953 Lot 88 DP 754953 Lot 1 DP 1192663 Lot 2 DP 1192663 Lot 5 DP 1192663 Lot 6 DP 1192663 Lot 18 DP 754927 Lot 1 DP 1255368</p> <p>Part of 103-105 Dripping Rock Road, Boggabri, NSW 2382</p> <p>Comprising part or all of:</p> <p>Lot 39 DP 754953 Lot 67 DP 754953 Lot 68 DP 754953 Lot 80 DP 754953 Lot 81 DP 754953 Lot 29 DP 1192663 Lot 16 DP 1182291</p> <p>Part of 94 Dripping Rock Road, Boggabri, NSW 2382</p> <p>Comprising part of:</p> <p>Lot 18 DP 754953 Lot 33 DP 754953</p> <p>Part of 386 Leards Forest Road, Boggabri, NSW 2382</p> <p>Comprising part of:</p> <p>Lot 83 DP 754953</p> |
| Area: | Approximately 7.7km ² |
| Local Government Areas: | Narrabri Shire Council |
| Narrabri LEP Zoning: | RU1 – Primary Production |

Zone 2 is located within Narrabri Shire Council LGA. The Narrabri LEP indicates that land within Zone 1 is zoned “RU1 – Primary Production”.

2.1.3 Zone 3

Zone 3 is situated approximately 12km south of the mine site component of the Project and has a total area of approximately 7.6km². The extent of Zone 3 is shown in *Figure 5 of Annexure A*.

Zone 3 includes land that forms part of four property addresses. Street addresses and lot identifiers for land within Zone 3 are summarised in *Table 3*.

Table 3: Zone 3 Property Details

| Detail | Description |
|--|--|
| Addresses and Cadastral Identifiers: (Source: NSW Spatial Information Exchange, 2025) | <p>Part of 559-5603 Rangari Road, Boggabri, NSW 2382 Comprising part of: Lot 1 DP 1015921</p> <p>Part of 5747 Rangari Road, Boggabri, NSW 2382 Comprising part or all of: Lot 1 DP 1131282 Lot 2 DP 1131282 Lot 120 DP754926</p> <p>Part of 5405 Rangari Road, Boggabri, NSW 2382 Comprising part or all of: Lot 2 DP 1015921 Lot 31 DP 754953 Lot 43 DP 754953</p> <p>Part of 5171 Rangari Road, Boggabri, NSW 2382 Comprising part or all of: Lot 23 DP 754953 Lot 24 DP 754953 Lot 27 DP 754953 Lot 37 DP 754953 Lot 60 DP 754953</p> |
| Area: | Approximately 7.6km ² |
| Local Government Areas: | Narrabri Shire Council |
| Narrabri LEP Zoning: | RU1 – Primary Production |

Zone 3 is located within Narrabri Shire Council LGA. The Narrabri LEP indicates that land within Zone 1 is zoned “RU1 – Primary Production”.

2.2 Land Use and Ownership

The Study Area is located on land owned and managed by Whitehaven. At the time of this assessment the land within the Study Area was used for livestock grazing and dryland cropping.

2.3 Topography

2.3.1 Zone 1

Surface topography within Zone 1 is shown in *Figure 6* of *Annexure A*.

Zone 1 is located within the Maules Creek catchment. Maules Creek is situated approximately 500m to the north of the northern extent of Zone 1. Maules Creek has a surface elevation of approximately 310m Australian Height Datum (AHD) at this location.

There is a general regional gradient from south east to north west. The most elevated part of Zone 1 is situated at the southern end where the surface elevation is approximately 400m AHD. The lowest part of Zone 1 occurs in the north west corner where the surface elevation is approximately 315m AHD.

The land surface within Zone 1 is relatively flat in northern parts and gently undulating in the southern parts.

The majority of Zone 1 drains in a north westerly direction towards Maules Creek in minor unnamed drainage lines. The south west corner of Zone 1 drains in a westerly direction to Back Creek, which flows in a westerly direction before flowing into Maules Creek approximately 16km west of Zone 1.

2.3.2 Zone 2

Surface topography within Zone 2 is shown in *Figure 7 of Annexure A*.

Zone 2 is situated on the middle to lower northern, western and southern slopes of Goonbri Mountain. The highest parts of Zone 2 occur on the mid-slopes of Goonbri Mountain at an elevation of approximately 360m AHD. The lowest part of Zone 2 is the south west corner, where the surface elevation is approximately 280m AHD alongside Goonbri Creek.

Surface gradient in elevated parts of Zone 2 on the mid-slopes of Goonbri Mountain are approximately 15% whilst land in the south western corner close to Goonbri Creek and Bollol Creek is relatively flat.

The western boundaries of Zone 2 generally follow Goonbri Creek which flows in a north to south direction.

Land within the south east portion of Zone 2 drain in a southerly direction toward Bollol Creek. Bollol Creek is situated approximately 0-500m south of Zone 2 boundaries (i.e. Bollol Creek borders the southern Zone 2 boundary in some areas). Bollol Creek flows in a general west to easterly direction in areas close to Zone 2. Bollol Creek flows into Barber's Lagoon approximately 9 km south west of Zone 2. Barber's Lagoon is an anabranch of Namoi River.

2.3.3 Zone 3

Surface topography within Zone 3 is shown in *Figure 8 of Annexure A*.

Zone 3 spans an area of relatively flat plains. The highest part of Zone 3 occurs at the eastern boundary where the surface elevation is approximately 285m AHD. The lowest part of Zone 3 occurs at the western boundary where the surface elevation is approximately 255m AHD. There is an average regional gradient of approximately 0.5% from north east to south west across Zone 3.

Zone 3 is crossed by several poorly defined drainage lines which generally flow north to south and discharge into Driggle Draggie Creek. Driggle Draggie Creek is situated to the south of Zone 3 and flows in a general west south westerly direction, Driggle Draggie Creek flows into Barber's Lagoon (an anabranch of Namoi River) approximately 4km south of the south western corner of Zone 3.

2.4 Geology

Figure 9 of Annexure A shows the Study Area marked over an extract of the interpreted surface geology published in the "Manilla 1:250,000 Geological Series Sheet SH 56-9" (Chesnut et.al., 1973).

2.4.1 Zone 1

Zone 1 straddles the Hunter-Mooki Fault which runs in an approximate north north west to south south east direction. Parts of Zone 1 on the western side of the fault are underlain by the "Vickery Formation". The Vickery Formation is described as "polymictic conglomerate, shale, labile sandstone" (Chesnut et.al., 1973).

Parts of Zone 1 on the eastern side of the fault are underlain by the "Lark Hill Formation". The Lark Hill Formation is described as "sandstones, conglomerates and pyroclastics" (Chesnut et.al., 1973).

Quaternary alluvium associated with Maules Creek covers the basement geology in the northern portion of Zone 1.

2.4.2 Zone 2

Zone 2 is located on the western side of the Hunter-Mooki Fault and is underlain by the “Vickery Formation”. The Vickery Formation is obscured by quaternary alluvium in lower lying areas in the south west portion of Zone 2. The quaternary alluvium is associated with Goonbri Creek and Bollol Creek.

2.4.3 Zone 3

Zone 3 is situated on the western side of the Hunter-Mooki Fault. The majority of Zone 3 is situated over the Vickery Formation, which is mostly obscured by quaternary alluvium associated with Driggle Draggie Creek and Bollol Creek.

The “Manilla 1:250,000 Geological Series Sheet SH 56-9” (Chesnut et.al., 1973) indicates that quaternary alluvium at the western end of Zone 3 is likely obscuring “Boggabri Volcanics”. “Boggabri Volcanics” are described as “rhyolite, rhyolite tuff and rhyodacite”.

2.5 Hydrogeology

The hydrogeological regime proximal to the Study Area consists of the following hydrostratigraphic units (Whitehaven, 2023).

- Quaternary alluvium associated with river and creek flood plains that form productive aquifer systems, typically in deeper and coarser grained sediments.
- Weathered bedrock (regolith) that is generally unsaturated but acts as a temporary water store and pathway during sustained wet periods;
- Permian conglomerate/sandstone/siltstone/shale interburden that act as an aquitard;
- Permian coal seams of the Maules Creek Formation that form a low yielding aquifer; and
- Permian Boggabri Volcanics that typically acts as an aquiclude/aquitard.

Ground Doctor reviewed registered groundwater works records available on the WaterNSW online database (WaterNSW, 2025) for works located within a 500m buffer of the Study Area. The results of the search within each revegetation zone are outlined in the following sections.

2.5.1 Zone 1

A map of registered groundwater works identified within the search area around Zone 1 is presented as *Figure 10* of *Annexure A*.

Two registered groundwater works were identified within Zone 1 and an additional three groundwater works were identified within 500m of Zone 1. Groundwater works details for Zone 1 are summarised in *Table 4*.

Table 4: Summary of Registered Groundwater Works within 500m of Zone 1

| Work ID | Registered Use | Bore Depth (m) | Yield (L/s) | SWL (mbgl) | Water Bearing Zones | Distance from Study Area |
|----------|-----------------------------|----------------|-------------|------------|--|--------------------------|
| GW000583 | Stock and Domestic | 98.7 | 0.8 | 31.1 | 36-37m Sandstone 96-97m Sandstone | Inside |
| GW08255 | Stock (Abandoned) | 91.4 | - | - | - | Inside |
| GW03496 | Stock | 172.8 | 0.4 | 61.6 | 90-91m Sandstone 139-140m Shale 146-147m Sandstone 172-173m Shale | <500m |
| GW060306 | Stock, Domestic, Irrigation | 12.2 | - | - | - | <500m |
| GW062785 | Stock and Domestic | 12.2 | - | - | - | <500m |

The work summary forms of the identified registered groundwater works indicate existing groundwater uses include stock, domestic and irrigation. Three works identified in the central and southern parts of Zone 1 were more than 90m deep and intersected groundwater in sandstone and shale (where recorded). Drillers logs are not provided for GW060306 and GW062785 however the relatively shallow depth (less than 13m) suggests that these works intersected groundwater in alluvium associated with Maules Creek.

2.5.2 Zone 2

A map of registered groundwater works identified within the search area around Zone 2 is presented as *Figure 11 of Annexure A*.

Six registered groundwater works were identified within Zone 2 and an additional nine groundwater works were identified within 500m of Zone 2. Groundwater works details for Zone 1 are summarised in *Table 5*.

Table 5: Summary of Registered Groundwater Works within 500m of Zone 2

| Work ID | Registered Use | Bore Depth (m) | Yield (L/s) | SWL (mbgl) | Water Bearing Zones | Distance from Study Area |
|----------|--------------------|----------------|-------------|------------|--|--------------------------|
| GW000963 | Stock and Domestic | 40.6 | 0.7 | 28.0 | - | Inside |
| GW002506 | Stock | 33.5 | - | 10.10 | 22-23m Sandstone 32-24m "Rock" | Inside |
| GW006013 | Stock | 103.6 | 0.3 | 79.2 | 30-31m Clay Gravel 100-104m Shale / Coal | Inside |
| GW967883 | Monitoring | 105m | - | 102 | 102-105m Coal | Inside |
| GW970207 | Monitoring | 34.0 | 0.4 | 10.0 | 19-29m Gravel and Clay | Inside |
| GW970702 | Monitoring | 279.1 | - | - | - | Inside |
| GW002523 | Stock | 38.4 | 0.3 | 20.7 | 37-38m "Rock" | <500m |
| GW017148 | Irrigation | 21.3 | 1.3 | 9.4 | 10-13m Gravel | <500m |
| GW029832 | Stock | 66.8 | 0.2 | 30.5 | 34-36m Coal 65-67m Coal | <500m |
| GW032929 | Stock and Domestic | 42.7 | - | 6.1 | - | <500m |
| GW044997 | Stock and Domestic | 45.7 | - | 4.6 | 6-7m Clay 12-14m Clay / Gravel 24-25m Gravel | <500m |
| GW048934 | Stock and Domestic | 49.4 | 1.5 | - | 45-50m Sandstone / Conglomerate | <500m |
| GW969818 | Monitoring | 30.0 | 0.5 | - | - | <500m |
| GW969819 | Monitoring | 45.0 | - | - | - | <500m |
| GW969820 | Monitoring | 60.0 | 0.2 | - | 51-54m Coal | <500m |

2.5.3 Zone 3

A map of registered groundwater works identified within the search area around Zone 3 is presented as *Figure 12 of Annexure A*.

Two registered groundwater works were identified within Zone 3 and an additional nine groundwater works were identified within 500m of Zone 3. Groundwater works details for Zone 3 are summarised in *Table 6*.

Table 6: Summary of Registered Groundwater Works within 500m of Zone 3

| Work ID | Registered Use | Bore Depth (m) | Yield (L/s) | SWL (mbgl) | Water Bearing Zones | Distance from Study Area |
|----------|----------------|----------------|-------------|------------|--|--------------------------|
| GW003106 | Not Known | 85.3 | 0.6 | 36.6 | 51-52m Gravel 78-85m Shale / Coal | Inside |
| GW043704 | Stock | 30.6 | - | - | - | Inside |
| GW001735 | Stock | 44.8 | - | 33.5 | 33-34m Sand / Gravel 42-43m Sand / Gravel | <500m |
| GW001739 | Stock | 39.9 | 0.5 | 30.5 | 36-37m Sand | <500m |
| GW003083 | Not Known | 100.0 | 0.7 | 20.1 | 30-31m Gravel 93-99m Shale / Coal | <500m |
| GW032103 | Stock | 42.4 | - | - | - | <500m |
| GW032104 | Stock | 54.6 | - | - | - | <500m |
| GW032236 | Stock | 14.0 | - | - | - | <500m |
| GW038978 | Stock | 29.6 | - | - | - | <500m |
| GW043705 | Stock | 39.6 | - | - | - | <500m |
| GW038979 | Domestic | 51.2 | - | - | - | <500m |

The work summary forms of the identified registered groundwater works indicate existing groundwater use for stock water and domestic use. Recorded bore depths ranged from 14.0m to 100.0m below ground level.

Drillers logs for the groundwater works (where provided) indicate that existing groundwater works intersect groundwater in alluvium in the upper 50m of the subsurface and/or in underlying sedimentary bedrock including coal seams.

2.6 Acid Sulphate Soils

Acid sulphate soils risk mapping indicates that the nearest site with a high probability of occurrence of acid sulphate soil is more than 50km from the Study Area (Department of Planning, Industry and Environment, 1998). As such, acid sulphate soils are not considered further in this PSI.

2.7 Naturally Occurring Asbestos

Ground Doctor reviewed publicly available NSW government mapping of Naturally Occurring Asbestos in the vicinity of the site (NSW Resource and Geosciences, 2025). The Study Area is not within a naturally occurring asbestos risk area.

The nearest risk area for naturally occurring asbestos is approximately 45km east of the Study Area. The mapped risk area corresponds to the occurrence of serpentinite and other ultrabasic volcanic geology along the Peel Fault, which runs in a north-northwest to south-south easterly direction between Bingara, Barraba and Manilla.

3 Description of the Proposed Development

3.1 Project Description

MCC is seeking approval to continue open cut mining operations within the MCCM tenements for a further 10 years (from 2035 to 2044). Development Consent for the Project is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the EP&A Act.

A detailed description of the Project is provided in Section 3 of the EIS.

3.2 Landscape Revegetation Zones

The Landscape Revegetation Zones are proposed as part of the Project to:

- provide a larger area of native vegetation cover than currently exists in the local region of Leard State Forest;
- complement the existing Leard Forest Regional Biodiversity Strategy, by expanding habitat adjacent to Leard State Forest and restoring linkages between remnant woodland /existing conserved areas; and
- provide a larger benefit (net gain¹) compared to offsetting alone (i.e. it would be additional/in excess to standard biodiversity offset/credit requirements).

A key aspect to the initiative is anticipated to be that MCC would plant approximately 500 to 800 ha of trees in the planting season per year for the first three to five years of the Project, upon its approval and commencement. This initiative would establish approximately 2,300 ha of revegetation within approximately three to five years of approval of the Project.

A complete description of the Landscape Revegetation Zones is provided in Section 3.2 of the Project EIS.

3.3 Post Development Land Use

Once vegetation is established (i.e. once woodland has reached maturity), some grazing within the Landscape Revegetation Zones would be possible. Access to the Landscape revegetation zones would therefore be limited to ongoing monitoring and maintenance activities, and any agricultural management actions required for proposed future grazing activities.

Monitoring would be undertaken to track changes in vegetation and habitat in response to management measures. which may include control of weeds or pest fauna.

Annual revegetation assessments would be undertaken to determine what and where any active maintenance revegetation is required (i.e. maintenance revegetation, ecological burns, weed and pest animal control).

Use of land for grazing would be of a similar intensity to existing agricultural operations in the region, with respect to soil disturbance, potential human interaction with soil and potential for soil to interact with the environment.

¹ The NSW Biodiversity Offset Scheme sets a standard of no net loss.

4 Potential Areas of Environmental Concern

Ground Doctor assessed the Study Area for potential sources of land contamination using the following sources of information:

- A search of NSW EPA databases relevant to a contaminated land assessment (NSW EPA, 2025a; 2025b; and 2025c). These include registers of properties where contamination has been reported based on the “Duty to Report Contamination” provisions of the *Contaminated Land Management Act 1997* and lists of sites where contamination has been regulated by the NSW EPA using its powers under the *Contaminated Land Management Act 1997*. Ground Doctor also searched the NSW EPA database for lists of properties that hold or have held licenses required by the POEO Act, or that undertake activities that are regulated by the NSW EPA.
- A review of recent aerial photography of the Study Area for land uses or activities that have potential to contaminate land. Ground Doctor conducted an initial review of aerial photography prior to inspecting the Study Area. A final review of aerial photography was conducted at the time of reporting. Ground Doctor reviewed NSW Government aerial photography published on the spatial information exchange website (NSW Government, 2025). Photographs presented on the spatial information exchange were taken in 2011. Aerial imagery published on Google Earth (30 January 2025) were also used to assess recent history of the Study Area.
- An inspection of accessible parts of the Study Area to identify potential areas of environmental concern, to ground truth aerial imagery and collect more information on potential areas of concern identified in the aerial imagery review.

Results of the assessment are outlined in the following sub-sections of this report.

4.1 NSW EPA Notified Contaminated Sites

Ground Doctor conducted a search of the NSW EPA list of sites notified under section 60 of the *Contaminated Land Management Act 1997*. The search was conducted on 30 January 2025. The list published on the NSW EPA website at the time of the review was last updated on 20 January 2025.

There were no notified sites located within 25km of any parts of the Study Area.

4.2 NSW EPA Licenced Activities

Ground Doctor conducted a search of the NSW EPA list of activities licensed under the POEO Act. The search was conducted on 30 January 2025. The list of all licensed activities was downloaded and sorted to display only those activities within the Narrabri Shire Council LGA.

Licensed activities were identified in the vicinity of the Study Area including MCCM, VCM, Boggabri Coal Mine and TCM. The specific licensed activities included “mining for coal”, “coal works” and “crushing, grinding and separating”. Aerial photography indicated that activities licensed under the POEO Act were not located within the Study Area. The TCM open cut was situated approximately 150m from the south west corner of Zone 2 of the Study Area at its closest point.

4.3 NSW EPA Regulated Sites

Ground Doctor conducted a search of the NSW EPA list of premises that are not required to be licensed under the *Protection of the Environment Operations Act 1997* but are still regulated by the NSW EPA. The search was conducted on 30 January 2025. The list of all licensed activities was downloaded and sorted to display only those activities within the Narrabri Shire Council LGA. There were only two properties identified in the database and those were located more than 30km from the Study Area.

4.4 Aerial Photo Review and On-ground Inspection

The following sections provide a review of aerial photography and observations of the Study Area during on-ground inspections conducted on 14 and 15 November 2024.

4.4.1 Zone 1

Figure 13 and 14 of Annexure A show recent aerial photography of the northern and southern parts of Zone 1, respectively. Zone 1 was inspected by Ground Doctor personnel on 14 November 2024.

Figure 15 of Annexure A shows the locations of points of interest noted during the Study Area inspection. Ground Doctor made the following observations of Zone 1.

- Land within Zone 1 appeared to be previously cleared agricultural land. There was evidence of previous dryland cropping across most parts of Zone 1.
- There was evidence of previous earthworks within Zone 1 that included contour banking, drainage, establishment of farm dams and associated drainage and overflows and establishment of unsealed access tracks.
- A steel above ground storage tank (AST) was identified in an open paddock in the north west corner of Zone 1. The AST appeared to be a former fuel storage. It was a capacity of approximately 2000L. At the time of the inspection the tank had a large opening at the top. The tank did not contain fuel and there was no apparent petroleum hydrocarbon odour from the tank opening. The tank appeared to have been modified to store water for livestock. There was no discoloured or odorous soil around the AST.
- Paddock fencing was present throughout Zone 1.
- There was a fenced area marked as an “environmentally sensitive area” in the central part of Zone 1.
- Portable livestock feeder bins were identified in several locations around Zone 1 and are visible in the aerial photo of Zone 1.
- A pile of milled timber was identified in the north east part of Zone 1. The timber appeared to have been local timber that had been milled on-site. The timber did not appear to be treated.
- A flat bed truck was parked along the main access track in the central northern portion of Zone 1.
- Abandoned farm machinery was identified along boundary fences in two locations in the central southern portion of Zone 1. This included a small tractor and a cereal header.
- A relatively small waste pile was identified along the northern boundary of the southern part of Zone 1. The waste pile included timber fence posts, wire and some empty metal drums.

- Pig traps were identified along the south western boundary of Zone 1 at the time of the inspection.
- A former homestead was located in a central position within southern Zone 1. The homestead area included a ruin of a former dwelling. Land occupied by the ruin is excluded from Zone 1. The ruined building was constructed of timber and corrugated metal sheeting. Ground Doctor did not identify any potential asbestos containing materials (ACMs) in or around the ruin.
- Two metal clad sheds were identified to the south of the timber ruin. One of the sheds was open sided and appeared to be a stockfeed storage. One of the sheds was enclosed and was likely to have formerly been used as a machinery or equipment store.
- A trailer was parked near the metal sheds. The trailer featured a steel AST that appeared to be used to store and cart diesel for on-farm operations. It was also possible that the tank was used to store water for firefighting purposes. There was no evidence of soil contamination in soil beneath the trailer.
- Two white silage bags were present close to the sheds were likely filled with grain from recent harvest within Zone 1.
- Bailed hay was present in some parts of Zone 1 at the time of the inspection and is visible in parts of Zone 1 in aerial photos of the Study Area.
- Above ground electricity wires were present in the area but the observed powerlines appear to be excluded from Zone 1.
- Ground Doctor did not identify any evidence of waste burial within Zone 1.
- Ground Doctor did not identify livestock yards or livestock treatment pens such as crush, shower or plunge dip.

4.4.2 Zone 2

Figure 16 and 17 of Annexure A show recent aerial photography of the northern and southern parts of Zone 2, respectively. Zone 2 was inspected by Ground Doctor personnel on 14 November 2024.

Figure 18 of Annexure A shows the locations of points of interest noted during the Study Area inspection or during review of aerial photography. Ground Doctor made the following observations of Zone 2.

- Land within Zone 1 appeared to be previously cleared agricultural land. There was evidence of previous dryland cropping across most parts of Zone 2 and part of Zone 2 was under crop at the time of inspection.
- There was evidence of previous earthworks within Zone 2 that included contour banking, drainage, establishment of farm dams and associated drainage and overflows and establishment of unsealed access tracks.
- Zone 2 spanned areas surrounding three homesteads. The boundaries of Zone 2 were located to exclude the homesteads from Zone 2. This means that Zone 2 was free of built infrastructure typical of homesteads such as dwellings, machinery sheds, workshops, laydown areas, bulk fuel storages and farm chemical storage areas.
- Paddock fencing was present throughout Zone 2.
- There were two fenced areas marked as an “environmentally sensitive area” adjacent to the south west portion of Zone 2.

- Groundwater bores were identified in several locations. Some were equipped with pumps and featured redundant windmills. Some bores were not equipped.
- Livestock water troughs and water tanks were identified in several locations around Zone 2 and are visible in aerial photos of Zone 2.
- A cattle yard and crush were situated in the south west portion of Zone 2 close to Goonbri Road. There were two steel 205L oil drums located adjacent to the crush that appeared empty and may have been used to store water when required. A review of aerial photography published on google earth (<https://earth.google.com>, 4 February 2025) indicates that the cattle yard was not present on 24 June 2022. Therefore, the yard has been present for less than 2.5 years.
- A second set of cattle yards was identified in the northern portion of Zone 2 close to Goonbri Road. These yards appeared to be temporary. The yard is not present in the most recent aerial photography dated 18 May 2023 indicating the yards have existed for less than 2 years.
- Some gully erosion was evident along prominent drainage lines in the mid-slopes of Goonbri Mountain. Fill was identified in one of the eroded gullies in the central southern portion of Zone 2. The fill appeared to have been tipped recently. It was estimated that approximately 2-4 tipper loads of fill was present in the gully. The fill comprised a mix of soil and building and demolition rubble including concrete and brick. Some small pieces of fibre cement sheeting were identified within the fill at the time of the site inspection. The appearance and properties of the identified fibre cement sheeting indicated that it was asbestos containing.
- A second area of gully filling was identified in aerial photography in the northern part of Zone 2. The area of filling is visible in several aerial photographs spanning 2010 to 2024 published on google earth (<https://earth.google.com>, 4 February 2025). This part of Zone 2 could not be accessed at the time of the Study Area inspection so the composition of fill is not known.
- A series of excavations are visible across Zone 2 in aerial photographs dated 13 September 2011. At each location there appears to be two rectangular excavation and piles of excavated material. At one of the locations vehicles are parked adjacent to the excavations. The equipment appears to include a drilling rig and support truck. It is inferred that the excavations visible in the 2011 aerial photograph are drilling sites where open pits have been used to circulate drilling mud. The excavations are backfilled in subsequent aerial photographs and were not apparent at the time of the site inspection.
- An automated weather station was identified in the south west corner of Zone 2. It is inferred that the weather station is utilised by the adjacent TCM.
- Above ground electricity wiring was present in the area but the observed powerlines appear to be excluded from Zone 2.

4.4.3 Zone 3

Figure 19 and 20 of Annexure A show recent aerial photography of Zone 3. Zone 3 was inspected by Ground Doctor personnel on 15 November 2024.

Figure 21 of Annexure A shows the locations of points of interest noted during the Study Area inspection. Ground Doctor made the following observations of Zone 3.

- Land within Zone 3 appeared to be previously cleared agricultural land.
- There was evidence of livestock grazing across most parts of Zone 3. Zone 3 contained paddock fencing, and livestock watering infrastructure including troughs and tanks.
- Most parts of Zone 3 appeared to have been used periodically for dryland cropping. A recently harvested cereal crop had been grown in some parts of Zone 3 at the time of the site inspection.
- Zone 3 was relatively flat. With the exception of several farm dams, there was no evidence of significant earthworks within Zone 3.
- Ground Doctor did not identify any evidence of waste burial within Zone 3.
- Ground Doctor did not identify livestock yards or livestock treatment pens such as crush, shower or plunge dip.
- There were no buildings identified within Zone 3.

4.5 Identified Potential Sources of Contamination

Potential sources of contamination identified within the Study Area are:

- Potential application of pesticides, herbicides and/or fertilisers at broad scale across the Study Area as part of previous cropping or pastoral activities.
- ASTs were identified at two locations within Zone 1 and may have previously been used to store petroleum hydrocarbons.
- Two existing cattle yards within Zone 2 of the Study Area in which livestock may have been treated with pesticides.
- Two areas of gully filling within Zone 2 of the Study Area including one area where ACMs were identified (the volume and extent of gully fill observed to contain ACMs is relatively small).

4.6 Potential Unexpected Finds

4.6.1 Buried Waste

Burial of domestic and farm waste is a common practise in rural areas. Buried waste was identified in one part of the Study Area during the PSI. Ground Doctor did not identify any other obvious waste burial areas in the review of aerial photographs or inspection of the Study Area.

Burial areas would be obvious if encountered during the proposed revegetation works. Potential human health and environmental risks could be managed at the time of works, in accordance with an unexpected finds protocol.

4.6.2 Petroleum Hydrocarbon Storages or Spill Areas

Soil contaminated with petroleum hydrocarbons is easy to identify based on the presence of discolouration and odour. If petroleum hydrocarbon impacted soil is identified along the Study Area, it could be managed appropriately at the time of works, in accordance with an unexpected finds protocol.

4.6.3 Farm Chemical Storages

Ground Doctor did not identify any significant chemical storage areas within the Study Area. Farm chemicals are typically stored in retail sized containers within sheds or designated storages. Risk of significant contamination at these storage areas is low due to the small volumes of chemical stored.

There is potential for mixed chemical (i.e. chemical product added to mix water) to have been stored temporarily in spray rigs or similar storages.

Significant soil contamination should be identifiable by the presence of stained or odorous soil. If impacted soil is identified within the Study Area, it could be managed appropriately at the time of works, in accordance with an unexpected finds protocol.

4.6.4 Asbestos Containing Materials.

Structures made of cemented fibre sheeting that contain asbestos are common across Australia. Ground Doctor did not identify any buildings within the Study Area that included ACMs. ACMs were identified in gully fill in one part of the Study Area.

If asbestos containing material was encountered during construction works, it could be managed in accordance with an unexpected finds protocol.

5 Conceptual Site Model

Potential sources of contamination are considered conceptually within *Table 7*.

The source-pathway-receptor model is used to assess risks to human health and the environment when determining the level of acceptable contamination. For contamination to pose a risk to human health or the environment, there needs to be a source of contamination, a human or environmental receptor, and a pathway via which contaminants can reach the receptor from the source.

Ground Doctor has identified some potential sources of land contamination within the Study Area, as outlined in *Table 7*. With the exception of identified gully fill in two locations, the status of land contamination in these areas has not been assessed and is not known with any certainty. The identified potential sources of land contamination pose a relatively low risk of land contamination. The size of the Study Area and the location of the potential sources relative to boundaries means that the identified issues would not be impacting off-site areas or nearest environmental receptors.

The contamination status of the Study Area (if any contamination exists) would remain unchanged by the proposed Landscape Revegetation Zones. The establishment of the proposed Landscape Revegetation Zones would not involve any activities that would create new sources of land contamination or exacerbate any existing contamination (if present). The proposed revegetation works would involve minimal soil disturbance to prepare the soil for planting. There would be limited potential for soil disturbance activities following the establishment of the Landscape Revegetation Zones (e.g. maintenance and monitoring works, and agricultural management activities). There would be no significant movement of soil as part of the proposed development.

The Landscape Revegetation Zones would see use of the Study Area continue in a manner which is similar to the existing agricultural use in the short term. The Landscape Revegetation Zones would require planting of seedlings and naturing of the plants in the early stages and may require subsequent watering and management of pest flora and fauna.

Over the long term the potential for human contact with soil would reduce. Once vegetation is self-sustaining there would be little if any human interaction with soil in the Study Area.

The risk of raised dust would also decrease within the Study Area as vegetation matures sheltering soil from wind, covering soil with organic matter and binding soil together in root structures.

Table 7: Potential Sources of Contamination Identified in Study Area

| Potential Area of Concern | Contaminants of Concern | Media Affected | Potential Exposure Pathways | Discussion of Issue |
|---|--------------------------------|---|--|--|
| Broadacre cropping has occurred across most of the Study Area. This is likely to have included application of pesticides, herbicides and fertilisers to land within the Study Area. | Pesticides, Herbicides Metals. | <p>Near surface soil is the media most likely to be affected. Chemical used to control weeds and pests and to fertilise crops are typically applied above ground to exposed vegetation or soil.</p> <p>The potential source is diffuse as application of agricultural chemicals typically occurs relatively uniformly across the property.</p> <p>Given the diffuse nature of the source it is unlikely that the identified source would impact groundwater.</p> <p>Contaminants of concern would typically become immobile in or on soil shortly after been applied and therefore would not be expected impact underlying groundwater resources.</p> <p>Ground Doctor did not identify any potential point sources for agricultural chemicals such as chemical storage or mixing areas within the Study Area. These activities were likely to have occurred within homesteads of property, which have been excluded from the Study Area.</p> | <p>Direct contact with soil.</p> <p>Inhalation of dust.</p> <p>Ingestion of soil on grown produce.</p> | <p>The proposed development aims to reestablish native vegetation across the Study Area. There is potential for human exposure to soil via the direct contact and dust inhalation pathways during the proposed revegetation works.</p> <p>These risks of human exposure would be similar to those associated with continued agricultural use of the land (i.e. ploughing and seeding seasonal crops), noting however, that these activities would no longer occur once the revegetation works are undertaken.</p> <p>Once vegetation has been established across the Study Area, soil disturbance would be limited to ongoing maintenance and monitoring works, and agricultural management activities. Risks to human health would decrease as there would be less human presence on the land and no regular direct contact with soil. Establishment of permanent native vegetation would reduce potential for dust generation and minimise potential for future erosion.</p> <p>If significant contamination existed from previous agricultural use of the Study Area the problem would cover a significant land area and could not easily be remediated. The proposed development would be an appropriate way to manage human health risks posed by any broadscale contamination caused by previous agricultural land use, if it existed within the Study Area or in similar surrounding agricultural properties.</p> <p>Based on consideration of the information outlined above the identified source of potential contamination does not make the Study Area unsuitable for the proposed development.</p> <p>Revegetation workers can adopt standard health and safety protocols to minimise potential exposure to soil during revegetation works. This could include wearing long sleeve clothing, pants and gloves when contacting soil and washing hands prior to breaks.</p> |

| Potential Area of Concern | Contaminants of Concern | Media Affected | Potential Exposure Pathways | Discussion of Issue |
|--|---|--|--|---|
| <p>Above Ground Storage Tank located within Zone 1 at:</p> <p>232942 East 6619560 North GDA 2020 Zone 56</p> <p>A mobile trailer containing a 2000L fuel tank and transfer pump was identified at:</p> <p>233970 East 6615967 North GDA 2020 Zone 56</p> | <p>Petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs).</p> | <p>Near surface soil beneath above ground storage tanks and nearby areas where fuel may have been spilled during fuel delivery or dispensing. The depth of potential impacts would be dependent on the nature of any loss. Irregular surface spills have less chance of resulting in significant soil and/or groundwater impacts compared to a prolonged loss at a point source.</p> <p>Prolonged point source losses are unlikely as the tank was situated above ground which would make leaks relatively easy to identify and rectify. Refuelling activity would be infrequent relative to a commercial setting (e.g. a service station).</p> <p>Groundwater impacts would only be likely if point sources were present which had lost fuel for a prolonged period, or where significant loss of containment had occurred.</p> | <p>Direct contact with soil.</p> <p>Inhalation of dust.</p> <p>Ingestion of soil in grown produce.</p> <p>Vapour intrusion (unlikely if the contaminant was diesel).</p> | <p>The identified on-ground AST appeared to be used to store water for livestock. The tank had a large opening in the top at the time of inspection and there was no petroleum hydrocarbon odour inside the tank indicating it had not recently been used to store fuel.</p> <p>Soil surrounding and beneath the AST was free of evidence of contamination such as discolouration or odour. Field observations indicate use of the identified AST has not caused significant contamination of the surrounding or underlying soil or groundwater.</p> <p>The AST mounted on the trailer was part of a mobile unit. It was likely used in a range of locations around Zone 1. Therefore, any losses from the AST or spills during dispensing would not be expected to have resulted in significant accumulation of contaminants. Contamination from a bulk storage tank and dispenser typically only becomes significant when there is prolonged loss of fuel at a point source. The capacity of the identified ASTs was 2000L. Even if a failure of a 2000L tank occurred in either location, the volume of fuel lost would not cause significant contamination in the context of the expanse of the Study Area and distance to nearest environmental receptors.</p> <p>Available information indicates that the identified ASTs have not resulted in significant contamination of the surrounding or underlying soil or groundwater. The nature of the proposed development is such that even if petroleum hydrocarbon contamination existed within soil and/or groundwater, the impacted area would still be suitable revegetation works. Petroleum hydrocarbons are organic and biodegrade naturally in the presence of oxygen. There is a significant buffer between the ASTs and the nearest Study Area boundary and the nearest environmental receptors. The proposed revegetation works would not see humans habiting impacted open space and any short term risks associated with direct contact with soil during revegetation works could be addressed using common health and safety controls.</p> |

| Potential Area of Concern | Contaminants of Concern | Media Affected | Potential Exposure Pathways | Discussion of Issue |
|---|-------------------------|---|---|---|
| Gully Fill at: 232570 East 6609207 North GDA2020 Zone 56 | Unknown | If fill is limited to solid waste it would be confined to the extent of filling. If filling included disposal of liquid waste there would be potential for contaminants to impact surrounding soil and/or underlying groundwater. | Potential contaminants unknown. Exposure pathways are likely to include: Direct contact with soil (or waste); and/or Inhalation of dust. | Filling was identified by review of aerial photography. The filled area was not inspected so the nature of filling is not known. Filling was located approximately 450m from a nearby homestead so it is likely the fill comprised domestic waste from the homestead and farm waste. The potential risks associated with the filling could be managed by: <ul style="list-style-type: none"> • Removing the fill and disposing appropriately off-site; • Delineate the filled area and exclude it from the proposed revegetation works so that the fill is not disturbed during the proposed development; and/or, • Cap with clean imported fill to a depth that eliminates the risk of future direct contact and establish vegetation in the capped area to minimise potential of future erosion. |
| ACMs in Gully Fill at: 231964 East 6607376 North GDA2020 Zone 56 | Asbestos | The ACM observed was bonded. The source of the ACM is not known but it was within a pile of fill that had been transported from another location. The identified ACM is solid material and therefore is not mobile unless physically disturbed. | Inhalation of respirable asbestos fibres if bonded ACM is disturbed or damaged. | The eroded gully in which fill was identified appears to have formed in the last 15 years and therefore the fill has likely been deposited at the site in the last 15 years. The observed pieces of cemented fibre sheeting in gully fill would be considered bonded as they were in relatively good condition. The identified ACM was in fill limited to a very small part of the Study Area. The ACM may pose a risk to human health if disturbed. There is potential for the fill to be disturbed by future flood events due to its position along an eroded gully. The identified risk could be addressed by: <ul style="list-style-type: none"> • Removing the ACM impacted fill from the Study Area and dispose appropriately off-site. • Delineating and marking the impacted area and excluding access. • Exclude the impacted area from the proposed revegetation works. • Cap with clean imported fill so that the ACM cannot be disturbed during future use of the site and establish vegetation to minimise risk of future erosion. |

| Potential Area of Concern | Contaminants of Concern | Media Affected | Potential Exposure Pathways | Discussion of Issue |
|---|---|---|--|--|
| <p>Cattle Yards at: 232402 East 6609998 North GDA 2020 Zone 56 and 231172 East 6606888 North GDA 2020 Zone 56</p> | <p>Pesticides, Metals if cattle had been treated with pesticides at the identified yards.</p> | <p>If the identified yards had been used to treat cattle for pests there is potential for pesticides to have been lost to the ground surface. Near surface soil would be the media most likely to be impacted by the identified potential source of contamination.</p> <p>Given the limited age (less than 2.5 years old) of both sets of identified yards it is unlikely there would be significant contamination or contamination that would impact underlying groundwater.</p> | <p>Direct contact with soil (or waste); and/or Inhalation of dust.</p> | <p>Aerial photographs indicate that the identified cattle yards have been present for less than 2.5 years. The northern yards were constructed with temporary cattle fencing and did not appear to include a crush so it is unlikely cattle have been treated at that location.</p> <p>The southern yards featured a crush and may have been used to apply pesticides to cattle. The yards have existed for less than 2.5 years. As such the probability of significant contamination existing is low.</p> <p>The proposed development is to reestablish native flora across the Study Area. There is potential for human exposure to soil via the direct contact and dust inhalation pathways during the proposed revegetation works. These risks would be similar to those associated with continued agricultural use of the land.</p> <p>Once vegetation has been established across the Study Area, soil disturbance would be limited to ongoing maintenance and monitoring works, and agricultural management activities. Risks to human health would decrease as there would be less human presence on the land and no regular direct contact with soil. Establishment of permanent native vegetation would reduce potential for dust generation and minimise potential for future erosion.</p> <p>If significant contamination existed from previous agricultural use of the Study Area the problem would cover a significant land area and could not easily be remediated. The proposed development would be an appropriate way to manage human health risks posed by any broadscale contamination caused by previous agricultural land use.</p> |

6 Conclusion and Recommendations

Development Consent for the Project is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the EP&A Act. The Project includes:

- continuation of open cut mining operations within the MCCM mining and exploration tenements for a further 10 years (from 2035 to 2044);
- establishment of Landscape Revegetation Zones; and
- construction of a water transfer pipeline between the MCCM Water pipeline network and the approved Vickery Coal Mine to Tarrawonga Coal Mine pipeline network.

The Resilience and Hazards SEPP requires the consent authority to consider whether the land within the Study Area is contaminated. If the land is contaminated the consent authority must be satisfied that the land is suitable for the proposed revegetation works in its contaminated state or that it will be made suitable after remediation is undertaken.

The findings of the PSI indicate that the Study Area is suitable for the proposed works associated with the establishment of the Landscape Revegetation Zones, subject to the following remediation actions:

- It is recommended that the ACM impacted fill is removed from the site and disposed at an appropriately licensed waste facility as asbestos containing waste. The works should be overseen, documented and validated by a duly qualified person.
- As the identified small area of gully filling in the northern portion of Zone 2 was not inspected, it is recommended that this area be inspected prior to the establishment of the Landscape Revegetation Zones, and, if required, the fill is removed from site and disposed appropriately licensed waste facility. If the fill is observed to potentially include chemical contaminants it may need to be sampled, analysed and classified in accordance with the NSW EPA (2014) Waste Classification Guidelines. The works should be overseen, documented and validated by a duly qualified person.

Ground Doctor recommends that appropriate health and safety controls are implemented during the proposed revegetation works to mitigate risks posed by any contaminations related to former agricultural use of the Study Area. This should include ensuring workers wear long sleeve clothing, pants and gloves when contacting soil, wetting down the work area to minimise dust generation during revegetation works and implementing good hygiene practises such as washing hand prior to breaks. These measures represent good occupational health and safety practise irrespective of the status of soil within the Study Area.

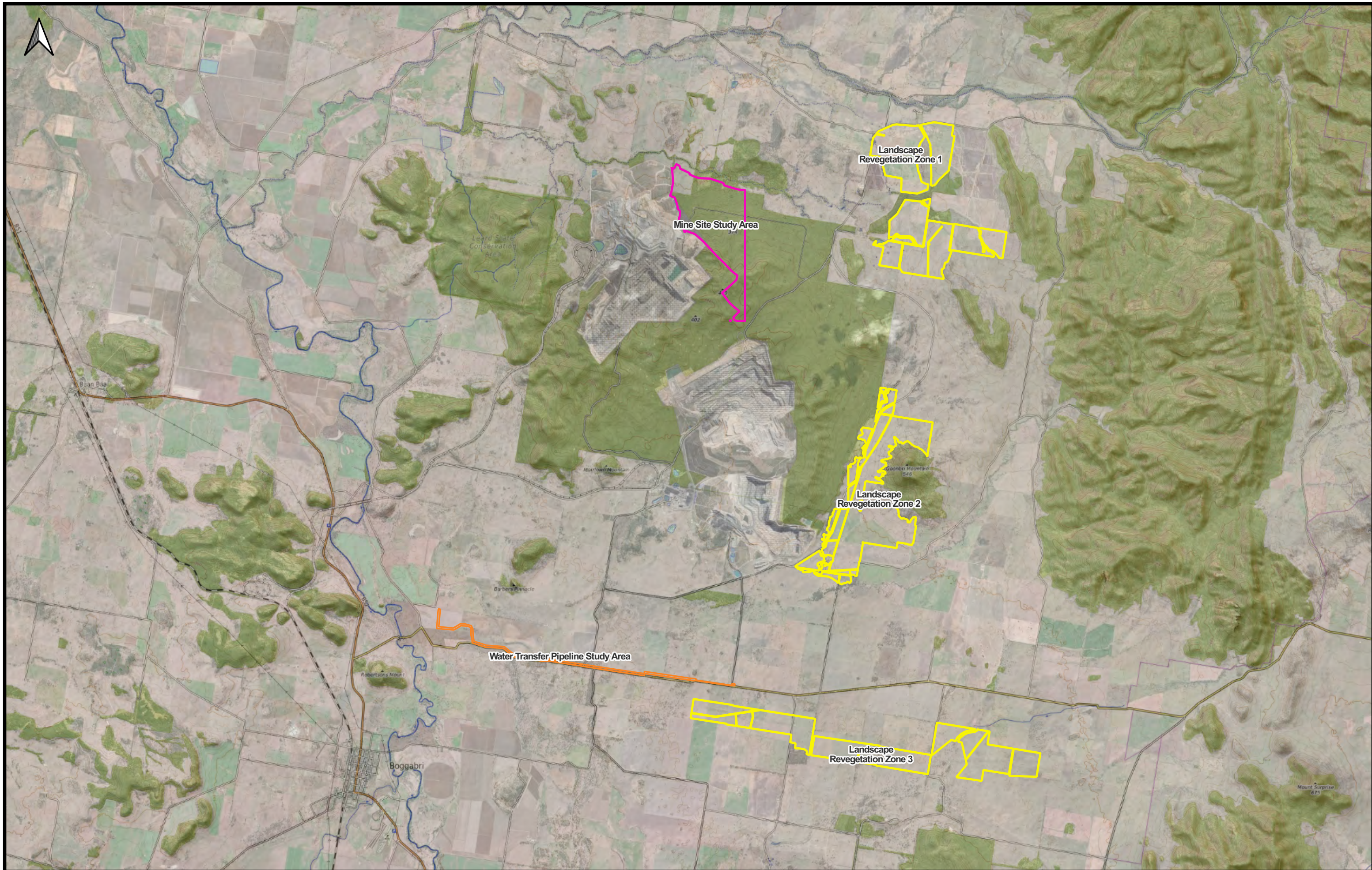
An unexpected finds protocol should be implemented during the revegetation works addressing the potential issues outlined in *Section 4.6* and procedures for unknown issues. In general, if abnormal ground conditions are encountered during revegetation works the approach should be to stop work in the affected area, evaluate the potential issue and develop an appropriate strategy to ensure risks to human health are made acceptable prior to recommencing work.

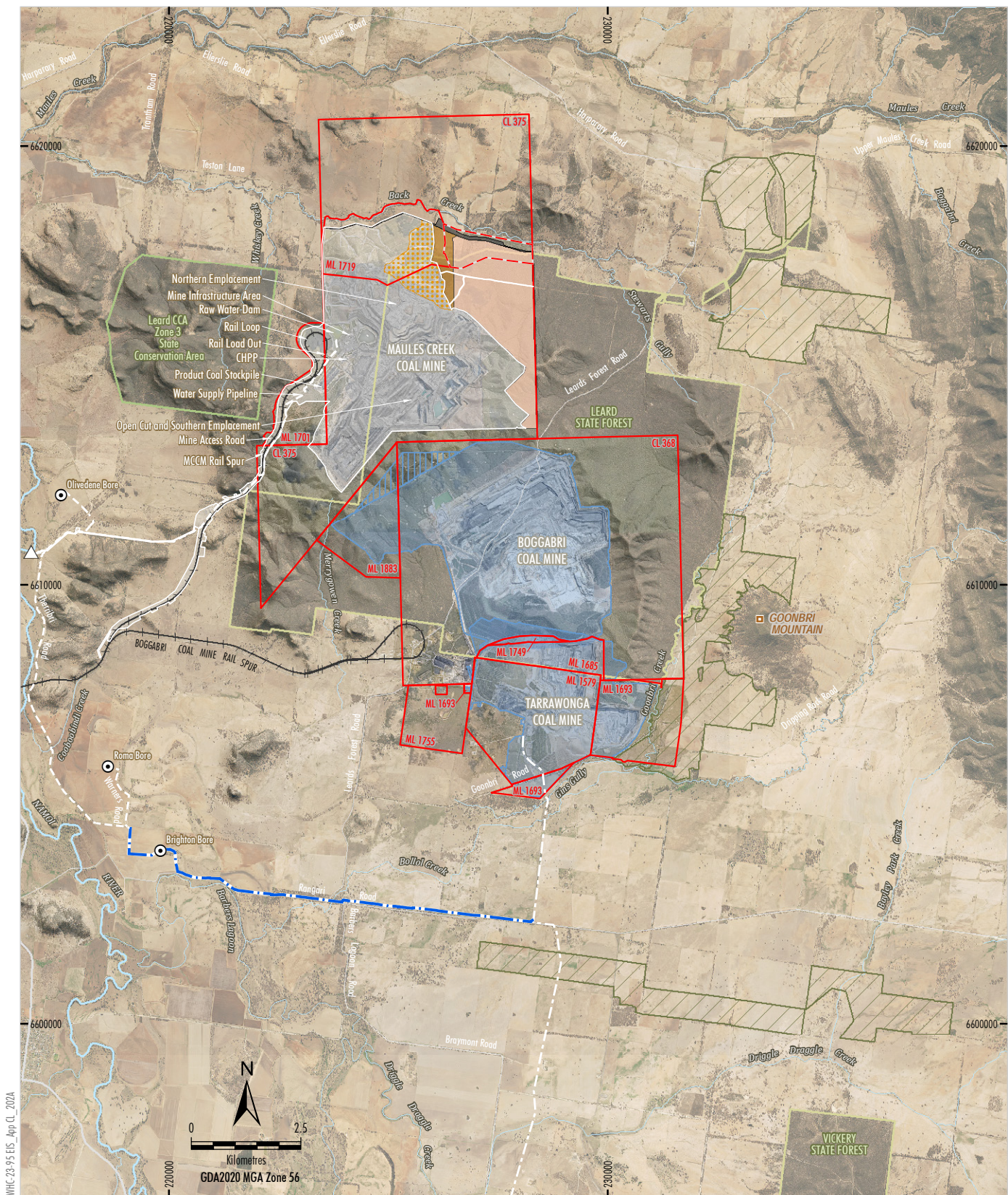
7 References

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Annexure A

Figures





WHC-23-95 EIS_Apr CL 2024

- LEGEND**
- Rail Line
 - State Conservation Area
 - State Forest
 - Mining Tenement Boundary (ML and CL)
 - Provisional Mining Lease Application Area
 - Other Mining Operation *
 - Other Mining Operation - Proposed *
 - VCM to TCM Water Transfer Pipeline
 - Existing/Approved MCCM Development
 - Approximate Extent of Existing/Approved Surface Development
 - MCCM Water Supply Pipeline
 - MCCM Groundwater Supply Bore
 - MCCM Namoi River Pump Station

- Maules Creek Continuation Project**
- Indicative Go-line, Access and Infrastructure Area
 - Indicative Open Cut Extension Area
 - Indicative Overburden Emplacement Extension
 - Existing Overburden Rehabilitation to be Disturbed
 - Indicative Landscape Revegetation Zones#
 - Indicative Water Transfer Pipeline (Proposed)

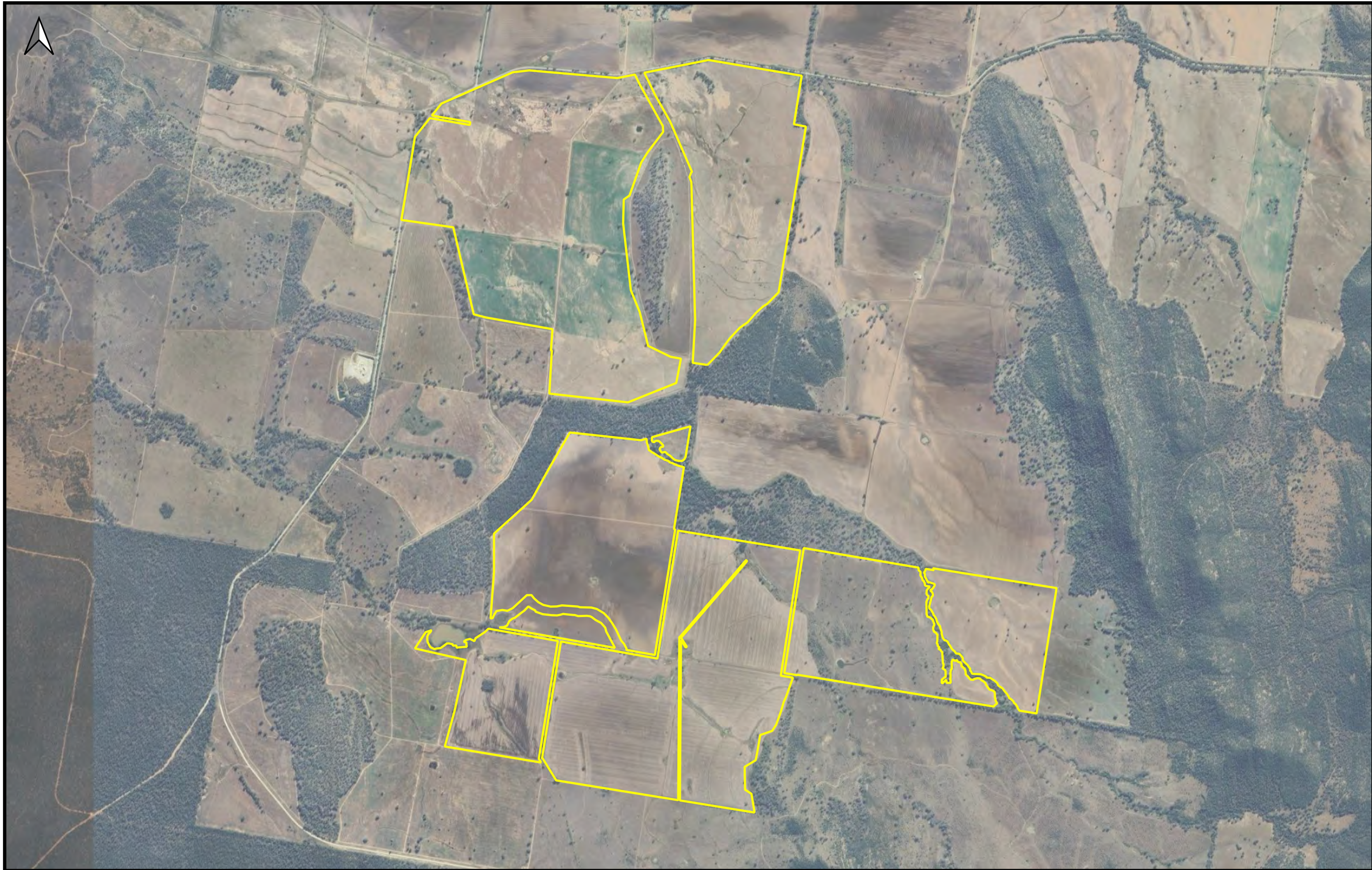
Source: NSW Spatial Services (2024)
Orthophoto Mosaic: Whitehaven (2019-2024)

Whitehaven
MAULES CREEK CONTINUATION PROJECT
General Arrangement of the Project

* BCM boundary digitised from Figure 1 of the BCM Modification 10 Scoping Letter.

#Landscape Revegetation Zones shown on this figure are approximate extents only.

Figure 2



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Legend:

 Landscape Revegetation Study Area

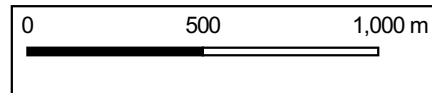
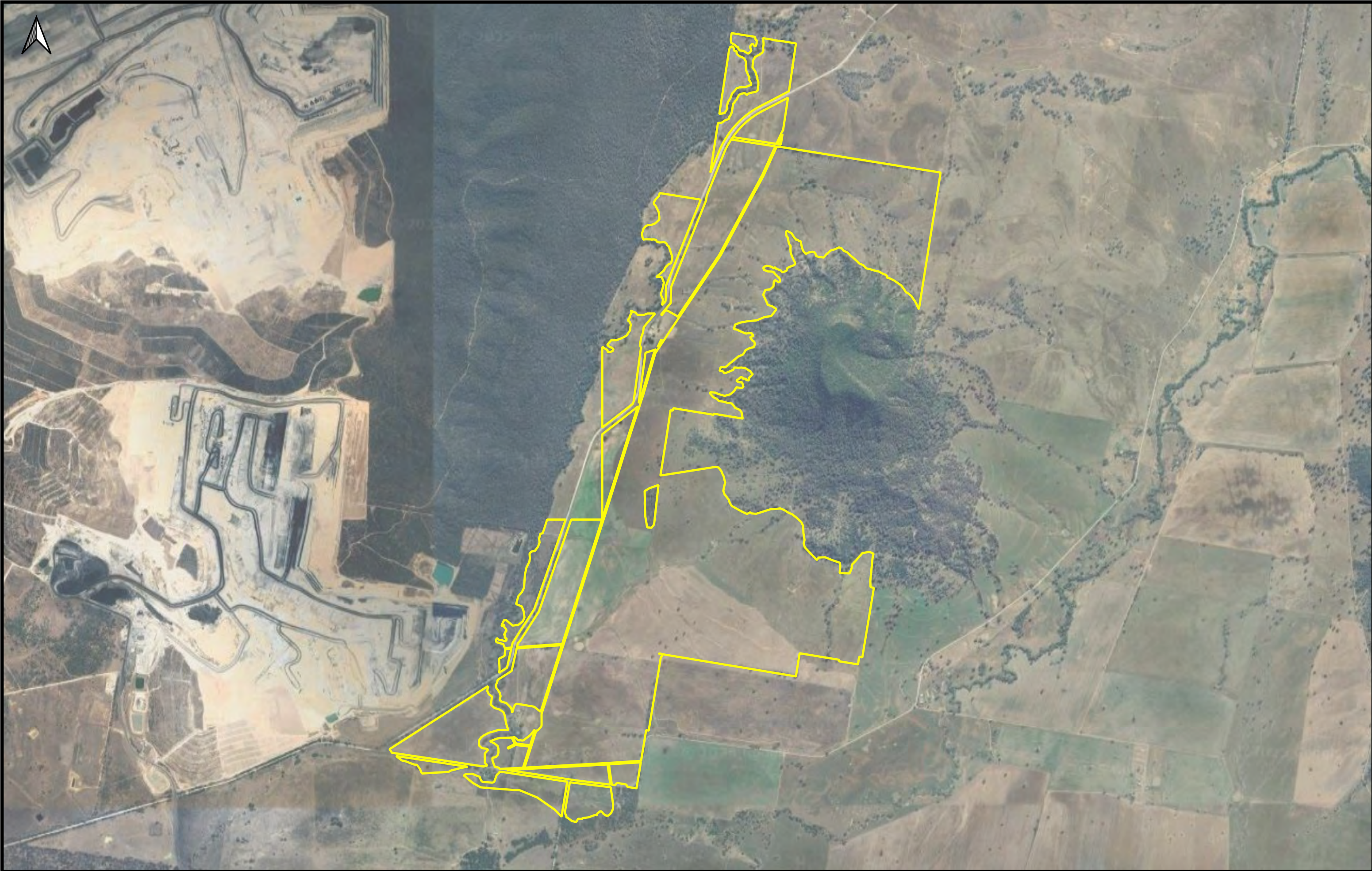


Figure 3: Landscape Revegetation Zone 1

Job Name: Preliminary Site Investigation - Maules Creek Continuation Project - Landscape Revegetation Zones

Job Number: 2023-GD010-RP3





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Legend:

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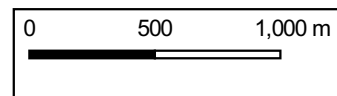
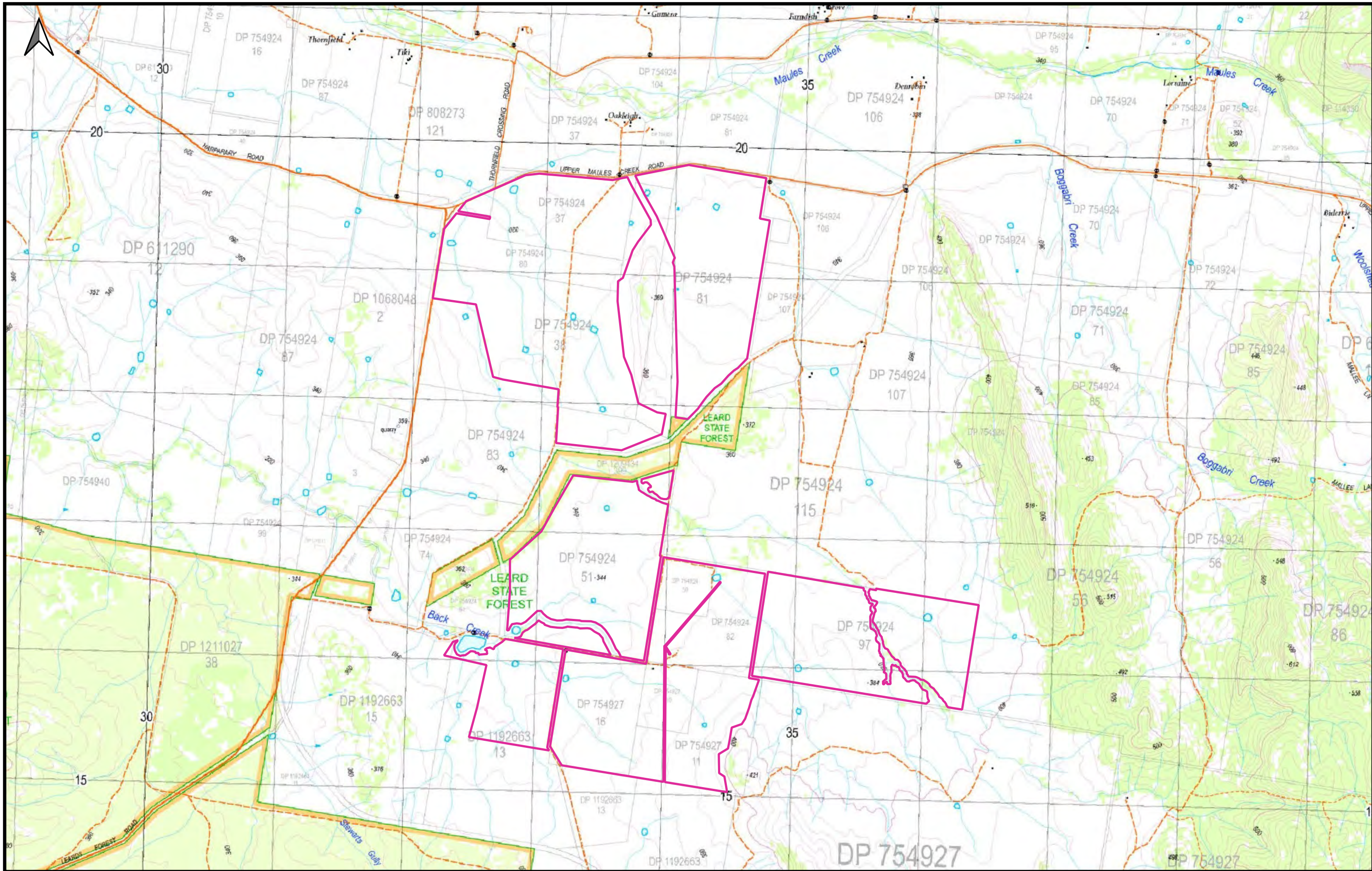
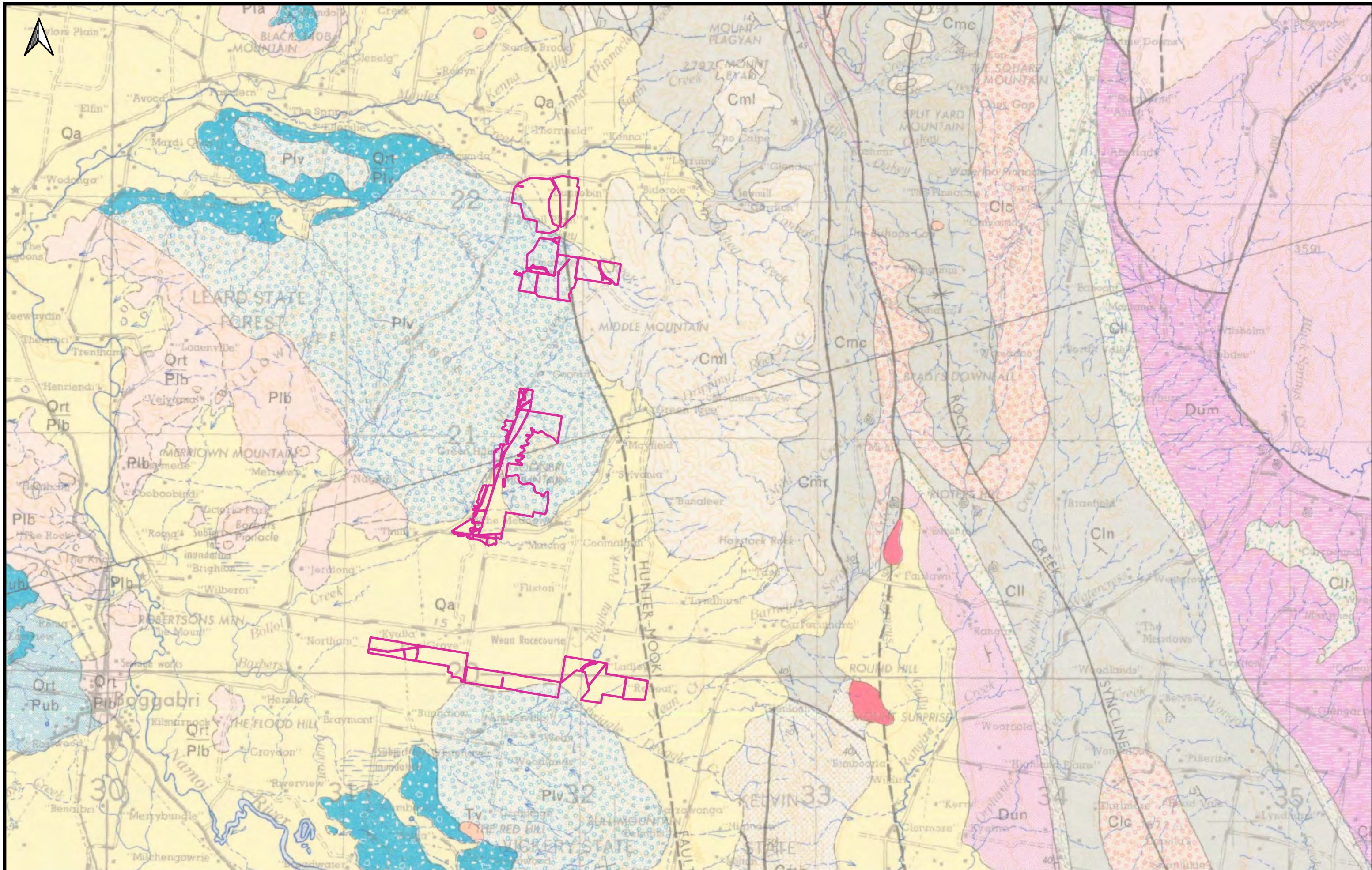


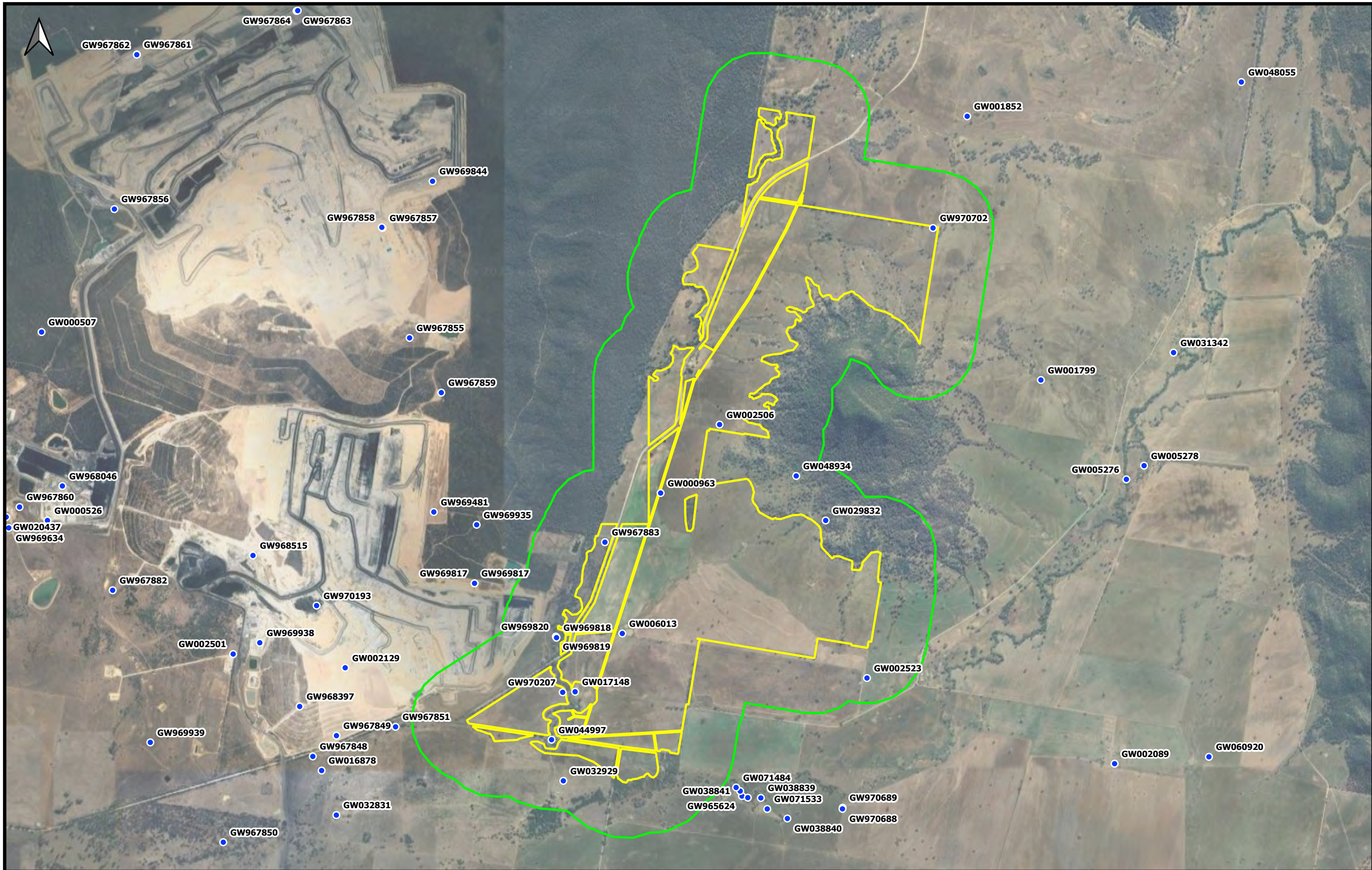
Figure 5: Landscape Revegetation Zone 3

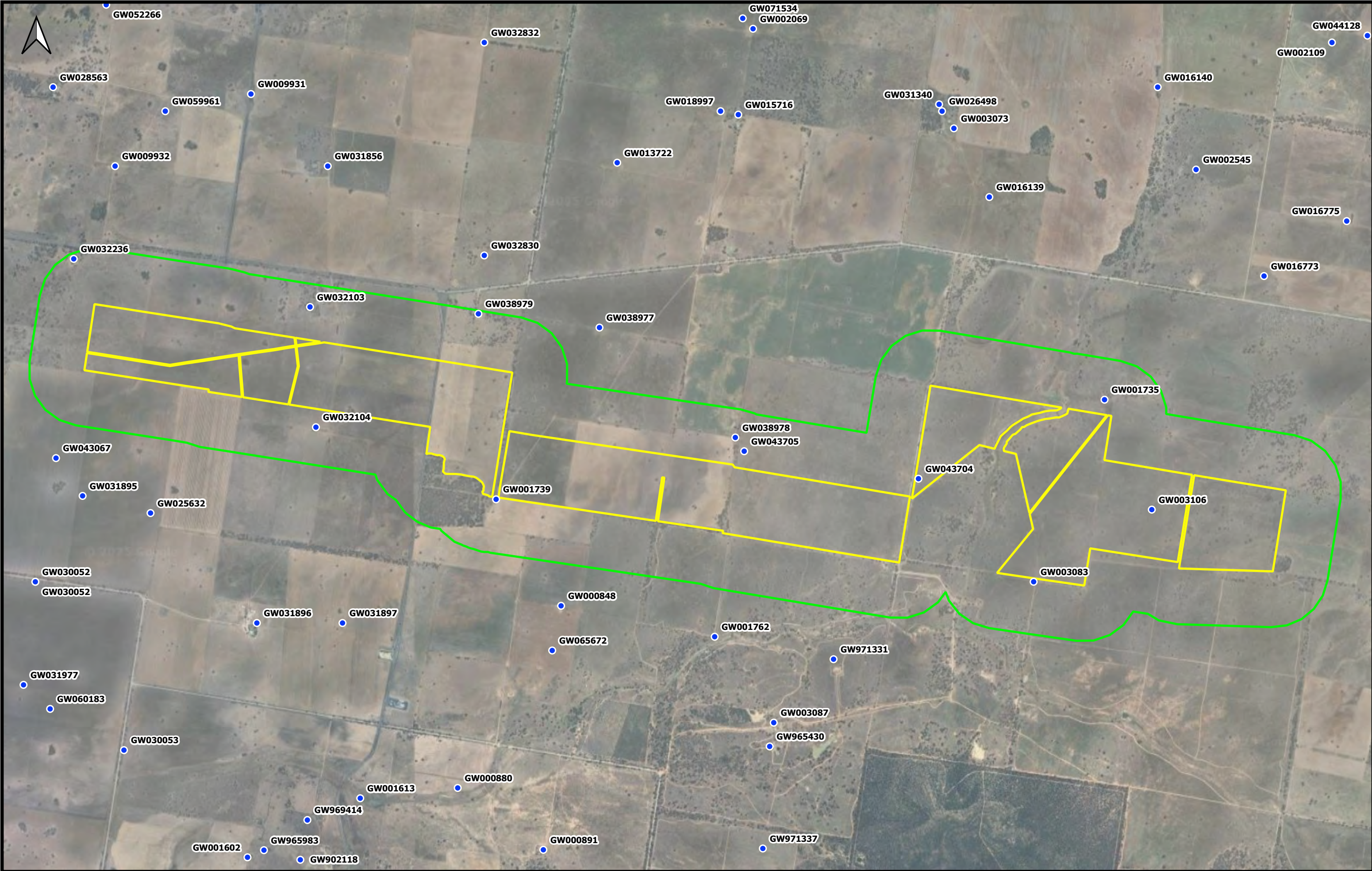
Job Name: Preliminary Site Investigation - Maules Creek Continuation Project - Landscape Revegetation Zones

Job Number: 2023-GD010-RP3

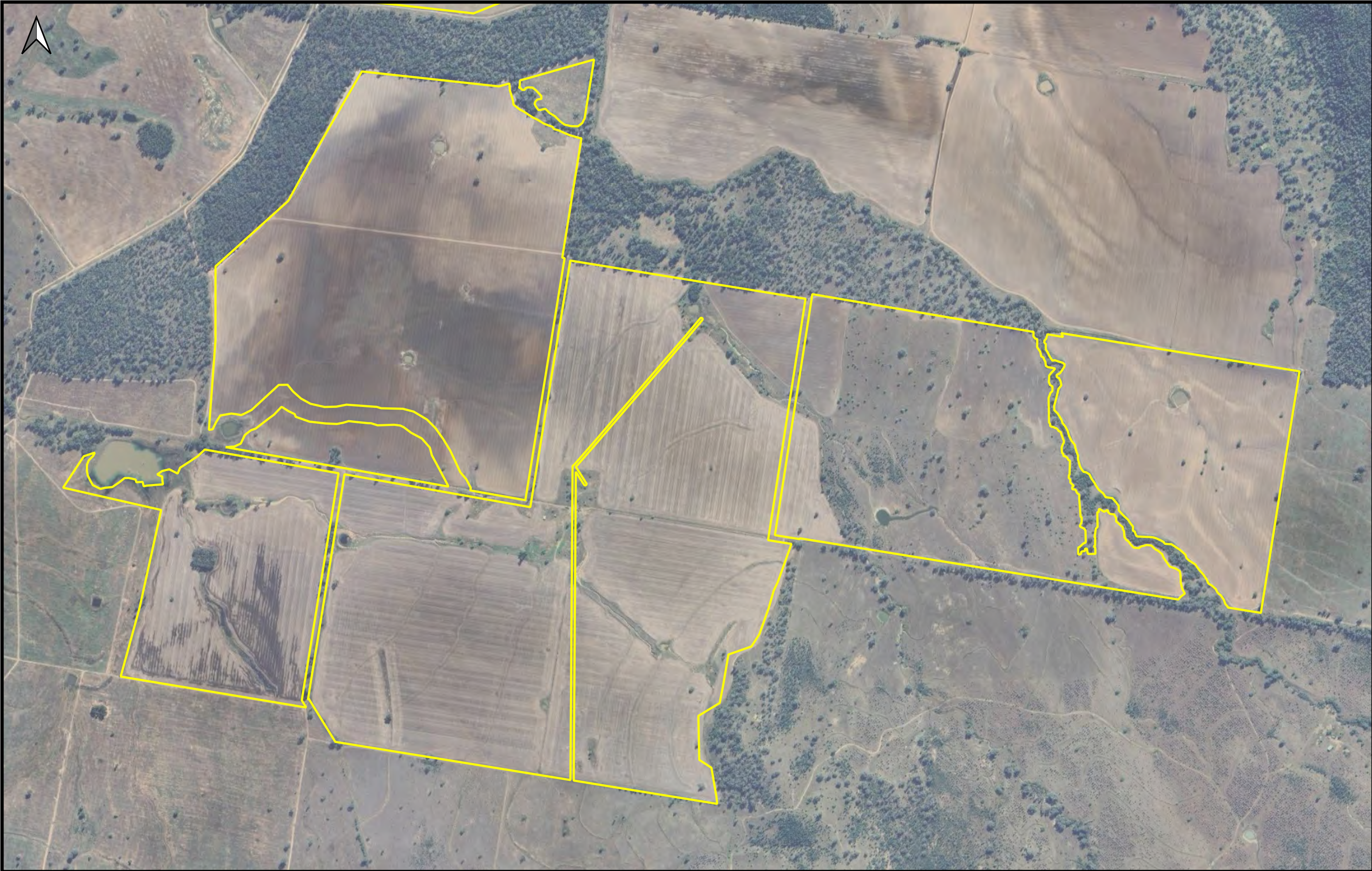












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Legend:

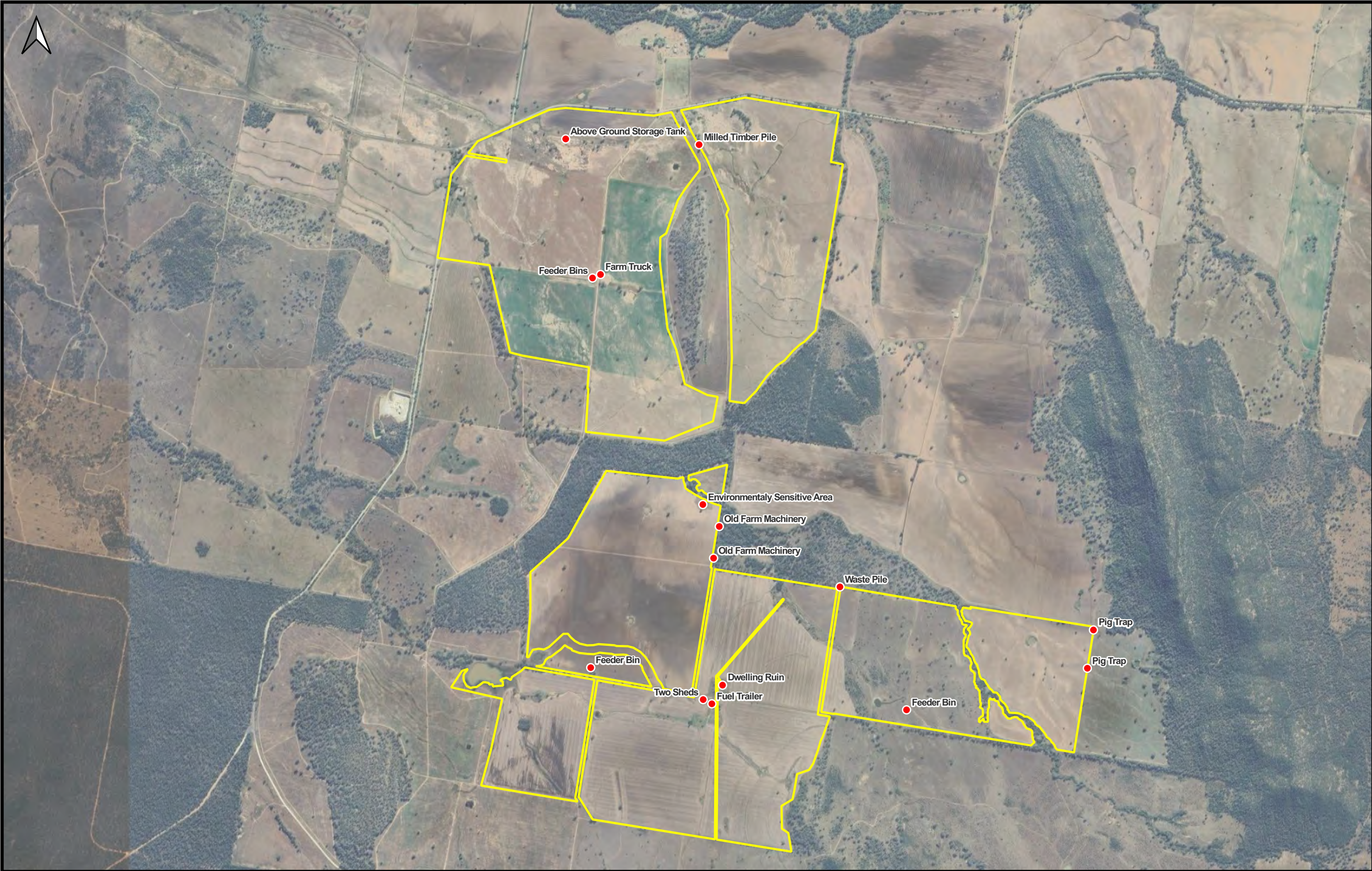
 Landscape Revegetation Study Area

0 100 200 300 400 500 m

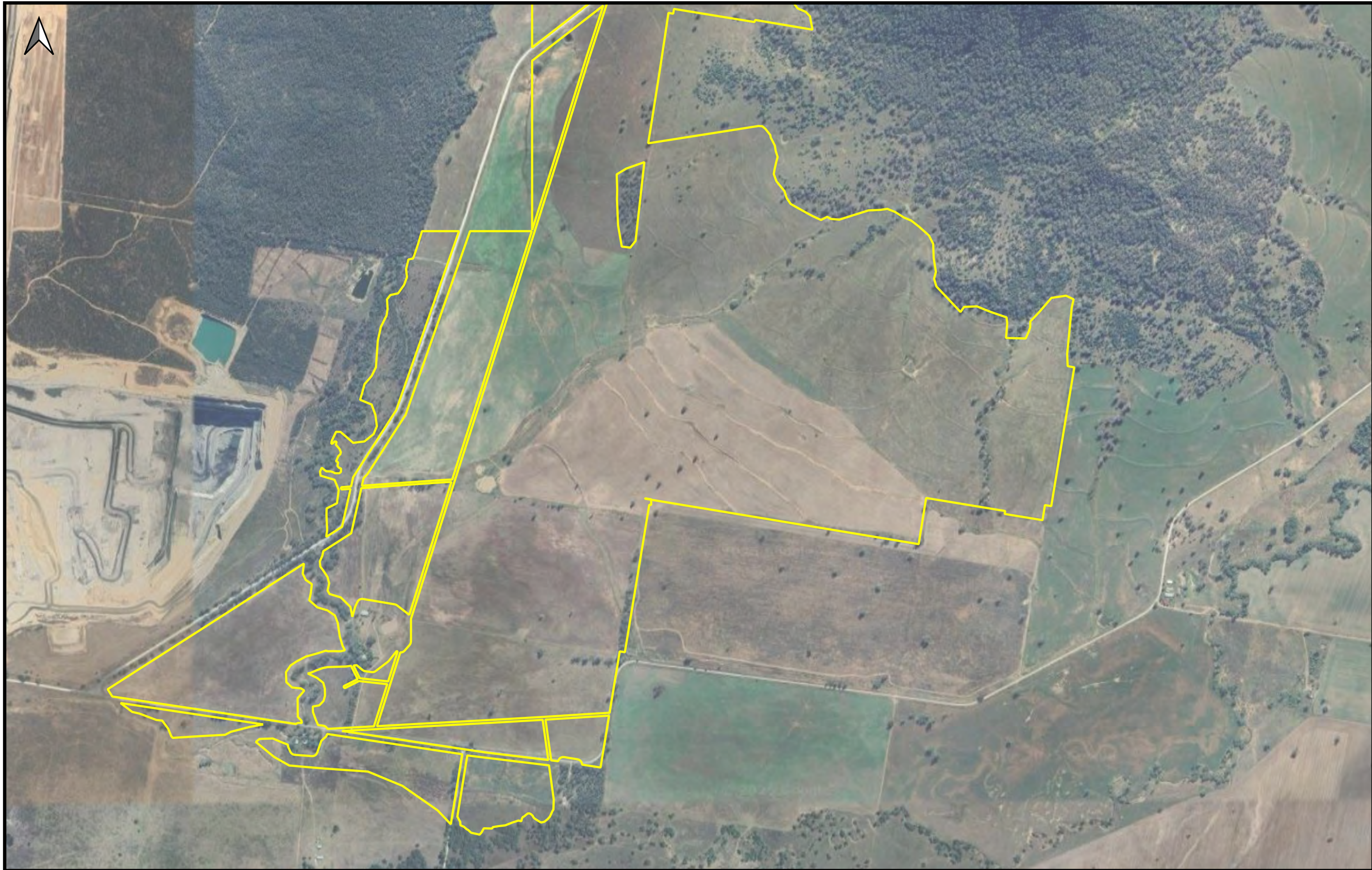
Figure 14: Aerial Photograph of Southern Part of Zone 1

Job Name: Preliminary Site Investigation - Maules Creek Continuation Project - Landscape Revegetation Zones

Job Number: 2023-GD010-RP3







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Legend:

 Landscape Revegetation Study Area

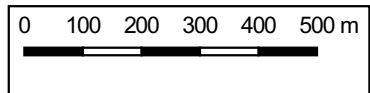
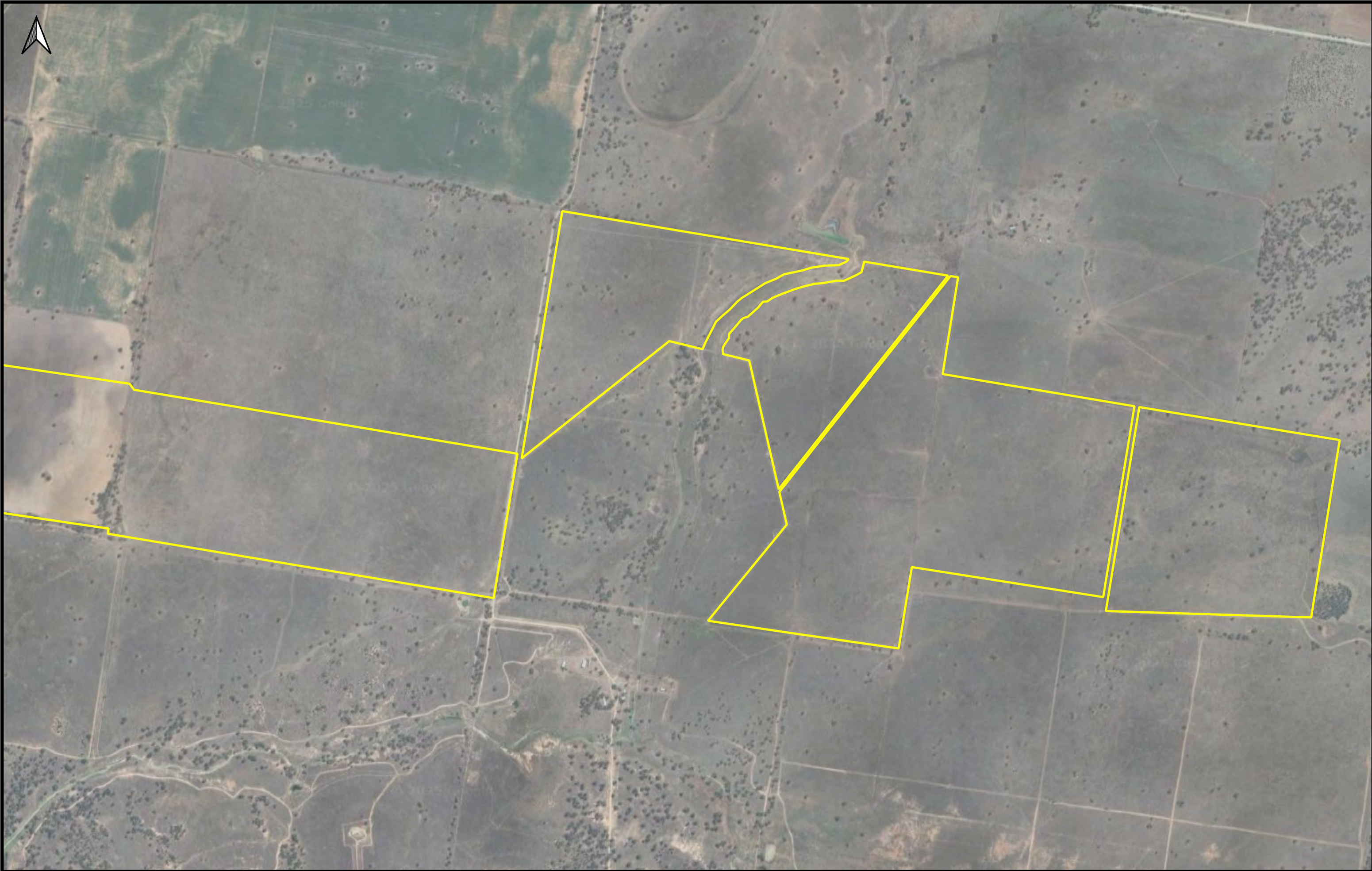


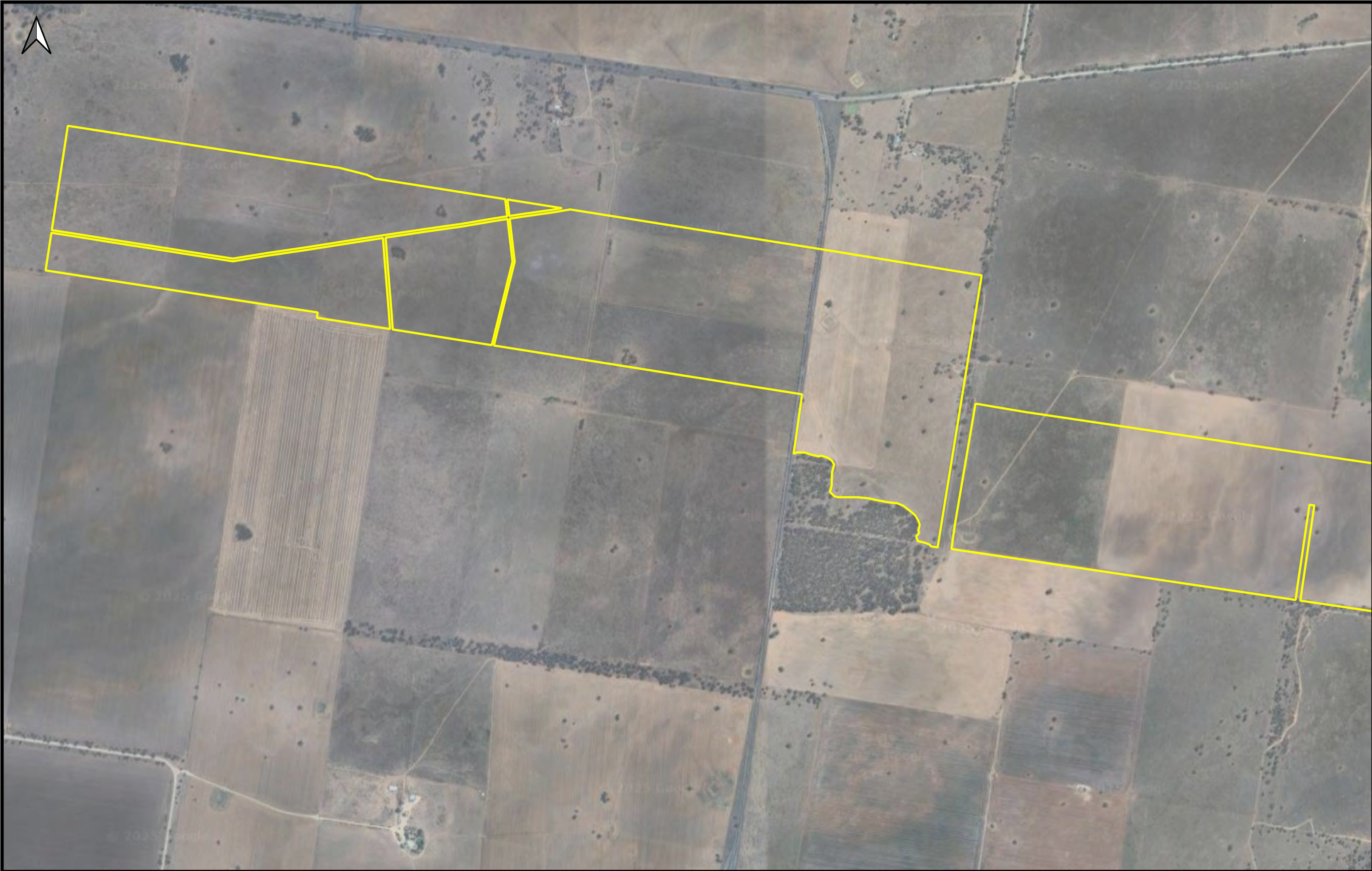
Figure 17: Aerial Photograph of Southern Part of Zone 2

Job Name: Preliminary Site Investigation - Maules Creek Continuation Project - Landscape Revegetation Zones

Job Number: 2023-GD010-RP3







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Legend:

 Landscape Revegetation Study Area

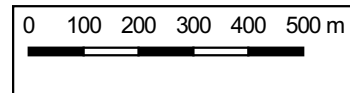
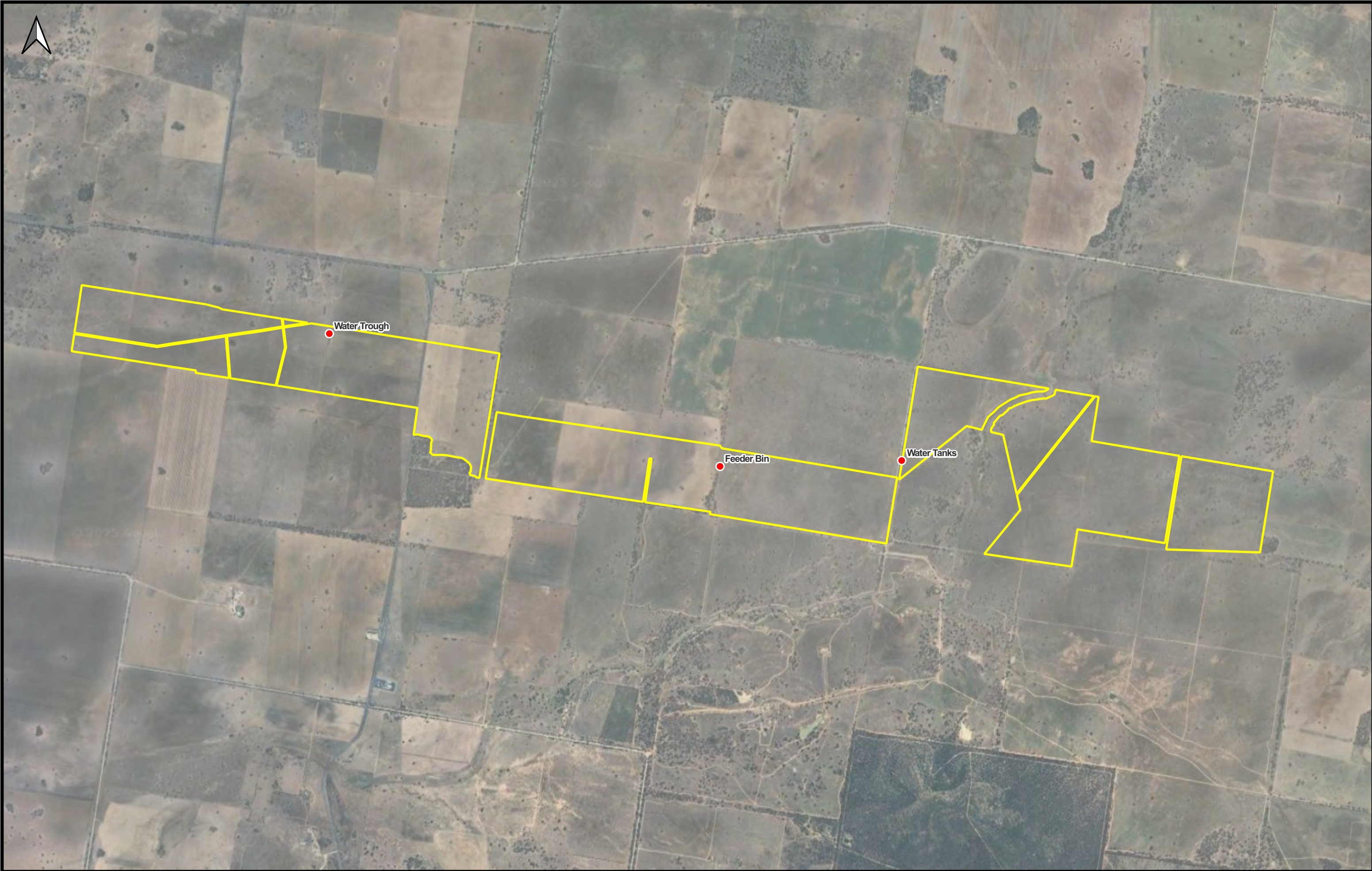


Figure 20: Aerial Photograph of Western Part of Zone 3

Job Name: Preliminary Site Investigation - Maules Creek Continuation Project - Landscape Revegetation Zones

Job Number: 2023-GD010-RP3



Annexure B

WSPC Inspection Photographs



A feeder bin identified within the northern part of Zone 1.



An above ground storage tank was identified close to the northern extent of Zone 1. The tank appeared to have been used to store water. There was no evidence of soil contamination around the AST.



Livestock feeder bins in the central northern portion of Zone 1. Feeder bins were identified at various locations across the Study Area. Feeder bins are not a potential source of contamination.



An old farm truck was identified in the central northern portion of Zone 1.



A pile of milled or semi-milled timber was identified in the north east part of Zone 1. The timber appeared to have been sourced locally and was not treated. The timber is not a potential source of contamination.



A fenced “environmentally sensitive area” within or close to the central part of Zone 1. The fencing presumably protecting an area of sensitive vegetation.



Abandoned farm machinery was identified close to the Study Area boundary in the central part of Zone 1. The machinery was not a potential source of significant land contamination.



Abandoned farm machinery was identified close to the Study Area boundary in the central part of Zone 1. The machinery was not a potential source of significant land contamination.



A pile of farm waste was identified close to the Study Area boundary in the central portion of Zone 1. The waste included timber posts, fencing wire, sheet metal and some metal drums. The identified waste did not appear to be a potential source of significant land contamination.



Pig traps were identified along the eastern boundary of Zone 1. These are not a potential source of significant contamination.



A feeder identified in the southern part of Zone 1.



A dwelling ruin was identified close to the southern part of Zone 1. The dwelling footprint is excluded from the Study Area. The dwelling appeared to have been constructed of timber and sheet metal. Ground Doctor did not identify any potential ACMs around the ruin.



Two metal sheds and a fuel trailer (or possibly a water cart) were identified in the southern central portion of Zone 1. There was no evidence of soil contamination around the fuel trailer.



Looking in a north westerly direction over recently cropped paddocks in the southern part of Zone 1. Most of the land within Zone 1 was cleared open space used for livestock grazing and dryland cropping.



A groundwater bore identified in the south west corner of Zone 2 was one of the only points of interest noted. The majority of land within Zone 2 is cleared open space used for livestock grazing and dryland cropping.



A cattle yard including a crush identified in the south west part of Zone 2. Pesticides may have been applied to livestock in the yards. Aerial photographs indicate the yards have been present for less than 2.5 years so significant contamination is unlikely.



A cluster of groundwater monitoring bores was identified in the south west part of Zone 2 and were likely associated with the nearby Tarrawonga Coal mine.



Gully fill was identified in the southern central part of Zone 2. The fill comprised soil and building and demolition waste including broken concrete and brick. Small pieces of fibre cement sheeting were identified within the fill and appeared to be asbestos containing.



Gully fill was identified in the southern central part of Zone 2. The fill comprised soil and building and demolition waste including broken concrete and brick. Small pieces of fibre cement sheeting were identified within the fill and appeared to be asbestos containing.



Gully fill was identified in the southern central part of Zone 2. The fill comprised soil and building and demolition waste including broken concrete and brick. Small pieces of fibre cement sheeting were identified within the fill and appeared to be asbestos containing.



Looking in a south easterly direction across the southern portion of Zone 2. Most of the land within the Study Area was cleared open space that was used for livestock grazing and dryland cropping.



Looking in a south westerly direction across the southern portion of Zone 2. Most of the land within the Study Area was cleared open space that was used for livestock grazing and dryland cropping.



Looking in a westerly direction across the southern portion of Zone 2. Most of the land within the Study Area was cleared open space that was used for livestock grazing and dryland cropping.



Looking in a westerly direction across Zone 3. Most of the land within the Study Area was cleared open space used for livestock grazing and dryland cropping. Points of interest identified within Zone 3 were limited to livestock watering points and water tanks.



Looking in a north westerly direction across Zone 3. Most of the land within the Study Area was cleared open space used for livestock grazing and dryland cropping. Points of interest identified within Zone 3 were limited to livestock watering points and water tanks.



Looking in a northerly direction along the eastern boundary of Zone 3. Most of the land within the Study Area was cleared open space used for livestock grazing and dryland cropping. Points of interest identified within Zone 3 were limited to livestock watering points and water tanks.



Looking in a westerly direction across the central part of Zone 3. Most of the land within the Study Area was cleared open space used for livestock grazing and dryland cropping. Points of interest identified within Zone 3 were limited to livestock watering points and water tanks.



Looking in a westerly direction across the central part of Zone 3. Most of the land within the Study Area was cleared open space used for livestock grazing and dryland cropping. Points of interest identified within Zone 3 were limited to livestock watering points and water tanks.



Looking in an easterly direction across the central part of Zone 3. Most of the land within the Study Area was cleared open space used for livestock grazing and dryland cropping. Points of interest identified within Zone 3 were limited to livestock watering points and water tanks.