



APPENDIX G
Land Contamination Assessment

**COWAL GOLD OPERATIONS
PROCESSING RATE MODIFICATION**

Environmental Assessment
2018





Ground Doctor Pty Ltd

Stage 1 Contamination Assessment

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**Part of Lot 100, Lot 101 and Lot 102 DP 1059150
Lake Cowal, NSW**

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**On Behalf Of:
Evolution Mining (Cowal) Pty Ltd**



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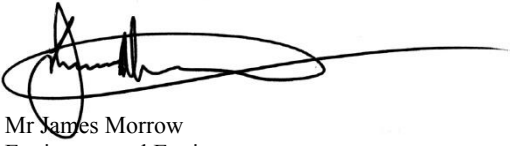
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1 Introduction

Ground Doctor Pty Ltd (Ground Doctor) was commissioned by Resource Strategies Pty Ltd to conduct a Stage 1 Contamination Assessment of land within parts of Lot 100, Lot 101 and Lot 102 of Deposited Plan (DP) 1059150, Lake Cowal, New South Wales (NSW).

The assessment was undertaken on behalf of Evolution Mining (Cowal) Pty Ltd (Evolution). Evolution is the owner and operator of the Cowal Gold Operations (CGO), located approximately 38 kilometres (km) north east of West Wyalong in New South Wales (NSW).

At the time of this assessment Evolution owned the parts of the assessment area within Lot 101 and Lot 102 DP 1059150. Land within Lot 100 DP 1059150 was owned by the State of NSW.

Evolution proposes to modify Development Consent DA 14/98 under section 75W of the NSW *Environmental Planning and Assessment Act, 1979* to increase the CGO's approved ore processing rate of 7.5 million tonnes per annum (Mtpa) to 9.8 Mtpa (herein referred to as the Modification).

The main activities associated with development of the Modification would include (refer to *Figure 1 of Annexure A*):

- increasing the ore processing rate from 7.5 Mtpa to 9.8 Mtpa;
- modification of the existing Tailings Storage Facilities (TSFs) to form one larger TSF, which would also accommodate mine waste rock (herein referred to as the Integrated Waste Landform or IWL);
- relocation of water management infrastructure (i.e. the Up-Catchment Diversion System and approved location for contained water storage D10) and other ancillary infrastructure (e.g. internal roads and soil and ore stockpiles) elsewhere within Mining Lease (ML) 1535 and within Mining Lease Application (MLA) 1;
- installation of a secondary crushing circuit within the existing process plant area;
- duplication of the existing water supply pipeline across Lake Cowal;
- increased annual extraction of water from the CGO's external water supply sources;
- increased consumption of process reagents (including cyanide) and other process consumables;
- an increase in the average and peak workforce employed at the CGO;
- relocation of a travelling stock reserve (TSR) and Lake Cowal Road; and
- provision of crushed rock material to local councils to assist with road base supplies.

The assessed area boundary is shown in *Figure 2 of Annexure A*.

At the time of the assessment, CGO operated on land to the south of the assessment area (within ML 1535). The Modification proposes to include a portion of the assessment area within a new mining lease (i.e. MLA 1). Activities proposed by the Modification within the assessment area are summarised as follows.

- Part of the assessment area is proposed to be used for stockpiling of stripped near surface soil from TSFs/IWL. The stockpiled soil would be used in later mine rehabilitation works. The approximate extent of the proposed stockpiling area relative to the assessment area boundary is shown in *Figure 5 of Annexure A*.

- Lake Cowal Road and the adjacent TSR would be re-aligned through the assessment area as shown in *Figure 5 of Annexure A*. At the time of the assessment Lake Cowal Road and the TSR traversed the southern portion of the assessment area, parallel to the southern assessment area boundary.
- Surface water management drains and/or bunds would be constructed within the assessment area as required.

At the time of this assessment the assessment area was used for agriculture (specifically grazing of livestock).

1.1 Assessment Objectives

Clause 7 of the NSW State Environmental Planning Policy (SEPP) No. 55 stipulates that contamination and remediation need to be considered in determining a development application. Clause 7 of NSW SEPP No. 55 states:

- (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 subclause (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 subclause (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.*

The objectives of the Stage 1 Contamination Assessment were to:

- identify past and present land uses at the site and within adjoining land;
- identify potential sources of land contamination associated with past or present use of the site and associated potential contaminants of concern;
- assess the setting, and subsurface conditions at the site and the surrounding environment to identify potential human health and environmental receptors.
- use the previously mentioned information to assess the suitability of the assessment area for the proposed development, or recommend remediation works where the proposed development poses an unacceptable risk to human health or the environment.

1.2 Scope of Work

Ground Doctor completed the following work:

- Inspected the assessment area to establish current site conditions, surrounding land uses and potential human and environmental receptors located at/near the site.
- Reviewed several aerial photographs of the assessment area taken between 1958 and 2015.
- Reviewed available Bland Shire Council records related to the assessment area.
- Interviewed a relative of the assessment area's former owner to obtain information related to previous use of the assessment area.
- Conducted a search of historical land titles records for the assessment area.
- Conducted a search of the NSW Environment Protection Authority (EPA) database for notices pertaining to the site under the Contaminated Land Management Act 1997.
- Conducted a search of the NSW EPA public register of licences, applications and notices made under the Protection of the Environment Operations Act 1997.
- Conducted a search of the NSW Department of Primary Industries Water (DPI Water) (now the NSW Department of Industry – Water [DI-Water]) registered groundwater works database to identify groundwater works located within 2km of the assessment area (DPI Water, 2017).
- Conducted a search of the NSW SafeWork dangerous goods licensing database for records of dangerous goods storage at the site.
- Reviewed available geology maps to assess subsurface conditions at the site.
- Used all of the reviewed data to prepare a sampling and analytical plan for a preliminary surface soil assessment.
- Collected surface soil samples at seven locations within the assessment area. Collected a material sample at one location within the assessment area.
- Analysed soil and material samples for potential contaminants of concern identified by the review of site history.
- Developed a conceptual site model (CSM) using the site history, the site setting, preliminary soil data and the proposed future land use. The CSM was used to assess the suitability of the assessment area for the proposed development.
- Prepared this report outlining the methodology and results of the assessment and providing conclusions with respect to the project objectives.

1.3 Limitations of this Report

The findings of this report are based on the scope of work outlined in *Section 1.2*. 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, express or implied are made.

The results of this assessment are based upon the information documented and presented in this report. All conclusions and recommendations regarding the site are the professional opinions of Ground Doctor personnel involved with the project, 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 project.

Ground Doctor collected preliminary soil and material samples at several locations within the assessment area to quantify potential areas of concern identified in the review of the site history. The absence of the compounds of concern in soil samples cannot be interpreted as a guarantee that such materials, or other potentially toxic or hazardous compounds, do not exist at the site in soil, water or other media.

Statements in this report regarding the suitability of the assessment area for future development relate to presence of land contamination only. Statements are made based on the data collected at the time of the assessment and presented in this report. Ground Doctor will not be liable to revise the report to account for any changes in site characteristics, regulatory requirements, guidelines or the availability of additional information, subsequent to the issue date of this report. Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

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 Resource Strategies Pty Ltd and Evolution subject to full payment of the agreed project fees. Ground Doctor Pty Ltd accepts no liability for use or interpretation by any person or body other than Resource Strategies Pty Ltd and Evolution. This report should not be reproduced without prior approval by Resource Strategies Pty Ltd and Evolution. 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 enquires.

2 Site Description

2.1 Assessment Area Details

The assessment area occupied parts of Lot 100, Lot 101 and Lot 102 of DP 1059150. The assessment area is shown in *Figure 2 of Annexure A*.

Figure 2 of Annexure A shows the cadastral boundaries within the assessment area. The assessment area is comprised primarily of part of Lot 102 DP 1059150. A small triangular region in the eastern extent of the assessment area is within Lot 101 DP 1059150. A long strip of land along the southern assessment area boundary (surrounding the existing Lake Cowal Road) is part of Lot 100 DP 1059150.

The assessment area was approximately 5.4 square kilometres.

The NSW Spatial Information Exchange (NSW Government, 2017) indicates that the assessment area is within a much larger property with the address 419 Uncle Bill's Road, Lake Cowal, NSW. The assessment area was within a former agricultural property named "Thornton".

The site was located within the Bland Shire Council local government area. Bland Local Environment Plan (2011) indicated that the assessment area was zoned "RU1-Primary Production". Zone RU1 allowed for a wide range of development with consent including mining, agriculture and residential use.

Property details are summarised in *Table 1*.

Table 1: Summary of Site Details

	Description
Street Address:	"Thornton", Part of 419 Uncle Bill's Road, Lake Cowal, NSW, 2671
Lot and DP Number:	Part of: Lot 100 DP 1059150 Lot 101 DP 1059150 Lot 102 DP 1059150
Local Government Area:	Bland Shire Council
Zoning	RU1 – Primary Production
Geographical Coordinates (MGA94 Zone 55):	East 532500 North 6280010 (Approximate Site Centre)

2.2 Site Layout and Features

A site inspection was conducted by Mr James Morrow of Ground Doctor on 14 September 2017.

At the time of the inspection the only identified cultural features within the assessment area were as follows.

- A metal clad shed formerly used for grain storage.
- A metal clad cylindrical grain silo.
- A concrete slab that was the foundation of a former dwelling. The dwelling was destroyed by a fire in the late 1980's. The dwelling footprint was relatively small (less than 10 metres [m] x 10m in area). Small pieces of fibro cladding were identified at the ground surface in the vicinity of the former dwelling.

- The remains of a blacksmiths forge. The forge was approximately 2m long by 1m wide and was less than 1m tall.
- A compacted gravel floor associated with a former machinery shed. The machinery shed was destroyed by fire in the late 1980s.
- Burnt wooden posts that were the remains of a hay shed that was destroyed by fire in the late 1980s.
- Paddock fencing and gates.
- Former gold mine shafts that were fenced.
- Lake Cowal Road traversed the southern portion of the assessment area.
- Five farm dams were situated along drainages in various parts of the assessment area.

Most of the cultural features were situated in the vicinity of the former “Thornton” homestead. This area featured a dwelling, a grain silo, a grain shed, the remains of a blacksmiths forge, the remains of a hay shed, and the remains of a part sealed floor of a former machinery shed (refer to *Figure 4 of Annexure A*).

The former gold mining shafts were situated in the northern portion of the assessment area. Former mining operations were believed to target reef gold only and did not utilise extraction of gold by chemical leaching.

With the exception of Lake Cowal Road and the adjacent TSR, the assessment area resembled an agricultural property used for livestock grazing. The assessment area was divided into several paddocks lined with wire fencing. Unsealed tracks were present along fence lines and between paddocks across the assessment area.

The assessment area was predominantly grassed open space. Native trees were scattered across the assessment area. Stands of native trees were present along elevated parts of the north west portion of the assessment area. The north east portion of the assessment area was predominantly covered by gilgai.

The eastern and western portions of the site were mostly free of trees and appeared to have formerly been cropped. Known cropping areas are shown in *Figure 3 of Annexure A*.

Lake Cowal Road traversed the southern portion of the assessment area. The road was unsealed and was topped with road base. The road was surrounded by unlined drainages which directed water into the adjacent TSR.

The TSR adjacent to Lake Cowal Road was predominantly grassed open space with scattered remnant native trees.

Ground Doctor did not observe any obvious areas of stressed vegetation or bare patches that may be indicative of land contamination within the assessment area.

Remains of a plough, a tractor tyre and a 200 litre (L) fuel drum were identified in open space to the south east of the former machinery shed. The 200L drum contained water.

The assessment area drained from west to east. Five small dams were situated within the drainage pathways through the site, which were subtle within the landscape.

2.3 Adjoining Land-use

At the time of the site inspection land use of the adjoining properties was as follows.

- North – Agricultural properties used for grazing and cropping.
- East – Agricultural properties used for grazing and cropping. Lake Cowal was located approximately 2km to the east of the assessment area.
- South – CGO mining lease area was situated immediately south of the assessment area.
- West – The disused West Wyalong – Burcher Railway corridor was located along the western boundary of the assessment area. Agricultural land that was used for cropping and grazing was located to the west of the railway corridor.

2.4 Topography

Topographic information published on the NSW Government Spatial Information Exchange (NSW Government, 2017) indicated that the assessment area elevation ranged from approximately 250m Australian Height Datum (AHD) in the north west corner to approximately 220m AHD in the eastern corner.

The regional gradient was from west to east toward Lake Cowal at an average gradient of approximately 1 percent (%). The landscape was best described as gently undulating in the western portion to flat in the eastern portion. Drainages across the assessment area were not well defined.

Lake Cowal was situated approximately 2km east of the site. Lake Cowal is part of the Lachlan River catchment.

2.5 Geology and Soils

The “*Wyalong Australian 1:100000 Geological Series Sheet 8330*” (Geological Survey of NSW, 2000) indicates that the eastern portion of the assessment area is situated above tertiary aged colluvium described as “*shallow slope colluvial plains and rises, some residual veneer; interfingers with inactive alluvial plains*”. The colluvium overlies the “*Lake Cowal Volcanics*” which are described as “*intermediate to mafic volcanic intrusives*”.

The western portion of the site is situated on the “*Girilambone Group*”, which is described as “*multiply deformed phyllite, metagreywacke, quartzose, sandstone, minor siltstone and chert*” along elevated areas and covered by quaternary aged “*colluvial sheetwash and scree slopes, minor aeolian climbing dunes*” and quaternary alluvium fingers in lower lying areas.

There was no obvious filling evident at the site during the site inspection. The gently sloping topography of the assessment area did not lend itself to easy filling opportunities, such as steep gullies.

2.6 Hydrogeology

Ground Doctor reviewed registered groundwater works records for works located within 2km of the assessment area (Table 2). Registered groundwater works were not identified within the assessment area.

Fifteen registered groundwater works were identified within a 2km radius of the assessment area.

The identified bores and a summary of groundwater works details are presented in *Annexure E*.

All of the identified groundwater works were recorded as being monitoring bores installed for the purpose of mining. The licence status of two of the identified bores was “cancelled” indicating they were inactive. It is assumed that all identified active monitoring bores within the search area are used by Evolution to monitor potential groundwater impacts associated with mining operations.

The identified bores were situated in areas underlain by alluvium associated with Lake Cowal and Bland Creek. Bore depths ranged from 9m to 90m below ground level. Driller’s Logs indicate that groundwater was typically encountered in alluvium between 10m and 40m below ground level. Water bearing strata were described as silty clay, clay, gravel, sandy clay and gravelly clay. Standing water levels ranged from 9m to 22m below ground level. Recorded groundwater salinity ranged from 5000 micro Siemens per centimetre ($\mu\text{S}/\text{cm}$) to 36000 $\mu\text{S}/\text{cm}$ indicating groundwater beneath the assessment area had limited potential for beneficial use.

No registered potable or stock water supply bores were identified within 2km of the assessment area.

Table 2: Summary of Registered Groundwater Works within 2km

Bore ID	Distance From Assessment Area (m)	Direction	Depth (m bgl)	SWL (m bgl)	Water Bearing Zone	Registered Use
GW700457	50m	South East	23.2	9.67	Clayey Silt (10-23m)	Monitoring - Mining
GW700586	200m	South	48	21.81	Clay (36-48m)	Monitoring - Mining
GW700594	200m	South East	9	-	-	Monitoring - Mining
GW700458	300m	South East	23.2	11.26	Clayey Silt (10-23m)	Monitoring - Mining
GW703265	300m	South	23.2	21.6	Silty Clay (21-23m)	Monitoring - Mining
GW703264	300m	South	42.6	21.6	Clay, Silty Clay, Sandy Clay (20-42m)	Monitoring - Mining
GW700587	1100m	South East	90	14.4	Clay (24-36m)	Monitoring - Mining
GW700595	1200m	East	84	10.47	Clay and Gravel (20-42m)	Monitoring - Mining
GW700456	1500m	South	23.2	17.89	Silty Clay (20-22m)	Monitoring - Mining
GW703261	1700m	South East	35	13.44	Gravel and Clay (14-30m)	Monitoring - Mining
GW703260	1700m	South East	19	13.56	Clay (13-14m)	Monitoring - Mining
GW700455	1700m	South	23.2	-	-	Monitoring - Mining
GW700588	1900m	South	70	14.35	Clay (18-30m)	Test Bore - Cancelled
GW700589	2000m	South	73	17.86	Clay (24-36m)	Test Bore - Cancelled
GW700454	2000m	South	23.2	20.76	Clayey Silt (20-23m)	Monitoring - Mining

bgl = below ground level

2.7 Sensitive Environments

The nearest sensitive environment to the assessment area was Lake Cowal, which was located approximately 2km to the east of the assessment area.

The nearest residence was situated approximately 930m to the south west of the assessment area.

No registered potable water supply bores were situated within 2km of the assessment area.

3 Site History and Relevant Information

3.1 Lotsearch Property Information Search

Ground Doctor engaged Lotsearch Pty Ltd (Lotsearch) to conduct a search of multiple sources of land and property information relevant to a Stage 1 Contamination Assessment. The Lotsearch report is presented as *Annexure E*.

The Lotsearch report is titled “Environmental Planning and Risk Report, Lot 102 DP 1059150, Lake Cowal, NSW 2671”. The search area covered by the report includes the whole assessment area, despite the title inferring that searches covered Lot 102 DP 1059150 only.

3.2 Interview with Mal Carnegie

On 14 September 2017 Ground Doctor conducted an interview with Mr Mal Carnegie (Mal Carnegie pers. comm., 14 September 2017). Mal Carnegie has lived in the vicinity of the assessment area for the duration of his life. Mal is nephew of Colin Carnegie, who owned and ran “Thornton” from circa 1979 to 2002. Mal spent time within the assessment area when it operated as a pastoral property.

Mal examined several historical aerial photographs of the assessment area (refer to *Section 3.4*). Mal was able to identify the former buildings within the vicinity of the homestead based on the 1973 aerial photograph. Mal indicated buildings within the assessment area comprised:

- a small dwelling that was clad in fibre cement sheeting;
- a rectangular metal clad grain storage shed;
- a metal clad cylindrical grain silo;
- a rectangular metal clad machinery shed; and
- a rectangular open sided hay shed.

A blacksmiths forge had been located close to the former dwelling and had been used to shoe horses and to make and repair farm equipment.

The former layout of the homestead precinct, as indicated by Mal Carnegie and shown in historical aerial photography, is shown in *Figure 4 of Annexure A*.

Mal indicated that the dwelling was modest and relatively small. The former concrete slab floor of the dwelling remained at the time of the site inspection.

The grain shed and silo were used to store grain grown at the property. Mal indicated that grain was typically fumigated prior to or during storage using commonly available pesticides. Grain was fumigated whilst it was augered into the storage facilities.

The machinery shed was used to store equipment and to serve as a workshop for farm machinery. Mal indicated that the machinery shed had a bitumen sealed floor.

Mal indicated that there was no bulk fuel storage within the assessment area. There was no bulk storage of agricultural chemicals. Any chemical used was purchased within small retail sized containers. There was no chemical treatment of livestock within the assessment area. Livestock had been treated at another property to the south of the assessment area that was run by other members of the Carnegie family.

Mal indicated that the dwelling, machinery shed and hay shed were destroyed by a fire which occurred in the late 1980s. No-one had resided at the property since the fire.

Mal indicated that there were mine shafts in the northern portion of the assessment area (refer to *Figure 3 of Annexure A*). Mal indicated that historical mining activity within the assessment area had targeted reef gold and was conducted at a small scale by individuals. Mal indicated that mining activity within the assessment area did not involve chemical leaching of gold from ore. The mining area was visited during the site inspection. The entrances to the mine shafts were fenced. Some old mining equipment was visible in the vicinity of the old mine shafts. There were no obvious stockpiles of mining debris in the vicinity of the shafts.

Mal indicated that the eastern portion of the assessment area had regularly been cropped. The western portion of the assessment area had also been used for cropping. The extents of cropping areas as indicated by Mal Carnegie are shown in *Figure 3 of Annexure A*. Other areas of the assessment area were used solely for grazing livestock.

Mal indicated that a narrow band of trees spanning the southern portion of the assessment area in several of the aerial photographs was the former mail delivery route.

3.3 Land Title Records

A search of land titles records was undertaken by Advanced Legal Searchers on behalf of Ground Doctor. Results of the search are presented as *Annexure D*.

Lot 101 of DP 1059150 was previously referred to as Portion 11 Parish of Corringale and later Lot 11 DP 753083.

Lot 102 DP 1059150 was previously referred to as Portion 12 Parish of Corringale and later Lot 12 DP 753083.

In 2004 Lot 11 and Lot 12 of DP 753083 were purchased by Barrick Australia Limited, presumably for the establishment of CGO. Lake Cowal Road and the adjacent TSR previously traversed the CGO mining lease. The establishment of CGO required Lake Cowal Road and the adjacent TSR to be rerouted through Lot 11 and Lot 12 DP 753083. New cadastral boundaries were established in DP 1059150 as follows:

- Lot 100 of DP 1053150 (representing the TSR adjacent to Lake Cowal Road) was established in 2004 through land that was formerly part of Lot 11 and Lot 12 of DP 753083. Ownership of Lot 100 DP 1059150 was transferred to the State of NSW once created.
- Areas of Lot 11 DP 753083 outside of the TSR and Lake Cowal Road were identified as Lot 101 DP 1059150.
- Areas of Lot 12 DP 753083 outside of the TSR and Lake Cowal Road were identified as Lot 102 DP 1059150.

The historical ownership of Lot 101 DP 1059150 is summarised in *Table 3*. The historical ownership of Lot 102 DP 1059150 is summarised in *Table 4*. Tables 3 and 4 also describe historical ownership relevant to Lot 100 of DP 1053150 (i.e. these tables present the history of Lot 100's previous land titles).

Table 3: Summary of Land Ownership – Lot 101 DP 1059150

Period	Site Owner / Lease Details
Lot 101 DP 1059150	
2004 – to date	Barrick Australia Limited
Lot 11 DP 753083	
2003 – 2004	Barrick Australia Limited <i>(previously known as Homestake Australia Limited)</i>
2002 – 2003	Homestake Australia Limited
1990 – 2002	Nyelva Moya Carnegie, married woman
Portion 11 Parish Corringle – Area 640 Acres - CTVol 9683 Fol 21	
1964 – 1990	Nyelva Moya Carnegie, married woman
Portion 11 Parish Corringle – Area 640 Acres – CTVol 2743 Fol 116	
1955-1964	Enid Isobel Carnegie, spinster
1922-1955	Roy Charles John Hammond, grazier
1921-1922	Khmon Perry, grazier
1917-1921	The Commercial Banking Company of Sydney Limited, grantee
Portion 11 Parish Corringle – Area 640 Acres	
Prior – 1917	Crown Land
<i>(1886 – 1917)</i>	<i>(Conditional Purchase 1886/2 Wyalong)</i>

Table 4: Summary of Land Ownership – Lot 102 DP 1059150

Period	Site Owner / Lease Details
Lot 102 DP 1059150	
2004 – to date	Barrick Australia Limited
Lot 12 DP 753083	
2003 – 2004	Barrick Australia Limited <i>(previously known as Homestake Australia Limited)</i>
2002 – 2003	Homestake Australia Limited
1990 – 2002	Colin Carnegie, farmer and grazier
Portion 12 Parish Corringle – Area 1552 Acres 1 Rood 29 Perches - CTVol 4615 Fol 233	
1979 – 1990	Colin Carnegie, farmer and grazier
1955 – 1979	Herbert John Carnegie, grazier
1934 – 1955	Roy Charles John Hammond, grantee
Portion 12 Parish Corringle – Area 1552 Acres 1 Rood 29 Perches	
Prior – 1934	Crown Land
<i>(1928 – 1934)</i>	<i>(Conditional Purchase 1928/41 Wyalong to Roy Charles John Hammond)</i>
<i>(1910 – 1928)</i>	<i>(Conditional Purchase 1910/45 Wyalong to Bank of New South Wales)</i>

The majority of the assessment area was situated within former Lot 12 DP 753083. This part of the assessment area was crown land until 1934, when it was granted to Roy Hammond (a grazier). Title information indicates that the land was occupied by Roy Hammond from 1910. A title plan documents land occupation by Frank Harper Allen as early as 1886. Land title was transferred to Herbert Carnegie in 1955 and remained in the Carnegie family until 2002.

A small portion of the eastern corner of the assessment area was situated within former Lot 11 DP 753083. This part of the assessment area was crown land until 1917, when it was granted to The Commercial Banking Company of Sydney Limited. A title plan documents land occupation by Frank Harper Allen as early as 1886. Land title was transferred to Khmon Perry (a grazier) in 1921 and then to Roy Hammond (a grazier) in 1922. Land title transferred to Enid Carnegie in 1955 and the land remained under ownership of the Carnegie family until 2002.

The assessment area was purchased by Homestake Australia Limited in 2002. Homestake was later acquired by Barrick Australia Limited in 2003 and the assessment area changed ownership to Barrick Australia Limited from 2004 to the time of reporting. The assessment was acquired by Evolution in 2015, at the same time as the adjacent mining operation was purchased.

3.4 Aerial Photography Review

In order to assess past land uses at the site and on adjoining properties, Ground Doctor reviewed aerial photographs taken in 1958, 1973, 1983, 1989, 1993, 1997, 2004, and 2015. The photographs reviewed are presented in *Annexure E*.

3.4.1 The Assessment Area

The basic layout and use of the assessment area appears consistent in all of the aerial photographs, with the exception of the relocation of Lake Cowal Road and the adjacent TSR (Lot 100 DP 1059150) circa 2004.

The 1958 aerial is a relatively poor quality image and it is not clear what buildings are present within the homestead precinct. In the 1973 photograph several buildings are visible in the homestead precinct. Based on information by Mal Carnegie (refer to *Section 3.2*) buildings in this area included a fibro clad dwelling, rectangular grain shed, a grain silo, a machinery shed and a hay shed.

The homestead precinct remains similar in the 1983 aerial photograph. In the 1989 aerial photograph the dwelling, machinery shed and hay shed are not visible. Mal Carnegie (refer to *Section 3.2*) indicated that these building were destroyed by fire in the late 1980s.

In the 1958, 1973 and 1983 aerial photographs there is a narrow line of trees running in a south south west to north north west direction in the area to the west of the Homestead. The line of trees corresponds to an easement marked on a land title plan dating back to the late 1800s. Mal Carnegie (refer to *Section 3.2*) indicated that this was a mail route.

Ploughed soil indicative of cropping activity is evident in several of the aerial photographs. The aerial photographs indicate land in the eastern portion of the assessment area was regularly cropped. The aerial photographs do not show any evidence of cropping in the western portion of the assessment area, however, Mal Carnegie indicated that cropping also occurred in this area.

With the exception of minor changes to vegetation there are few if any significant changes to land use visible in the series of aerial photographs. Lake Cowal Road and the adjacent TSR are first visible in the 2004 aerial photograph. A large excavation believed to be a water storage dam is present on the southern side of Lake Cowal Road. It is possible that the observed excavation was used to supply material to build part of Lake Cowal Road.

With the exception of Lake Cowal Road, there is no visible evidence of significant earthworks or filling in any of the aerial photographs. There is no evidence of livestock yards in any of the photographs. Mal Carnegie indicated that all intensive livestock activity (such as yarding and chemical treatment) occurred on a property located further to the south that was also operated by the Carnegie family.

3.4.2 Adjacent Land Use

Land adjacent to the assessment area appeared to have been used for agricultural purposes (mixed cropping and grazing of livestock) in all aerial photographs reviewed with the exception of the following.

- A rail corridor was present along the western boundary of the assessment area in each aerial photograph.
- In the 2004 aerial photograph development of the Cowal Gold Mine is apparent to the south of the assessment area, and a TSF is being constructed on land to the south of Lake Cowal Road. In the 2015 aerial photograph, both the NTSF and STSF exist to the south of the assessment area.

3.5 Council Document Review

Ground Doctor submitted a Government Information Public Access request to Bland Shire Council to access available council records that may be relevant to the assessment area. Ground Doctor visited the Bland Shire Council office at West Wyalong on 14 September 2017 to view the property files made available by Bland Shire Council.

The search was conducted based on the address of the assessment area, namely 419 Uncle Bill's Road, Lake Cowal, NSW. This address covered a much greater extent than the assessment area and included areas now occupied by CGO. The files reviewed related to development occurring outside of the assessment area and most were associated with development of the CGO. The files viewed are summarised in *Table 5*.

Table 5: Bland Council Files Reviewed

Reference	Description	Relevance
DA/2006/078	Development application for installation of septic system at "Hillgrove".	Not within assessment area. Not relevant.
ACT/2006/013	Development application to subdivide Lot 7 DP 753083.	Not within assessment area. Not relevant.
ACT/2008/018	Development application to install a temporary storage shed.	Not within assessment area. Not relevant.
ACT/2007/001	Development application to install a temporary office.	Not within assessment area. Not relevant.
DA/2005/091	Development application by Barrick Australia to relocate a temporary office.	Not within assessment area. Not relevant.
DA/2005/097	Development application by Barrick Australia for erection of a shed.	Not within assessment area. Not relevant.
ACT/2006/013	Development application to install a temporary office.	Not within assessment area. Not relevant.
DA/2006/013	Development application to relocate a temporary office.	Not within assessment area. Not relevant.
DA/1/04/6814	Development application for a new road to access Cowal Gold Mine.	Not within assessment area. Not relevant.

3.6 NSW EPA Notified Contaminated Sites

Ground Doctor engaged Lotsearch Pty Ltd (2017) to conduct searches of the NSW EPA list of sites notified under section 60 of the Contaminated Land Management Act 1997, and other databases maintained by the NSW EPA identifying potentially contaminated land based on historical land use. The search was conducted on 25 August 2017. Search results are presented in *Annexure E*.

There were no notifications listed for the site or within a 500m buffer of the assessment area.

3.7 NSW Protection of the Environment Operations Act Licenced Activities

Ground Doctor engaged Lotsearch Pty Ltd (2017) to conduct a search of the NSW EPA register of licences made under the Protection of the Environment Operations Act 1997. These searches were conducted on 25 August 2017. Search results are presented in *Annexure E*.

No licensed activities were identified within the assessment area.

Five mining related licenses were identified for land outside of the assessment area on the southern side of Lake Cowal Road. These licenses were held by Evolution.

Two railway licenses applied to the railway corridor immediately west of the assessment area.

3.8 NSW SafeWork Dangerous Good Records

NSW SafeWork conducted a search of their database for records pertaining to the storage of dangerous goods within the assessment area. The search application requested the search be undertaken referencing Lot 102 DP 1059150, the street address (419 Uncle Bills Road, Lake Cowal, NSW), and the original property name (“Thornton”). NSW SafeWork did not find any records.

Results of the search are presented as *Annexure F*.

3.9 Section 149 Certificates

Ground Doctor reviewed Section 149 Certificates for Lot 100, Lot 101 and Lot 102 of DP 1059150. The Section 149 Certificates are presented as *Annexure G*.

The certificates indicate that as of 10 August 2017, with respect to meaning within the Contaminated Land Management Act 1997:

- Bland Council had no record that the land is significantly contaminated;
- Bland Council had no record that the land was subject to a management order;
- Bland Council had no record that the land was subject to an approved voluntary management proposal;
- Bland Council had no record that the land was subject to an ongoing maintenance order; and
- Bland Council had no record that the land was subject of a site audit.

3.10 Summary of Site History

The site history has been summarised based on the collective information outlined above and is presented in *Table 6*.

Table 6: Summary of Site History

Period	Inferred Land Use / Relevant Information
Prior to 2002	<p>The assessment area was used for agricultural purposes since time of first permanent settlement. Land titles information indicates first documented land occupation from the 1880s. Agricultural use appears to have been limited to grazing of livestock and growing of annual cereal crops.</p> <p>Some small scale gold mining is known to have occurred in the northern portion of the assessment area but did not involve chemical processing of ore.</p> <p>Development within the assessment area has been largely limited to the area in close proximity to the former homestead of “Thornton”. Development included a fibre cement sheeting clad dwelling, two grain storages, a machinery shed, a hay shed and a blacksmiths forge.</p> <p>Information provided by Mal Carnegie indicated that chemical treatment of livestock was never performed within the assessment area. Grain storages were fumigated with commonly used pesticides. There was no bulk agricultural chemical or fuel storage within the assessment area.</p> <p>Inspection of aerial photographs did not identify any evidence of significant filling within the assessment area.</p> <p>Mal Carnegie indicated that the former dwelling, machinery shed and hay shed were destroyed by fire in the late 1980s.</p>
2002 to 2017	<p>The assessment area has been owned by the adjoining CGO. During this period the assessment area appears to have been used for grazing of livestock.</p> <p>Lake Cowal Road and the adjacent TSR were relocated to the existing location circa 2004.</p>

4 Potential Areas of Environmental Concern

Ground Doctor assessed potential areas of environmental concern at the site based on the information presented in *Sections 2 and 3*. Potential areas of environmental concern are discussed in *Table 7*.

Table 7: Summary of Potential Areas of Environmental Concern

Potential Area of Concern	Summary of Issue	Potential Contaminants of Concern / Hazards
Asbestos Containing Material	The former dwelling within the assessment area was clad in fibre cement sheeting. The dwelling is believed to have been built in the mid 1900s and was destroyed by fire in the late 1980s. During the site inspection fibre cement sheeting fragments were observed at the ground surface in the vicinity of the former dwelling. Fibre cement sheeting used during this period typically contains asbestos.	Asbestos
Cropping Areas	Parts of the assessment area were formerly cropped. It is possible that pesticides, herbicides and fertilisers were used within the cropping areas.	Organochlorine pesticides (OCPs), Organophosphate pesticides (OPPs), metals
Grain Storages	Grain storages were likely to have been treated with pesticides.	OCPs, OPPs, metals
Machinery Shed	The machinery shed was used to maintain farm machinery. There was potential for petroleum hydrocarbons to be lost to the ground surface in the vicinity of the machinery shed.	Total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylene (BTEX) polycyclic aromatic compounds (PAHs), metals
Blacksmiths Forge	A small blacksmiths forge as located immediately north of the former dwelling.	TRH, PAHs, metals

With the exception of asbestos containing materials, the risk of significant land contamination due to the potentially contaminating activities identified in *Table 7* was considered low due to the scale of operations within the assessment area. For example, the blacksmiths forge would have been used on an as required basis for on-farm horse shoeing, mechanical repairs and tool making only, rather than for full time commercial operations. Similarly, the machinery shed would have been used to store property specific machinery that would have undergone maintenance on a seasonal basis only. Grain storages were relatively small and used for storage of on-farm production on a seasonal basis only. Quantities of pesticides used would also be small and number of applications limited as grain storage would have been temporary. Cropping activity within the assessment area appears to have been conducted on a seasonal basis at a relatively small scale.

A railway corridor was present along the western boundary of the assessment area. The rail corridor was occupied by a single track. There were no sidings present. In this setting, potential issues of concern related to railway use of land would be limited to application of herbicides along the track. There was a buffer of approximately 15m between the track and the assessment area boundary. In this setting, potential for impacts to have encroached onto the assessment area were considered low and did not warrant further assessment.

Lake Cowal Road was constructed circa 2004. Given the timing and nature of this work, it is likely that controlled fill was used to construct the road. Any imported fill is most likely to have been sourced from a nearby borrow pit. Land contamination risks associated with this activity were considered low and did not warrant further assessment.

5 Preliminary Sampling and Analytical Plan

The Data Quality Objectives process was used to develop a preliminary sampling and analytical plan.

5.1 Issues Identification

5.1.1 Potential Areas of Environmental Concern

A number of potentially contaminating activities were identified based on results of the desktop study of the site history. These are summarised in *Table 7*.

5.1.2 Site Conceptual Model

Evolution proposes to use the assessment area for mining related activity. In particular, for stockpiling stripped soil for use in future site rehabilitation works, and for the relocation of Lake Cowal Road. *Figure 5 of Annexure A* shows the approximate footprint of these activities within the assessment area.

All of the identified potential sources of contamination were situated or occurred above ground. Near surface soil was most likely to have been impacted, if significant impacts had occurred. Therefore, collection of near surface soil samples was considered appropriate for preliminary assessment purposes.

The potential sources of contamination identified in the vicinity of the homestead were point sources. The potentially contaminating activity occurred around former buildings or structures. Potential contamination associated with cropping (i.e. application of agricultural chemicals across a relatively large area of the assessment area) was a diffuse source.

If contamination existed within the assessment area potential human health exposure pathways that would require consideration would include:

- Direct contact with soil; and
- Inhalation of dust.

There were no dwellings or enclosed work areas within the assessment area, and these are not proposed as part of the Modification. Vapour inhalation risks were not of concern. However, analytical results for soil samples were compared to vapour intrusion related human health thresholds (refer to *Section 5.5*) for completeness.

The proposed future use of the site is not considered more sensitive than the existing use. With respect to potential human health risks the proposed future use would be best described as “commercial / industrial”. Personnel would only be present within the assessment area during an average working day and no one would reside within the assessment area.

With respect to potential environmental risks, the proposed future use would be considered moderately sensitive. It is envisaged that the assessment area would continue to be used for agricultural purposes, ancillary mining activities (i.e. soil stockpiling) or as an environmental buffer around the CGO. Soil stockpiled within the assessment area is to be reused in rehabilitation works so should be suitable for the establishment of native vegetation within rehabilitation areas. The assessment area should be free of contaminants that could be spread into future rehabilitation areas.

5.2 Identify the Decision

The primary objective of this assessment was to assess the suitability of the assessment area for the proposed future use as required by NSW SEPP No. 55.

5.3 Identify Inputs to the Decision

A desktop assessment of site history was used to identify past land uses that had potential to have resulted in land contamination. The findings of the desktop assessment are summarised in *Section 3*.

Preliminary soil samples were collected at selected locations to quantify potential land contamination. The need for a more detailed Stage 2 assessment was to be evaluated based on the results of preliminary soil sampling and analysis. If significant impacts were not observed in near surface soil close to the potential sources then it was unlikely that significant contamination existed within the assessment area.

5.4 Define the Study Area Boundary

The assessment area boundary is marked on *Figure 2 of Annexure A*.

5.5 Decision Rule – How to Assess Risk

Ground Doctor used field observations to identify potential aesthetic impacts or contaminants such as potential asbestos containing materials (PACMs), which are best identified visually.

Soil analytical data was assessed against thresholds published in the National Environment Protection Council (NEPC) (1999) *National Environment Protection (Assessment of Site Contamination) Measure* (the NEPM) (revised April 2013).

5.5.1 Petroleum Hydrocarbons

Petroleum hydrocarbon concentrations in soil were compared to health screening levels (HSLs), ecological screening levels (ESLs) and management limits published in the NEPM (2013). Ground Doctor adopted the most conservative (lowest) of the published HSLs, ESLs, and Management Limits as a preliminary screening threshold. The adopted screening thresholds are summarised in *Table 8*.

5.5.2 Health Investigation Levels

Ground Doctor adopted Health Investigation Levels (HILs) outlined in the NEPM (2013) for assessment of non-petroleum hydrocarbon impacts in soil. Ground Doctor adopted the most conservative (lowest) of the published HILs as a preliminary screening threshold. The adopted screening thresholds are summarised in *Table 8*.

Where no HIL was published for analytes of concern, Ground Doctor used detection of any such compound as preliminary screening criteria.

5.5.3 Ecological Investigation Levels

Ground Doctor adopted Ecological Investigation Levels (EILs) outlined in the NEPM (2013) for assessment of non-petroleum hydrocarbon impacts in soil. Ground Doctor adopted the most conservative (lowest) of the published EILs as preliminary screening thresholds. The adopted screening thresholds are summarised in *Table 8*.

5.5.4 Summary of Screening Thresholds

The adopted preliminary screening thresholds used to assess analytical data are summarised in *Table 8*.

Table 8: Preliminary Screening Threshold for Soil Analytical Data

Potential Contaminants / Analyte	Ecological Threshold	Health Based Threshold
TRH		
TRH (C ₆ -C ₁₀)	180	45
TRH (>C ₁₀ -C ₁₆)	120	110
TRH (<C ₁₆ -C ₃₄)	300	-
TRH (C ₃₄ -C ₄₀)	2800	-
BTEX		
Benzene	-	0.5
Toluene	-	160
Ethylbenzene	-	55
Total Xylenes	-	40
PAHs		
Naphthalene	170	-
Benzo(a)pyrene	0.7	-
Benzo(a)pyrene TEQ	-	3
Total PAH's	-	300
Metals		
Arsenic	100	100
Cadmium	-	20
Chromium	190*	100
Copper	60*	6000
Lead	1100*	300
Mercury	-	40
Nickel	30*	400
Zinc	70*	7400
OCPs		
Hexachlorobenzene	-	10
Heptachlor	-	6
Aldrin	-	6 ^a
gamma-chlordane	-	50 ^b
alpha-chlordane	-	50 ^b
Endosulfan I	-	270 ^d
DDE	-	240 ^c
Dieldrin	-	6 ^a
Endrin	-	10
DDD	-	240 ^c
Endosulfan II	-	270 ^d
DDT	180	240 ^c
Methoxychlor	-	300
OPPs		
Chlorpyrifos	-	160
a Guideline applies to the sum of Aldrin and Dieldrin concentrations b Guideline applies to the sum of alpha and gamma chlordane concentrations c Guideline applies to the sum of DDE, DDD and DDT concentrations d Guideline applies to the sum of Endosulfan I and Endosulfan II concentrations * EIL is the most conservative "Added Contaminant Limit", not total concentration		

5.5.5 Soil Decision Rule

The adopted assessment criteria were not intended to be a site suitability criteria. The assessment criteria were intended to provide some preliminary limits which prompt further consideration of site specific conditions where exceeded.

5.6 Specify Limits on Decision Errors

Ground Doctor collected and analysed a field duplicate sample for quality assurance and quality control (QAQC) purposes. Ground Doctor adopted the following criteria with which to assess the results of duplicate sampling:

- Calculated relative percentage difference (RPD) values should be less than 50% where the reported concentrations of analytes are greater than 10 times the estimated quantification limit (EQL);
- Calculated RPD values should be less than 75% where the reported concentrations of analytes are greater than 5 times the EQL but less than 10 times the EQL; and
- Calculated RPD values should be less than 100% where the reported concentrations of analytes are less than 5 times the EQL.

5.7 Optimise the Design for Collecting Data

5.7.1 Asbestos Containing Materials

Small pieces of fibro were visible on the ground surface in the vicinity of the former dwelling. A piece of fibro was collected from the ground surface in the footprint of the former dwelling. The sample was labelled "PACM1".

The sample was analysed to see whether the fibro contained asbestos.

5.7.2 Cropping Areas

Soil samples "SS1", "SS2" and "SS3" were collected from the upper 0.2m of soil within the identified cropping areas as marked in *Figure 3 of Annexure A*. Near surface soil was considered appropriate as the samples were targeting application of agricultural chemicals at the surface.

These samples were analysed for OCPs, OPPs and heavy metals.

5.7.3 Grain Storages

Soil samples "SS4" and "SS5" were collected from the upper 0.2m of soil immediately south of the grain storages. Near surface soil was considered appropriate as fumigants were applied above ground. Surface soil represented the area most likely to be impacted if contamination had occurred.

These samples were analysed for OCPs, OPPs and heavy metals.

5.7.4 Machinery Shed

Soil sample "SS6" was collected from the upper 0.2m of soil in the footprint of the former machinery shed. A near surface sample was considered appropriate for assessing potential surface spills or petroleum hydrocarbons at the ground surface.

This sample was analysed for TRH, BTEX, PAHs and heavy metals.

5.7.5 Blacksmith's Forge

Soil sample "SS7" was collected from the upper 0.2m of soil immediately adjacent to the former blacksmiths forge. A near surface sample was considered appropriate as blacksmith related activity occurred above ground.

This sample was analysed for TRH, BTEX, PAHs and heavy metals.

5.7.6 Quality Assurance and Quality Control

A field duplicate sample “SS8” was collected at “SS1” to assess the repeatability of the adopted soil sampling and analytical procedures.

5.7.7 Sample Sampling Methodology

Soil samples were collected by hand from near surface soils. A hand tool was used to break up near surface soil. Care was used to ensure the sampled soil had not come into direct contact with the hand tool.

The sampler wore clean disposable nitrile gloves at each sampling location. Samples were placed directly into a new laboratory supplied 125 millilitre (mL) glass jar that was labelled with appropriate sample identification, the project identification and sampling date.

Soil samples were placed on ice inside an esky immediately after collection.

5.7.8 Soil Sample Analysis

Sample analysis was sub-contracted to Envirolab Services (Sydney). The soil samples were sent to Envirolab services (Sydney, NSW) by express overnight courier. Envirolab Services had National Association of Testing Authorities accreditation for the proposed analysis and used analytical methods which comply with the NEPM (2013) guidelines.

6 Analytical Results

Analytical results are presented and compared to the preliminary assessment thresholds in *Table B1* and *Table B2* of *Annexure B*.

The laboratory certificate of analysis is presented as *Annexure C*.

6.1 Asbestos

Asbestos was identified in sample “PACM1”, which was a piece of fibre cement sheeting found in the footprint of the former dwelling. Envirolab reported that the sample contained chrysotile, amosite and crocidolite asbestos fibres.

6.2 TRH, BTEX and PAHs

Samples SS6 and SS7 were analysed for TRH, BTEX and PAHs. The reported TRH, BTEX and PAHs concentrations were less than the laboratory EQLs and the adopted human health and ecological assessment thresholds.

6.3 Pesticides

Samples SS1 – SS5 were analysed for OCPs and OPPs. The reported OCPs and OPPs concentrations were less than the laboratory EQLs and the adopted human health and ecological assessment thresholds.

6.4 Metals

Samples SS1 – SS7 were analysed for metals. The reported metals concentrations in each sample were less than the adopted human health and ecological assessment thresholds with the exception of zinc in two samples (SS4 and SS7).

The reported zinc concentrations in samples SS4 and SS7 were 200 milligrams per kilogram (mg/kg) and 100mg/kg respectively, which exceeded the preliminary ecological threshold for zinc of 70mg/kg but were less than the human health threshold.

6.5 Discussion of Results

Asbestos was detected in a sample of fibre cement sheeting collected from the ground surface in the footprint of the former dwelling. The result indicates that the fibro cladding on the former dwelling contained asbestos and that other fragments of the fibro material would also contain asbestos. There were many small pieces of broken fibre cement sheeting on the ground surface close to the former dwelling and many were less than 2 centimetres in size. Based on the number and small size of the fragments observed it is possible that friable asbestos exists in near surface soil in the vicinity of the former dwelling.

The presence of asbestos containing material does not affect the assessment area’s suitability for the proposed use. *Figure 5* of *Annexure A* shows the approximate footprint of development proposed within the assessment area. A soil stockpile is to be established in the south east portion of the assessment area. Lake Cowal Road is to be realigned along the western and northern areas of the assessment area. Development is not proposed within the vicinity of the former homestead. Asbestos impacted soil in the vicinity of the former dwelling is situated at least 150m from the proposed alignment of Lake Cowal Road and would not be disturbed during the proposed development.

The asbestos impacted area could be remediated by removal of near surface soil, with subsequent validation of remaining soil by a hygienist. If the area cannot be remediated prior to the proposed development, controls could be implemented to manage human health risks. Controls could include constructing a fence around the impacted area with signs indicating that the fenced area contains asbestos. Silt fencing could be installed around the perimeter to act as a wind break and prevent wind / water erosion of soil from the impacted area. Administrative controls could also be implemented prior to the proposed development to ensure personnel working within the assessment area are aware of the asbestos impacted area and do not disturb it or mix it with other soil.

The reported concentrations of OCPs and OPPs in soil samples collected from the cropping areas and adjacent to grain storages were less than the EQL and/or the adopted preliminary assessment thresholds. The results indicate there is unlikely to be significant (unacceptable) chemical residue in soil due to former cropping activities or grain fumigation.

Reported metals concentrations in soil samples collected in cropping areas were less than the adopted preliminary assessment thresholds indicating no unacceptable metals impacts.

With the exception of zinc in two samples, reported metals concentrations in samples collected near the grain storages and blacksmiths forge were less than the adopted preliminary assessment thresholds. The reported zinc concentrations in samples SS4 and SS7 were 200mg/kg and 100mg/kg respectively, which exceeded the preliminary ecological threshold for zinc of 70mg/kg. Zinc concentrations were well below the human health threshold of 7400mg/kg.

The preliminary zinc threshold (70mg/kg) was the most conservative of the “*added contaminant limit*” (ACL) published in the NEPM (2013). The ACL for zinc is typically calculated using the measured soil pH and the soil cation exchange capacity (CEC). The background zinc concentrations would also then be added to the ACL to develop a site specific threshold. Samples collected from the site were limited in number and were not analysed for pH and CEC. It was not possible to calculate a site specific threshold for zinc in soil. It is noted that where pH of soil exceeds 6.0, the minimum ACL for zinc is 230mg/kg, which is higher than the maximum concentrations of zinc measured in soil samples from the assessment area.

Zinc is present in the regolith naturally and was reported in each soil sample from the assessment area at concentrations ranging from 16mg/kg to 200mg/kg. The more elevated concentrations at SS4 may be related to the use of galvanised metal cladding on the nearby grain shed. Elevated zinc near the blacksmiths forge may be related to solder or use of galvanised metal in the vicinity of the forge.

Petroleum hydrocarbons and PAHs were not detected in soil samples collected beneath the former machinery shed. Concentrations of metals in the machinery shed sample (SS6) were also less than the adopted preliminary screening thresholds. The analytical results indicate that significant (unacceptable) contamination is unlikely to be present in the vicinity of the former machinery shed.

7 Quality Assurance and Quality Control

Multiple sources of information were used to establish the site history. Sources were cross checked and where overlap occurred, were found to be consistent.

Surface soil was sampled at locations immediately adjacent to potential point sources of contamination and were analysed for relevant contaminants of concern. The sampler wore clean disposable nitrile gloves when collecting each sample to minimise cross contamination. Where a hand tool was used to break soil for sampling, care was taken to collect soil that had not come into direct contact with the hand tool.

Ground Doctor labelled samples appropriately and placed samples on ice in an esky immediately after collection. Samples remained on ice until they were sent to the analytical laboratory. Samples were sent by overnight courier service to minimise transit time and ensure samples remained on ice whilst in transit. Envirolab indicated that the esky was approximately 8 degrees Celcius upon receipt.

A field duplicate sample was analysed to assess the repeatability of the sampling and analytical procedure. Analytical results for the duplicate and primary sample are presented in *Table B3* of *Annexure B*. Reported concentrations of most analytes within the duplicate and primary sample were less than the EQL, so an RPD could not be calculated. Where analytes were detected, the RPD were less than 6% which indicated good agreement. Duplicate sample results indicated that field procedures and laboratory analysis could achieve repeatable results.

Envirolab performed a number of quality assurance checks as part of the analytical procedures. These include, adding and recovering surrogate compounds to each sample, spiking some samples to measure recovery, analysing blank samples to check for false positives and analysis laboratory duplicate samples. Ground Doctor reviewed lab QAQC data and found that all results were within the laboratory performance criteria.

The level of data QAQC was considered appropriate given the objective of the assessment. Results for QAQC parameters indicate that data was of acceptable quality to assess potential risks to human health and the environment associated with the assessment area. The data could be relied upon to make the conclusions outlined in *Section 8*.

8 Conclusions

The assessment area history and site setting was assessed using a range of data sources. A number of potential areas of environmental concern were identified within the assessment area, primarily related to former agricultural use. These included:

- the presence of fibre cement sheeting fragments on the ground surface in the vicinity of a former dwelling that was destroyed by fire;
- former use of pesticides in grain storages;
- the presence of a machinery shed that was used for mechanical repairs;
- the presence of a blacksmiths forge used for farm related metal works; and
- potential use of pesticides and fertilisers in areas of the assessment area that had been used for cropping.

Qualitative assessment of former site use indicated a low potential for significant (unacceptable) contamination. Preliminary soil sampling and analysis was undertaken to quantify the findings of the desktop assessment. Soil samples were collected immediately adjacent to all identified potential point sources of contamination and within areas where diffuse contamination was possible. A fragment of fibre cement sheeting was also collected to assess whether it contained asbestos.

Results of soil sample analysis indicated that there was no significant (unacceptable) impacts to soil adjacent to the identified point sources, or within areas that had formerly been cropped.

Asbestos was detected in a sample of fibre cement sheeting collected from the ground surface in the footprint of the former dwelling. The result indicates that fibro cladding associated with the former dwelling contained asbestos and that other fragments of the material would also contain asbestos. Ground Doctor observed many small pieces of broken fibre cement sheeting on the ground surface close to the footprint of the former dwelling. Based on the number and small size of the fragments observed it is possible that friable asbestos exists in near surface soil in the vicinity of the former dwelling.

Whilst the presence of asbestos containing material within the assessment area requires further consideration, it does not affect the suitability of the assessment area for the proposed development (i.e. the Modification). Development is not proposed within the vicinity of the former dwelling. Human health risk posed by the identified asbestos containing material could be managed by removing asbestos containing materials from the impacted area or by implementing controls to exclude people from the impacted area and to prevent spread of materials by wind and/or water.

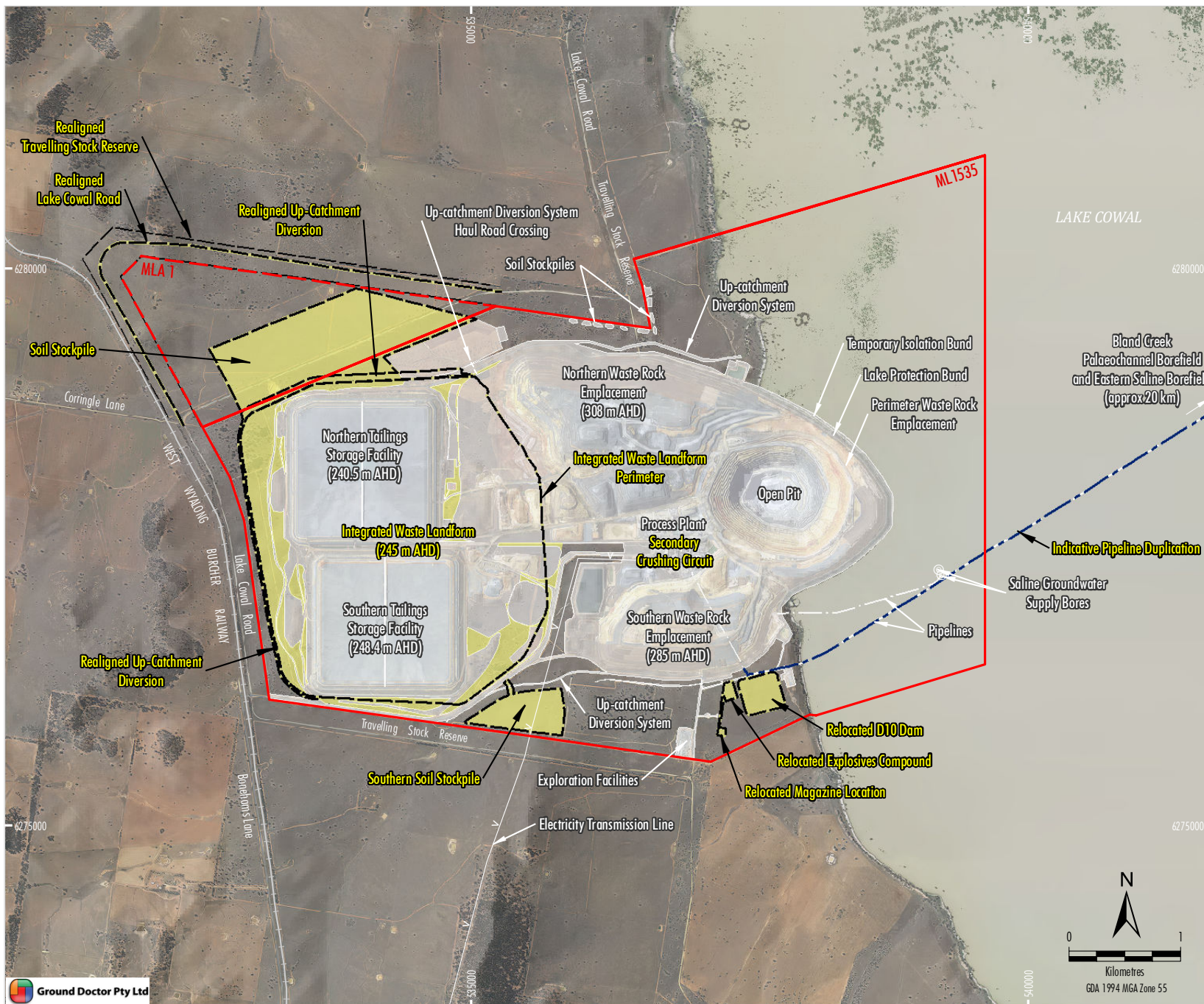
Ground Doctor believes that the assessment area is suitable for the proposed development (i.e. the Modification) in its current state.

9 References

- Geological Survey of NSW (2000), *Wyalong Australian 1:100000 Geological Series Sheet 8330*, First Edition.
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Annexure A

Figures



- LEGEND**
- Mining Lease Boundary (ML 1535)
 - Mining Lease Application Boundary (MLA 1)
 - Approximate Extent of Approved Surface Development
 - Approximate Extent of Additional Modification Surface Disturbance
 - Modification Component

Source: Evolution (2018); © NSW Department of Finance, Services & Innovation (2017)
 Orthophoto: Evolution (Oct 2017)



**CGO PROCESSING RATE MODIFICATION
 Modification General Arrangement**

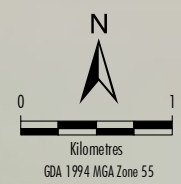
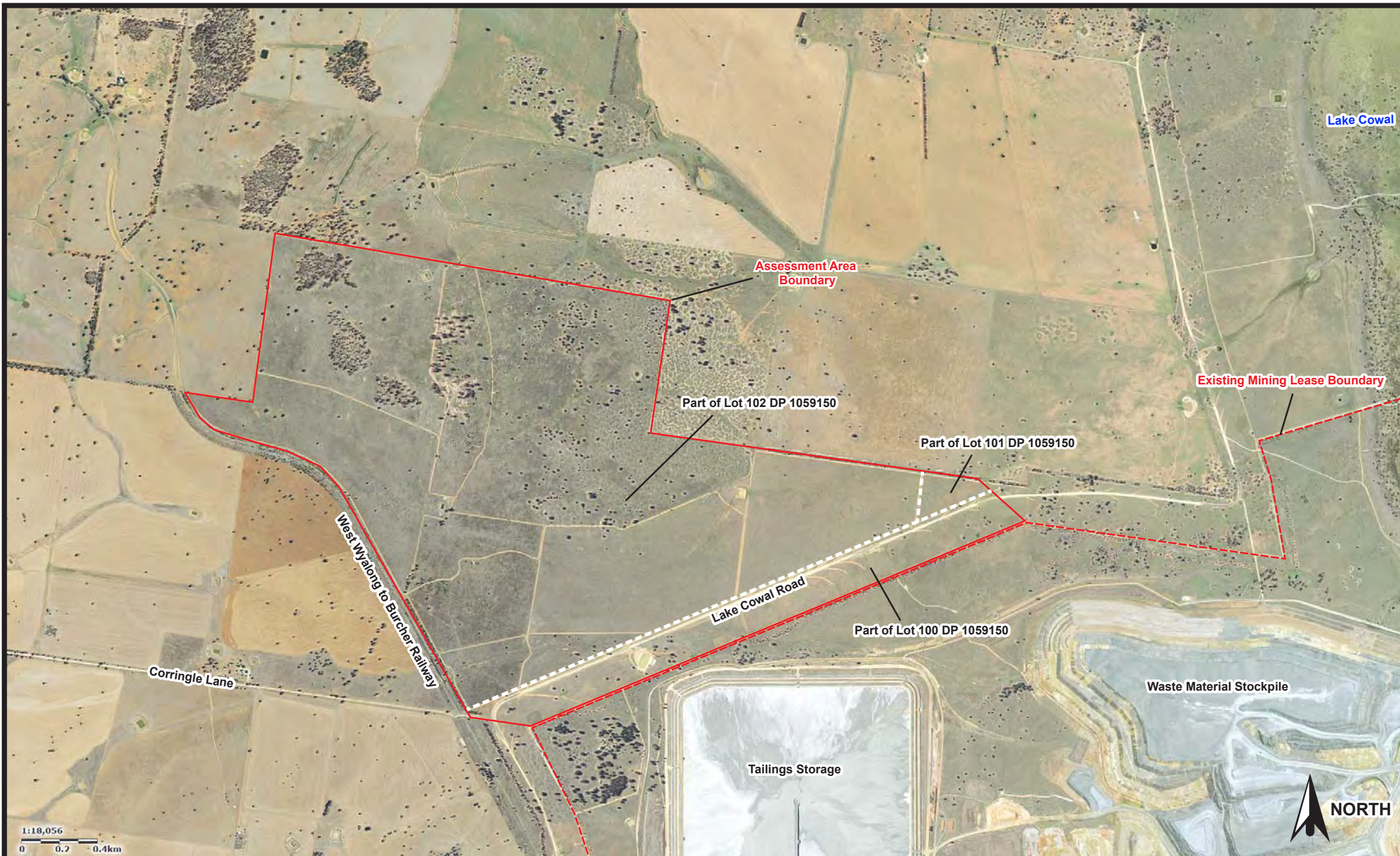


Figure 1



1:18,056
0 0.2 0.4km



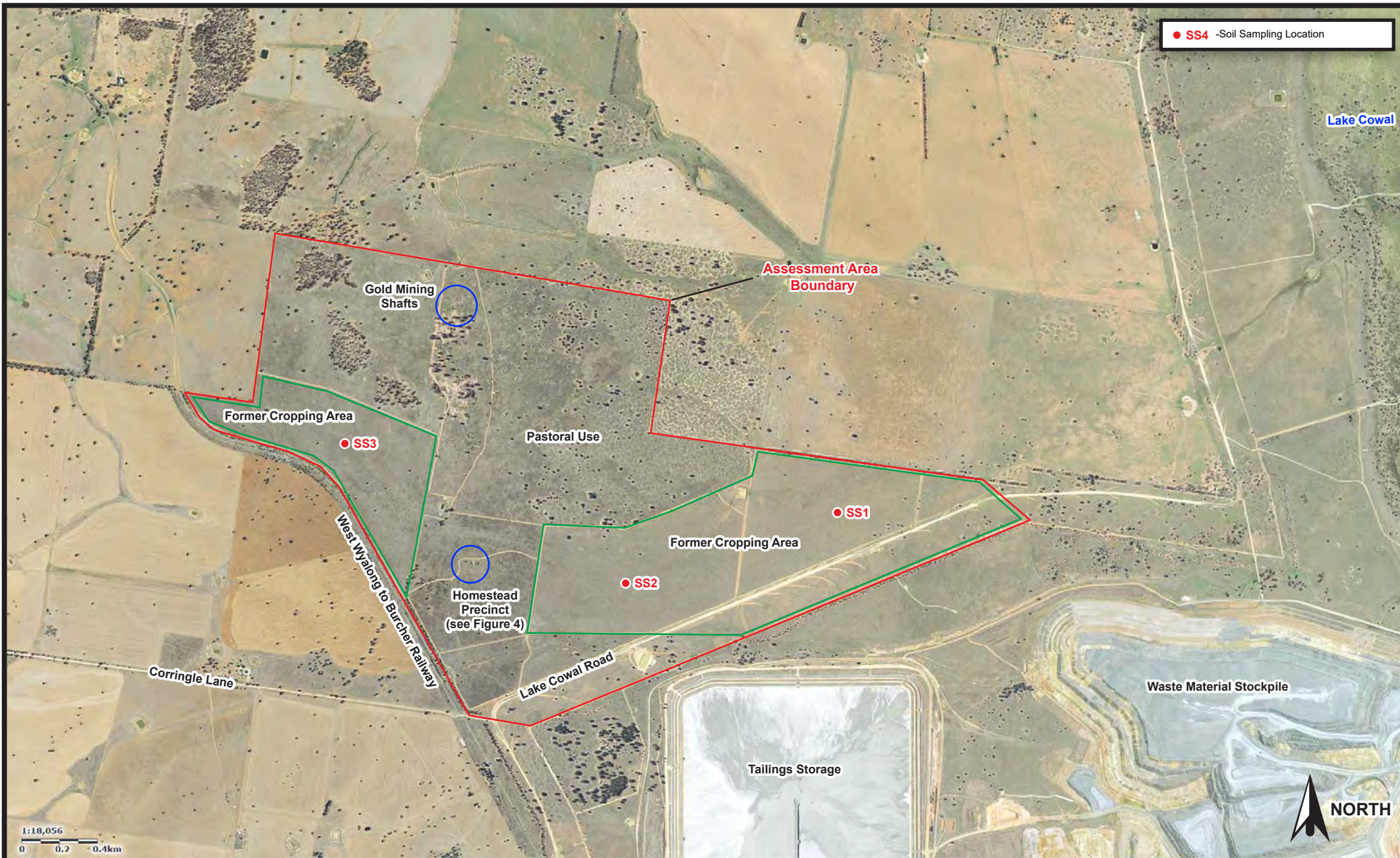
Ground Doctor Pty Ltd

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PO Box 6278
22 Tamworth Street
Dubbo NSW 2830

Project Name:	Stage 1 Contamination Assessment Part of Lot 100, Lot 101 and Lot 102 DP 1059150, Lake Cowal, NSW
Project Number:	2017-GD012

Figure 2
Assessment Area Boundary and Setting



● SS4 - Soil Sampling Location

Lake Cowal

Assessment Area Boundary

Gold Mining Shafts

Former Cropping Area

● SS3

Pastoral Use

● SS1

Former Cropping Area

● SS2

Homestead Precinct (see Figure 4)

Corrangle Lane

West Wyalong to Burcher Railway

Lake Cowal Road

Tailings Storage

Waste Material Stockpile



1:18,056
0 0.2 0.4km



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Project Number:	2017-GD012

Figure 3
Assessment Area Layout and Features

● **SS4** -Soil Sampling Location
 ● **PACM1** -Material Sample Location



1:1,128
 0 15 30m



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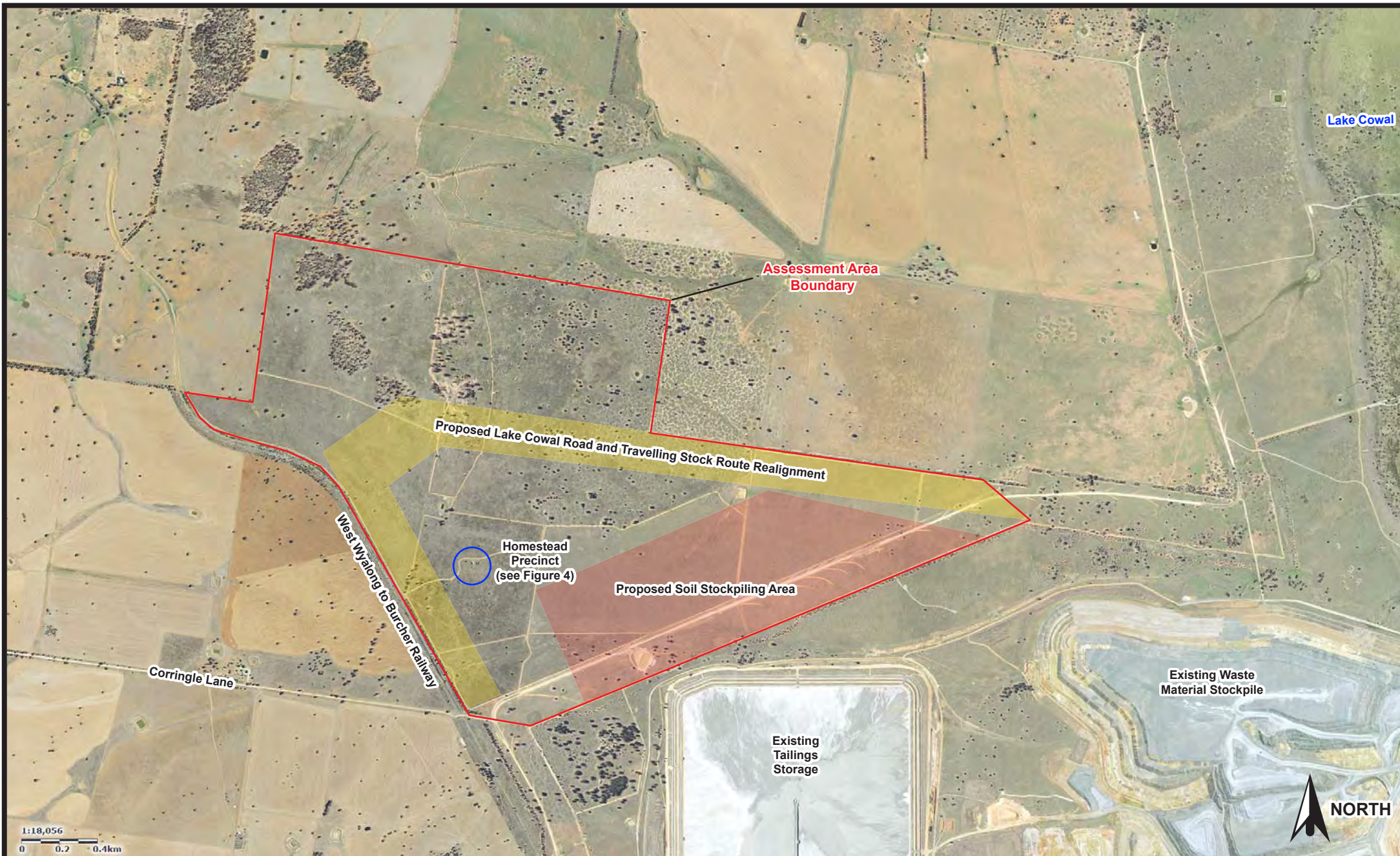
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 Dubbo NSW 2830

Project Name: Stage 1 Contamination Assessment
 Part of Lot 100, Lot 101 and Lot 102 DP 1059150, Lake Cowal, NSW

Figure 4

Project Number: 2017-GD012

Homestead Precinct Layout and Soil Sampling Locations



1:18,056
0 0.2 0.4km



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Project Name: Stage 1 Contamination Assessment
Part of Lot 100, Lot 101 and Lot 102 DP 1059150, Lake Cowal, NSW

Project Number: 2017-GD012

Figure 5

Indicative Proposed Future Use of the Assessment Area

Annexure B

Soil Analytical Results Summary Tables

TABLE B1
Reported Concentrations of Metals, OCPs and OPPs in Soil (mg/kg)
Stage 1 Contamination Assessment - Part of Lot 102 DP 1059150, Lake Cowal, NSW

Sample ID	EQL	NEPM (1999) Ecological	NEPM (1999) Human Health	SS1 14/9/17	SS2 14/9/17	SS3 14/9/17	SS4 14/9/17	SS5 14/9/17	SS6 14/9/17	SS7 14/9/17
Metals										
Arsenic	4	100	100	<4	<4	4	37	30	15	28
Cadmium	0.5	-	20	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	1	190*	100	24	24	28	19	17	12	23
Copper	1	60*	6000	14	13	11	6	6	10	10
Lead	1	1100*	300	10	11	15	11	14	20	25
Mercury	0.1	-	40	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	1	30*	400	9	9	10	8	6	12	11
Zinc	5	70*	7400	16	18	18	200	51	48	100
OCPs										
Hexachlorobenzene	0.1	-	10	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
a-BHC	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
g-BHC (Lindane)	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
b-BHC	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Heptachlor	0.1	-	6	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
d-BHC	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Aldrin	0.1	-	6a	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Heptachlor epoxide	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
gamma-chlordane	0.1	-	50b	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
alpha-chlordane	0.1	-	50b	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Endosulfan I	0.1	-	270d	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
pp-DDE	0.1	-	240c	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Dieldrin	0.1	-	6a	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Endrin	0.1	-	10	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
pp-DDD	0.1	-	240c	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Endosulfan II	0.1	-	270d	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
pp-DDT	0.1	180	240c	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Endrin Aldehyde	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Endosulfan sulphate	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Methoxychlor	0.1	-	300	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
OPPs										
Azinphos-methyl	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Bromophos-ethyl	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Chlorpyrifos	0.1	-	160	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Chlorpyrifos-methyl	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Diazinon	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Dichlorvos	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Dimethoate	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Ethion	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Fenitrothion	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Malathion	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Parathion	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Ronnel	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	-

Shaded cell indicates concentration exceeds assessment criteria

- a Guideline applies to the sum of Aldrin and Dieldrin concentrations
- b Guideline applies to the sum of alpha and gamma chlordane concentrations
- c Guideline applies to the sum of DDE, DDD and DDT concentrations
- d Guideline applies to the sum of Endosulfan I and Endosulfan II concentrations
- * EIL is the most conservative "Added Contaminant Limit", not total concentration

TABLE B2
Reported Concentrations of TRH, BTEX and PAHs in Soil (mg/kg)
Stage 1 Contamination Assessment - Part of Lot 102 DP 1059150, Lake Cowal, NSW

Sample ID	EQL	NEPM (1999) Ecological	NEPM (1999) Human Health	SS6 14/9/17	SS7 14/9/17
TRH					
TRH (C6-C10)	25	180	45	<25	<25
TRH (>C10-C16)	50	120	110	<50	<50
TRH (<C16-C34)	100	300	-	<100	<100
TRH (C34-C40)	100	2800	-	<100	<100
BTEX					
Benzene	0.2	-	0.5	<0.2	<0.2
Toluene	0.5	-	160	<0.5	<0.5
Ethylbenzene	1	-	55	<1	<1
Total Xylenes	3	-	40	<3	<3
PAHs					
Naphthalene	0.1	170	-	<0.1	<0.1
Acenaphthylene	0.1	-	-	<0.1	<0.1
Acenaphthene	0.1	-	-	<0.1	<0.1
Fluorene	0.1	-	-	<0.1	<0.1
Phenanthrene	0.1	-	-	<0.1	<0.1
Anthracene	0.1	-	-	<0.1	<0.1
Fluoranthene	0.1	-	-	<0.1	<0.1
Pyrene	0.1	-	-	<0.1	<0.1
Benzo(a)anthracene	0.1	-	-	<0.1	<0.1
Chrysene	0.1	-	-	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	-	-	<0.2	<0.2
Benzo(a)pyrene	0.05	0.7	-	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	0.1	-	-	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	-	-	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	-	-	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	0.5	-	3	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	0.5	-	3	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	0.5	-	3	<0.5	<0.5
Total +vePAH's	0.05	-	300	<0.05	<0.05

Shaded cell indicates concentration exceeds assessment criteria

TABLE B3
Duplicate Sample Results - Metals, OCPs and OPPs in Soil (mg/kg)
Stage 1 Contamination Assessment - Part of Lot 102 DP 1059150, Lake Cowal, NSW

Sample ID	EQL	NEPM (1999) Ecological	NEPM (1999) Human Health	SS1 14/9/17	SS8 14/9/17	RPD (%)
-----------	-----	------------------------	--------------------------	-------------	-------------	---------

Metals						
Arsenic	4	100	100	<4	<4	-
Cadmium	0.5	-	20	<0.4	<0.4	-
Chromium	1	190*	100	24	23	4
Copper	1	60*	6000	14	14	0
Lead	1	1100*	300	10	10	0
Mercury	0.1	-	40	<0.1	<0.1	-
Nickel	1	30*	400	9	9	0
Zinc	5	70*	7400	16	15	6

OCPs						
Hexachlorobenzene	0.1	-	10	<0.1	<0.1	-
a-BHC	0.1	-	-	<0.1	<0.1	-
g-BHC (Lindane)	0.1	-	-	<0.1	<0.1	-
b-BHC	0.1	-	-	<0.1	<0.1	-
Heptachlor	0.1	-	6	<0.1	<0.1	-
d-BHC	0.1	-	-	<0.1	<0.1	-
Aldrin	0.1	-	6a	<0.1	<0.1	-
Heptachlor epoxide	0.1	-	-	<0.1	<0.1	-
gamma-chlordane	0.1	-	50b	<0.1	<0.1	-
alpha-chlordane	0.1	-	50b	<0.1	<0.1	-
Endosulfan I	0.1	-	270d	<0.1	<0.1	-
pp-DDE	0.1	-	240c	<0.1	<0.1	-
Dieldrin	0.1	-	6a	<0.1	<0.1	-
Endrin	0.1	-	10	<0.1	<0.1	-
pp-DDD	0.1	-	240c	<0.1	<0.1	-
Endosulfan II	0.1	-	270d	<0.1	<0.1	-
pp-DDT	0.1	180	240c	<0.1	<0.1	-
Endrin Aldehyde	0.1	-	-	<0.1	<0.1	-
Endosulfan sulphate	0.1	-	-	<0.1	<0.1	-
Methoxychlor	0.1	-	300	<0.1	<0.1	-

OPPs						
Azinphos-methyl	0.1	-	-	<0.1	<0.1	-
Bromophos-ethyl	0.1	-	-	<0.1	<0.1	-
Chlorpyrifos	0.1	-	160	<0.1	<0.1	-
Chlorpyrifos-methyl	0.1	-	-	<0.1	<0.1	-
Diazinon	0.1	-	-	<0.1	<0.1	-
Dichlorvos	0.1	-	-	<0.1	<0.1	-
Dimethoate	0.1	-	-	<0.1	<0.1	-
Ethion	0.1	-	-	<0.1	<0.1	-
Fenitrothion	0.1	-	-	<0.1	<0.1	-
Malathion	0.1	-	-	<0.1	<0.1	-
Parathion	0.1	-	-	<0.1	<0.1	-
Ronnel	0.1	-	-	<0.1	<0.1	-

Annexure C

Laboratory Certificate of Analysis

SAMPLE RECEIPT ADVICE

Client Details

Client	Ground Doctor Pty Ltd
Attention	James Morrow

Sample Login Details

Your reference	Cowal Gold Mine PESA
Envirolab Reference	175915
Date Sample Received	19/09/2017
Date Instructions Received	19/09/2017
Date Results Expected to be Reported	26/09/2017

Sample Condition

Samples received in appropriate condition for analysis	YES
No. of Samples Provided	9 samples
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	8.4
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: ahie@envirolab.com.au

Jacinta Hurst

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: jhurst@envirolab.com.au

Analysis Underway, details on the following page:



Sample ID	VTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides	Acid Extractable metals in soil	Asbestos ID - materials
SS1-0-0.2				✓	✓	✓	
SS2-0-0.2				✓	✓	✓	
SS3-0-0.2				✓	✓	✓	
SS4-0-0.2				✓	✓	✓	
SS5-0-0.2				✓	✓	✓	
SS6-0-0.2	✓	✓	✓			✓	
SS7-0-0.2	✓	✓	✓			✓	
SS8-0-0.2				✓	✓	✓	
PACM1							✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.



CERTIFICATE OF ANALYSIS 175915

Client Details

Client	Ground Doctor Pty Ltd
Attention	James Morrow
Address	PO Box 6278, Dubbo, NSW, 2830

Sample Details

Your Reference	<u>Cowal Gold Mine PESA</u>
Number of Samples	9 samples
Date samples received	19/09/2017
Date completed instructions received	19/09/2017

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	26/09/2017
Date of Issue	22/09/2017
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Asbestos Approved By

Analysed by Asbestos Approved Identifier: Paul Ching
Authorised by Asbestos Approved Signatory: Lulu Scott

Results Approved By

Dragana Tomas, Senior Chemist
Jeremy Faircloth, Organics Supervisor
Long Pham, Team Leader, Metals
Lulu Scott, Asbestos Supervisor

Authorised By

David Springer, General Manager

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		175915-6	175915-7
Your Reference	UNITS	SS6	SS7
Depth		0-0.2	0-0.2
Date Sampled		14/09/2017	14/09/2017
Type of sample		Soil	Soil
Date extracted	-	20/09/2017	20/09/2017
Date analysed	-	21/09/2017	21/09/2017
TRH C ₆ - C ₉	mg/kg	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<1	<1
naphthalene	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	85	88

svTRH (C10-C40) in Soil			
Our Reference		175915-6	175915-7
Your Reference	UNITS	SS6	SS7
Depth		0-0.2	0-0.2
Date Sampled		14/09/2017	14/09/2017
Type of sample		Soil	Soil
Date extracted	-	20/09/2017	20/09/2017
Date analysed	-	20/09/2017	20/09/2017
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50
Surrogate o-Terphenyl	%	80	81

PAHs in Soil			
Our Reference		175915-6	175915-7
Your Reference	UNITS	SS6	SS7
Depth		0-0.2	0-0.2
Date Sampled		14/09/2017	14/09/2017
Type of sample		Soil	Soil
Date extracted	-	20/09/2017	20/09/2017
Date analysed	-	21/09/2017	21/09/2017
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5
Total +ve PAH's	mg/kg	<0.05	<0.05
Surrogate <i>p</i> -Terphenyl-d14	%	103	102

Client Reference: Cowal Gold Mine PESA

Organochlorine Pesticides in soil						
Our Reference		175915-1	175915-2	175915-3	175915-4	175915-5
Your Reference	UNITS	SS1	SS2	SS3	SS4	SS5
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		14/09/2017	14/09/2017	14/09/2017	14/09/2017	14/09/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/09/2017	20/09/2017	20/09/2017	20/09/2017	20/09/2017
Date analysed	-	20/09/2017	20/09/2017	20/09/2017	20/09/2017	20/09/2017
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	83	79	83	85	85

Organochlorine Pesticides in soil		
Our Reference		175915-8
Your Reference	UNITS	SS8
Depth		0-0.2
Date Sampled		14/09/2017
Type of sample		Soil
Date extracted	-	20/09/2017
Date analysed	-	20/09/2017
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	81

Client Reference: Cowal Gold Mine PESA

Organophosphorus Pesticides						
Our Reference		175915-1	175915-2	175915-3	175915-4	175915-5
Your Reference	UNITS	SS1	SS2	SS3	SS4	SS5
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		14/09/2017	14/09/2017	14/09/2017	14/09/2017	14/09/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/09/2017	20/09/2017	20/09/2017	20/09/2017	20/09/2017
Date analysed	-	20/09/2017	20/09/2017	20/09/2017	20/09/2017	20/09/2017
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	83	79	83	85	85

Organophosphorus Pesticides		
Our Reference		175915-8
Your Reference	UNITS	SS8
Depth		0-0.2
Date Sampled		14/09/2017
Type of sample		Soil
Date extracted	-	20/09/2017
Date analysed	-	20/09/2017
Azinphos-methyl (Guthion)	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Chlorpyrifos	mg/kg	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Dichlorvos	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Ethion	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Parathion	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Surrogate TCMX	%	81

Client Reference: Cowal Gold Mine PESA

Acid Extractable metals in soil						
Our Reference		175915-1	175915-2	175915-3	175915-4	175915-5
Your Reference	UNITS	SS1	SS2	SS3	SS4	SS5
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		14/09/2017	14/09/2017	14/09/2017	14/09/2017	14/09/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	20/09/2017	20/09/2017	20/09/2017	20/09/2017	20/09/2017
Date analysed	-	21/09/2017	21/09/2017	21/09/2017	21/09/2017	21/09/2017
Arsenic	mg/kg	<4	<4	4	37	30
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	24	24	28	19	17
Copper	mg/kg	14	13	11	6	6
Lead	mg/kg	10	11	15	11	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	9	10	8	6
Zinc	mg/kg	16	18	18	200	51

Acid Extractable metals in soil				
Our Reference		175915-6	175915-7	175915-8
Your Reference	UNITS	SS6	SS7	SS8
Depth		0-0.2	0-0.2	0-0.2
Date Sampled		14/09/2017	14/09/2017	14/09/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	20/09/2017	20/09/2017	20/09/2017
Date analysed	-	21/09/2017	21/09/2017	21/09/2017
Arsenic	mg/kg	15	28	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	12	23	23
Copper	mg/kg	10	10	14
Lead	mg/kg	20	25	10
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	12	11	9
Zinc	mg/kg	48	100	15

Client Reference: Cowal Gold Mine PESA

Moisture						
Our Reference		175915-1	175915-2	175915-3	175915-4	175915-5
Your Reference	UNITS	SS1	SS2	SS3	SS4	SS5
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		14/09/2017	14/09/2017	14/09/2017	14/09/2017	14/09/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	20/09/2017	20/09/2017	20/09/2017	20/09/2017	20/09/2017
Date analysed	-	21/09/2017	21/09/2017	21/09/2017	21/09/2017	21/09/2017
Moisture	%	3.8	5.6	8.6	5.4	3.0

Moisture				
Our Reference		175915-6	175915-7	175915-8
Your Reference	UNITS	SS6	SS7	SS8
Depth		0-0.2	0-0.2	0-0.2
Date Sampled		14/09/2017	14/09/2017	14/09/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	20/09/2017	20/09/2017	20/09/2017
Date analysed	-	21/09/2017	21/09/2017	21/09/2017
Moisture	%	2.3	5.2	5.0

Asbestos ID - materials		
Our Reference		175915-9
Your Reference	UNITS	PACM1
Depth		-
Date Sampled		14/09/2017
Type of sample		Material
Date analysed	-	22/09/2017
Mass / Dimension of Sample	-	45x25x5mm
Sample Description	-	Beige fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected Amosite asbestos detected Crocidolite asbestos detected

Client Reference: Cowal Gold Mine PESA

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Client Reference: Cowal Gold Mine PESA

Method ID	Methodology Summary
Org-012	<p>Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.</p> <p>For soil results:-</p> <ol style="list-style-type: none"> 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. <p>Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.</p>
Org-014	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.</p>
Org-016	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p>
Org-016	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p> <p>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.</p>

Client Reference: Cowal Gold Mine PESA

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			20/09/2017	[NT]	[NT]	[NT]	[NT]	20/09/2017	[NT]
Date analysed	-			21/09/2017	[NT]	[NT]	[NT]	[NT]	21/09/2017	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	87	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	84	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	88	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	85	[NT]	[NT]	[NT]	[NT]	84	[NT]

Client Reference: Cowal Gold Mine PESA

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			20/09/2017	[NT]	[NT]	[NT]	[NT]	20/09/2017	[NT]
Date analysed	-			20/09/2017	[NT]	[NT]	[NT]	[NT]	20/09/2017	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	91	[NT]
Surrogate o-Terphenyl	%		Org-003	83	[NT]	[NT]	[NT]	[NT]	93	[NT]

Client Reference: Cowal Gold Mine PESA

QUALITY CONTROL: PAHs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			20/09/2017	[NT]	[NT]	[NT]	[NT]	20/09/2017	[NT]
Date analysed	-			21/09/2017	[NT]	[NT]	[NT]	[NT]	21/09/2017	[NT]
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	122	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	91	[NT]	[NT]	[NT]	[NT]	128	[NT]

Client Reference: Cowal Gold Mine PESA

QUALITY CONTROL: Organochlorine Pesticides in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			20/09/2017	[NT]	[NT]	[NT]	[NT]	20/09/2017	[NT]
Date analysed	-			20/09/2017	[NT]	[NT]	[NT]	[NT]	20/09/2017	[NT]
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	82	[NT]	[NT]	[NT]	[NT]	95	[NT]

Client Reference: Cowal Gold Mine PESA

QUALITY CONTROL: Organophosphorus Pesticides				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			20/09/2017	[NT]	[NT]	[NT]	[NT]	20/09/2017	[NT]
Date analysed	-			20/09/2017	[NT]	[NT]	[NT]	[NT]	20/09/2017	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	75	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Dimethoate	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Fenitrothion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Malathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	79	[NT]
Parathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Ronnel	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Surrogate TCMX	%		Org-008	82	[NT]	[NT]	[NT]	[NT]	79	[NT]

Client Reference: Cowal Gold Mine PESA

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			20/09/2017	[NT]	[NT]	[NT]	[NT]	20/09/2017	[NT]
Date analysed	-			21/09/2017	[NT]	[NT]	[NT]	[NT]	21/09/2017	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	110	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	102	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
<p>Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.</p>	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

CHAIN OF CUSTODY - Client



ENVIROLAB GROUP

Client: Ground Doctor Pty Ltd Contact person: James Morrow Project Mgr: James Morrow Sampler: James Morrow Address: PO Box 6278, DUBBO, NSW 2830 Phone: -- Mob: 0407 875 302 Fax: -- Email: james.morrow@grounddoc.com.au	Client Project Name / Number / Site etc (ie report title): Cowal Gold Mine PESA PO No.: 2017-GD012-1 Envirolab Quote No. : Standard TAT Or choose: standard / same day / 1 day / 2 day / 3 day Note: Inform lab in advance if urgent turnaround is required - surcharge applies Lab comments:
Envirolab Services 12 Ashley St, Chatswood, NSW 2067 Phone: 02 9910 6200 Fax :02 9910 6201 E-mail: ahie@envirolabservices.com.au Contact: Aileen Hie Envirolab Services WA t/a MPL 16-18 Hayden Crt, Myaree WA 6154 Phone: 08 9317 2505 Fax :08 9317 4163 E-mail: lab@mpl.com.au Contact: Joshua Lim	

Sample information				Tests Required						Comments									
Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	M8 Metals	OCPs / OPPs	Combo 3	Asbestos											
1	SS1	0-0.2m	14-Sep-17	Soil	X	X													Provide as much information about the sample as you can
2	SS2	0-0.2m	14-Sep-17	Soil	X	X													
3	SS3	0-0.2m	14-Sep-17	Soil	X	X													
4	SS4	0-0.2m	14-Sep-17	Soil	X	X													
5	SS5	0-0.2m	14-Sep-17	Soil	X	X													
6	SS6	0-0.2m	14-Sep-17	Soil		X													
7	SS7	0-0.2m	14-Sep-17	Soil		X													
8	SS8	0-0.2m	14-Sep-17	Soil	X	X													
9	PACM1	-	14-Sep-17	Material				X											
Relinquished by (company):				Ground Doctor Pty Ltd						Received by (company): <u>EG</u>									
Print Name:				James Morrow						Print Name: <u>JM</u>									
Date & Time:				18/09/2017						Date & Time: <u>19/9/17 09:50</u>									
Signature:				JRM						Signature:									

Lab use only:
 Samples Received: Cool or Ambient (circle one)
 Temperature Received at: 8.4 (if applicable)
 Transported by: Hand delivered / courier
 White - Lab copy / Blue - Client copy / Pink - Retain in Book

Page No: 1 of 1

Annexure D

Land Title Search Records

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)
ABN 82 147 943 842

18/36 Osborne Road,
Manly NSW 2095

Telephone: +612 9977 6713
Mobile: 0412 169 809
Email: search@alsearchers.com.au

11th October 2017

GROUND DOCTOR PTY LTD
PO Box 6278
DUBBO. NSW 2830

Attention: James Morrow,

**RE: Lake Cowal Road,
Lake Cowal
Report 2**

Note: Historical Report is of part Lot 100 DP 1059150 as indicated in supplied diagram.

Note 1: Part Lot 100 DP 1059150 (page 1)
Note 2: Lot 101 DP 1059150 (page 4)

Note 1:

Current Search

Folio Identifier 100/1059150 (title attached)
DP 1059150 (plan attached)
Dated 09th October 2017
Registered Proprietor:
THE STATE OF NEW SOUTH WALES

Cadastral Records Enquiry Report

Requested Parcel : Lot 102 DP 1059150

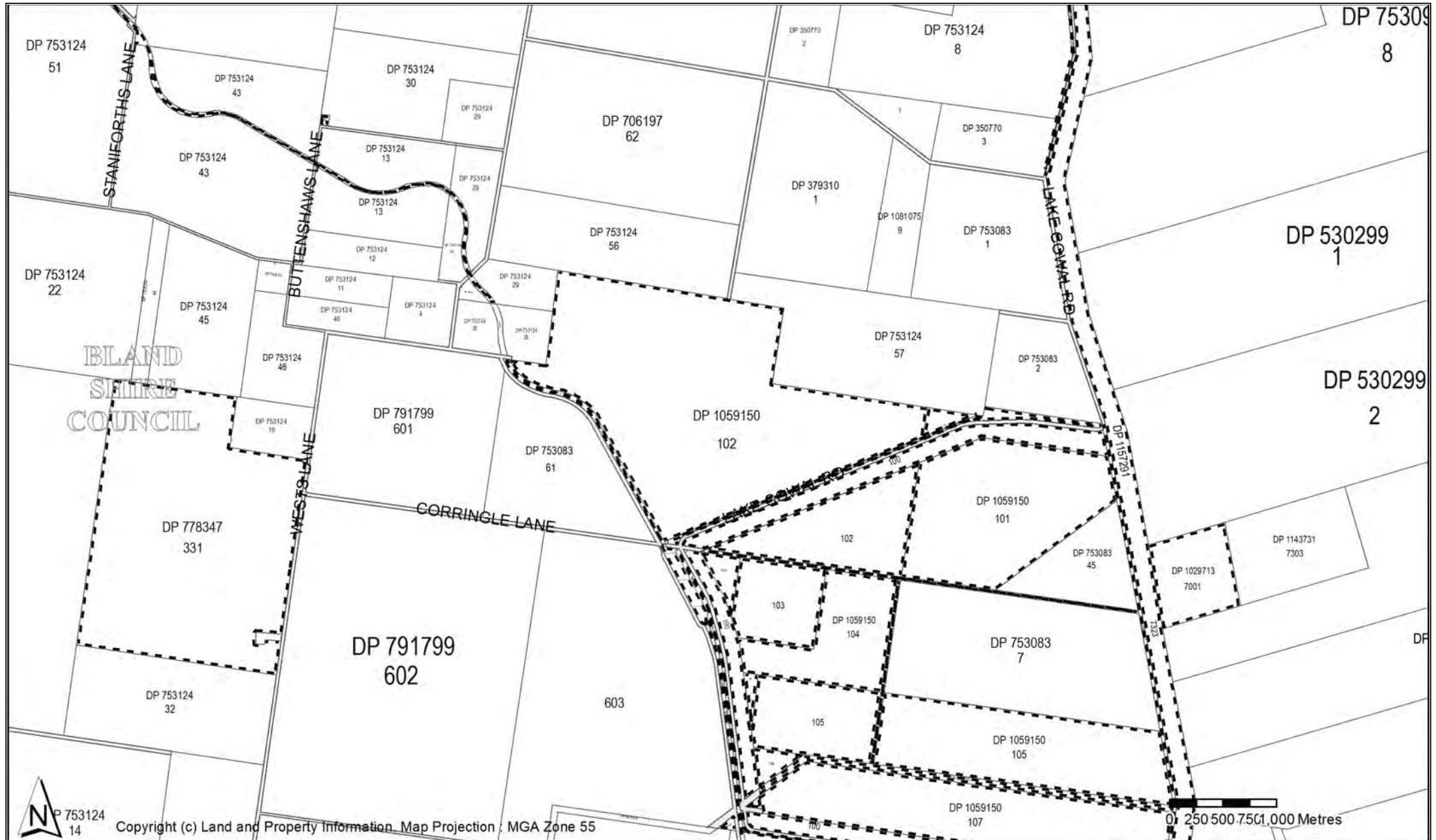
Identified Parcel : Lot 102 DP 1059150

Locality : LAKE COWAL

LGA : BLAND

Parish : CORRINGLE

County : GIPPS



Copyright (c) Land and Property Information. Map Projection : MGA Zone 55

Requested Parcel : Lot 102 DP 1059150

Identified Parcel : Lot 102 DP 1059150

Locality : LAKE COWAL


LGA : BLAND

Parish : CORRINGLE


County : GIPPS

Status	Surv/Comp	Purpose
--------	-----------	---------


DP753124

Lot(s): 47
 CA149910 - LOT 47 DP753124




DP778347

Lot(s): 331
 DP1230638 REGISTERED SURVEY PIPELINES ACT, 1967

DP1029713

Lot(s): 7001
 NSW GAZ. 23-04-2004 Folio : 2182
 RESERVATION OF CROWN LAND (RESERVE NO. 17085) GAZ. 1-10-2004 FOL. 7808 - LOT 7008 DP753083


DP1059150

Lot(s): 100
 DP1073837 REGISTERED SURVEY EASEMENT
 NSW GAZ. 16-04-2004 Folio : 2119
 DECLARED CROWN LAND
 LOT 100 DP1059150
 NSW GAZ. 16-04-2004 Folio : 2119
 ADDITION TO RESERVED CROWN LAND
 RESERVE NO. 17085 - LOT 100 DP1059150


Lot(s): 100, 101, 102, 103, 104, 105, 106, 107

 DP753083 HISTORICAL COMPILATION CROWN ADMIN NO.


DP1060709

Lot(s): 1, 2
 NSW GAZ. 24-10-2003 Folio : 10210
 CLOSED ROAD
 LOTS 1 AND 2 DP1060709


DP1060907

Lot(s): 2
 NSW GAZ. 07-11-2003 Folio : 10456
 CLOSED ROAD
 LOT 2 DP1060907


Lot(s): 1

 NSW GAZ. 16-04-2004 Folio : 2119
 CLOSED ROAD
 LOT 1 DP1060907


DP1157291

Lot(s): 7323
 NSW GAZ. 23-04-2004 Folio : 2182
 LOT 7008 DP753083 - REVOCATION OF RESERVATION OF CROWN LAND

DP1172077

Lot(s): 1156
 CA161099 - LOT 1156 DP1172077

DP1172078

Lot(s): 1157
 CA161100 - LOT 1157 DP1172078

DP1172081

Lot(s): 1158
 CA161102 - LOT 1158 DP1172081

Caution: For all **ACTIVITY PRIOR to SEPT 2002** you must refer to the RGs Charting and Reference Maps.

Cadastral Records Enquiry Report

Ref : gd - west wyalong

Requested Parcel : Lot 102 DP 1059150

Identified Parcel : Lot 102 DP 1059150

Locality : LAKE COWAL

LGA : BLAND

Parish : CORRINGLE

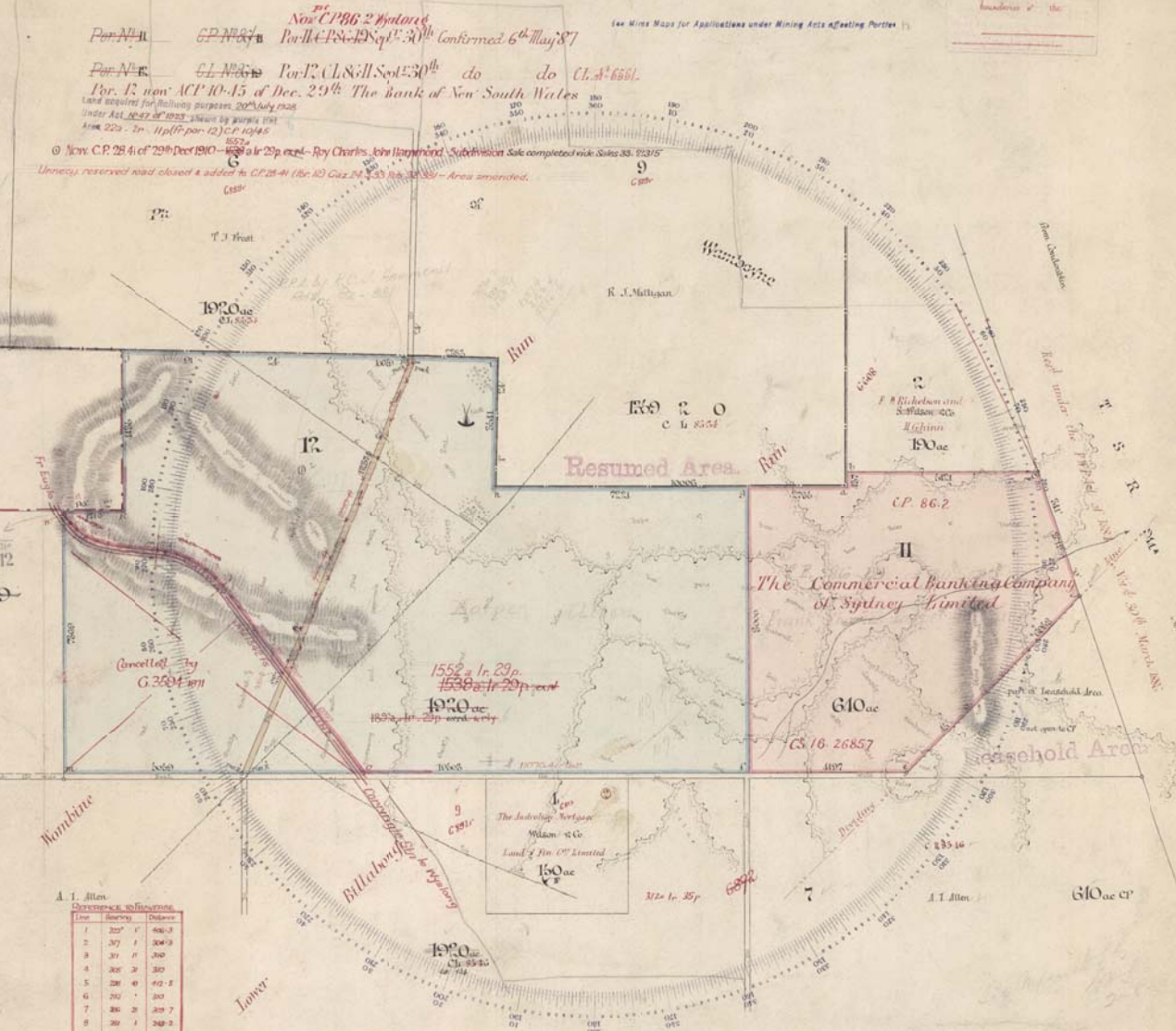
County : GIPPS

Plan	Surv/Comp	Purpose
DP39733	SURVEY	CROWN FOLIO CREATION
DP183637	SURVEY	UNRESEARCHED
DP350770	COMPILATION	UNRESEARCHED
DP379310	SURVEY	UNRESEARCHED
DP530299	SURVEY	SUBDIVISION
DP660586	COMPILATION	DEPARTMENTAL
DP706197	COMPILATION	SUBDIVISION
DP753083	COMPILATION	CROWN ADMIN NO.
DP753097	COMPILATION	CROWN ADMIN NO.
DP753124	COMPILATION	CROWN ADMIN NO.
DP778347	SURVEY	SUBDIVISION
DP791799	SURVEY	SUBDIVISION
DP1029713	COMPILATION	DEPARTMENTAL
DP1059150	SURVEY	SUBDIVISION
DP1059150	SURVEY	SUBDIVISION
DP1060709	COMPILATION	ROADS ACT, 1993
DP1060907	COMPILATION	ROADS ACT, 1993
DP1081075	COMPILATION	DEPARTMENTAL
DP1143731	COMPILATION	CROWN LAND CONVERSION
DP1157291	COMPILATION	CROWN LAND CONVERSION
DP1172077	COMPILATION	LIMITED FOLIO CREATION
DP1172078	COMPILATION	LIMITED FOLIO CREATION
DP1172081	COMPILATION	LIMITED FOLIO CREATION

Wyalong.
 Central Division.
 Resumed Area No. _____
 Lake Cowal Pastoral Holding.

PLAN OF PORTIONS II - E
 County of Gwypp Parish of Corringle
 LAND DISTRICT OF Wyalong LAND BOARD DISTRICT OF Porters

Applied for under the 24th Clause of the Crown Lands Act of 1884 by
 Frank Charles Jasper Allen



A. T. Allen

Line	Bearing	Distance
1	352° 1'	446-3
2	377° 1'	304-9
3	371° 1'	310
4	308° 2'	350
5	298° 0'	412-5
6	262° 1'	300
7	262° 2'	319-7
8	262° 1'	249-3
9	278° 3'	456-3
10	272° 15'	676-4
11	277° 1'	378-6
12	246° 4'	346-9
13	236° 2'	385
14	319° 2'	394-9
15	312° 40'	385
16	222° 1'	399-7
17	362° 0'	400-3

REFERENCE TO CORNERS

Cor. Bearing	From	Link	On Tree	Cor. Bearing	From	Link	On Tree
1	352° 1'	1	1	377° 1'	1	1	1
2	377° 1'	2	2	371° 1'	2	2	2
3	371° 1'	3	3	308° 2'	3	3	3
4	308° 2'	4	4	298° 0'	4	4	4
5	298° 0'	5	5	262° 1'	5	5	5
6	262° 1'	6	6	262° 2'	6	6	6
7	262° 2'	7	7	278° 3'	7	7	7
8	278° 3'	8	8	272° 15'	8	8	8
9	272° 15'	9	9	277° 1'	9	9	9
10	277° 1'	10	10	246° 4'	10	10	10
11	246° 4'	11	11	236° 2'	11	11	11
12	236° 2'	12	12	319° 2'	12	12	12
13	319° 2'	13	13	312° 40'	13	13	13
14	312° 40'	14	14	222° 1'	14	14	14
15	222° 1'	15	15	362° 0'	15	15	15
16	362° 0'	16	16				

SCHEDULE OF IMPROVEMENTS

Particulars of Improvements	L	S	D
No. of improvements 2 25.	25	0	0
Rs. 100 bank 250-00-00	250	0	0

Situated within the Resumed Area Lake Cowal PH
 In the Fourth Quarter Porters Corringle District
 No. 7 50 15 11

OBSERVATION FOR TRUE MERIDIAN

Basis of bearings _____
 Field Book Vol. _____ folio _____

REFERENCE TO TRAVERSE

Line	Bearing	Dist.	Line	Bearing	Dist.	Line	Bearing	Dist.	Line	Bearing	Dist.

Scale 20 Chains to an Inch

Plan approved for E388a 1r. 29p. ex. et. et. et.
 M. S. Lawrence
 Office in Charge
 General District Survey.

I hereby certify that I in person made, and on the 25th Oct 1887
 completed the survey represented on this plan, as which are
 written the bearings and lengths of the lines measured by
 me, and I declare that the survey has been executed in
 accordance with the regulations published for the guidance
 of Licensed Surveyors, and the practice of the Surveyor
 General's Department.

A. Mackintosh
 Licensed Surveyor

Transmitted to the District Surveyor with my letter of the 30th Nov 1887

Voucher No. 5075 Paid 5/8 10/3/87
 Calculation Book No. 1288 Folio 13
 Checked and Charted M. Boland Esq. 8th 1887
 Examined J. H. Thomas
 Plan approved 10th March 1887
 District Surveyor.

Form: 97-10CN
Licence: 10V/0167/95
Printed: 0897LTO

Application to Record

CHANGE OF NAME

New South Wales
Real Property Act 1900
Crown Land Acts 1989
Western Lands Act 1901

6500619M



Instructions for filling out
this form are available from
the Land Titles Office

(A) LAND

See attached annexure A & B.

(B) REGISTERED DEALING
if applicable.

Refer attached annexure A & B.

(C) LODGED BY

LTO Box 28A	Name, Address or DX and Telephone GALLOWAY & CO. Phone: (02) 9233 1011 Fax: (02) 9232 6491 Reference (15 character maximum): EX 340: SYDNEY L.T.O. Delivery 28A Marsaw - North
-----------------------	---

(D) REGISTERED PROPRIETOR
whose name is to be changed.

NORTH CENTRAL SECURITIES LTD. A.C.N. 004 736 458

(E) NEW NAME
in full.

CN	BANKSIA SECURITIES LIMITED A.C.N. 004 736 458
-----------	--

(F) I, the registered proprietor, apply to have my new name recorded in the Register in respect of the above land/registered dealing.

(G) STATUTORY DECLARATION BY THE APPLICANT

I, *[new name]* James Desmond Lally, Director of Banksia Securities Limited, solemnly and sincerely declare that

- I am identical with the registered proprietor referred to above;
- On 19 at
in the State of I married
- North Central Securities Ltd. A.C.N. 004 736 458 changed their name to Banksia Securities Limited A.C.N. 004 736 458 on 10th day of June, 1999.

I make this solemn declaration conscientiously believing the same to be true and by virtue of the Oaths Act 1900, and I certify this application correct for the purposes of the Real Property Act 1900. Evidence Act 1958

Made and subscribed at Kyabram in the State of Victoria
on 11th January 19 2000 in the presence of

[Signature]
Signature of Witness

HASLEM GRAEME ROBERT
Name of Witness (BLOCK LETTERS)

G. R. HASLEM J.P. 10566
21 Bond Street,
KYABRAM VIC 3620
Address and Qualification of Witness

[Signature]
Signature of Applicant

FILM WITH 6500619

I CERTIFY THIS IS A TRUE COPY OF THE ORIGINAL.

James Lally

JAMES DESMOND LALLY

A natural person who is a current practitioner
within the meaning of the Legal Practice Act 1995
157 Fenaughty Street, Kyabram

REGIONAL COMPANY SERVICES PTY. LTD.
ATTN: NICHOLAAS SPANNINGA
P O BOX 101
GEELONG VIC 3220

Remove this top section if desired before framing

Certificate of Registration on Change of Name



This is to certify that

NORTH CENTRAL SECURITIES LTD.

Australian Company Number 004 736 458

did on the tenth day of June 1999 change its name to

BANKSIA SECURITIES LIMITED

Australian Company Number 004 736 458

The company is a public company.

The company is limited by shares.

The company is taken to be registered as a company
under the Corporations Law of Victoria.

Issued by the
Australian Securities and Investments Commission
on this tenth day of June, 1999.

Alan Cameron

Alan Cameron
Chairman

PAGE 2 OF 4

ANNEXURE "A"

- ✓ Certificate of Title Volume 11365 Folio 35 ✓
- ✓ Folio Identifier 5/750921
- ✓ Folio Identifier 7/750921
- ✓ Folio Identifier 9/750921
- ✓ Folio Identifier 10/750921
- ✓ Folio Identifier 22/750921
- ✓ Folio Identifier 30/750921
- ✓ Folio Identifier 34/750921
- ✓ Folio Identifier 36/750921
- ✓ Folio Identifier 37/750921
- ✓ Folio Identifier 40/750921
- ✓ Folio Identifier 41/750921
- ✓ Folio Identifier 45/750921
- ✓ Folio Identifier 82/750921
- ✓ Folio Identifier 104/750921
- ✓ Folio Identifier 112/750921
- ✓ Folio Identifier 118/750921
- ✓ Folio Identifier 136/750921
- ✓ Folio Identifier 2/337081
- ✓ Folio Identifier 1/778983

Mortgage No. 3968992

James Lally

ANNEXURE "B"

✓Folio Identifier 2/832704 Mortgage 5488651

✓Folio Identifier 3/753083
✓Folio Identifier 7/753083
✓Folio Identifier 12/753083 Mortgage 6111852
✓Folio Identifier 45/753083
✓Folio Identifier 24/753097
✓Auto Consol 10178-114

✓Folio Identifier 1/948968
✓Folio Identifier 58/750862
✓Folio Identifier 8/750862 Mortgage 5855249
✓Folio Identifier 4/750862
✓Auto Consol 13355-105

✓Auto Consol 10411-113
✓Folio Identifier 7/860313
✓Folio Identifier 199/753335 Mortgage 0112358
✓Folio Identifier 4/513627
✓Folio Identifier 2/513628

✓Folio Identifier C/152904 Mortgage 2404729

Form 01T
Licence: 01-11-027
Licensee: Blake Dawson Waldron

TRANSFER

New South Wales
Real Property Act 1900



8831159X

PRIVACY NOTE: this information is legally required and will become part of the public record

STAMP DUTY

Office of State Revenue use only	NEW SOUTH WALES DUTY	
	11-07-2002	0002042955-001
	SECTION 18(2)	
	DUTY	\$ *****2.00

(A) **TORRENS TITLE**
If appropriate, specify the part transferred / /
3/753083, 7/753083, 12/753083, Auto Consol 10178-114, and 45/753083

(B) LODGED BY	Delivery Box	Name, Address or DX and Telephone	CODES
	39U	39U GALLOWAY & CO. Phone: (02) 9233 1011 Fax: (02) 9232 9491 DX 940, SYDNEY N.S.W. 2009 Reference (optional): <i>EVENG- CARNEGIE</i>	T TW (Sheriff)

(C) **TRANSFEROR**
Colin Carnegie

(D) **CONSIDERATION** The transferor acknowledges receipt of the consideration of \$ 2,020,000.00 and as regards
(E) **ESTATE** the land specified above transfers to the transferee an estate in fee simple, being the same
(F) **SHARE** consideration as referred to in transfers of even date of 4/753083,
TRANSFERRED 9/753083, 10/753083, 11/753083 and 24/753097

(G) Encumbrances (if applicable): 1. 2. 3.

(H) **TRANSFEEE**
HOMESTAKE AUSTRALIA LIMITED ACN 007 857 598

(I) **TENANCY:**

DATE 4 / 7 / 2002
dd mm yyyy

(J) I certify that the transferor(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this transfer in my presence.

Certified correct for the purposes of the Real Property Act 1900 by the transferor.

Signature of witness:

Signature of transferor:

Name of witness: *William Tom Ross B. Carnegie*

Address of witness: *Shirley
Coolan*

Certified correct for the purposes of the Real Property Act 1900 by the person whose signature appears below.

Signature: *B. Badcock*

Signatory's name: B. BADCOCK
Signatory's capacity: TRANSFEEE'S SOLICITOR

NOS LODGED

SIGNATURE AND SEALS ONLY

Mark Brennan
 Barrick Australia Limited
 PLN 007 857 598, by its duly
 constituted Attorney Mark
 Peter Brennan, under Power
 of Attorney dated 1 October
 2003, Registered Book 4404
 No. 129, in the presence
 of: *W. Oby*
 William Oby

Department of Lands Approval

I, _____, in approving this plan certify
 (Authorized Officer)
 that all necessary approvals in regard to the allocation of the land
 shown hereon have been given.

Signature: _____
 Date: _____
 File Number: _____
 Office: _____

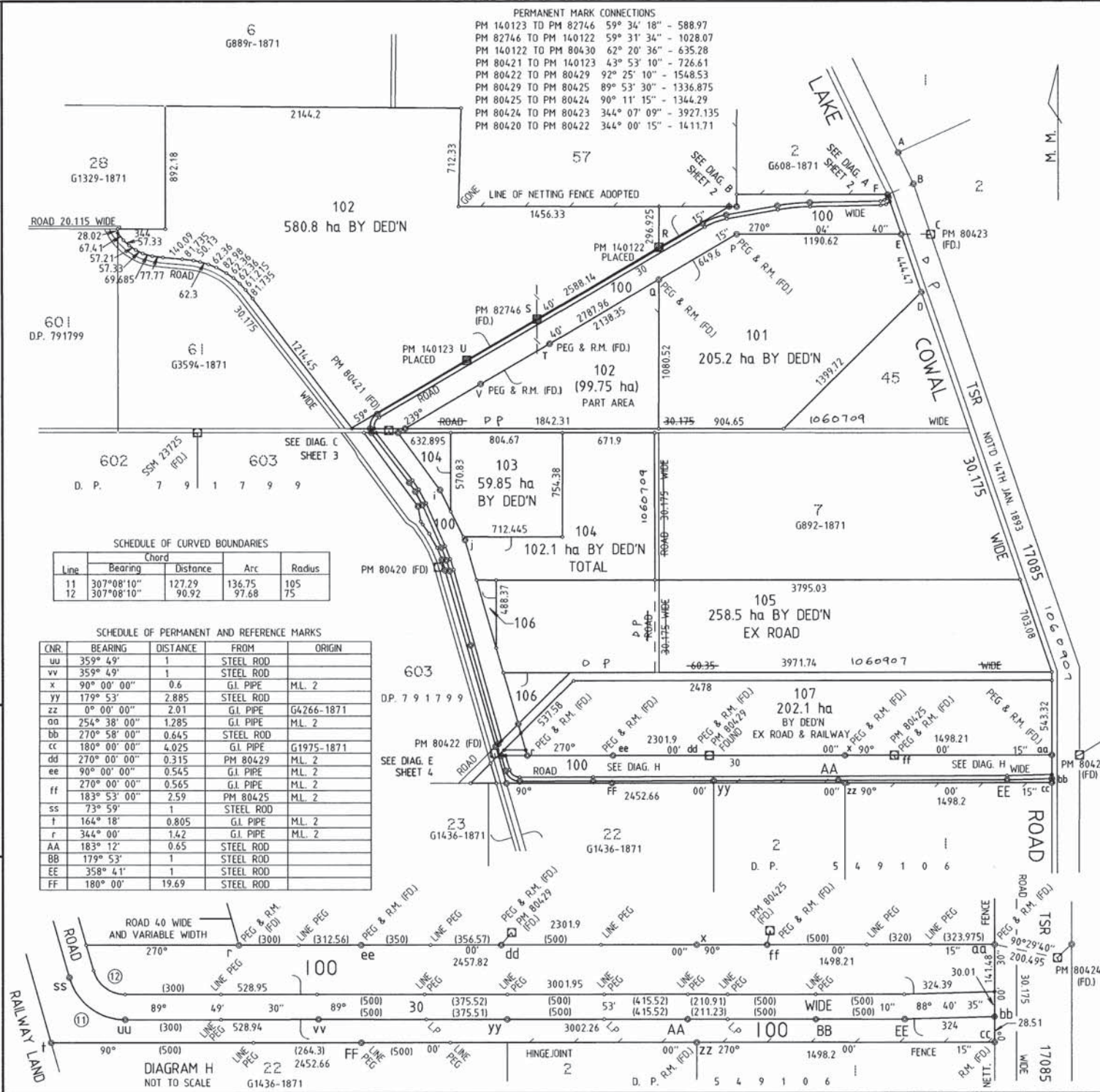
Subdivision Certificate

I certify that the provisions of s. 109J of the Environmental Planning
 and Assessment Act 1979 have been satisfied in relation to the
 proposed SUBDIVISION AND NEW ROADS as set out herein
 (insert 'subdivision' or 'new roads')

Consent Authority: *Bland Shire Council*
 Date of endorsement: *21.11.2003*
 Accreditation No.: _____
 Subdivision Certificate No.: *31/2003*
 File No.: *P. 691*

Note: When the plan is to be lodged electronically in the Land Titles
 Office, it should include a signature in an electronic or digital
 format approved by the Registrar-General.

* Delete whichever is inapplicable



DP1059150

Registered: *18-3-2004*

Title System: TORRENS

Purpose: SUBDIVISION

Ref Map: PARISH #

Last Plan: 813.1871, 891.1871, 892.1871, 893.1871, 1975.1871

PLAN OF SUBDIVISION OF LOT'S
 3,4,9,10,11,12 AND 44 IN
 D.P. 753083

Lengths are in metres. Reduction Ratio 1:20000

L.G.A.: BLAND

Locality: LAKE COWAL

Parish: CORRINGLE

County: GIPPS (17)

This is sheet 1 of my plan in 4 sheets.
 (Delete if inapplicable)

Surveying Regulation, 2001

WAYNE KEITH ROWE
 of LANGFORD & ROWE, P.O. BOX 373, DUBBO
 a surveyor registered under the Surveying Act 2002, hereby
 certify that the survey represented in this plan is accurate, has
 been made in accordance with the Surveying
 Regulation, 2001 and was completed on 29-08-2003.

The survey relates to LOT 100 AND CONNECTIONS
 (specify the land actually surveyed or specify any land
 shown in the plan that is not the subject of the survey).

Signature: *W. M. Rowe* Dated: 30-09-2003
 Surveyor registered under the Surveying Act, 2002
 Datum Line: _____
 Type: Urban/Rural

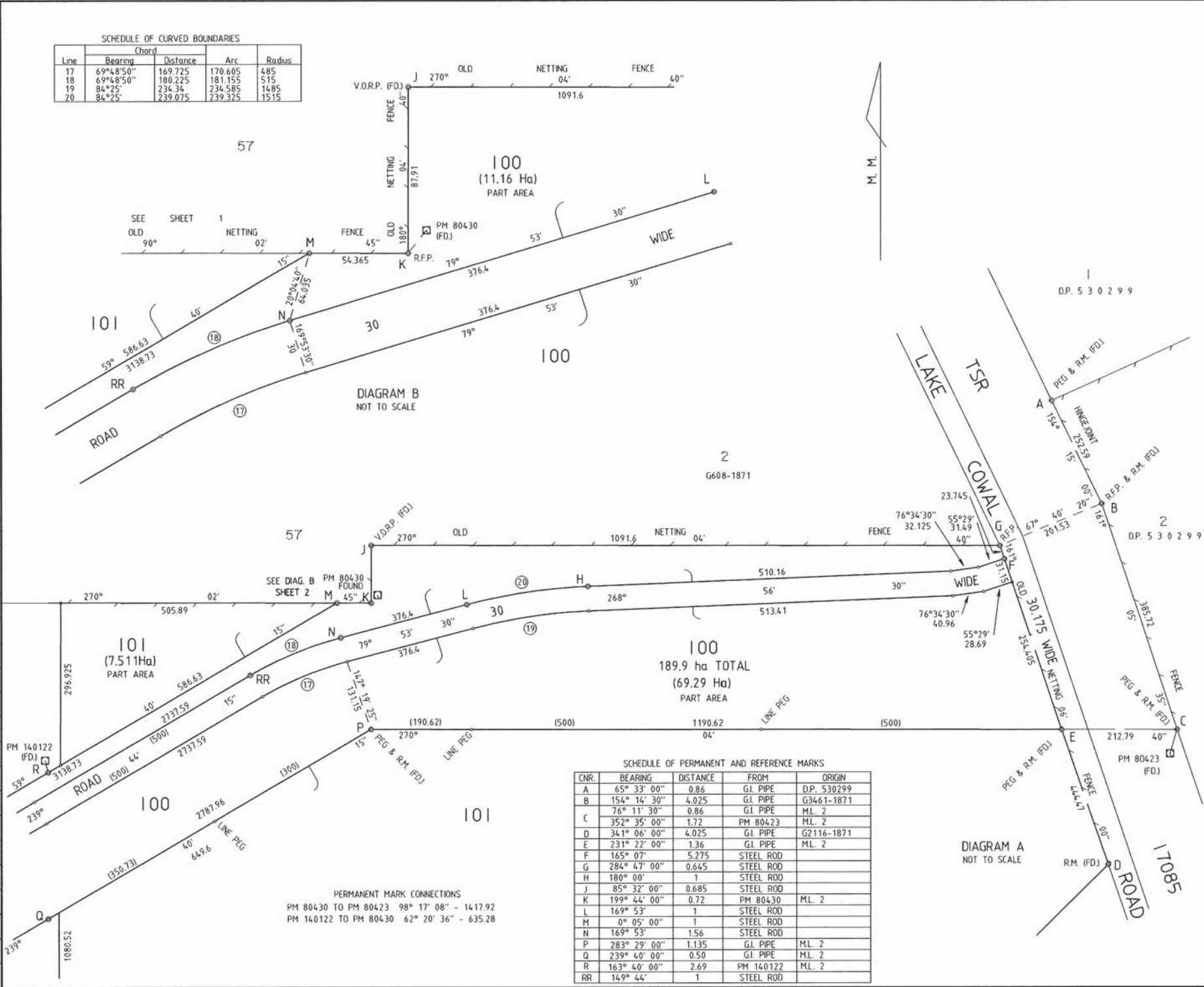
Plans used in preparation of survey/compilation:
 G608-1871 D.P. 530299
 G892-1871 D.P. 549106
 G1329-1871 D.P. 791799
 G1436-1871 ML 2
 G3594-1871

PANEL FOR USE ONLY for statements of intention to
 dedicate public roads, to create public reserves, drainage
 reserves, easements, restrictions on the use of land or
 positive covenants.

IT IS INTENDED
 TO DEDICATE THE ROADS MARKED 30 WIDE
 AND 40 WIDE AND VARIABLE WIDTH TO THE
 PUBLIC AS PUBLIC ROAD.

W. M. Rowe

Line	Chord		Arc	Radius
	Bearing	Distance		
17	69°48'50"	169.725	170.605	485
18	69°48'50"	180.225	181.155	515
19	84°25'	234.34	234.585	1485
20	84°25'	239.075	239.325	1515



CNR.	BEARING	DISTANCE	FROM	ORIGIN
A	65° 33' 00"	0.86	G.I. PIPE	D.P. 530299
B	154° 14' 30"	4.025	G.I. PIPE	G3461-1871
C	76° 11' 30"	0.86	G.I. PIPE	ML 2
	352° 35' 00"	1.72	PM 80423	ML 2
D	341° 06' 00"	4.025	G.I. PIPE	G2116-1871
E	231° 22' 00"	1.36	G.I. PIPE	ML 2
F	165° 07'	5.275	STEEL ROD	
G	284° 47' 00"	0.645	STEEL ROD	
H	180° 00'	1	STEEL ROD	
J	85° 32' 00"	0.685	STEEL ROD	
K	199° 44' 00"	0.72	PM 80430	ML 2
L	169° 53'	1	STEEL ROD	
M	0° 05' 00"	1	STEEL ROD	
N	169° 53'	1.56	STEEL ROD	
P	283° 29' 00"	1.135	G.I. PIPE	ML 2
Q	239° 40' 00"	0.50	G.I. PIPE	ML 2
R	163° 40' 00"	2.69	PM 140122	ML 2
RR	149° 44'	1	STEEL ROD	

PERMANENT MARK CONNECTIONS
 PM 80430 TO PM 80423 98° 17' 08" - 1417.92
 PM 140122 TO PM 80430 62° 20' 36" - 635.28

Reg:R247206 /Doc:DP 1059150 P /Rev:19-Mar-2004 /Sta:SC.OK /Pgs:ALL /Prt:24-Aug-2017 12:06 /Seq:2 of 4
 Ref:als /Szc:T
 Table of mm 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390

DP1059150

Registered 18-3-2004

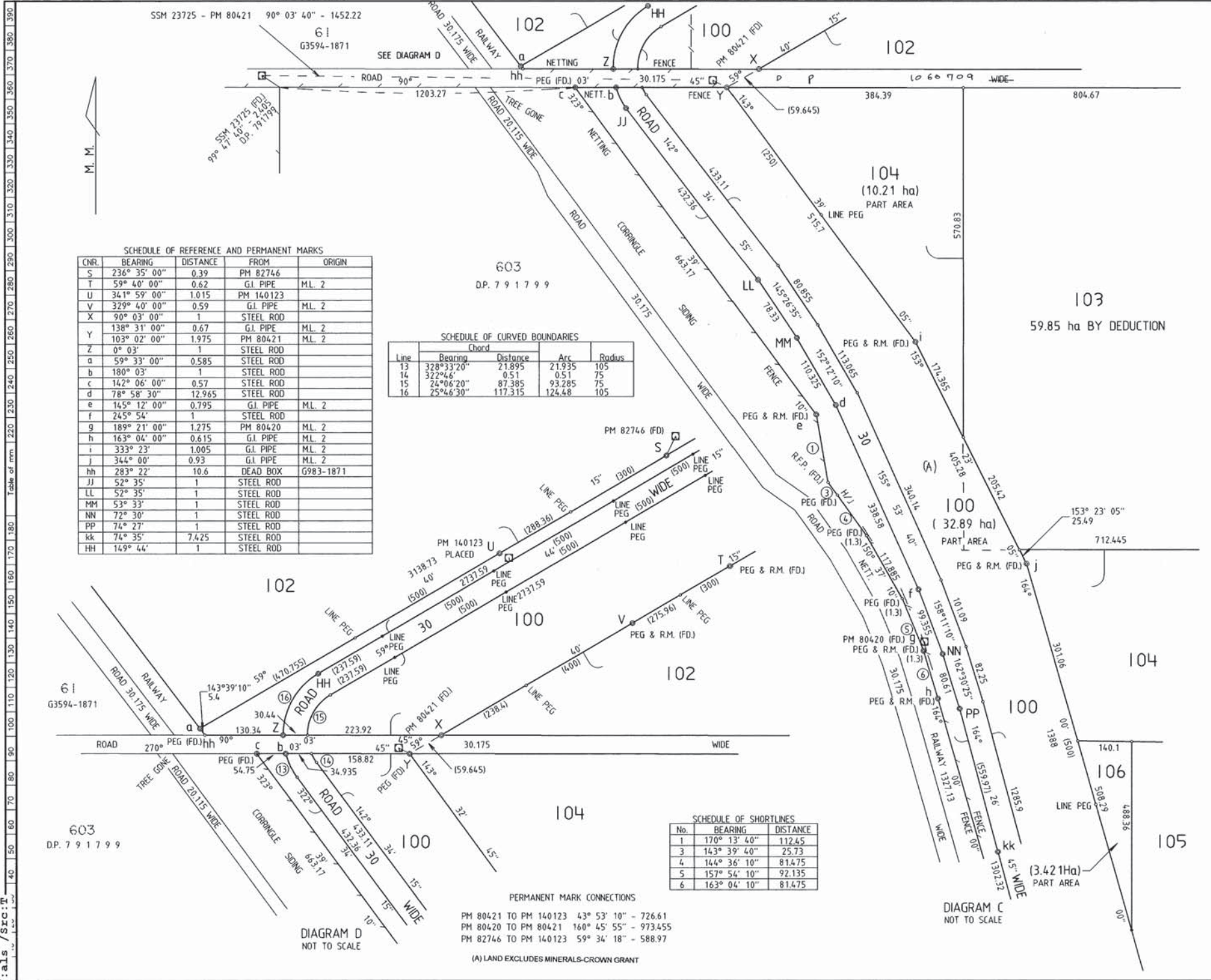
This is sheet 3 of my plan in 4 sheets dated 30-09-2003

W. M. Rowe
Surveyor registered under the Surveying Act, 2002

This is sheet 3 of the plan of 1059150 of 31/2003 4 sheets covered by my certificate No. 21/1/2003 of 21/1/2003

General Manager/Authorized Person/Accredited Certifier

For use where space is insufficient in any panel on Plan Form 2



SCHEDULE OF REFERENCE AND PERMANENT MARKS

CNR	BEARING	DISTANCE	FROM	ORIGIN
S	236° 35' 00"	0.39	PM 82746	
T	59° 40' 00"	0.62	G.I. PIPE	ML. 2
U	341° 59' 00"	1.015	PM 140123	
V	329° 40' 00"	0.59	G.I. PIPE	ML. 2
X	90° 03' 00"	1	STEEL ROD	
Y	138° 31' 00"	0.67	G.I. PIPE	ML. 2
Z	103° 02' 00"	1.975	PM 80421	ML. 2
a	0° 03'	1	STEEL ROD	
b	59° 33' 00"	0.585	STEEL ROD	
c	180° 03'	1	STEEL ROD	
d	142° 06' 00"	0.57	STEEL ROD	
e	78° 58' 30"	12.965	STEEL ROD	
f	145° 12' 00"	0.795	G.I. PIPE	ML. 2
g	245° 54'	1	STEEL ROD	
h	189° 21' 00"	1.275	PM 80420	ML. 2
i	163° 04' 00"	0.615	G.I. PIPE	ML. 2
j	333° 23'	1.005	G.I. PIPE	ML. 2
hh	344° 00'	0.93	G.I. PIPE	ML. 2
jj	283° 22'	10.6	DEAD BOX	G983-1871
ll	52° 35'	1	STEEL ROD	
mm	53° 33'	1	STEEL ROD	
nn	72° 30'	1	STEEL ROD	
pp	74° 27'	1	STEEL ROD	
kk	74° 35'	7.425	STEEL ROD	
hh	149° 44'	1	STEEL ROD	

SCHEDULE OF CURVED BOUNDARIES

Line	Bearing	Chord Distance	Acc	Radius
13	328° 33' 20"	21.895	21.935	105
14	322° 46'	0.51	0.51	75
15	24° 06' 20"	87.385	93.285	75
16	25° 46' 30"	117.315	124.48	105

SCHEDULE OF SHORTLINES

No.	BEARING	DISTANCE
1	170° 13' 40"	112.45
3	143° 39' 40"	25.73
4	144° 36' 10"	81.475
5	157° 54' 10"	92.135
6	163° 04' 10"	81.475

PERMANENT MARK CONNECTIONS
 PM 80421 TO PM 140123 43° 53' 10" - 726.61
 PM 80420 TO PM 80421 160° 45' 55" - 973.455
 PM 82746 TO PM 140123 59° 34' 18" - 588.97

(A) LAND EXCLUDES MINERALS-CROWN GRANT

DIAGRAM D
NOT TO SCALE

DIAGRAM C
NOT TO SCALE

Reg:R247206 /Doc:DP 1059150 P /Rev:19-Mar-2004 /Sta:SC.OK /Pgs:ALL /Prt:24-Aug-2017 12:06 /Seq:3 of 4
 Ref:als /sc:T
 Table of mm: 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390

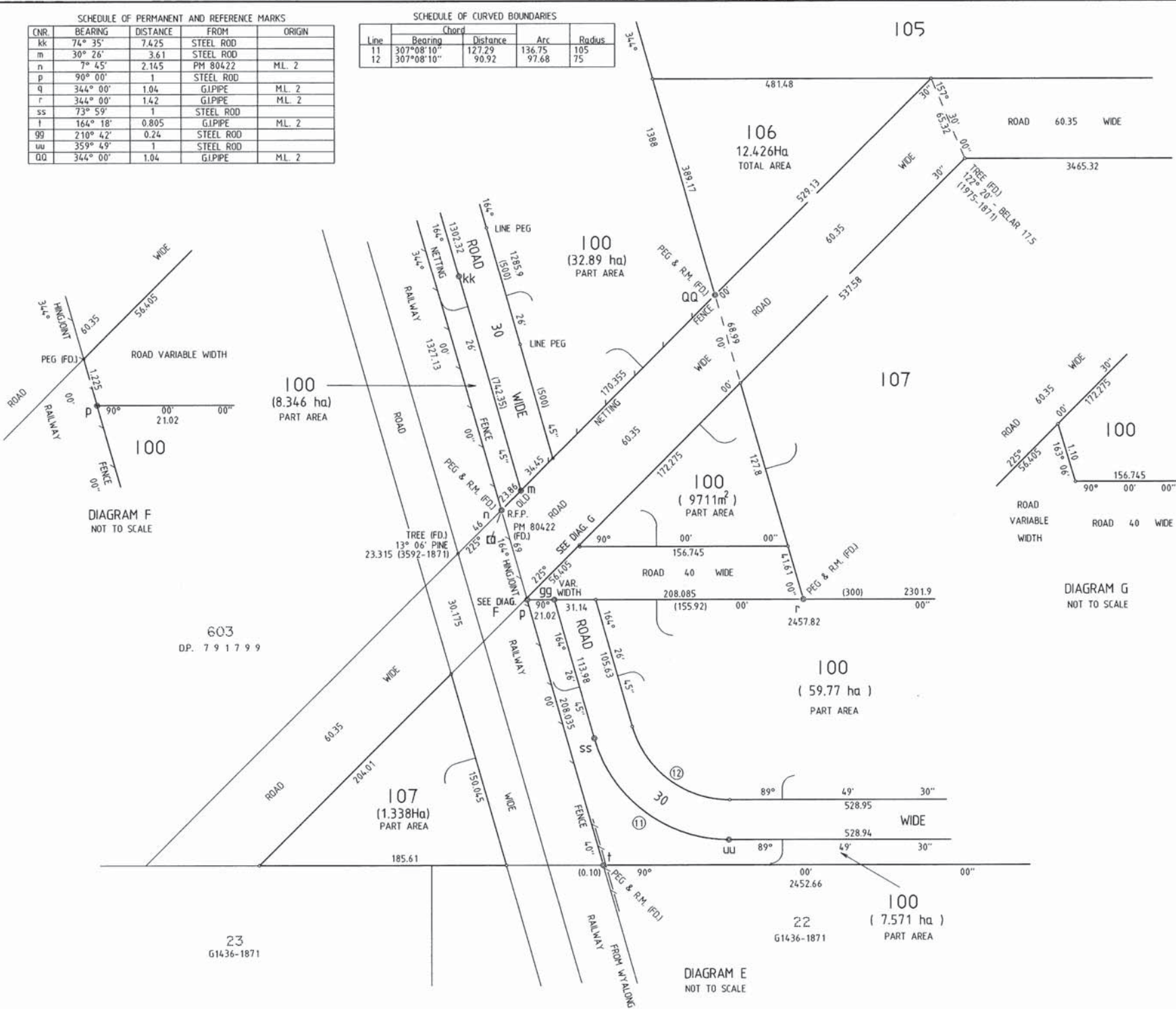
PLAN FORM 3
 To be used in conjunction with Plan Form 2
 WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION
 Reg:R247206 /Doc:DP 1059150 P /Rev:19-Mar-2004 /sts:SC:OK /Pgs:ALL /Prt:24-Aug-2017 12:06 /Seq:4 of 4
 Ref:als /Src:T
 Table of mm: 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390

SCHEDULE OF PERMANENT AND REFERENCE MARKS

CNR.	BEARING	DISTANCE	FROM	ORIGIN
kk	74° 35'	7.425	STEEL ROD	
m	30° 26'	3.61	STEEL ROD	
n	7° 45'	2.145	PM 80422	ML 2
p	90° 00'	1	STEEL ROD	
q	344° 00'	1.04	GLIPE	ML 2
r	344° 00'	1.42	GLIPE	ML 2
ss	73° 59'	1	STEEL ROD	
t	164° 18'	0.805	GLIPE	ML 2
99	210° 42'	0.24	STEEL ROD	
uu	359° 49'	1	STEEL ROD	
qq	344° 00'	1.04	GLIPE	ML 2

SCHEDULE OF CURVED BOUNDARIES

Line	Chord		Arc	Radius
	Bearing	Distance		
11	307°08'10"	127.29	136.75	105
12	307°08'10"	90.92	97.68	75



DP1059150

Registered 18-3-2004

This is sheet 4 of my plan in 4 sheets dated

W. M. Rowe
 Surveyor registered under the Surveying Act 2002

This is sheet 4 of the plan of subdivision 4 sheets covered by my certificate No. 31/2003 of 21/11/03

[Signature]

General Manager / Authorised Person / Accredited-Certifier

For use where space is insufficient in any panel on Plan Form 2

Advance Legal Searchers

Advance Legal Searchers Pty Ltd hereby certifies that the information contained in this document has been provided electronically by the Registrar General.

Information provided through Tri-Search an approved LPI/NSW Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

24/8/2017 12:08PM

FOLIO: 12/753083

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 4615 FOL 233

Recorded	Number	Type of Instrument	C.T. Issue
-----	-----	-----	-----
20/2/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
26/2/1990		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
25/3/1991		AMENDMENT: TITLE DIAGRAM	
15/9/1995	0536594	DISCHARGE OF MORTGAGE	
15/9/1995	0536595	DISCHARGE OF MORTGAGE	EDITION 1
10/10/1995	0596773	CAVEAT	
6/11/1996	2592627	WITHDRAWAL OF CAVEAT	
6/11/1996	2592628	CAVEAT	
17/4/1998	3924394	CAVEAT	
20/8/1999	6111845	WITHDRAWAL OF CAVEAT	
20/8/1999	6111852	MORTGAGE	EDITION 2
13/4/2000	6500619	CHANGE OF NAME	EDITION 3
13/6/2000	6855477	VARIATION OF MORTGAGE	EDITION 4
29/12/2000	7312798	VARIATION OF MORTGAGE	EDITION 5
8/6/2001	7674761	CAVEAT	
16/7/2001	7776855	DEPARTMENTAL DEALING	
15/8/2001	7853698	VARIATION OF MORTGAGE	EDITION 6
18/4/2002	8524662	CAVEAT	
25/6/2002	8577878	APPLICATION FOR PREPARATION OF LAPSING NOTICE	
7/8/2002	8831152	WITHDRAWAL OF CAVEAT	
7/8/2002	8831154	WITHDRAWAL OF CAVEAT	

END OF PAGE 1 - CONTINUED OVER

gd - west wyalong

PRINTED ON 24/8/2017

Advance Legal Searchers

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
24/8/2017 12:08PM

FOLIO: 12/753083 PAGE 2

Recorded	Number	Type of Instrument	C.T. Issue
7/8/2002	8831155	DISCHARGE OF MORTGAGE	
7/8/2002	8831159	TRANSFER	EDITION 7
24/6/2003	9725813	CHANGE OF NAME	EDITION 8
18/3/2004	DP1059150	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***

gd - west wyalong

PRINTED ON 24/8/2017

**ANY ENTRIES PRECEDED BY AN ASTERISK DO NOT APPEAR ON THE CURRENT EDITION OF THE CERTIFICATE OF TITLE. WARNING: THE INFORMATION APPEARING UNDER NOTATIONS HAS NOT BEEN FORMALLY RECORDED IN THE REGISTER.*

Advance Legal Searchers

Advance Legal Searchers

Advance Legal Searchers Pty Ltd hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act.

Information provided through Tri-Search an approved LPINSW Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 102/1059150

SEARCH DATE	TIME	EDITION NO	DATE
24/8/2017	12:07 PM	1	18/3/2004

LAND

LOT 102 IN DEPOSITED PLAN 1059150
AT LAKE COWAL
LOCAL GOVERNMENT AREA BLAND
PARISH OF CORRINGLE COUNTY OF GIPPS
TITLE DIAGRAM DP1059150

FIRST SCHEDULE

BARRICK AUSTRALIA LIMITED

SECOND SCHEDULE (4 NOTIFICATIONS)

- 1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
- * 2 AA552480 EASEMENT FOR PIPELINE 6 WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED AFFECTING THE SITE DESIGNATED (Z) IN DP1066957
- * 3 AA552481 EASEMENT FOR PIPELINE 6 WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED AFFECTING THE SITE DESIGNATED (Y) IN DP1066957
- * 4 AD864863 EASEMENT FOR WATER SUPPLY WORKS 7.8 WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED AFFECTING THE SITE DESIGNATED (Y) IN DP1103906

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

gd - west wyalong

PRINTED ON 24/8/2017

**ANY ENTRIES PRECEDED BY AN ASTERISK DO NOT APPEAR ON THE CURRENT EDITION OF THE CERTIFICATE OF TITLE. WARNING: THE INFORMATION APPEARING UNDER NOTATIONS HAS NOT BEEN FORMALLY RECORDED IN THE REGISTER.*

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)
ABN 82 147 943 842

18/36 Osborne Road,
Manly NSW 2095

Telephone: +612 9977 6713
Mobile: 0412 169 809
Email: search@alsearchers.com.au

28th August 2017

GROUND DOCTOR PTY LTD
PO Box 6278
DUBBO. NSW 2830

Attention: James Morrow,

RE: Lake Cowal Road,
Lake Cowal

Current Search

Folio Identifier 102/1059150 (title attached)
DP 1059150 (plan attached)
Dated 24th August 2017
Registered Proprietor:
BARRICK AUSTRALIA LIMITED

Title Tree
Lot 102 DP 1059150

Folio Identifier 102/1059150

Folio Identifier 12/753083

Certificate of Title Volume 4615 Folio 233

Crown Land

Summary of proprietor(s)
Lot 102 DP 1059150

Year	Proprietor(s)
	(Lot 102 DP 1059150)
2004 – todate	Barrick Australia Limited
	(Lot 12 DP 753083)
2003 – 2004	Barrick Australia Limited <i>(previously known as Homestake Australia Limited)</i>
2002 – 2003	Homestake Australia Limited
2000 – 2002	
1990 – 2000	Colin Carnegie, farmer and grazier
	(Portion 12 Parish Corringle – Area 1552 Acres 1 Rood 29 Perches – CTVol 4615 Fol 233)
1979 – 1990	Colin Carnegie, farmer and grazier
1955 – 1979	Herbert John Carnegie, grazier
1934 – 1955	Roy Charles John Hammond, grantee
	(Portion 12 Parish Corringle – Area 1552 Acres 1 Rood 29 Perches)
Prior – 1934	Crown Land
<i>(1928 – 1934)</i>	<i>(Conditional Purchase 1928/41 Wyalong to Roy Charles John Hammond)</i>
<i>(1910 – 1928)</i>	<i>(Conditional Purchase 1910/45 Wyalong to Bank of New South Wales)</i>

Requested Parcel : Lot 101 DP 1059150

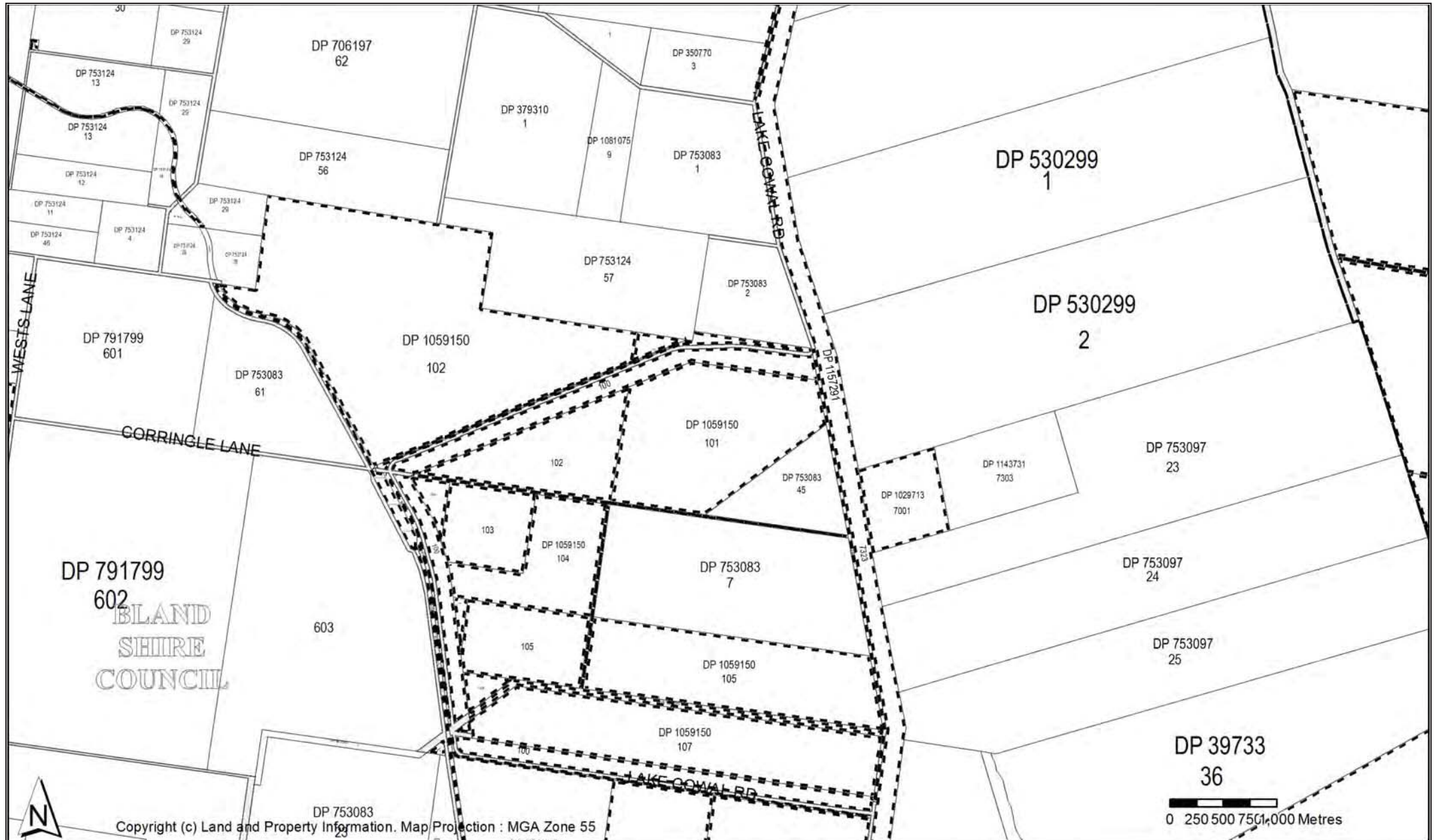
Identified Parcel : Lot 101 DP 1059150

Locality : LAKE COWAL

LGA : BLAND

Parish : CORRINGLE

County : GIPPS



Locality : LAKE COWAL






LGA : BLAND

Parish : CORRINGLE


County : GIPPS

Status	Surv/Comp	Purpose
--------	-----------	---------



DP42918
Lot(s): 46

 DP1066957	REGISTERED	SURVEY	EASEMENT
 DP1203651	REGISTERED	SURVEY	SUBDIVISION
 NSW GAZ.	21-11-2003		Folio : 10722
EASEMENT(S) FOR PIPELINE 6 WIDE AFFECTING THE PART SHOWN IN DP1061485 (SEE GAZ. FOR FULL DESCRIPTION)			
 NSW GAZ.	30-05-2014		Folio : 1983
LOTS 44 AND 46 DP42918 INCLUSION OF LAND IN JEMALONG IRRIGATION AREA OF OPERATIONS			
 NSW GAZ.	13-06-2014		Folio : 2187
LOTS 44 AND 46 DP42918 INCLUSION OF LAND IN JEMALONG IRRIGATION AREA OF OPERATIONS			


Lot(s): 47

 DP1061485	REGISTERED	SURVEY	EASEMENT
---	------------	--------	----------

DP549106
Lot(s): 2

 DP1073837	REGISTERED	SURVEY	EASEMENT
 NSW GAZ.	21-01-2005		Folio : 215
EASEMENT FOR OVERHEAD POWERLINES 40 WIDE SHOWN IN DP1073837 ACQUIRED FOR THE ELECTRICITY SUPPLY ACT, 1995			

DP753083
Lot(s): 64

 DP1073837	REGISTERED	SURVEY	EASEMENT
 DP1157847	REGISTERED	SURVEY	EASEMENT


DP753097
Lot(s): 17

 DP1203651	REGISTERED	SURVEY	SUBDIVISION
---	------------	--------	-------------

Lot(s): 18

 DP1066957	REGISTERED	SURVEY	EASEMENT
---	------------	--------	----------


DP753124
Lot(s): 47

 CA149910 - LOT 47 DP753124			
--	--	--	--




DP778347
Lot(s): 331

 DP1230638	REGISTERED	SURVEY	PIPELINES ACT, 1967
---	------------	--------	---------------------

DP1029713
Lot(s): 7001

 NSW GAZ.	23-04-2004		Folio : 2182
RESERVATION OF CROWN LAND (RESERVE NO. 17085) GAZ. 1-10-2004 FOL. 7808 - LOT 7008 DP753083			


DP1059150
Lot(s): 100

 DP1073837	REGISTERED	SURVEY	EASEMENT
 NSW GAZ.	16-04-2004		Folio : 2119
DECLARED CROWN LAND LOT 100 DP1059150			
 NSW GAZ.	16-04-2004		Folio : 2119
ADDITION TO RESERVED CROWN LAND RESERVE NO. 17085 - LOT 100 DP1059150			

Lot(s): 100, 101, 102, 103, 104, 105, 106, 107

 DP753083	HISTORICAL	COMPILATION	CROWN ADMIN NO.
--	------------	-------------	-----------------


DP1059284
Lot(s): 4

 DP753097	HISTORICAL	COMPILATION	CROWN ADMIN NO.
--	------------	-------------	-----------------






DP1060709
Lot(s): 1, 2

 NSW GAZ.	24-10-2003		Folio : 10210
CLOSED ROAD LOTS 1 AND 2 DP1060709			

DP1060907
Lot(s): 2

 NSW GAZ.	07-11-2003		Folio : 10456
CLOSED ROAD LOT 2 DP1060907			

Caution: For all **ACTIVITY PRIOR to SEPT 2002** you must refer to the RGs Charting and Reference Maps.

Status	Surv/Comp	Purpose
Lot(s): 1  NSW GAZ. CLOSED ROAD LOT 1 DP1060907	16-04-2004	Folio : 2119
DP1157291 Lot(s): 7323  NSW GAZ. LOT 7008 DP753083 - REVOCATION OF RESERVATION OF CROWN LAND	23-04-2004	Folio : 2182
DP1172077 Lot(s): 1156  CA161099 - LOT 1156 DP1172077		
DP1172078 Lot(s): 1157  CA161100 - LOT 1157 DP1172078		
DP1172081 Lot(s): 1158  CA161102 - LOT 1158 DP1172081		

Plan	Surv/Comp	Purpose
DP39733	SURVEY	CROWN FOLIO CREATION
DP42918	SURVEY	CROWN FOLIO CREATION
DP45331	SURVEY	CROWN FOLIO CREATION
DP183637	SURVEY	UNRESEARCHED
DP350770	COMPILATION	UNRESEARCHED
DP379310	SURVEY	UNRESEARCHED
DP530299	SURVEY	SUBDIVISION
DP549106	SURVEY	RESUMPTION OR ACQUISITION
DP660586	COMPILATION	DEPARTMENTAL
DP706197	COMPILATION	SUBDIVISION
DP753083	COMPILATION	CROWN ADMIN NO.
DP753097	COMPILATION	CROWN ADMIN NO.
DP753124	COMPILATION	CROWN ADMIN NO.
DP778347	SURVEY	SUBDIVISION
DP791799	SURVEY	SUBDIVISION
DP1029713	COMPILATION	DEPARTMENTAL
DP1059150	SURVEY	SUBDIVISION
DP1059150	SURVEY	SUBDIVISION
DP1059284	SURVEY	RESUMPTION OR ACQUISITION
DP1060709	COMPILATION	ROADS ACT, 1993
DP1060907	COMPILATION	ROADS ACT, 1993
DP1081075	COMPILATION	DEPARTMENTAL
DP1143731	COMPILATION	CROWN LAND CONVERSION
DP1157291	COMPILATION	CROWN LAND CONVERSION
DP1172077	COMPILATION	LIMITED FOLIO CREATION
DP1172078	COMPILATION	LIMITED FOLIO CREATION
DP1172081	COMPILATION	LIMITED FOLIO CREATION

09683021

G.
NEW SOUTH WALES
(Crown Grant) Prior Title
Vol. 2743 Fol. 116



CERTIFICATE OF TITLE
PROPERTY ACT, 1900, as amended.



Vol. 9683 Fol. 21

1st Edition issued 21-4-1964

EH J608268



I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

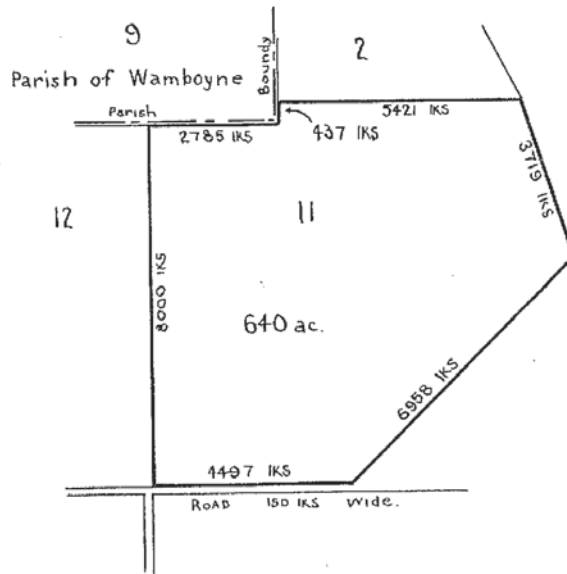
Witness *S MacLennan*

CANCELLED
Jawatson
Registrar-General.



PLAN SHOWING LOCATION OF LAND

SEE AUTO FOLIO



Scale: 30 chains to one inch.

J608268 7D.
P

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Portion 11 in the Shire of Bland Parish of Corringale and County of Gipps. Excepting thereout the minerals reserved by the Crown Grant.

Jawatson
Registrar General.

FIRST SCHEDULE (continued overleaf)

NYELVA MOYA CARNEGIE, of West Wyalong, Married Woman.

Jawatson
Registrar General.

SECOND SCHEDULE (continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant(s) above referred to.

Jawatson
Registrar General.

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

BY 1008 V. G. M. RUDIG, GOVERNMENT PRINTER

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar-General
	NATURE	NUMBER	DATE		
<p>CANCELLED</p> <p>SEE AUTO FOLD</p>					

SECOND SCHEDULE (continued)

PARTICULARS	INSTRUMENT NUMBER	DATE	ENTERED	Signature of Registrar-General	CANCELLATION
to The Commercial Banking Company of Sydney Limited.					

Form: 01T
Licence: 03-11-027
Licensee: Blake Dawson Waldron

TRANSFER

New South Wales
Real Property Act 1900



AA534531L

PRIVACY NOTE: Section 31B of the Real Property Act 1900 (RP Act) authorises the Registrar General to collect the information required by this form for the establishment and maintenance of the Real Property Act Register. Section 96B RP Act requires that the Register is made available to any person for search upon payment of a fee, if any.

STAMP DUTY

Office of State Revenue use only	NEW SOUTH WALES DUTY 26-03-2004 0001895062-001 SECTION OTHR LEGN-ORIGINAL NO DUTY PAYABLE
----------------------------------	--

(A) **TORRENS TITLE**

If appropriate, specify the part transferred 100/1059150

(B) **LODGED BY**

Delivery Box 238N	Name, Address or DX and Telephone BLAKE DAWSON WALDRON DX 355 SYDNEY Tel: 02 9258 6000 Reference (optional): BLB	CODES T TW (Sheriff)
----------------------	--	-------------------------------

(C) **TRANSFEROR**

BARRICK AUSTRALIA LIMITED ACN 007 857 598

- (D) **CONSIDERATION** The transferor acknowledges receipt of the consideration of \$ NIL and as regards
- (E) **ESTATE** the land specified above transfers to the transferee an estate in fee simple.
- (F) **SHARE TRANSFERRED**

(G) Encumbrances (if applicable): 1. 2. 3.

(H) **TRANSFEEE**

STATE OF NEW SOUTH WALES
TENANCY:

(I) **DATE** 25 / 3 / 2004
dd mm yyyy

I certify that the attorney(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this transfer in my presence.

Signature of witness: *W. Oby*
Name of witness: William Oby
Address of witness: 20 Peterborough Rd
Marrickville NSW

Certified correct for the purposes of the Real Property Act 1900 by the attorney(s) named below who signed this transfer pursuant to the power of attorney specified.

Signature of attorney: *Mark Peter Brennan*
Attorney's name: MARK PETER BRENNAN
Signing on behalf of: BARRICK AUSTRALIA LIMITED.
Power of attorney-Book: 4404
-No: 129

I certify that the authorised officer(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this transfer in my presence.

Signature of witness:

M Ogilvy

Name of witness:

MARGARET OGILVY

Address of witness:

'BRITTLE JACKS'
MULLION CK 2800

Certified correct for the purposes of the Real Property Act 1900 by the authorised officer named below.

Signature of authorised officer:

Ian C Neist

Authorised officer's name:

IAN C NEIST

Authority of officer:

Manager

Signing on behalf of:

Crown Lands NSW
for & on behalf of Minister
assisting the Minister for
Natural Resources (Lands)

SIGNATURE AND SEALS ONLY

Mark Brennan
 Barrick Australia Limited
 PLN 007 857 598, by its duly
 constituted Attorney Mark
 Peter Brennan, under Power
 of Attorney dated 1 October
 2003, Registered Book 4404
 No. 129, in the presence
 of: *W. Oby*
 William Oby

Department of Lands Approval

I, _____, in approving this plan certify
 (Authorized Officer)
 that all necessary approvals in regard to the allocation of the land
 shown hereon have been given.

Signature: _____
 Date: _____
 File Number: _____
 Office: _____

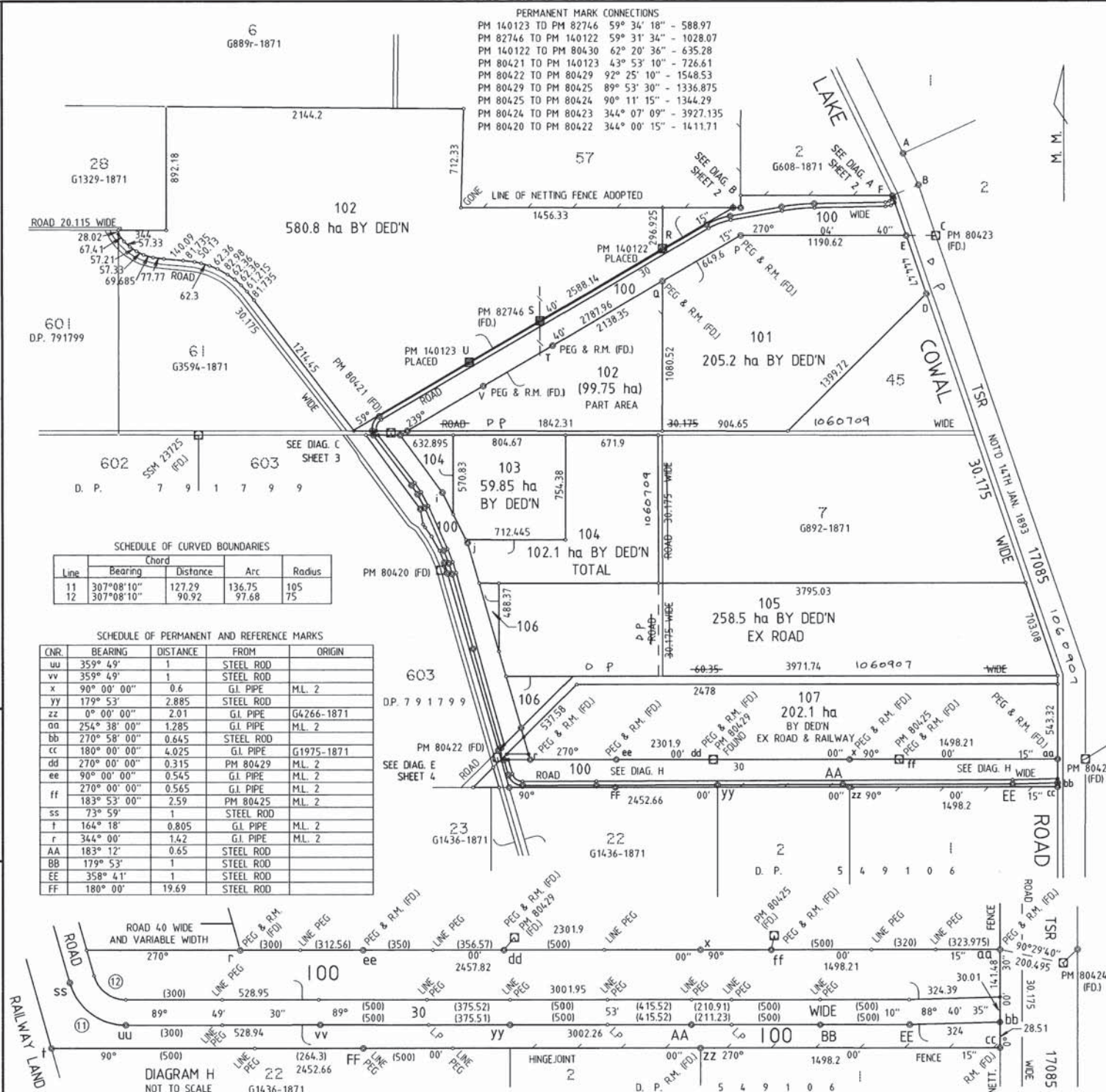
Subdivision Certificate

I certify that the provisions of s. 109J of the Environmental Planning
 and Assessment Act 1979 have been satisfied in relation to the
 proposed SUBDIVISION AND NEW ROADS as set out herein
 (insert 'subdivision' or 'new roads')

Consent Authority: *Bland Shire Council*
 Date of endorsement: *21.11.2003*
 Accreditation No.: _____
 Subdivision Certificate No.: *31/2003*
 File No.: *P. 691*

Note: When the plan is to be lodged electronically in the Land Titles
 Office, it should include a signature in an electronic or digital
 format approved by the Registrar-General.

* Delete whichever is inapplicable



DP1059150

Registered: 18-3-2004

Title System: TORRENS

Purpose: SUBDIVISION

Ref Map: PARISH #

Last Plan: 813.1871, 891.1871, 892.1871, 893.1871, 1975.1871

PLAN OF SUBDIVISION OF LOT'S
 3,4,9,10,11,12 AND 44 IN
 D.P. 753083

Lengths are in metres. Reduction Ratio 1:20000

L.G.A.: BLAND

Locality: LAKE COWAL

Parish: CORRINGLE

County: GIPPS (17)

This is sheet 1 of my plan in 4 sheets.
 (Delete if inapplicable)

Surveying Regulation, 2001

WAYNE KEITH ROWE
 of LANGFORD & ROWE, P.O. BOX 373, DUBBO
 a surveyor registered under the Surveying Act 2002, hereby
 certify that the survey represented in this plan is accurate, has
 been made in accordance with the Surveying
 Regulation, 2001 and was completed on 29-08-2003.

The survey relates to LOT 100 AND CONNECTIONS
 (specify the land actually surveyed or specify any land
 shown in the plan that is not the subject of the survey).

Signature: *W. M. Rowe* Dated: 30-09-2003
 Surveyor registered under the Surveying Act, 2002
 Datum Line: _____
 Type: Urban/Rural

Plans used in preparation of survey/compilation:
 G608-1871 D.P. 530299
 G892-1871 D.P. 549106
 G1329-1871 D.P. 791799
 G1436-1871 ML 2
 G3594-1871

PANEL FOR USE ONLY for statements of intention to
 dedicate public roads, to create public reserves, drainage
 reserves, easements, restrictions on the use of land or
 positive covenants.

IT IS INTENDED
 TO DEDICATE THE ROADS MARKED 30 WIDE
 AND 40 WIDE AND VARIABLE WIDTH TO THE
 PUBLIC AS PUBLIC ROAD.

DP1059150

Registered 18-3-2004

This is sheet 2 of my plan in 4 sheets dated 30-09-2003

W. M. Rowe
Surveyor registered under the Surveying Act, 2002

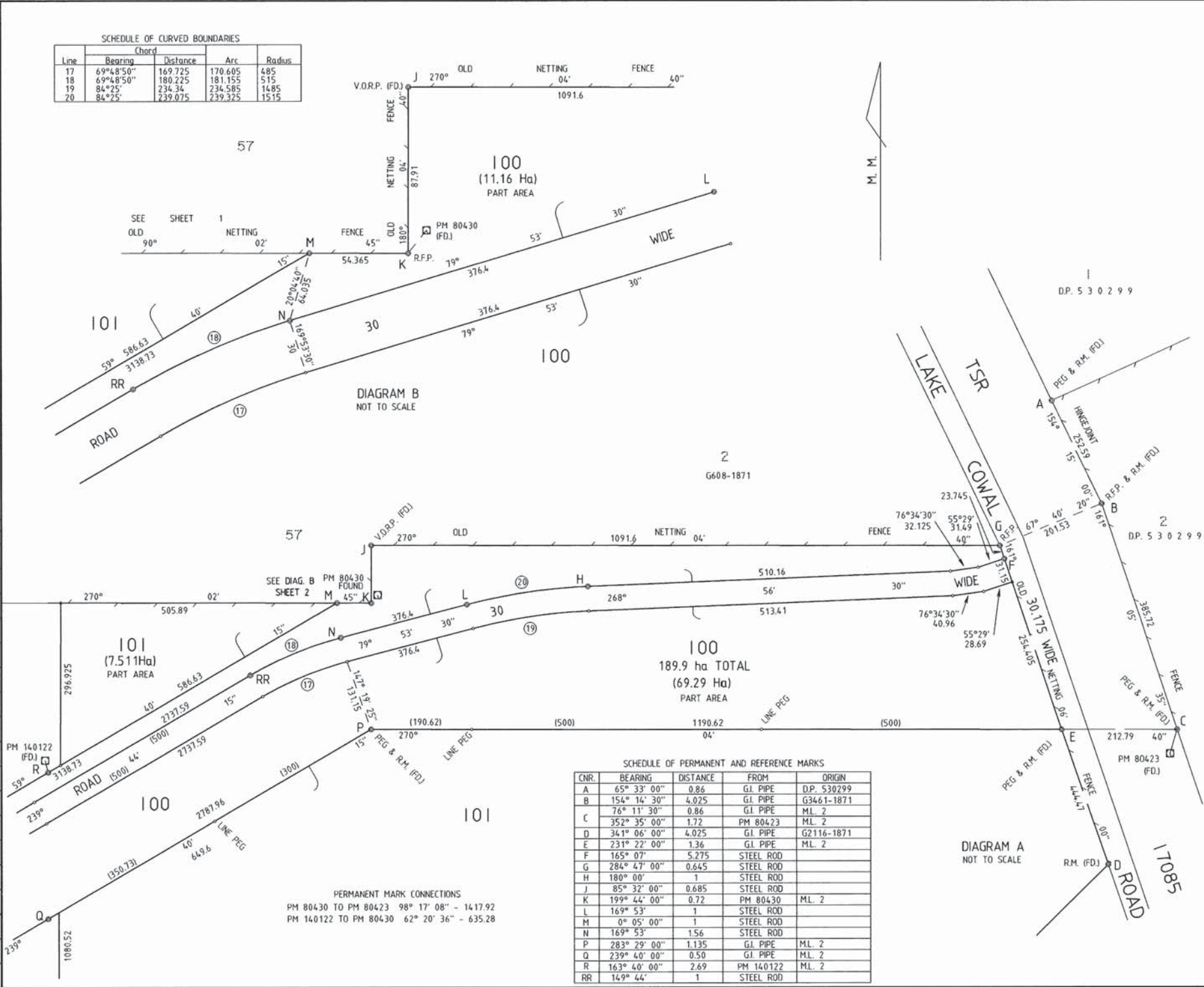
This is sheet 2 of the plan of 5464/1/2/2003. 4 sheets covered by my certificate No. 31/2003 of 2/1/03

W. M. Rowe
General Manager / Authorized Person / Accredited / Certified

For use where space is insufficient in any panel on Plan Form 2

SCHEDULE OF CURVED BOUNDARIES

Line	Bearing	Distance	Arc	Radius
17	69°48'50"	169.725	170.605	485
18	69°48'50"	180.225	181.155	515
19	84°25'	234.34	234.585	1485
20	84°25'	239.075	239.325	1515



SCHEDULE OF PERMANENT AND REFERENCE MARKS

CNR.	BEARING	DISTANCE	FROM	ORIGIN
A	65° 33' 00"	0.86	G.I. PIPE	D.P. 530299
B	154° 14' 30"	4.025	G.I. PIPE	G3461-1871
C	76° 11' 30"	0.86	G.I. PIPE	ML 2
	352° 35' 00"	1.72	PM 80423	ML 2
D	341° 06' 00"	4.025	G.I. PIPE	G2116-1871
E	231° 22' 00"	1.36	G.I. PIPE	ML 2
F	165° 07'	5.275	STEEL ROD	
G	284° 47' 00"	0.645	STEEL ROD	
H	180° 00'	1	STEEL ROD	
J	85° 32' 00"	0.685	STEEL ROD	
K	199° 44' 00"	0.72	PM 80430	ML 2
L	169° 53'	1	STEEL ROD	
M	0° 05' 00"	1	STEEL ROD	
N	169° 53'	1.56	STEEL ROD	
P	283° 29' 00"	1.135	G.I. PIPE	ML 2
Q	239° 40' 00"	0.50	G.I. PIPE	ML 2
R	163° 40' 00"	2.69	PM 140122	ML 2
RR	149° 44'	1	STEEL ROD	

PERMANENT MARK CONNECTIONS
 PM 80430 TO PM 80423 98° 17' 08" - 1417.92
 PM 140122 TO PM 80430 62° 20' 36" - 635.28

Ref: R247206 / Doc: DP 1059150 P / Rev: 19-Mar-2004 / Sts: SC, OK / Pgs: ALL / Prt: 24-Aug-2017 12:06 / Seq: 2 of 4
 Ref: 1/100 1/200 1/300 1/400 1/500 1/600 1/700 1/800 1/900 1/1000 1/1100 1/1200 1/1300 1/1400 1/1500 1/1600 1/1700 1/1800 1/1900 1/2000 1/2100 1/2200 1/2300 1/2400 1/2500 1/2600 1/2700 1/2800 1/2900 1/3000 1/3100 1/3200 1/3300 1/3400 1/3500 1/3600 1/3700 1/3800 1/3900
 Table of mm

DP1059150

Registered 18-3-2004

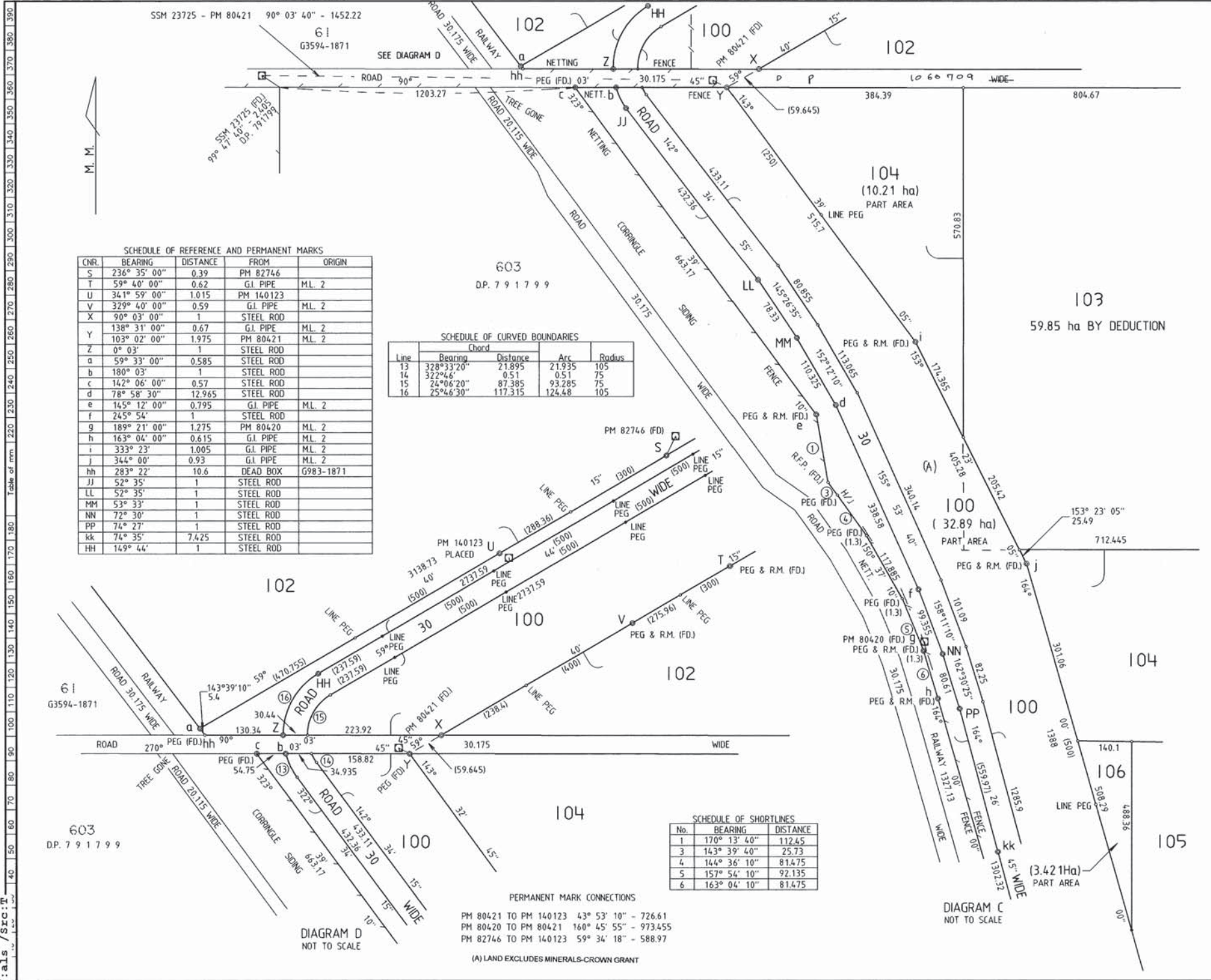
This is sheet 3 of my plan in 4 sheets dated 30-09-2003

W. M. Rowe
Surveyor registered under the Surveying Act, 2002

This is sheet 3 of the plan of Subdivision 4 sheets covered by my certificate No. 81/2003 of 21/11/2003

General Manager/Authorized Person/Accredited Certifier

For use where space is insufficient in any panel on Plan Form 2



SCHEDULE OF REFERENCE AND PERMANENT MARKS

CNR	BEARING	DISTANCE	FROM	ORIGIN
S	236° 35' 00"	0.39	PM 82746	
T	59° 40' 00"	0.62	G.I. PIPE	ML. 2
U	341° 59' 00"	1.015	PM 140123	
V	329° 40' 00"	0.59	G.I. PIPE	ML. 2
X	90° 03' 00"	1	STEEL ROD	
Y	138° 31' 00"	0.67	G.I. PIPE	ML. 2
Z	103° 02' 00"	1.975	PM 80421	ML. 2
a	0° 03'	1	STEEL ROD	
b	59° 33' 00"	0.585	STEEL ROD	
c	180° 03'	1	STEEL ROD	
d	142° 06' 00"	0.57	STEEL ROD	
e	78° 58' 30"	12.965	STEEL ROD	
f	145° 12' 00"	0.795	G.I. PIPE	ML. 2
g	245° 54'	1	STEEL ROD	
h	189° 21' 00"	1.275	PM 80420	ML. 2
i	163° 04' 00"	0.615	G.I. PIPE	ML. 2
j	333° 23'	1.005	G.I. PIPE	ML. 2
hh	344° 00'	0.93	G.I. PIPE	ML. 2
jj	283° 22'	10.6	DEAD BOX	G983-1871
ll	52° 35'	1	STEEL ROD	
mm	53° 33'	1	STEEL ROD	
nn	72° 30'	1	STEEL ROD	
pp	74° 27'	1	STEEL ROD	
kk	74° 35'	7.425	STEEL ROD	
hh	149° 44'	1	STEEL ROD	

SCHEDULE OF CURVED BOUNDARIES

Line	Bearing	Chord Distance	Acc	Radius
13	328° 33' 20"	21.895	21.935	105
14	322° 46'	0.51	0.51	75
15	24° 06' 20"	87.385	93.285	75
16	25° 46' 30"	117.315	124.48	105

SCHEDULE OF SHORTLINES

No.	BEARING	DISTANCE
1	170° 13' 40"	112.45
3	143° 39' 40"	25.73
4	144° 36' 10"	81.475
5	157° 54' 10"	92.135
6	163° 04' 10"	81.475

PERMANENT MARK CONNECTIONS
 PM 80421 TO PM 140123 43° 53' 10" - 726.61
 PM 80420 TO PM 80421 160° 45' 55" - 973.455
 PM 82746 TO PM 140123 59° 34' 18" - 588.97

(A) LAND EXCLUDES MINERALS-CROWN GRANT

DIAGRAM C NOT TO SCALE

DIAGRAM D NOT TO SCALE

Reg:R247206 /Doc:DP 1059150 P /Rev:19-Mar-2004 /Sta:SC.OK /Pgs:ALL /Prt:24-Aug-2017 12:06 /Seq:3 of 4
 Ref:als /sc:T
 Table of mm: 220 | 230 | 240 | 250 | 260 | 270 | 280 | 290 | 300 | 310 | 320 | 330 | 340 | 350 | 360 | 370 | 380 | 390

SCHEDULE OF PERMANENT AND REFERENCE MARKS				
CNR.	BEARING	DISTANCE	FROM	ORIGIN
kk	74° 35'	7.425	STEEL ROD	
m	30° 26'	3.61	STEEL ROD	
n	7° 45'	2.145	PM 80422	ML 2
p	90° 00'	1	STEEL ROD	
q	344° 00'	1.04	GLIPE	ML 2
r	344° 00'	1.42	GLIPE	ML 2
ss	73° 59'	1	STEEL ROD	
t	164° 18'	0.805	GLIPE	ML 2
99	210° 42'	0.24	STEEL ROD	
uu	359° 49'	1	STEEL ROD	
qq	344° 00'	1.04	GLIPE	ML 2

SCHEDULE OF CURVED BOUNDARIES				
Line	Chord		Arc	Radius
	Bearing	Distance		
11	307°08'10"	127.29	136.75	105
12	307°08'10"	90.92	97.68	75

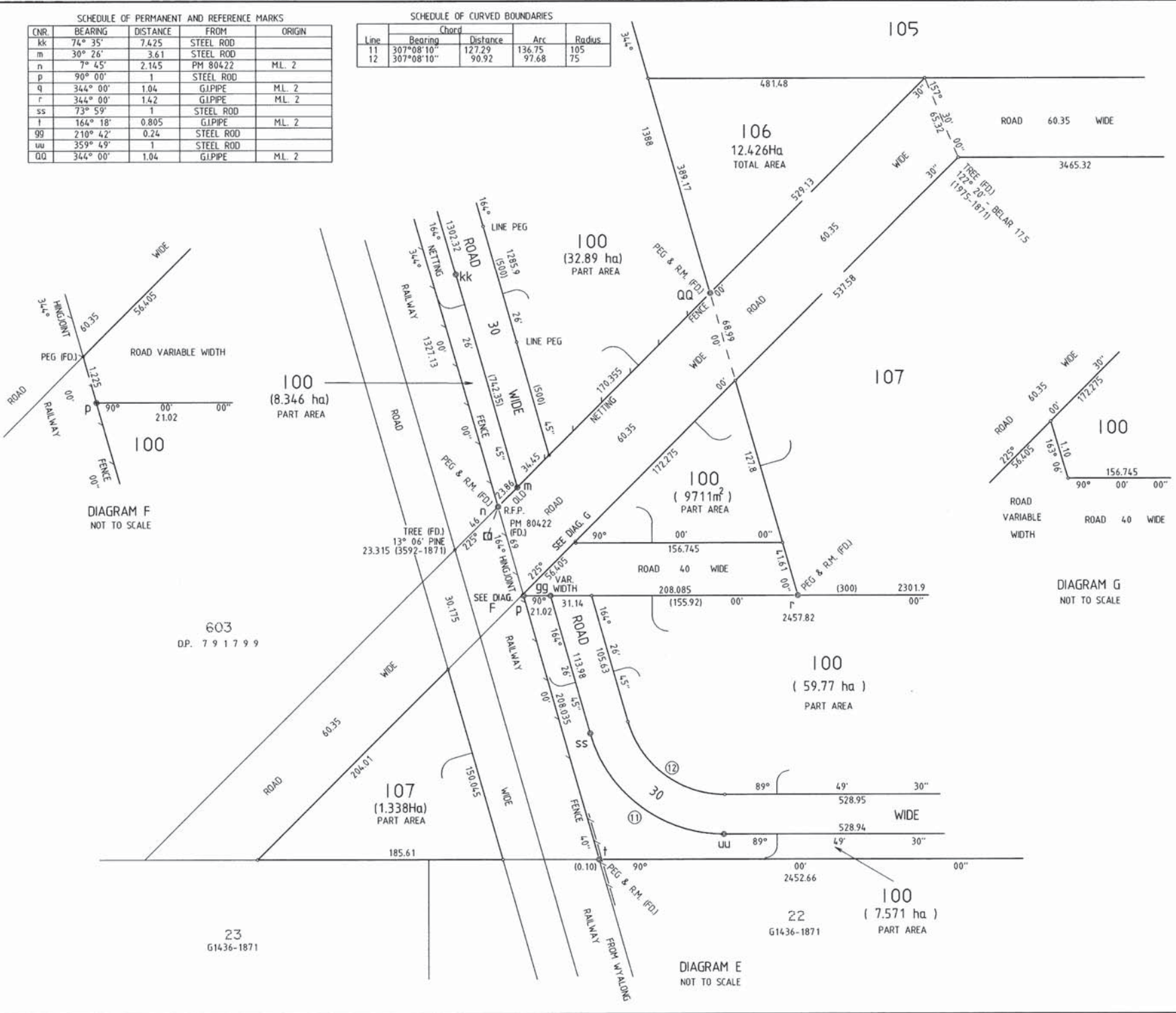


Table of mm 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390

DP1059150

Registered 18-3-2004

This is sheet 4 of my plan in 4 sheets dated

W. M. Rowe

Surveyor registered under the Surveying Act 2002

This is sheet 4 of the plan of subdivision 4 sheets covered by my certificate No. 31/2003 of 21/11/03

[Signature]

General Manager / Authorised Person / Accredited-Certifier

For use where space is insufficient in any panel on Plan Form 2

DIAGRAM F NOT TO SCALE

DIAGRAM G NOT TO SCALE

DIAGRAM E NOT TO SCALE

Reduction Ratio NOT TO SCALE

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

9/10/2017 4:02PM

FOLIO: 11/753083

First Title(s): SEE PRIOR TITLE(S)
 Prior Title(s): VOL 9683 FOL 21

Recorded	Number	Type of Instrument	C.T. Issue
3/12/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
6/1/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
25/3/1991		AMENDMENT: TITLE DIAGRAM	
10/10/1995	0596773	CAVEAT	
6/11/1996	2592627	WITHDRAWAL OF CAVEAT	
6/11/1996	2592628	CAVEAT	
20/8/1999	6111850	DISCHARGE OF MORTGAGE	
20/8/1999	6111851	MORTGAGE	EDITION 1
8/2/2000	6500534	CHANGE OF NAME	EDITION 2
13/6/2000	6855521	VARIATION OF MORTGAGE	EDITION 3
29/12/2000	7312792	VARIATION OF MORTGAGE	EDITION 4
8/6/2001	7674785	CAVEAT	
15/8/2001	7853782	VARIATION OF MORTGAGE	EDITION 5
18/4/2002	8524700	CAVEAT	
25/6/2002	8577885	APPLICATION FOR PREPARATION OF LAPSING NOTICE	
7/8/2002	8831153	WITHDRAWAL OF CAVEAT	
7/8/2002	8831154	WITHDRAWAL OF CAVEAT	
7/8/2002	8831156	DISCHARGE OF MORTGAGE	
7/8/2002	8831160	TRANSFER	EDITION 6
24/6/2003	9725813	CHANGE OF NAME	EDITION 7
18/3/2004	DP1059150	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

END OF PAGE 1 - CONTINUED OVER

advlegs

PRINTED ON 9/10/2017

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

9/10/2017 4:02PM

FOLIO: 11/753083

PAGE 2

<u>Recorded</u>	<u>Number</u>	<u>Type of Instrument</u>	<u>C.T. Issue</u>
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*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

9/10/2017 3:30PM

FOLIO: 100/1059150

First Title(s): VOL 2643 FOL 220 VOL 797 FOL 3
 VOL 5128 FOL 26 VOL 5128 FOL 27
 VOL 2743 FOL 116 VOL 4615 FOL 233
 VOL 10178 FOL 114
 Prior Title(s): 3-4/753083 9-12/753083
 44/753083

Recorded	Number	Type of Instrument	C.T. Issue
18/3/2004	DP1059150	DEPOSITED PLAN	FOLIO CREATED EDITION 1
31/3/2004	AA534531	TRANSFER	EDITION 2
6/5/2004	AA621544	DEPARTMENTAL DEALING	
25/5/2004	AA615996	APPLICATION	
22/9/2004	DP1073837	DEPOSITED PLAN	
10/12/2004	AB117365	TRANSFER GRANTING EASEMENT	EDITION 3
18/11/2010	AF885417	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 100/1059150

SEARCH DATE	TIME	EDITION NO	DATE
9/10/2017	3:26 PM	3	10/12/2004

LAND

LOT 100 IN DEPOSITED PLAN 1059150
AT LAKE COWAL
LOCAL GOVERNMENT AREA BLAND
PARISH OF CORRINGLE COUNTY OF GIPPS
TITLE DIAGRAM DP1059150

FIRST SCHEDULE

THE STATE OF NEW SOUTH WALES (AP AA615996)

SECOND SCHEDULE (2 NOTIFICATIONS)

- 1 AB117365 EASEMENT FOR OVERHEAD POWER LINE(S) 40 WIDE
AFFECTING THE PART(S) SHOWN AS "PROPOSED EASEMENT FOR
POWERLINES 40 WIDE" IN DP1073837
- * 2 THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN
LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER
DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT
OF THE MINISTER.

NOTATIONS

AA621544 NOTE: ADDITION TO RESERVED CROWN LAND VIDE GAZ 16/4/2004 FOL
2119

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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WARNING: THE INFORMATION APPEARING UNDER NOTATIONS HAS NOT BEEN FORMALLY RECORDED IN THE REGISTER.

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 101/1059150

SEARCH DATE	TIME	EDITION NO	DATE
9/10/2017	3:26 PM	1	18/3/2004

LAND

LOT 101 IN DEPOSITED PLAN 1059150
AT LAKE COWAL
LOCAL GOVERNMENT AREA BLAND
PARISH OF CORRINGLE COUNTY OF GIPPS
TITLE DIAGRAM DP1059150

FIRST SCHEDULE

BARRICK AUSTRALIA LIMITED

SECOND SCHEDULE (4 NOTIFICATIONS)

- 1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
- * 2 AA552480 EASEMENT FOR PIPELINE 6 WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED AFFECTING THE SITE DESIGNATED (Z) IN DP1066957
- * 3 AA552481 EASEMENT FOR PIPELINE 6 WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED AFFECTING THE SITE DESIGNATED (Y) IN DP1066957
- * 4 AD864863 EASEMENT FOR WATER SUPPLY WORKS 7.8 WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED AFFECTING THE SITE DESIGNATED (Y) IN DP1103906

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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Annexure E

Property Search Results

Lotsearch



Environmental Risk and Planning Report

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Report Date: 14 Nov 2017 14:05:27

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.

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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
1	Georeferenced to the site location / premise or part of site
2	Georeferenced with the confidence of the general/approximate area
3	Georeferenced to the road or rail
4	Georeferenced to the road intersection
5	Feature is a buffered point
6	Land adjacent to Georeferenced Site
7	Georeferenced to a network of features

Dataset Listing

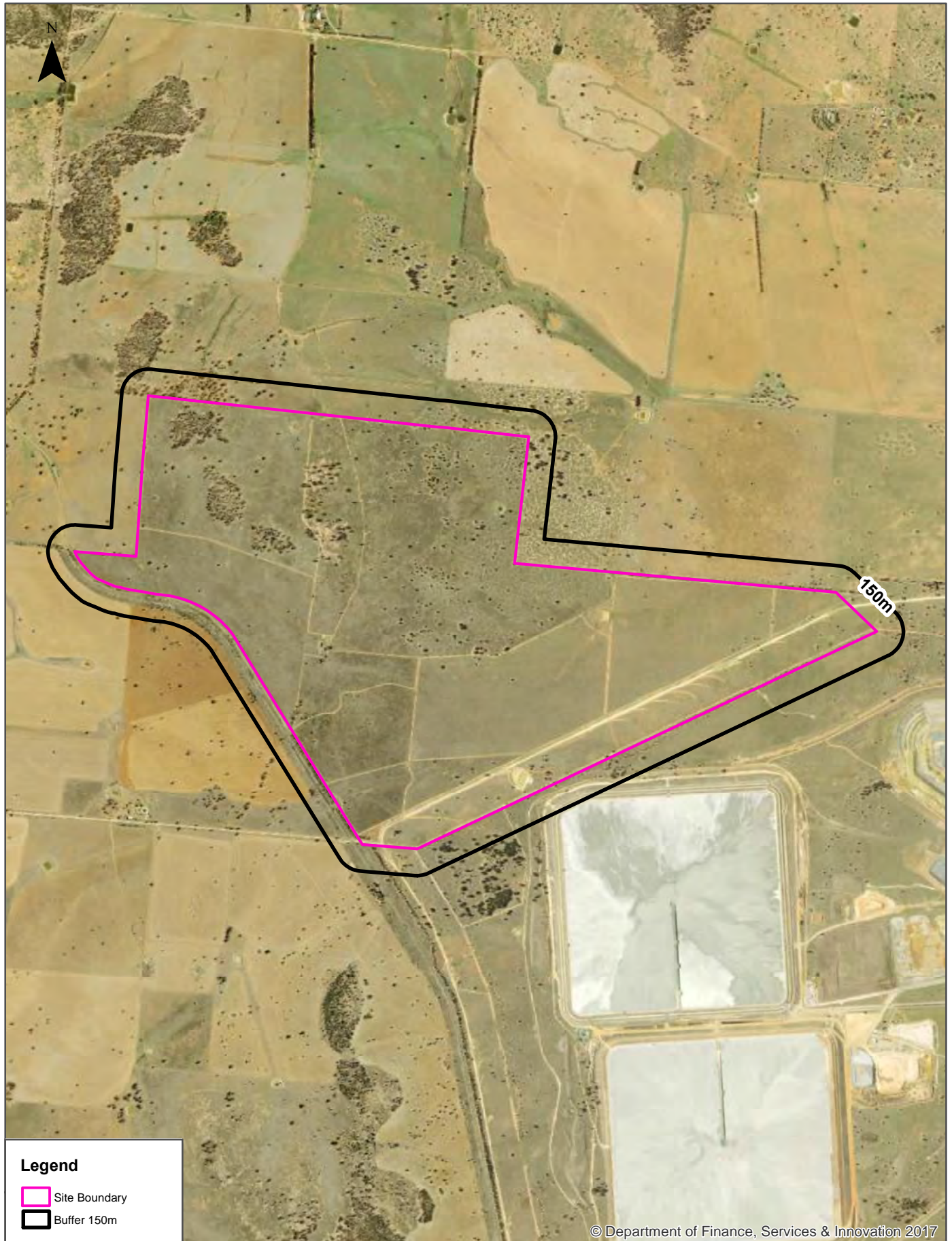
Datasets contained within this report, detailing their source and data currency:

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	Dept. Finance, Services & Innovation	14/11/2017	14/11/2017	Daily	-	-	-	-
Topographic Data	Dept. Finance, Services & Innovation	10/04/2015	01/04/2015	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	13/11/2017	04/09/2017	Monthly	1000	0	0	0
Contaminated Land: Records of Notice	Environment Protection Authority	13/11/2017	13/11/2017	Monthly	1000	0	0	0
Former Gasworks	Environment Protection Authority	13/11/2017	12/09/2017	Monthly	1000	0	0	0
National Waste Management Site Database	Geoscience Australia	13/11/2017	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	13/11/2017	13/11/2017	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	13/11/2017	13/11/2017	Quarterly	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	09/11/2017	09/11/2017	Monthly	1000	0	7	7
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	09/11/2017	09/11/2017	Monthly	1000	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	09/11/2017	09/11/2017	Monthly	1000	3	3	3
UPSS Environmentally Sensitive Zones	Environment Protection Authority	14/04/2015	12/01/2010	As required	1000	0	0	0
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	1000	0	0	0
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	1000	-	0	0
Points of Interest	Dept. Finance, Services & Innovation	01/02/2017	01/02/2017	Annually	1000	1	1	1
Tanks (Areas)	Dept. Finance, Services & Innovation	01/02/2017	01/02/2017	Annually	1000	0	0	0
Tanks (Points)	Dept. Finance, Services & Innovation	01/02/2017	01/02/2017	Annually	1000	0	0	0
Major Easements	Dept. Finance, Services & Innovation	01/02/2017	01/02/2017	As required	1000	0	0	0
State Forest	Dept. Finance, Services & Innovation	01/02/2017	29/06/2016	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	01/02/2017	31/12/2016	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Groundwater Boreholes	NSW Dept. of Primary Industries - Office of Water / Water Administration Ministerial Corporation; Commonwealth of Australia (Bureau of Meteorology)	21/03/2016	01/12/2015	Annually	2000	0	1	13
Geological Units 1:250,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	4	-	6



Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Geological Structures 1:250,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	6	-	12
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	5	-	5
Atlas of Australian Soils	CSIRO	19/05/2017	17/02/2011	As required	1000	1	1	2
Standard Local Environmental Plan Acid Sulfate Soils	NSW Planning and Environment	07/10/2016	07/10/2016	As required	500	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	1	2
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Office of Environment & Heritage	12/05/2017	01/01/2002	None planned	1000	-	-	-
Mining Subsidence Districts	Dept. Finance, Services & Innovation	13/07/2017	01/07/2017	As required	1000	0	0	0
SEPP 14 - Coastal Wetlands	NSW Planning and Environment	17/12/2015	24/10/2008	Annually	1000	0	0	0
SEPP 26 - Littoral Rainforest	NSW Planning and Environment	17/12/2015	05/02/1988	Annually	1000	0	0	0
SEPP 71 - Coastal Protection	NSW Planning and Environment	17/12/2015	01/08/2003	Annually	1000	0	0	0
SEPP Major Developments 2005	NSW Planning and Environment	09/03/2013	25/05/2005	Under Review	1000	0	0	0
SEPP Strategic Land Use Areas	NSW Planning and Environment	01/08/2017	28/01/2014	Annually	1000	0	0	0
LEP - Land Zoning	NSW Planning and Environment	13/11/2017	13/11/2017	Quarterly	1000	1	3	4
LEP - Minimum Subdivision Lot Size	NSW Planning and Environment	13/11/2017	13/11/2017	Quarterly	0	1	-	-
LEP - Height of Building	NSW Planning and Environment	13/11/2017	13/11/2017	Quarterly	0	0	-	-
LEP - Floor Space Ratio	NSW Planning and Environment	13/11/2017	13/11/2017	Quarterly	0	0	-	-
LEP - Land Application	NSW Planning and Environment	13/11/2017	13/11/2017	Quarterly	0	1	-	-
LEP - Land Reservation Acquisition	NSW Planning and Environment	13/11/2017	13/11/2017	Quarterly	0	0	-	-
State Heritage Items	NSW Office of Environment & Heritage	13/11/2017	30/09/2016	Quarterly	1000	0	0	0
Local Heritage Items	NSW Planning and Environment	13/11/2017	13/11/2017	Quarterly	1000	0	0	1
Bush Fire Prone Land	NSW Rural Fire Service	13/11/2017	06/09/2017	Quarterly	1000	0	0	0
RAMSAR Wetlands	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	The Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	18	23	63
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	14/11/2017	14/11/2017	Daily	10000	-	-	-

Aerial Imagery 2015


Lot 102 DP 1059150, Lake Cowal, NSW 2671



Legend

-  Site Boundary
-  Buffer 150m

© Department of Finance, Services & Innovation 2017

Scale:

0250100520250035404550556055707580859095100850101520253035404550550
Meters

Data Sources: Historical Aerials: © Department Finance, Services & Innovation

Coordinate System:
GDA 1994 MGA Zone 56

Date: 14 November 2017

Contaminated Land & Waste Management Facilities

Lot 102 DP 1059150, Lake Cowal, NSW 2671

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 (m)	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 & Waste Management Facilities

Lot 102 DP 1059150, Lake Cowal, NSW 2671

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

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 (m)	Direction
N/A	No records in buffer											

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

EPA PFAS Investigation Program

Lot 102 DP 1059150, Lake Cowal, NSW 2671

EPA PFAS Investigation Program

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

Id	Site	Address	Location Confidence	Distance	Direction
N/A	No records in buffer				

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

EPA Other Sites with Contamination Issues

Lot 102 DP 1059150, Lake Cowal, NSW 2671

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

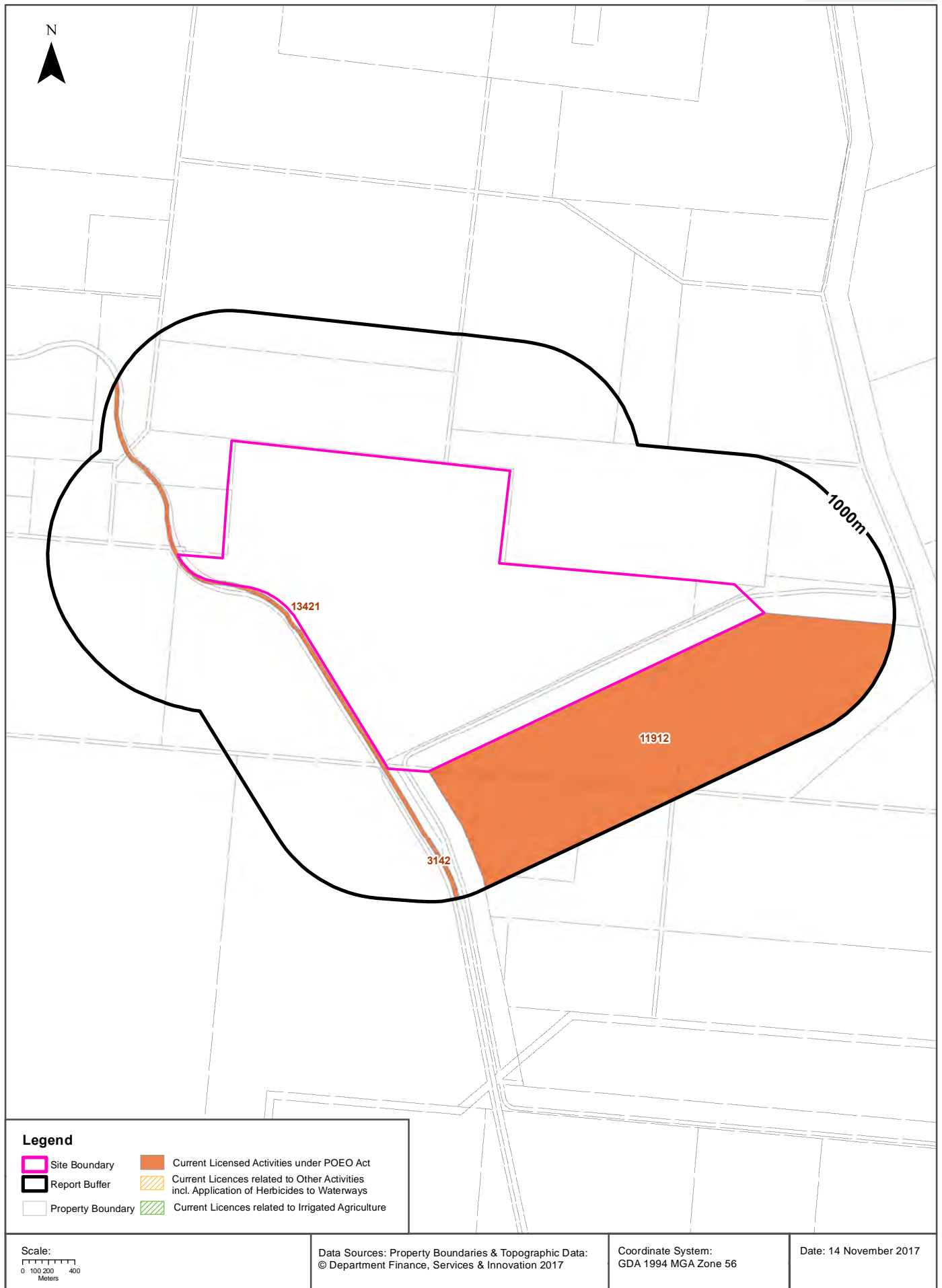
Sites within the dataset buffer:

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

Lot 102 DP 1059150, Lake Cowal, NSW 2671



EPA Activities

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Licensed Activities under the POEO Act 1997

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

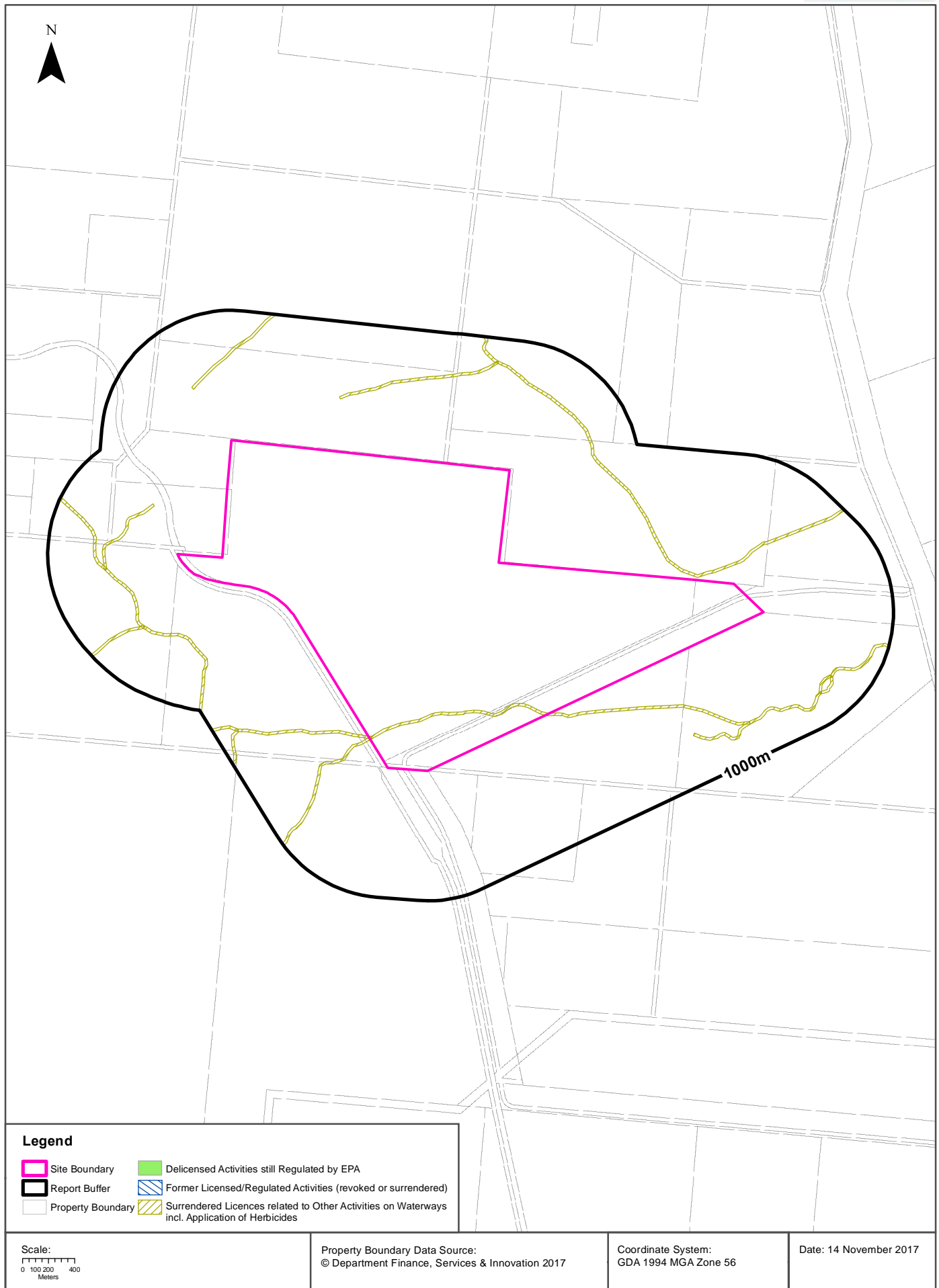
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
3142	AUSTRALIAN RAIL TRACK CORPORATION LIMITED		GPO BOX 14, SYDNEY, NSW 2001		Railway systems activities	3	0m	West
13421	JOHN HOLLAND RAIL PTY LTD		PO Box 215 , PARRAMATTA, NSW 2124		Railway systems activities	3	0m	West
11912	EVOLUTION MINING (COWAL) PTY LIMITED	Cowal Gold Project, 38km North East of West Wyalong	Lake Cowal Road	WEST WYALONG	Concrete works	1	0m	South East
11912	EVOLUTION MINING (COWAL) PTY LIMITED	Cowal Gold Project, 38km North East of West Wyalong	Lake Cowal Road	WEST WYALONG	Crushing, grinding or separating	1	0m	South East
11912	EVOLUTION MINING (COWAL) PTY LIMITED	Cowal Gold Project, 38km North East of West Wyalong	Lake Cowal Road	WEST WYALONG	Land-based extractive activity	1	0m	South East
11912	EVOLUTION MINING (COWAL) PTY LIMITED	Cowal Gold Project, 38km North East of West Wyalong	Lake Cowal Road	WEST WYALONG	Mineral processing	1	0m	South East
11912	EVOLUTION MINING (COWAL) PTY LIMITED	Cowal Gold Project, 38km North East of West Wyalong	Lake Cowal Road	WEST WYALONG	Mining for minerals	1	0m	South East

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Lot 102 DP 1059150, Lake Cowal, NSW 2671



EPA Activities

Lot 102 DP 1059150, Lake Cowal, NSW 2671

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
N/A	No records in buffer							

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

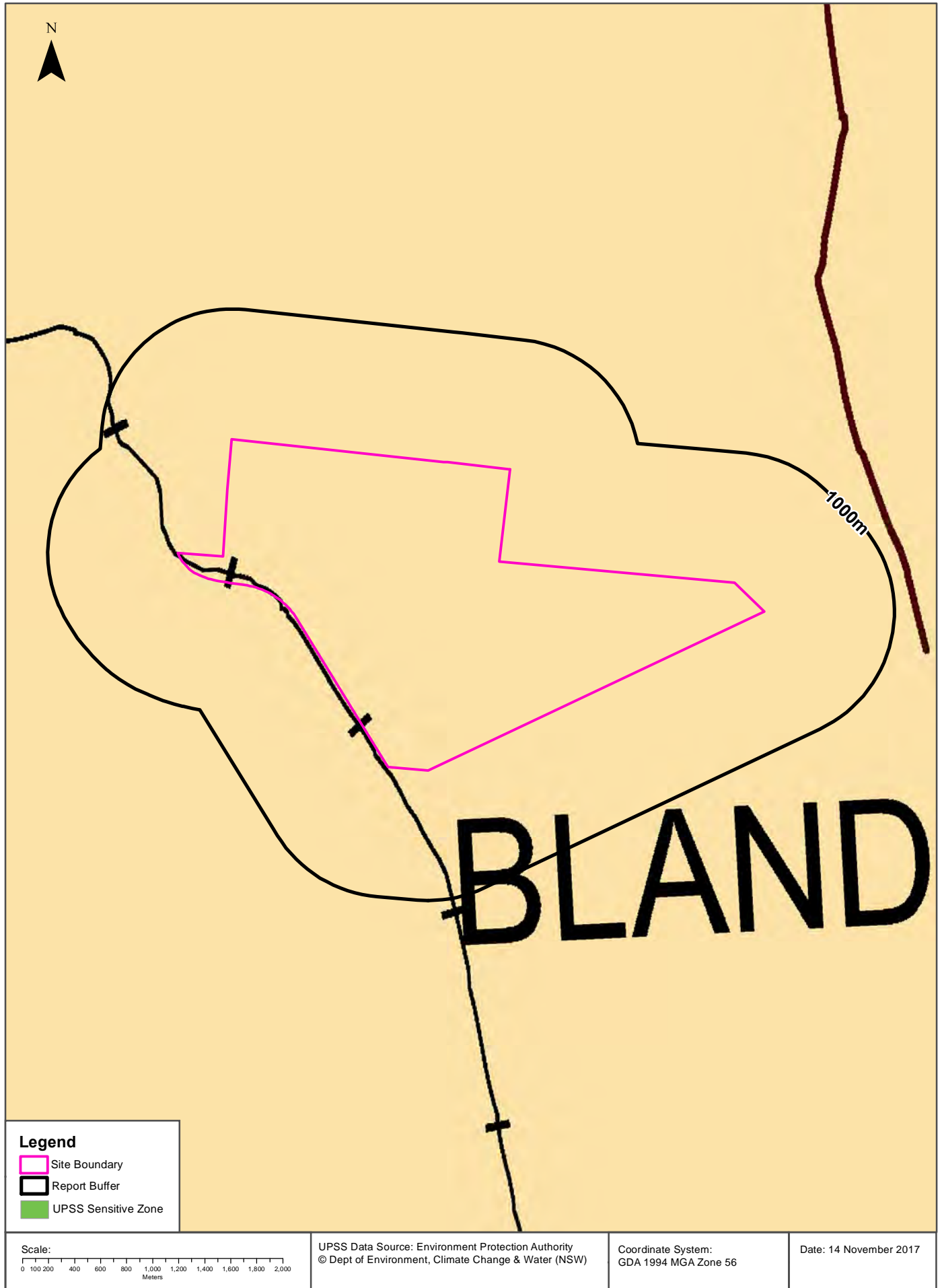
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	0m	Onsite
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	0m	Onsite
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	0m	Onsite

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

UPSS Sensitive Zones

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Historical Business Directories

Lot 102 DP 1059150, Lake Cowal, NSW 2671

1982 Business Directory Records Premise or Road Intersection Matches

Records from the 1982 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1982 Business Directory Records Road or Area Matches

Records from the 1982 UBD Business Directory, 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:

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

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Lot 102 DP 1059150, Lake Cowal, NSW 2671

1970 Business Directory Records Premise or Road Intersection Matches

Records from the 1970 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1970 Business Directory Records Road or Area Matches

Records from the 1970 UBD Business Directory, 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:

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

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Lot 102 DP 1059150, Lake Cowal, NSW 2671

1961 Business Directory Records Premise or Road Intersection Matches

Records from the 1961 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1961 Business Directory Records Road or Area Matches

Records from the 1961 UBD Business Directory, 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:

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

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Lot 102 DP 1059150, Lake Cowal, NSW 2671

1950 Business Directory Records Premise or Road Intersection Matches

Records from the 1950 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1950 Business Directory Records Road or Area Matches

Records from the 1950 UBD Business Directory, 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:

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

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Lot 102 DP 1059150, Lake Cowal, NSW 2671

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:

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer					

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

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

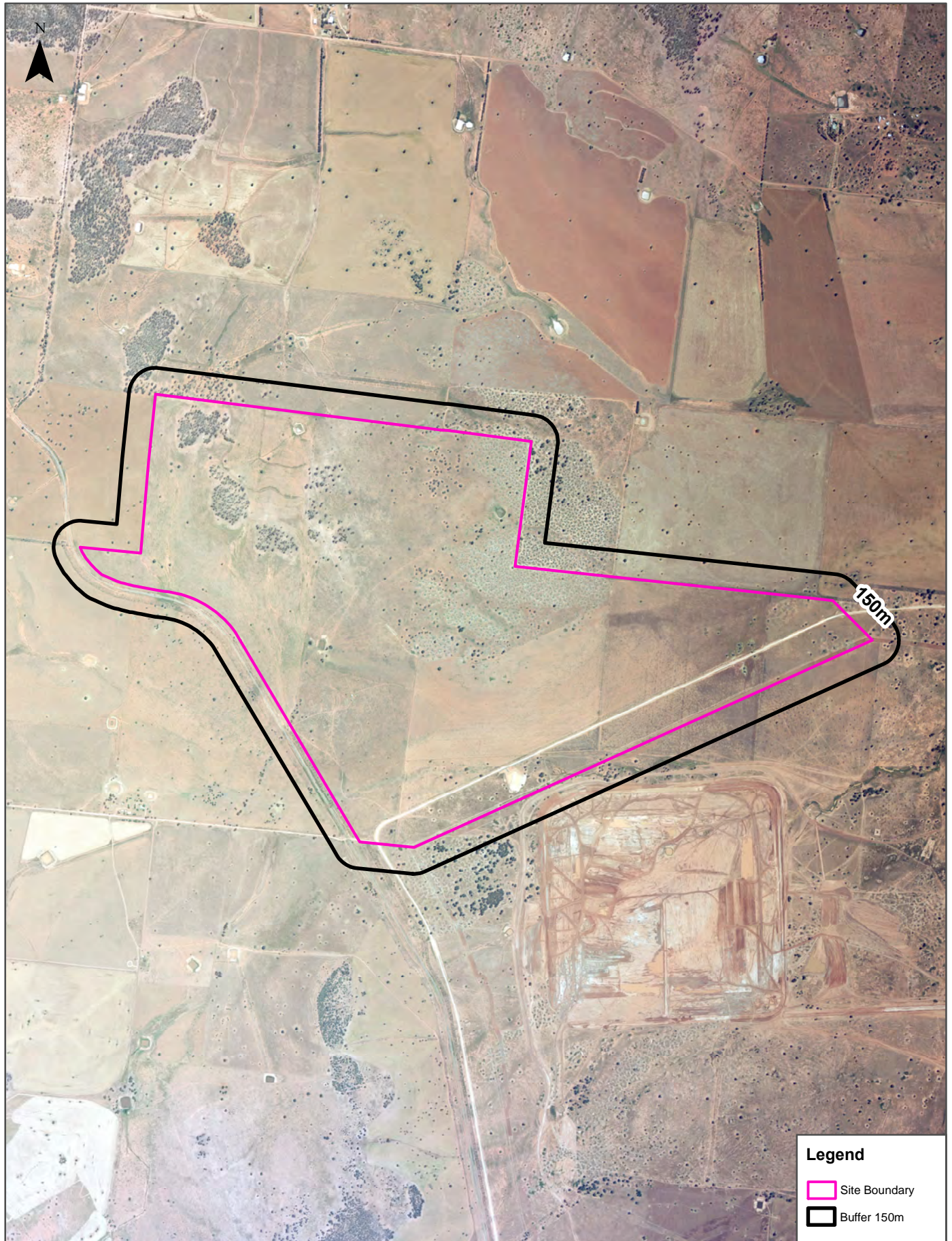
Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

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



Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

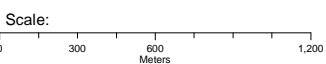
Aerial Imagery 2004

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Legend

-  Site Boundary
-  Buffer 150m



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

Coordinate System: GDA 1994 MGA Zone 56

Date: 13 November 2017

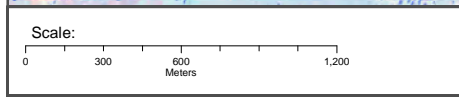
Aerial Imagery 1997

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Legend

- Site Boundary
- Buffer 150m



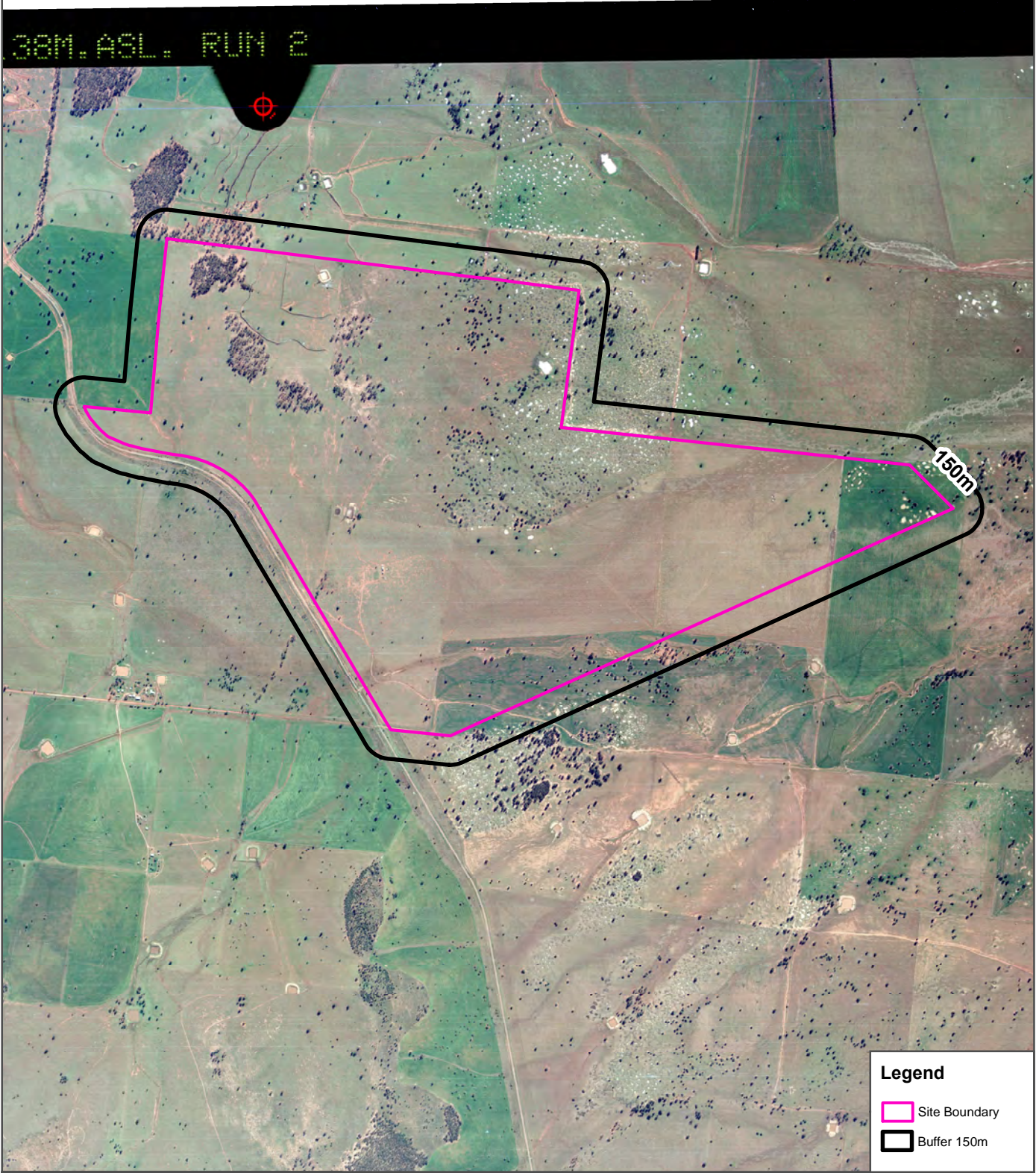
Data Sources: Aerial Imagery © Department Finance, Services & Innovation

Coordinate System: GDA 1994 MGA Zone 56



Date: 13 November 2017

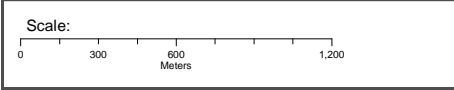
Aerial Imagery 1993

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Legend

-  Site Boundary
-  Buffer 150m



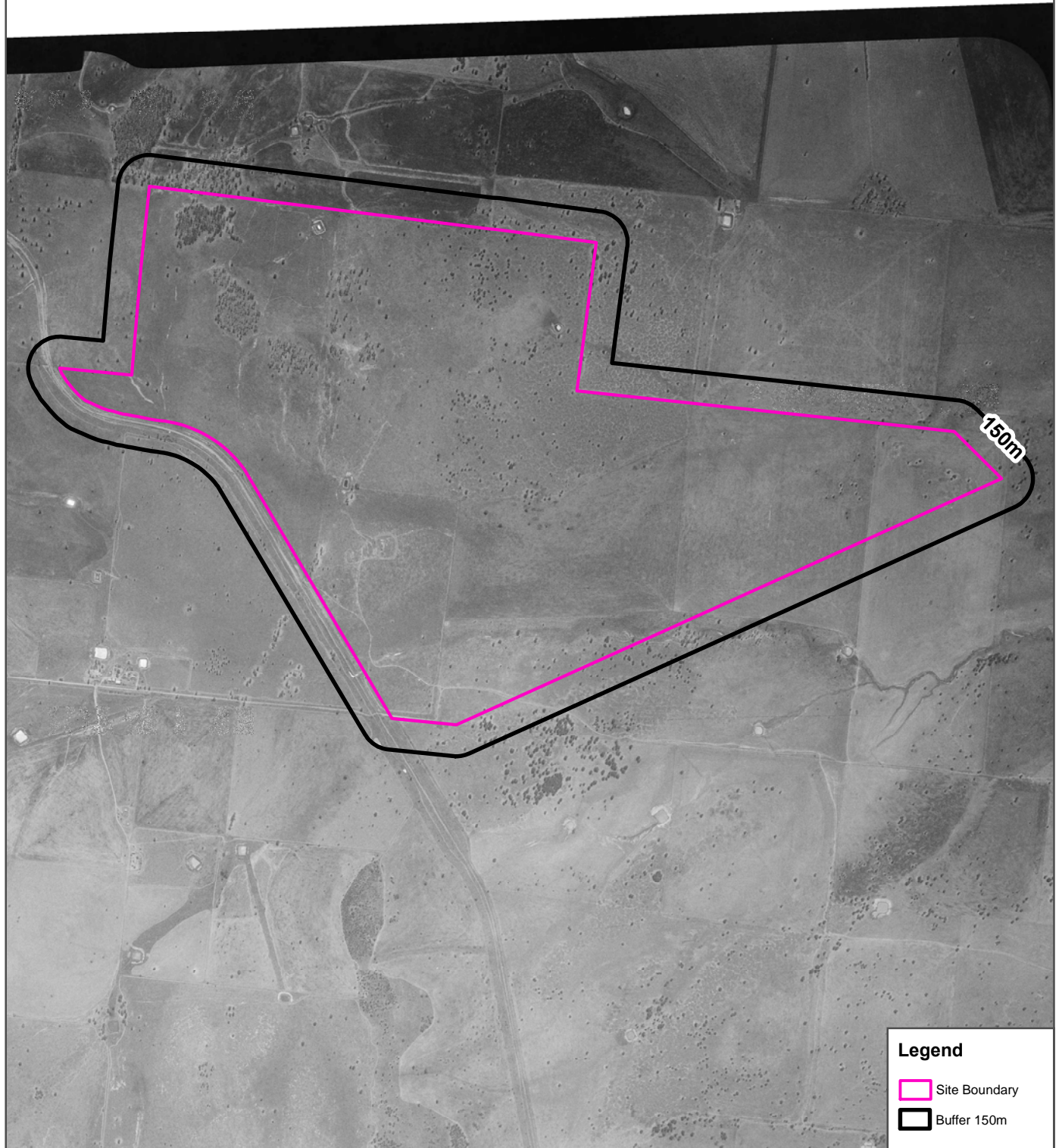
Data Sources: Aerial Imagery © Department Finance, Services & Innovation

Coordinate System:
GDA 1994 MGA Zone 56



Date: 13 November 2017

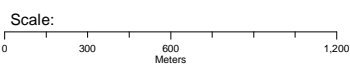
Aerial Imagery 1989

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Legend

-  Site Boundary
-  Buffer 150m



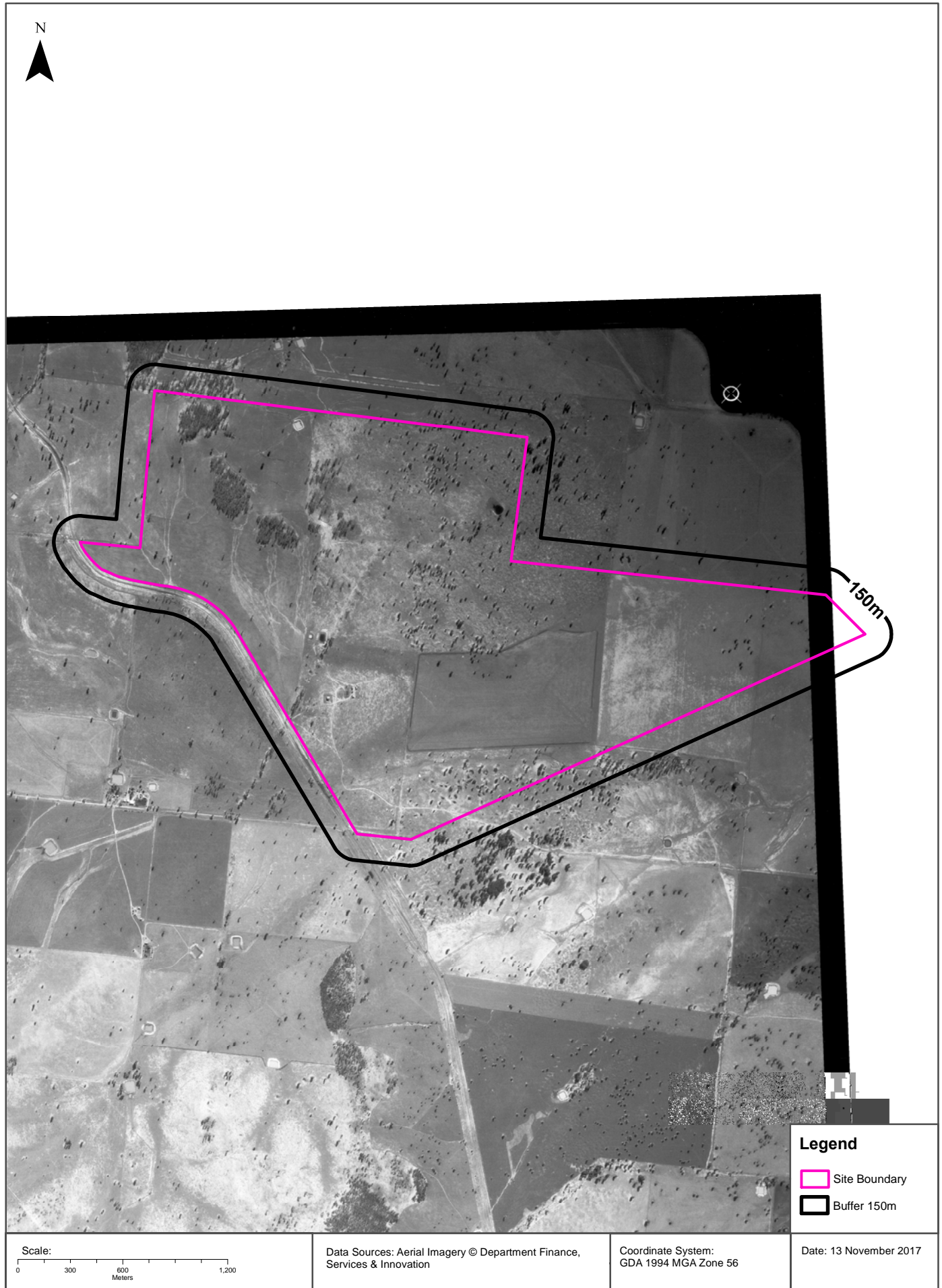
Data Sources: Aerial Imagery © Department Finance, Services & Innovation

Coordinate System:
GDA 1994 MGA Zone 56

Date: 13 November 2017

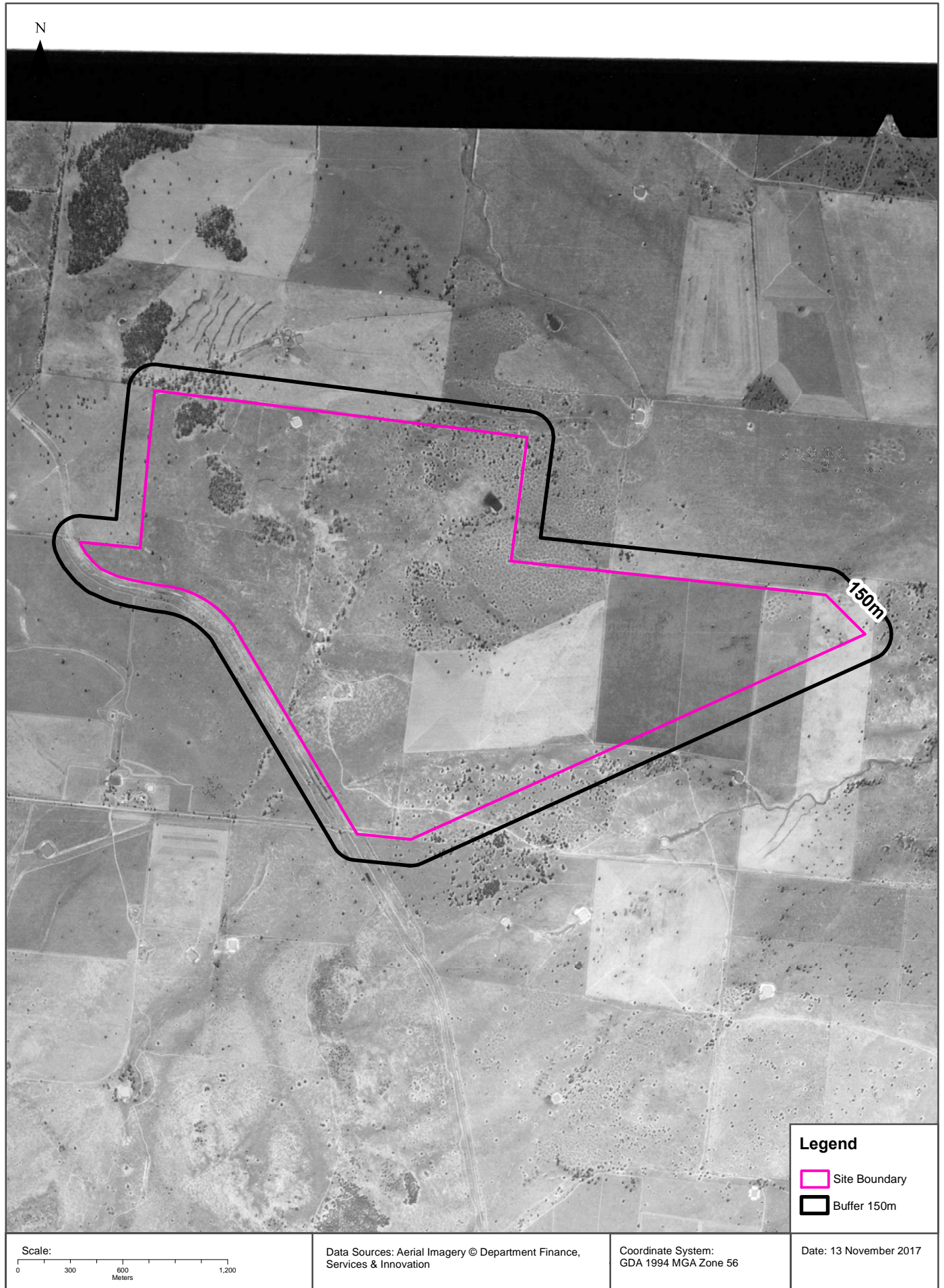
Aerial Imagery 1983

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Aerial Imagery 1973

Lot 102 DP 1059150, Lake Cowal, NSW 2671





Aerial Imagery 1958

Lot 102 DP 1059150, Lake Cowal, NSW 2671

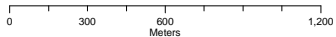


A.C. 146-5092

Legend

-  Site Boundary
-  Buffer 150m

Scale:



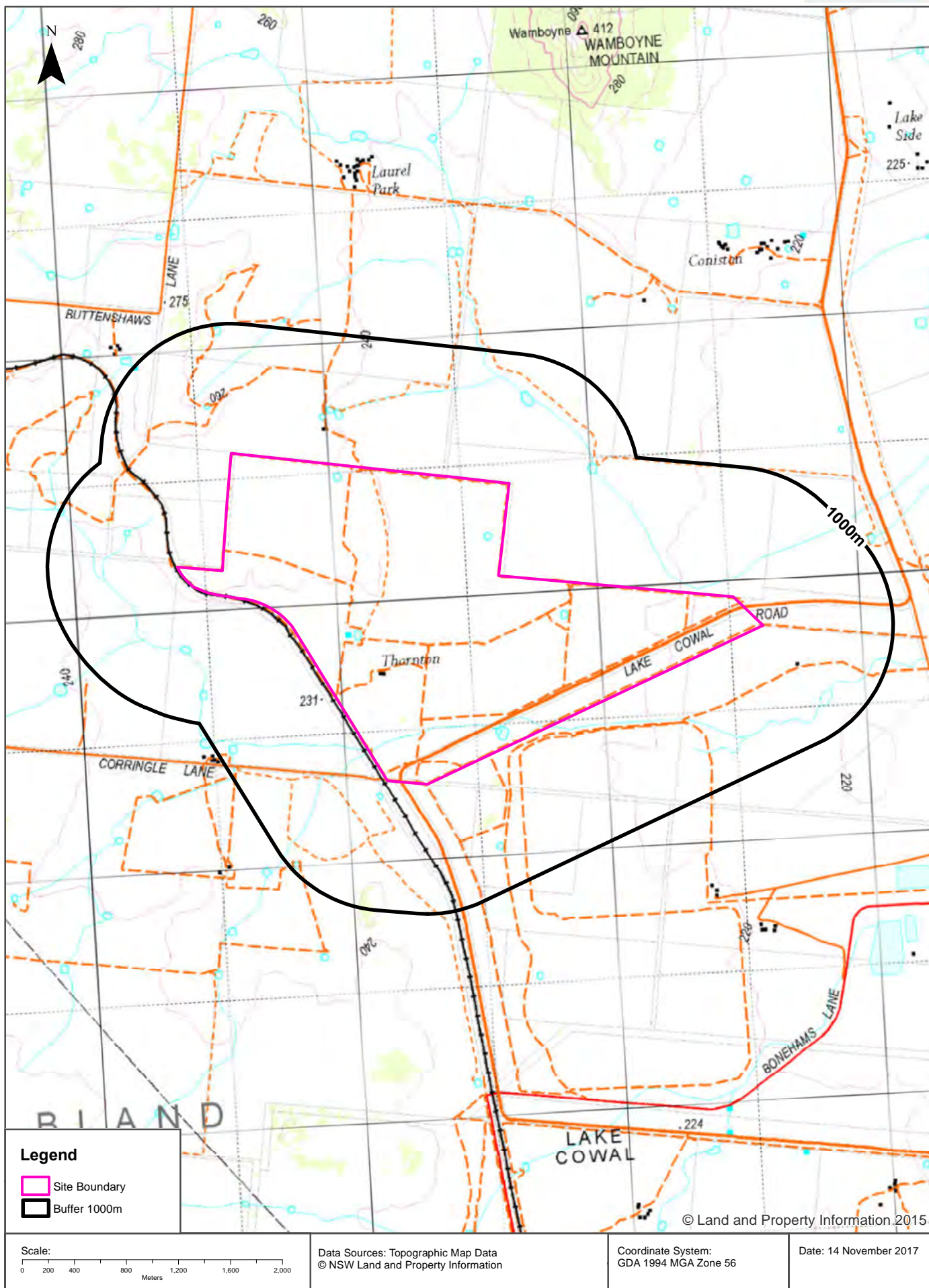
Data Sources: Aerial Imagery © Department Finance, Services & Innovation

Coordinate System: GDA 1994 MGA Zone 56

Date: 13 November 2017

Topographic Map 2015

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Legend

- Site Boundary
- Buffer 1000m

Scale:
0 200 400 800 1,200 1,600 2,000
Meters

Data Sources: Topographic Map Data
© NSW Land and Property Information

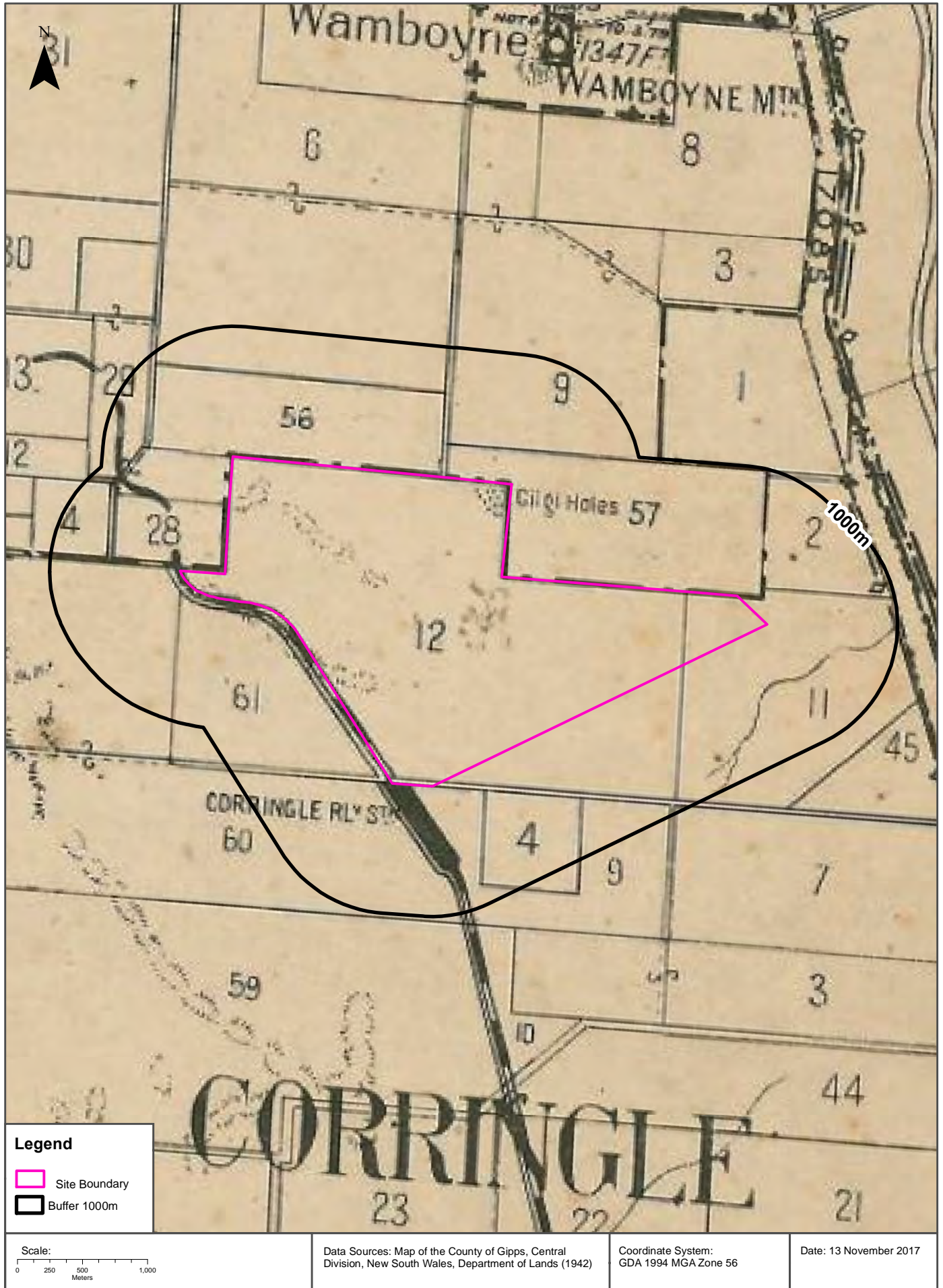
Coordinate System:
GDA 1994 MGA Zone 56

Date: 14 November 2017

© Land and Property Information 2015

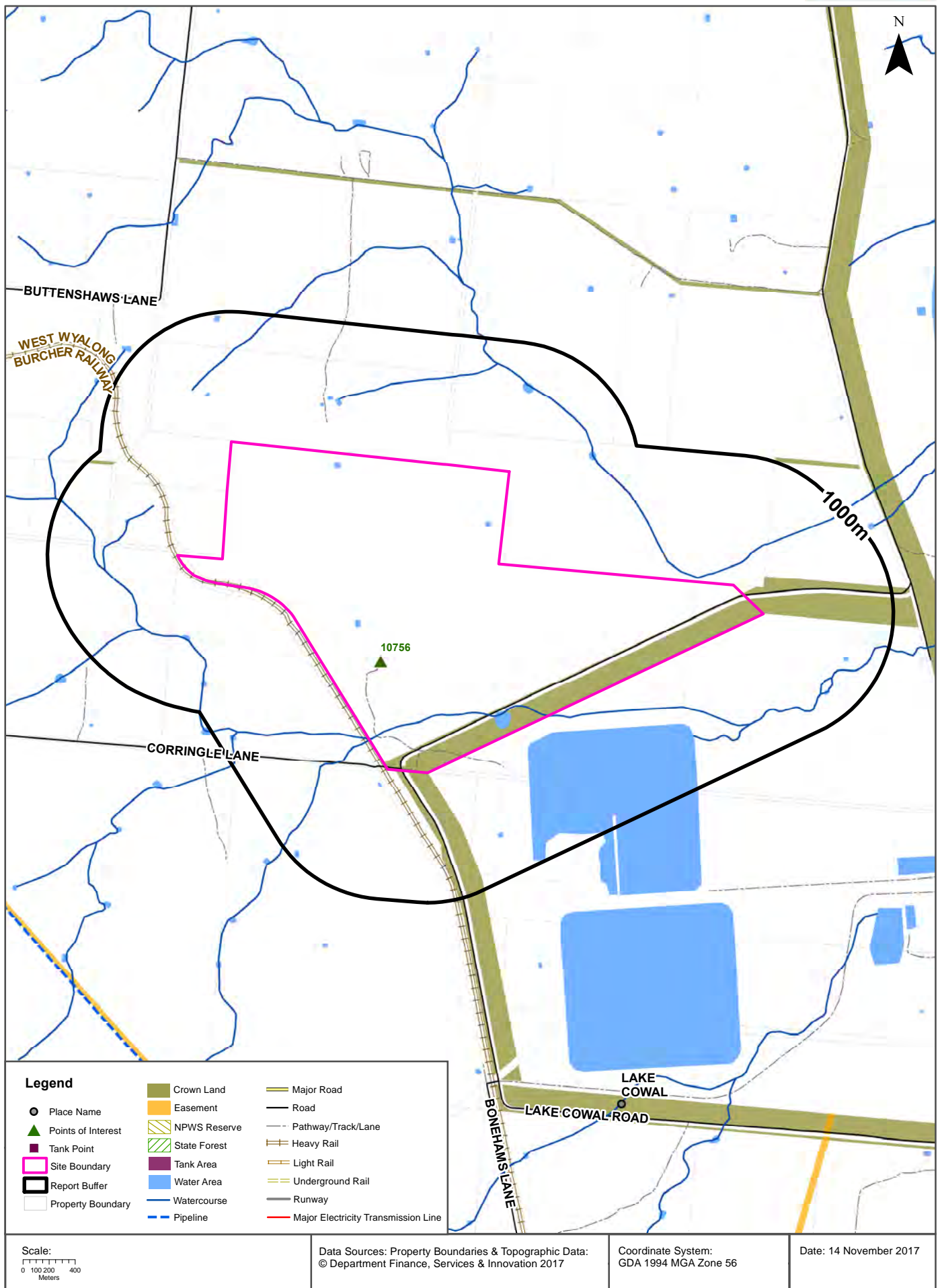
Historical Map ca.1940

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Topographic Features

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Scale:
0 100 200 400
Meters

Data Sources: Property Boundaries & Topographic Data:
© Department Finance, Services & Innovation 2017

Coordinate System:
GDA 1994 MGA Zone 56

Date: 14 November 2017

Topographic Features

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
10756	Homestead	THORNTON	0m	Onsite

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

Lot 102 DP 1059150, Lake Cowal, NSW 2671

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
	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
	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

Lot 102 DP 1059150, Lake Cowal, NSW 2671

State Forest

What State Forest exist within the dataset buffer?

State Forest Number	State Forest Name	Distance	Direction
N/A	No records in buffer		

State Forest Data Source: © Land and Property Information (2015)
Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

National Parks and Wildlife Service Reserves

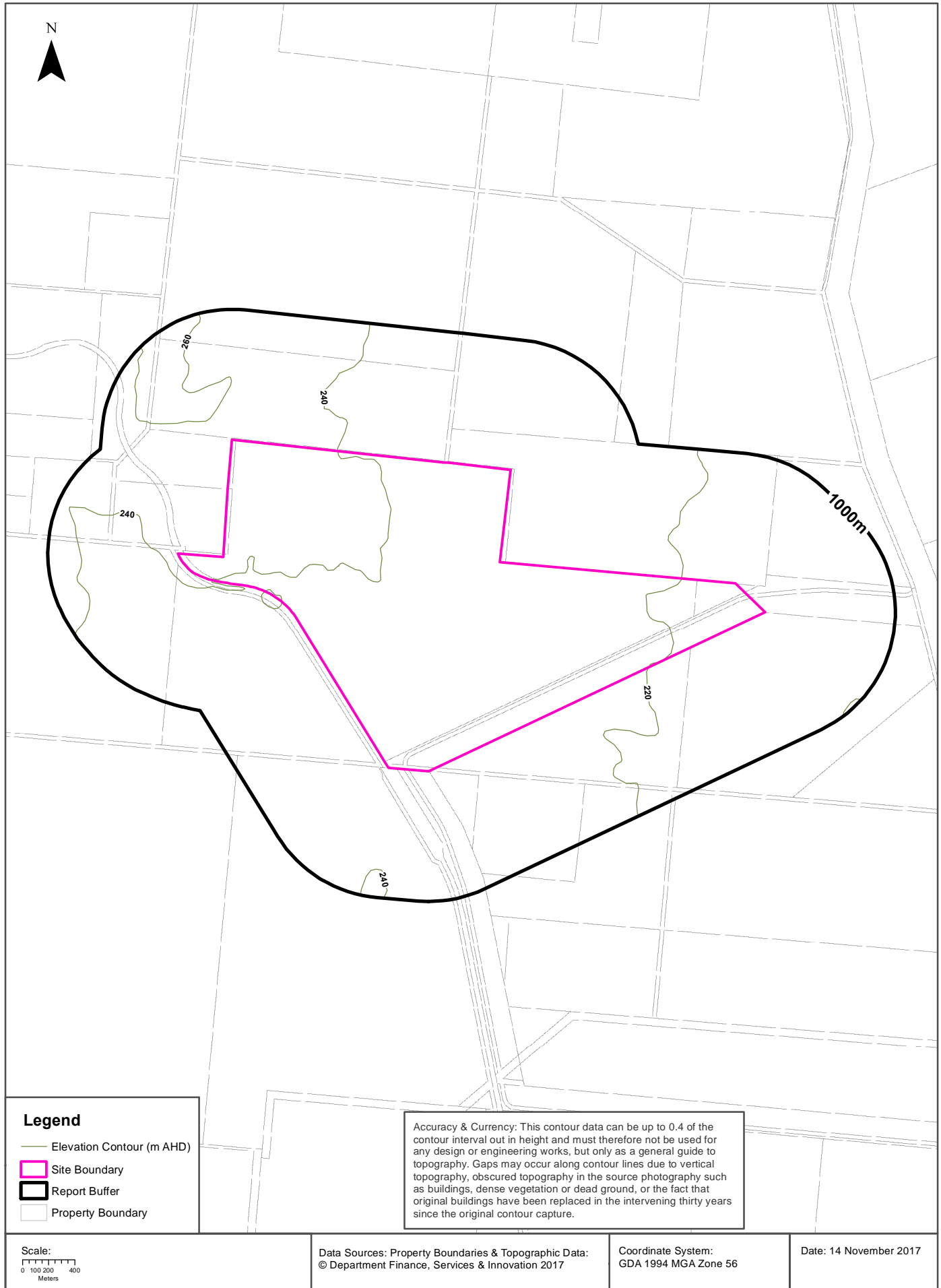
What NPWS Reserves exist within the dataset buffer?

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

NPWS Data Source: © Land and Property Information (2015)
Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

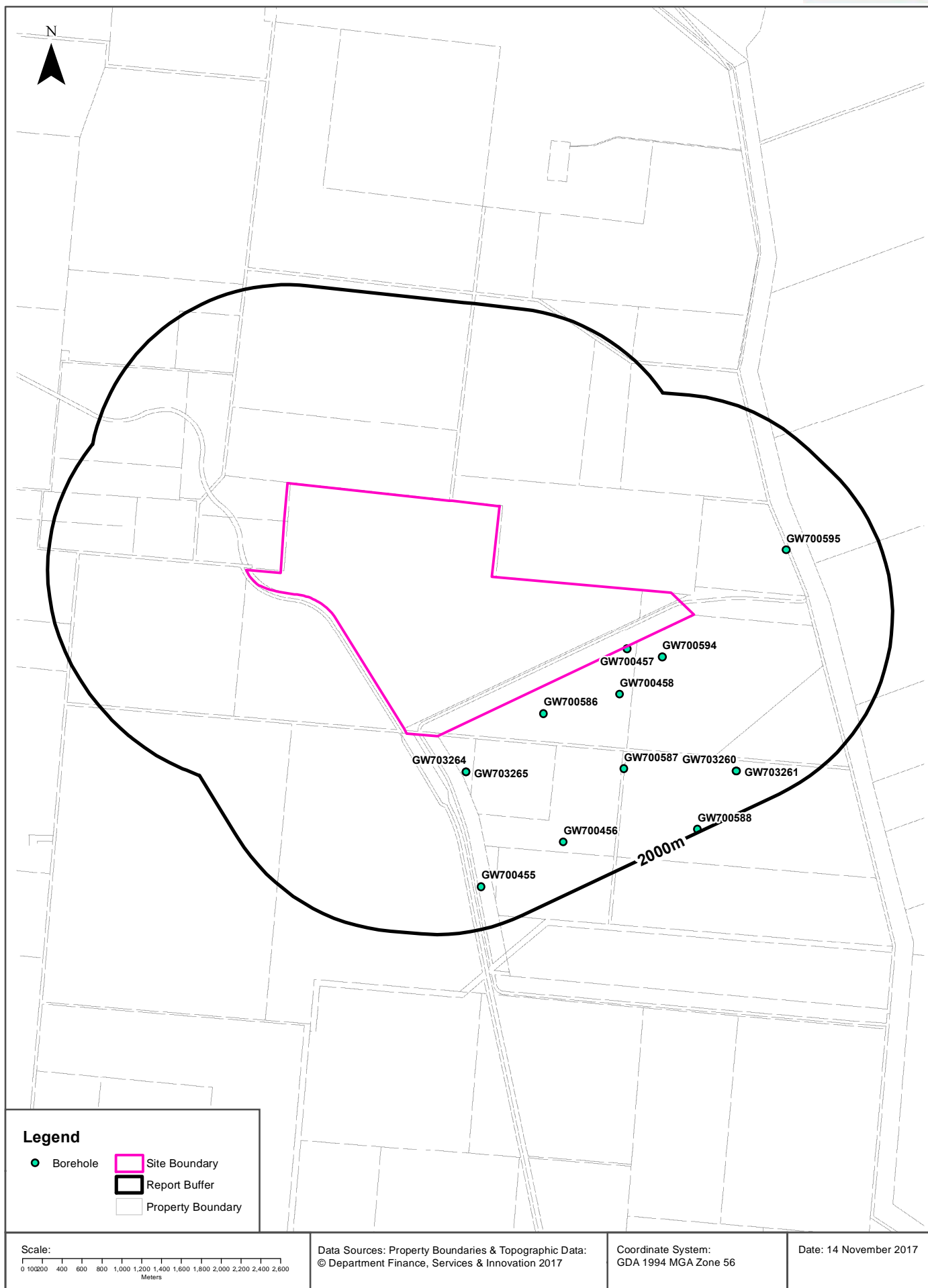
Elevation Contours (m AHD)

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Groundwater Boreholes

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Hydrogeology & Groundwater

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Hydrogeology

Description of aquifers on-site:

Description
Fractured or fissured, extensive aquifers of low to moderate productivity

Description of aquifers within the dataset buffer:

Description
Fractured or fissured, extensive aquifers of low to moderate productivity

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>

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW700457	70BL226558	Bore	Mines	Monitoring	Coffee Partners (International) Pty Ltd	10/04/1997	23.20	23.20	27000				27m	East
GW700594	70BL226125	Bore	Mines	Monitoring	Cherlor Air Drillers Pty Ltd	07/12/1994	9.00	9.00					251m	East
GW700586	70BL226125	Bore	Mines	Monitoring	Cherlor Air Drillers Pty Ltd	25/11/1994	48.00	48.00	11100				256m	South East
GW700458	70BL226558	Bore	Mines	Monitoring	Coffee Partners (International) Pty Ltd	09/04/1997	23.20	23.20	28000				408m	South East
GW703265	70BL232576	Bore	Mines	Monitoring		08/04/1997	23.20	23.20	7033.6	21.60			455m	South
GW703264	70BL232575	Bore	Mines	Monitoring	Mulligan Drilling	27/11/2004	42.60	42.60	7033.6	21.60			455m	South
GW700587	70BL226125	Bore	Mines	Monitoring	Cherlor Air Drillers Pty Ltd	30/11/1994	90.00	90.00	5950				1105m	South East
GW700595	70BL226125	Bore	Mines	Monitoring	Cherlor Air Drillers Pty Ltd	07/12/1994	84.00	84.00	9650				1135m	East
GW700456	70BL226558	Bore	Mines	Monitoring	Coffee Partners (International) Pty Ltd	09/04/1997	23.20	23.20	10700				1512m	South East
GW700455	70BL226558	Bore	Mines	Monitoring	Coffee Partners (International) Pty Ltd	08/04/1997	23.20	23.20					1585m	South
GW703260	70BL232568	Bore	Mines	Monitoring	Boart Longyear	06/04/2004	19.00	19.00	33728	13.56			1610m	South East
GW703261	70BL232569	Bore	Mines	Monitoring	Boart Longyear	02/04/2004	35.00	35.00	28928	13.44			1610m	South East
GW700588	70BL226125	Bore	Mines	Monitoring	Cherlor Air Drillers Pty Ltd	01/12/1994	70.00	70.00	24000				1973m	South East

Borehole Data Source : NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation for all bores prefixed with GW. All other bores © Commonwealth of Australia (Bureau of Meteorology) 2015. Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

Hydrogeology & Groundwater

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Driller's Logs

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

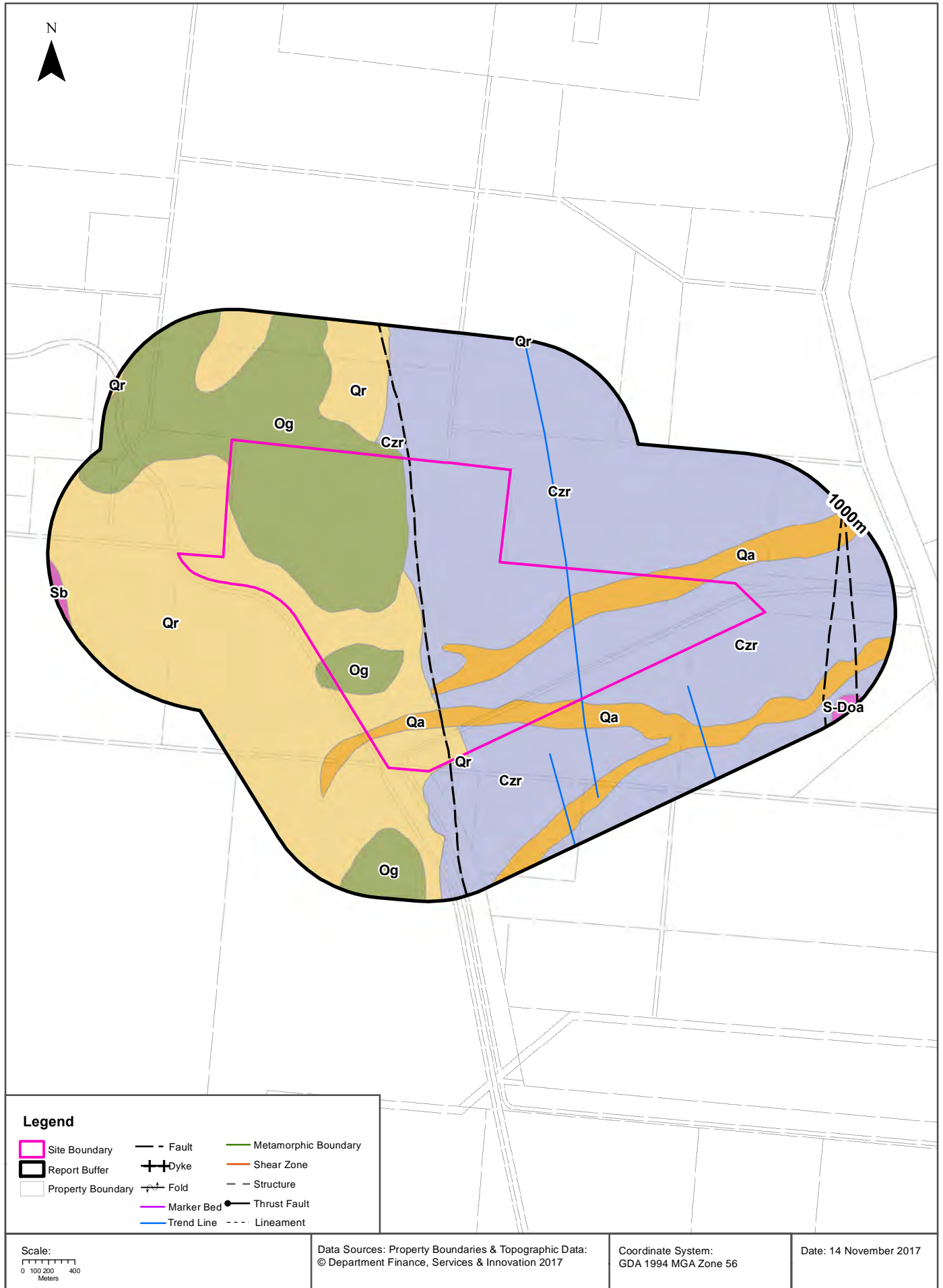
Groundwater No	Drillers Log	Distance	Direction
GW700457	0.00m-0.25m Topsoil, Silty Sandy Clay 0.25m-6.65m Silty Clay 6.65m-23.20m Clayey Silt	27m	East
GW700594	0.00m-4.00m Clay, dark brown to orange/brown 4.00m-5.00m Gravel, sandy, red/brown 5.00m-7.00m Clay, orange/brown 7.00m-8.00m Clay, silty, light grey/brown 8.00m-9.00m Sandstone	251m	East
GW700586	0.00m-3.00m to red/brown 3.00m-8.00m Gravel, clayey, orange/brown 8.00m-20.00m Clay, orange/brown to grey, high plasticity 20.00m-48.00m Clay, brown to orange/brown, high plasticity	256m	South East
GW700458	0.00m-0.40m Topsoil, Sandy Clay 0.40m-1.60m Sandy Clay 1.60m-3.40m Silty Clay 3.40m-5.80m Sandy Clay 5.80m-6.20m Silty Sandy Clay 6.20m-8.00m Sandy Clay 8.00m-10.00m Silty Clay 10.00m-23.20m Clayey Silt	408m	South East
GW703264	0.00m-1.00m Silty Clay, light brown, trace sand, fine-coarse 1.00m-4.00m Silty Clay, grey/orange/light brown, trace sand 4.00m-5.00m Silty Clay, grey/yellow/orange, trace sand 5.00m-6.00m Silty Clay, red/grey, trace sand & gravel 6.00m-10.50m Silty Clay, red, trace sand & gravel 10.50m-12.00m Silty Clay, grey/red, trace sand 12.00m-18.00m Silty Clay, red/grey, trace sand, fine-coarse 18.00m-21.00m Silty Clay, red/grey, trace sand, fine-medium 21.00m-24.00m Silty Clay, yellow/grey, some sand, fine- coarse 24.00m-33.00m Sandy Clay, orange, brown, fine-medium 33.00m-34.50m Silty Clay, orange/brown 34.50m-37.00m Sandy Clay, orange/grey/brown 37.00m-39.00m Silty Clay, grey/brown 39.00m-42.60m Saprock, orange/grey/green, volcanics?	455m	South
GW703265	0.00m-1.00m Silty Clay, light brown, trace sand 1.00m-4.00m Silty Clay, grey/orange/light brown, trace sand 4.00m-5.00m Silty Clay, grey/yellow/orange, trace sand 5.00m-6.00m Silty Clay, red/grey, trace sand & gravel 6.00m-10.50m Silty Clay, red, trace sand & gravel 10.50m-12.00m Silty Clay, grey/red, trace sand 12.00m-18.00m Silty Clay, red/grey, trace sand 18.00m-21.00m Silty Clay, brown, trace sand 21.00m-23.20m Silty Clay, yellow/grey, some sand	455m	South
GW700587	0.00m-8.00m Clay, red/brown to grey 8.00m-13.00m Gravel, clayey, red/brown 13.00m-19.00m Clay, orange to red/brown 19.00m-28.00m Clay, grey/brown to red 28.00m-36.00m Clay, orange to brown, med to high plasticity 36.00m-41.00m Clay, gravelly, laterite profile, red/brown 41.00m-62.00m Clay, dark brown, med to high plasticity 62.00m-73.00m Clay, dark brown, med. plast. 73.00m-80.00m , deeply weathered phyllite and quartz fragments 80.00m-90.00m green/grey/brown, mafic phyllite, manganese concretions, silty and minor quartz	1105m	South East
GW700595	0.00m-2.00m Clay, red/brown, stiff, dry, silty 2.00m-5.00m Clay, gravelly, brown, clear quartz 5.00m-12.00m Clay, silty, orange/brown, dry, minor sand 12.00m-15.00m Clay, silty, red/brown 15.00m-24.00m Clay, orange/brown 24.00m-28.00m Gravel, clayey, red/brown 28.00m-46.00m Clay, gravelly, red/brown to orange 46.00m-84.00m Sandstone, olive brown, weathered bedrock, fine to coarse phyllite	1135m	East
GW700456	0.00m-0.50m Topsoil, Silty Sandy Clay 0.50m-3.50m Silty Clay 3.50m-7.75m Sandy Clay 7.75m-9.00m Gravelly Sandy Clay 9.00m-11.00m Sandy Clay 11.00m-23.20m Silty Clay	1512m	South East

Groundwater No	Drillers Log	Distance	Direction
GW700455	0.00m-0.25m Topsoil, Silty Sand Clay 0.25m-23.20m Silty Clay	1585m	South
GW703260	0.00m-4.00m Clay, brown/red stained grey, minor sand at base 4.00m-6.00m Clay, red/orange stained, some sand, silt, ironstone 6.00m-9.00m Clay, red/orange stained, some sand 9.00m-12.00m Clayey Sand, red/orange, gravel interlayered 12.00m-14.00m Clay, red stained with rare ironstone & quartz 14.00m-15.00m Gravel with sandy clay, quartz & lithics 2-30mm 15.00m-19.00m Clay, orange, red stained, minor silt	1610m	South East
GW703261	0.00m-2.00m Silty Clay/Loam, grey brown with minor organics, rare quartz 2.00m-4.00m Silty Clay, red brown, minor sand, occasional quartz 4.00m-7.00m Sandy Clay, orange/red stained 7.00m-11.00m Sandy Clay, Sand, Gravel, interlayered, red/orange 11.00m-13.00m Clay, red stained with rare ironstone & quartz 13.00m-15.00m Gravel with Sandy Clay, Quartz & Lithics 2-30mm 15.00m-20.00m Clay, orange, red stained 20.00m-22.00m Clay, orange, red stained grey, minor Sand 22.00m-29.00m Clay, orange/red to orange stained, minor silt 29.00m-35.00m Clay, saprolite, brown	1610m	South East
GW700588	0.00m-3.00m Clay, orange/brown 3.00m-8.00m Clay, gravelly, orange/brown/grey 8.00m-14.00m Gravel, clayey, strong brown 14.00m-24.00m Clay, orange/brown 24.00m-36.00m Clay, Orange/brown 36.00m-47.00m Clay, lateritic, laterite decreases with depth, abundant ironstone, wet, sticky 47.00m-70.00m Sandstone, yellow/brown	1973m	South East

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp
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Geology 1:250,000

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Geology

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Czr	Shallow slope colluvial plains and rises, some residual veneer; interfingers with inactive alluvial plains				Cainozoic			1:250,000
Og	Multiply deformed phyllite, metagreywacke, quartzose sandstone, minor siltstone and chert	Undifferentiated	Girilambone Group		Palaeozoic			1:250,000
Qa	Alluvium, active depositional plains and terraces containing present day drainage; sand, silt, and gravel (aeolean and fluviatile)				Cainozoic			1:250,000
Qr	Colluvial sheetwash and scree slopes; minor aeolian climbing dunes; eluvial deposits				Cainozoic			1:250,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Czr	Shallow slope colluvial plains and rises, some residual veneer; interfingers with inactive alluvial plains				Cainozoic			1:250,000
Og	Multiply deformed phyllite, metagreywacke, quartzose sandstone, minor siltstone and chert	Undifferentiated	Girilambone Group		Palaeozoic			1:250,000
Qa	Alluvium, active depositional plains and terraces containing present day drainage; sand, silt, and gravel (aeolean and fluviatile)				Cainozoic			1:250,000
Qr	Colluvial sheetwash and scree slopes; minor aeolian climbing dunes; eluvial deposits				Cainozoic			1:250,000
Sb	Fine to medium-grained greywacke, silty lenses	Burcher Greywacke			Palaeozoic			1:250,000
S-Doa	Polymict conglomerate and massive medium grained quartz and lithic sandstone	Manna Conglomerate	Ootha Group		Palaeozoic			1:250,000

Geological Structures

What are the Geological Structures onsite?

Feature	Name	Description	Map Sheet	Dataset
Fault		Fault, Concealed	Forbes	1:250,000
Trendline			Forbes	1:250,000
Fault		Fault, Concealed	Forbes	1:250,000

Feature	Name	Description	Map Sheet	Dataset
Fault		Fault, Concealed	Forbes	1:250,000
Fault		Fault, Concealed	Forbes	1:250,000
Fault		Fault, Concealed	Forbes	1:250,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Dataset
Fault		Fault, Inferred	Forbes	1:250,000
Fault		Fault, Concealed	Forbes	1:250,000
Trendline			Forbes	1:250,000
Fault		Fault, Concealed	Forbes	1:250,000
Trendline			Forbes	1:250,000
Fault		Fault, Concealed	Forbes	1:250,000
Trendline			Forbes	1:250,000
Fault		Fault, Concealed	Forbes	1:250,000
Fault		Fault, Concealed	Forbes	1:250,000
Fault		Fault, Concealed	Forbes	1:250,000
Fault		Fault, Inferred	Forbes	1:250,000
Fault		Fault, Concealed	Forbes	1:250,000

Geological Data Source : NSW Department of Industry, Resources & Energy
 © State of New South Wales through the NSW Department of Industry, Resources & Energy

Naturally Occurring Asbestos Potential

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Naturally Occurring Asbestos Potential

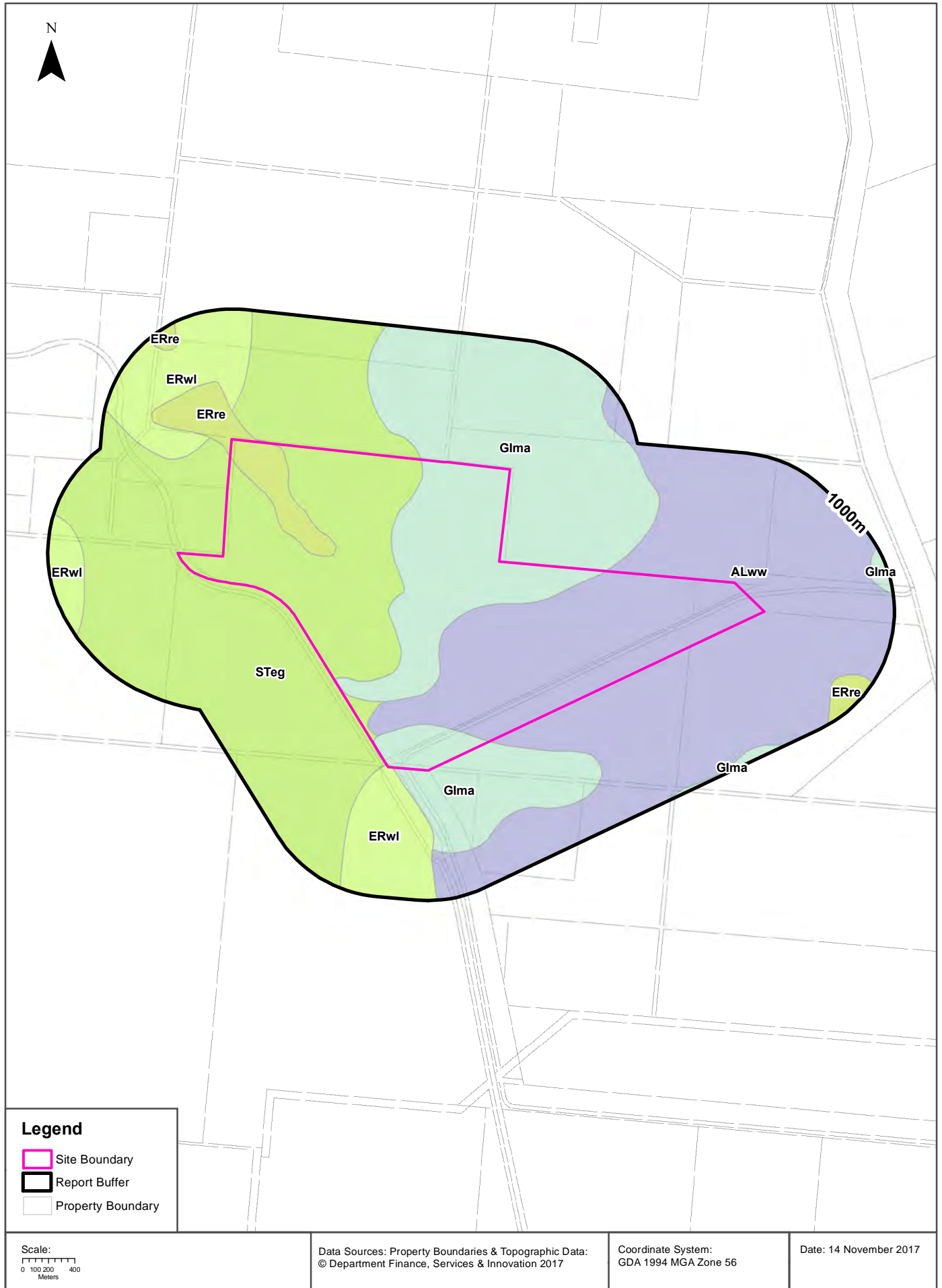
Naturally Occurring Asbestos Potential within the dataset buffer:

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

Mining Subsidence District Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy

Soil Landscapes

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Soils

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALww	WAH WAY		ALLUVIAL	Forbes	1:250,000
ERre	REEFTON		EROSIONAL	Forbes	1:250,000
ERwl	WEELAH		EROSIONAL	Forbes	1:250,000
Glma	MARSDEN		GILGAI	Forbes	1:250,000
STeg	EUGLO		STAGNANT ALLUVIAL	Forbes	1:250,000

What are the Soil Landscapes within the dataset buffer?

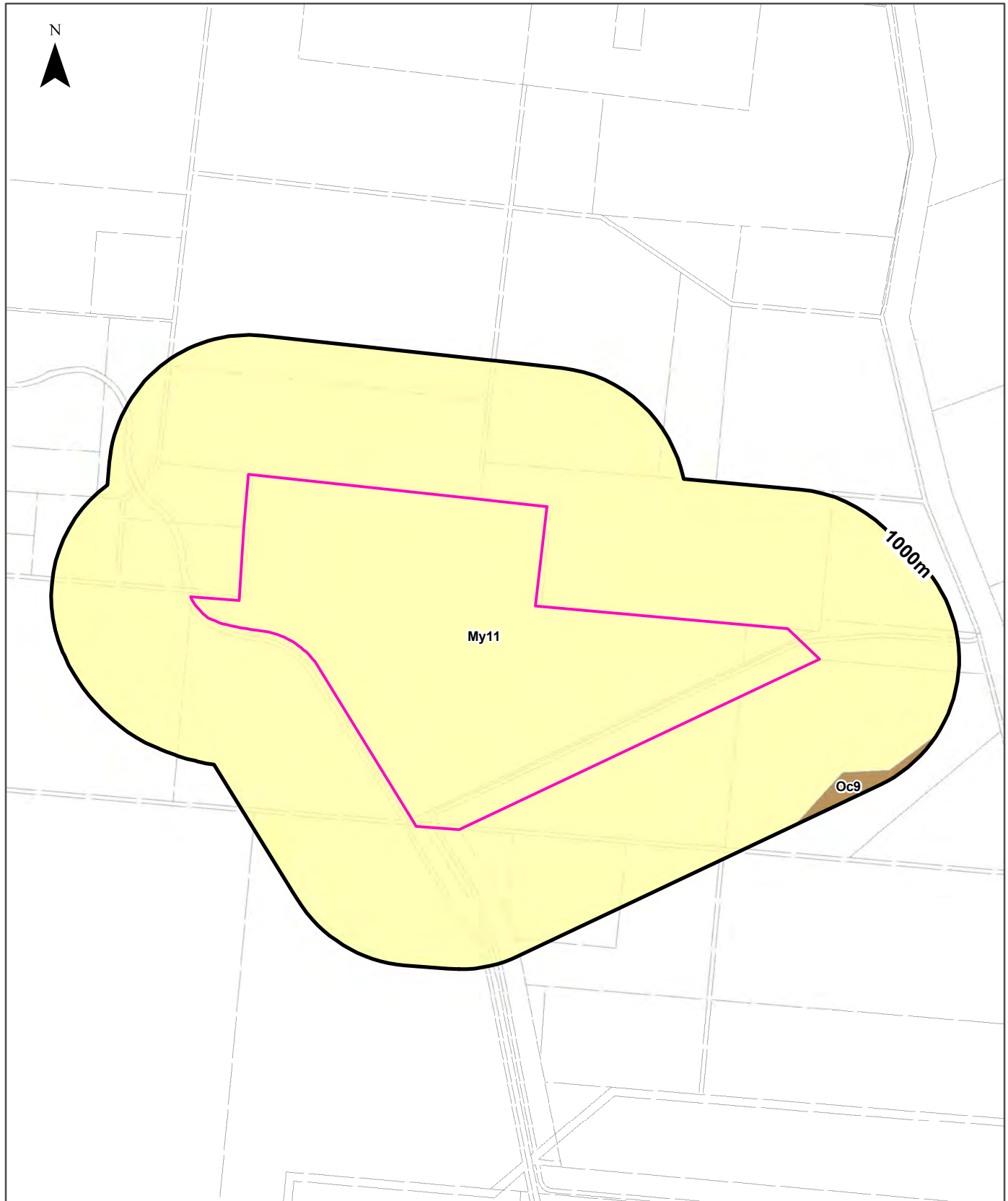
Soil Code	Name	Group	Process	Map Sheet	Scale
ALww	WAH WAY		ALLUVIAL	Forbes	1:250,000
ERre	REEFTON		EROSIONAL	Forbes	1:250,000
ERwl	WEELAH		EROSIONAL	Forbes	1:250,000
Glma	MARSDEN		GILGAI	Forbes	1:250,000
STeg	EUGLO		STAGNANT ALLUVIAL	Forbes	1:250,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage

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Atlas of Australian Soils

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Legend		Australian Soil Classification Orders					
Site Boundary	Anthrosol	Dermosol	Kandosol	Podosol	Tenosol	No Data	
Report Buffer	Calcarosol	Ferrosol	Kurosol	Rudosol	Vertosol		
Property Boundary	Chromosol	Hydrosol	Organosol	Sodosol	Lake		
Scale: 		Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2017		Coordinate System: GDA 1994 MGA Zone 56		Date: 14 November 2017	

Soils

Lot 102 DP 1059150, Lake Cowal, NSW 2671

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
My11	Kandosol	Rolling to nearly flat country with some widely spaced ridges and hills: chief soils are neutral and alkaline red earths (Gn2.12 and Gn2.13), and in the more easterly occurrences of the unit some (Gn2.15 and Gn2.16) soils. Associated are: variable areas of hard alkaline red soils (Dr2.33), hard alkaline brown soils (Db2.43), and (Dy) soils; and some stony or shaly ridges and hills of units Qc4 and/or Qc3 or LK4. Data are limited.	0m
Oc9	Sodosol	Plains: chief soils are hard alkaline red soils (Dr2.33). Associated are: various (D) soils including (Db1.33), (Dy2.43), (Dy3.43), and (Dd1.33) probably in some discontinuous slope sequence; grey and brown cracking clays (Ug5.2 and Ug5.3) in local gilgai areas; and minor areas of (Gn2) soils. The (D) soils usually have thin A horizons (< 6 in.) and especially so on the open plain. As mapped areas of unit CC14 are included.	805m

Atlas of Australian Soils Data Source: CSIRO

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Acid Sulfate Soils

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Standard Local Environmental Plan Acid Sulfate Soils

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

Soil Class	Description	LEP
N/A		

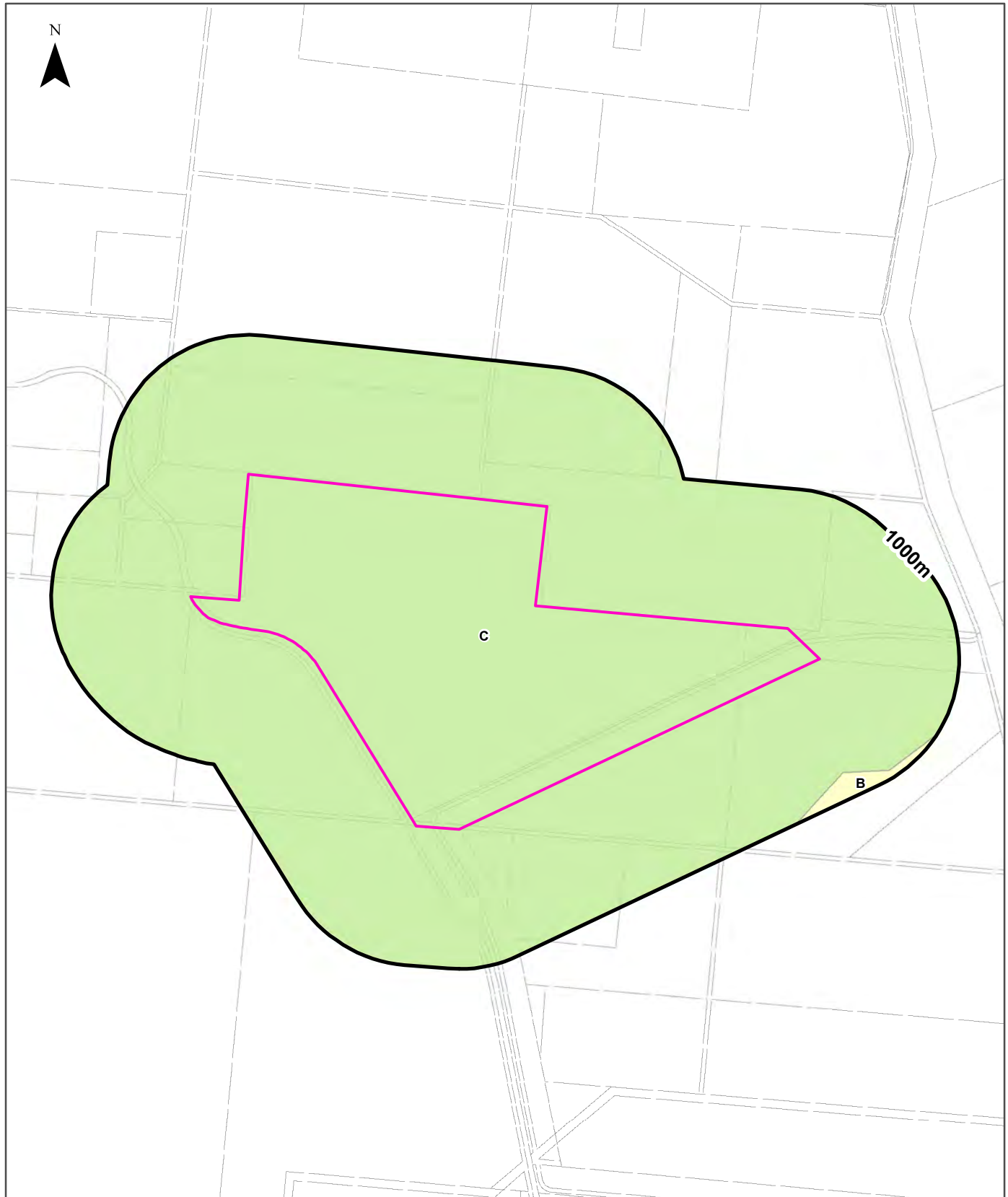
If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	LEP	Distance	Direction
N/A				

Acid Sulfate Data Source Accessed 07/10/2016: NSW Crown Copyright - Planning and Environment
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Atlas of Australian Acid Sulfate Soils

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Legend Site Boundary Report Buffer Property Boundary		Probability of occurrence of Acid Sulfate Soils A. High (>70%) B. Low (6-70%) C. Extremely Low (1-5%) D. No Chance (0%) No Data	
Scale: 		Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2017	
		Coordinate System: GDA 1994 MGA Zone 56	Date: 14 November 2017

Acid Sulfate Soils

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Atlas of Australian Acid Sulfate Soils

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

Class	Description	Distance
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m
B	Low Probability of occurrence. 6-70% chance of occurrence.	805m

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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Dryland Salinity

Lot 102 DP 1059150, Lake Cowal, NSW 2671

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	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.

Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

Feature Id	Classification	Description	Distance	Direction
N/A	Outside Data Coverage			

Dryland Salinity Potential of Western Sydney Data Source : NSW Office of Environment and Heritage

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Mining Subsidence Districts

Lot 102 DP 1059150, Lake Cowal, NSW 2671

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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Environmental Zoning

Lot 102 DP 1059150, Lake Cowal, NSW 2671

State Environmental Planning Policy Protected Areas

Are there any State Environmental Planning Policy Protected Areas onsite or within the dataset buffer?

Dataset	Onsite	Within Site Buffer	Distance
SEPP14 - Coastal Wetlands	No	No	N/A
SEPP26 - Littoral Rainforests	No	No	N/A
SEPP71 - Coastal Protection Zone	No	No	N/A

SEPP Protected Areas Data Source: NSW Department of Planning & Environment
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State Environmental Planning Policy Major Developments (2005)

State Environmental Planning Policy Major Developments within the dataset buffer:

Map Id	Feature	Effective Date	Distance	Direction
N/A	No records within buffer			

SEPP Major Development Data Source: NSW Department of Planning & Environment
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State Environmental Planning Policy Strategic Land Use Areas

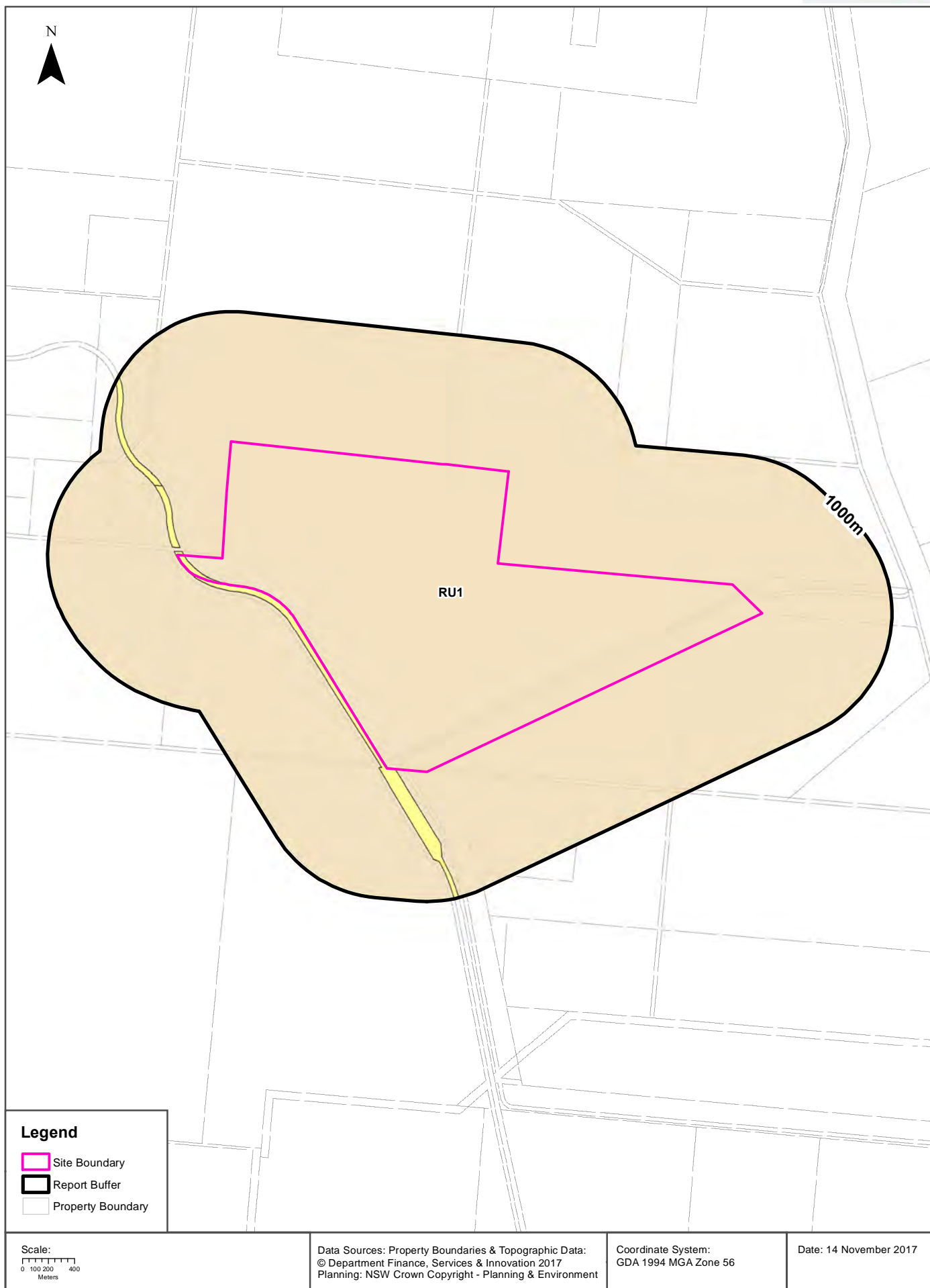
State Environmental Planning Policy Strategic Land Use Areas onsite or within the dataset buffer:

Strategic Land Use	SEPPNo	Effective Date	Amendment	Amendment Year	Distance	Direction
No records within buffer						

SEPP Strategic Land Use Data Source: NSW Department of Planning & Environment
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LEP Planning Zones

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Local Environmental Plan

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Land Zoning

What Local Environmental Plan Land Zones exist within the dataset buffer?

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RU1	Primary Production		Bland Local Environmental Plan 2011	09/12/2011	09/12/2011	09/12/2011		0m	Onsite
SP2	Infrastructure	Rail Infrastructure	Bland Local Environmental Plan 2011	09/12/2011	09/12/2011	09/12/2011		0m	South
SP2	Infrastructure	Rail Infrastructure	Bland Local Environmental Plan 2011	09/12/2011	09/12/2011	09/12/2011		56m	West
SP2	Infrastructure	Rail Infrastructure	Bland Local Environmental Plan 2011	09/12/2011	09/12/2011	09/12/2011		500m	North West

Local Environment Plan Data Source: NSW Crown Copyright - Planning & Environment
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Local Environmental Plan

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Minimum Subdivision Lot Size

What are the onsite Local Environmental Plan Minimum Subdivision Lot Sizes?

Symbol	Minimum Lot Size	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
AE	200 ha	Bland Local Environmental Plan 2011	09/12/2011	09/12/2011	09/12/2011		99.76

Maximum Height of Building

What are the onsite Local Environmental Plan Maximum Height of Buildings?

Symbol	Maximum Height of Building	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
No Data							

Floor Space Ratio

What are the onsite Local Environmental Plan Floor Space Ratios?

Symbol	Floor Space Ratio	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
No Data							

Land Application

What are the onsite Local Environmental Plan Land Applications?

Application Type	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
Included	Bland Local Environmental Plan 2011	09/12/2011	09/12/2011	09/12/2011		100

Land Reservation Acquisition

What are the onsite Local Environmental Plan Land Reservation Acquisitions?

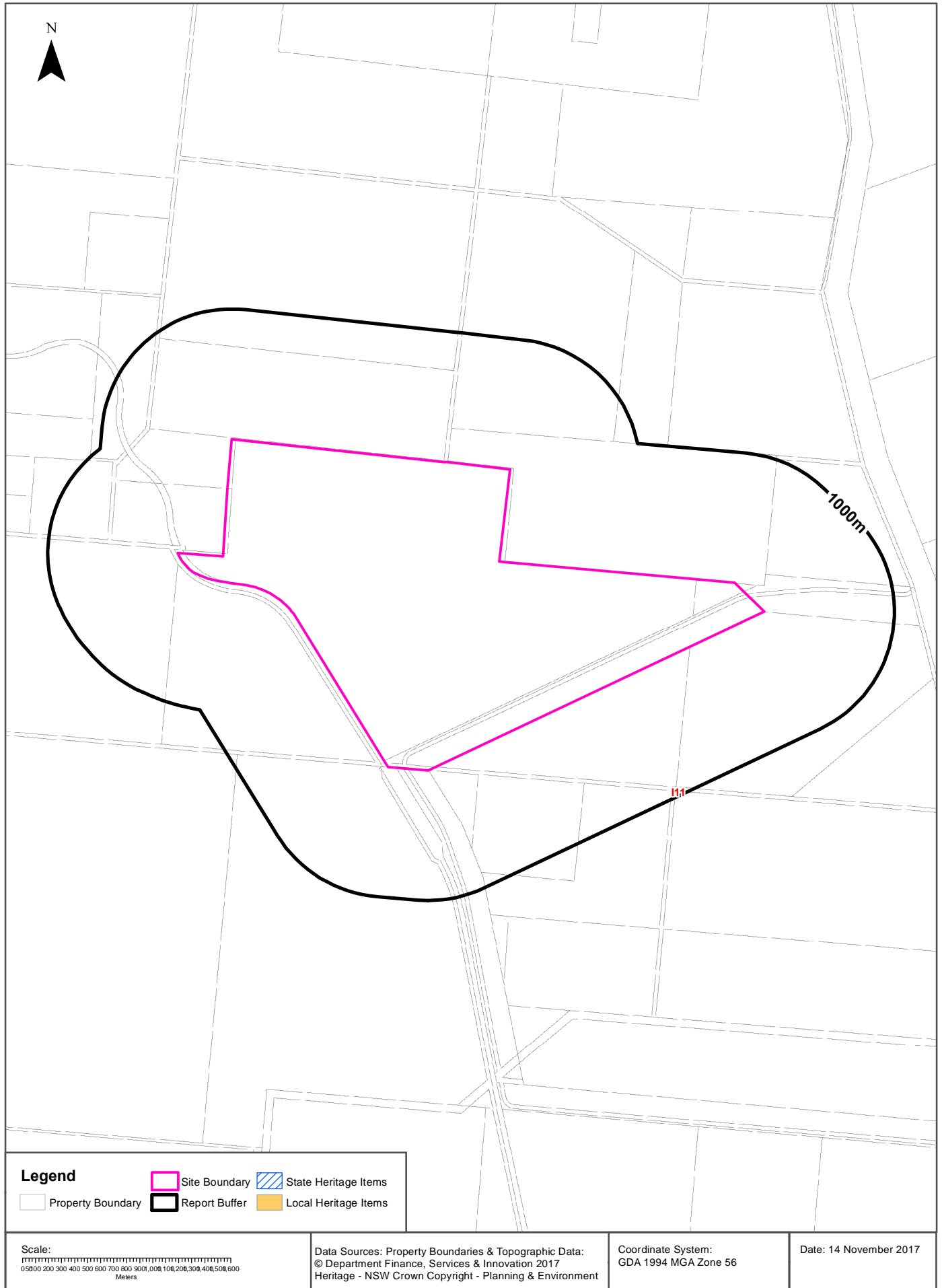
Reservation	LEP	Published Date	Commenced Date	Currency Date	Amendment	Comments	Percentage of Site Area
No Data							

Local Environment Plan Data Source: NSW Crown Copyright - Planning & Environment

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Heritage Items

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Heritage

Lot 102 DP 1059150, Lake Cowal, NSW 2671

State Heritage Items

What are the State Heritage 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 - Planning & Environment

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Local Heritage Items

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

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I11	Cowal West Group	Item - General	Local	Bland Local Environmental Plan 2011	09/12/2011	09/12/2011	09/12/2011	953m	South East

Heritage Data Source: NSW Crown Copyright - Planning & Environment

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Natural Hazards

Lot 102 DP 1059150, Lake Cowal, NSW 2671

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
No records within buffer		

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

Ecological Constraints

Lot 102 DP 1059150, Lake Cowal, NSW 2671

RAMSAR Wetlands

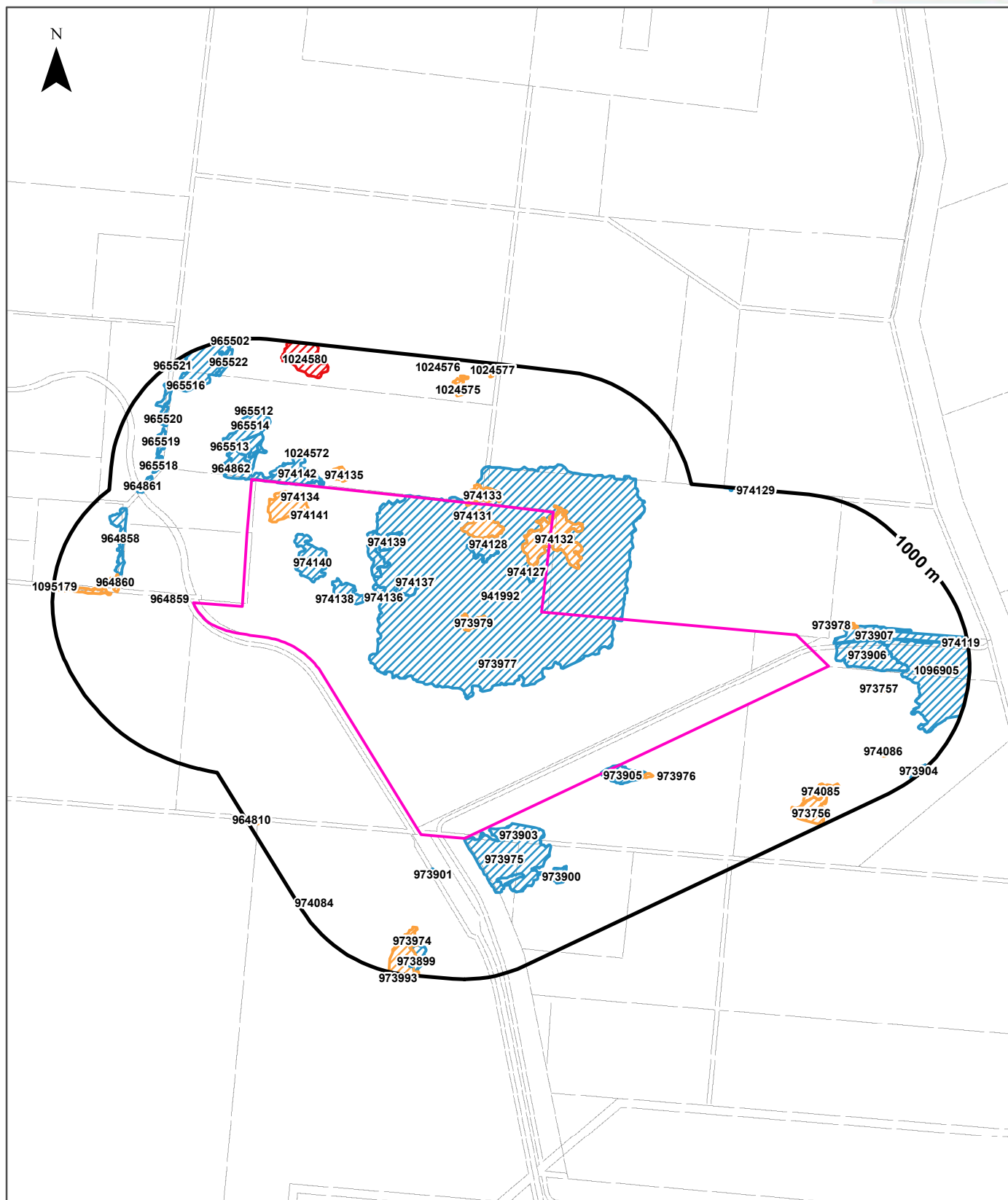
What RAMSAR Wetland areas exist within the dataset buffer?

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 Environment

Ecological Constraints - Groundwater Dependent Ecosystems Atlas

Lot 102 DP 1059150, Lake Cowal, NSW 2671



Legend Site Boundary Report Buffer Property Boundaries	High potential GDE - from national assessment High potential GDE - from regional studies Moderate potential GDE - from national assessment Moderate potential GDE - from regional studies	Low potential GDE - from national assessment Low potential GDE - from regional studies Known GDE - from regional studies Unclassified potential GDE - from national assessment Unclassified potential GDE - from regional studies
	Scale: 	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2017
		Date: 14 November 2017

Ecological Constraints

Lot 102 DP 1059150, Lake Cowal, NSW 2671

Groundwater Dependent Ecosystems Atlas

Map Id	Type	GDE Potential	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
941992	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
964862	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
973903	Terrestrial	Low potential GDE - from regional studies	3	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
973905	Terrestrial	Low potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
973977	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
973979	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
974127	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
974128	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
974136	Terrestrial	Low potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
974137	Terrestrial	Low potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
974138	Terrestrial	Low potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
974139	Terrestrial	Low potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
974140	Terrestrial	Low potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m
974141	Terrestrial	Low potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation		0m

974131	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	0m
974132	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	0m
974133	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	0m
974134	Terrestrial	Moderate potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	0m
974142	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	16m
974135	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	53m
973906	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	68m
964859	Terrestrial	Moderate potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	92m
965513	Terrestrial	Low potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	99m
973976	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	136m
973907	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	142m
973978	Terrestrial	Moderate potential GDE - from regional studies	3	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	202m
1024572	Terrestrial	Moderate potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	204m
973975	Terrestrial	Moderate potential GDE - from regional studies	3	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	223m
973901	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	232m
965514	Terrestrial	Low potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	278m
973757	Terrestrial	Moderate potential GDE - from regional studies	10	Plains of gravel and sandy alluvium.	Vegetation	365m
974119	Terrestrial	Low potential GDE - from regional studies	2	Plains of gravel and sandy alluvium.	Vegetation	390m

1096905	Terrestrial	Low potential GDE - from regional studies	2	Plains of gravel and sandy alluvium.	Vegetation	394m
965512	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	445m
973900	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	463m
964860	Terrestrial	Moderate potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	539m
964858	Terrestrial	Low potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	548m
1095179	Terrestrial	Moderate potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	586m
965518	Terrestrial	Low potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	646m
965517	Terrestrial	Low potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	649m
973974	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	655m
965519	Terrestrial	Low potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	658m
964861	Terrestrial	Low potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	702m
974086	Terrestrial	Moderate potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	703m
965511	Terrestrial	Low potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	707m
965520	Terrestrial	Low potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	712m
974085	Terrestrial	Moderate potential GDE - from regional studies	3	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	731m
1024575	Terrestrial	Moderate potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	744m
965516	Terrestrial	Low potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	750m

973899	Terrestrial	Low potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	754m
1024580	Terrestrial	High potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	765m
965522	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	769m
973756	Terrestrial	Moderate potential GDE - from regional studies	3	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	792m
1024576	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	866m
974084	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	878m
1024577	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	904m
1091896	Terrestrial	Low potential GDE - from regional studies	10	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	909m
964810	Terrestrial	Moderate potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	912m
973993	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	914m
965502	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	948m
973904	Terrestrial	Low potential GDE - from regional studies	10	Plains of gravel and sandy alluvium.	Vegetation	957m
965521	Terrestrial	Low potential GDE - from regional studies	1	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	965m
974129	Terrestrial	Low potential GDE - from regional studies	2	Ridges and minor tablelands stepping down westwards and breaking into detached hills with intervening alluvial valley floors. Some strong structural control on landforms.	Vegetation	978m

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology
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Ecological Constraints

Lot 102 DP 1059150, Lake Cowal, NSW 2671

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	<i>Crinia sloanei</i>	Sloane's Froglet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Amphibia	<i>Litoria raniformis</i>	Southern Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Aves	<i>Actitis hypoleucos</i>	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	<i>Anseranas semipalmata</i>	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Anthochaera phrygia</i>	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	<i>Apus pacificus</i>	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	<i>Ardea ibis</i>	Cattle Egret	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Botaurus poiciloptilus</i>	Australasian Bittern	Endangered	Not Sensitive	Endangered	
Animalia	Aves	<i>Burhinus grallarius</i>	Bush Stone-curlew	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	<i>Calidris ferruginea</i>	Curlew Sandpiper	Endangered	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	<i>Calidris melanotos</i>	Pectoral Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	<i>Calidris ruficollis</i>	Red-necked Stint	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	<i>Chlidonias leucopterus</i>	White-winged Black Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	<i>Chthonicola sagittata</i>	Speckled Warbler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Cinlosoma castanotum</i>	Chestnut Quail-thrush	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Circus assimilis</i>	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Daphoenositta chrysoptera</i>	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Drymodes brunneopygia</i>	Southern Scrub-robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Epthianura albifrons</i>	White-fronted Chat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Falco hypoleucos</i>	Grey Falcon	Endangered	Category 2	Not Listed	
Animalia	Aves	<i>Falco subniger</i>	Black Falcon	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Gallinago hardwickii</i>	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	<i>Gelochelidon nilotica</i>	Gull-billed Tern	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	<i>Glossopsitta pusilla</i>	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Grantiella picta</i>	Painted Honeyeater	Vulnerable	Not Sensitive	Vulnerable	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	<i>Grus rubicunda</i>	Brolga	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	<i>Hamirostra melanosternon</i>	Black-breasted Buzzard	Vulnerable	Category 3	Not Listed	
Animalia	Aves	<i>Hieraaetus morphnoides</i>	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Hirundapus caudacutus</i>	White-throated Needletail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Hydroprogne caspia</i>	Caspian Tern	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	<i>Hylacola cautus</i>	Shy Heathwren	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Lathamus discolor</i>	Swift Parrot	Endangered	Category 3	Critically Endangered	
Animalia	Aves	<i>Leipoa ocellata</i>	Malleefowl	Endangered	Not Sensitive	Vulnerable	
Animalia	Aves	<i>Limosa lapponica</i>	Bar-tailed Godwit	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Limosa limosa</i>	Black-tailed Godwit	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	<i>Lophoictinia isura</i>	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Merops ornatus</i>	Rainbow Bee-eater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	<i>Neophema pulchella</i>	Turquoise Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	<i>Ninox connivens</i>	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	<i>Numenius phaeopus</i>	Whimbrel	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Oxyura australis</i>	Blue-billed Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Pachycephala inornata</i>	Gilbert's Whistler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Pandion cristatus</i>	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	<i>Petroica boodang</i>	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Petroica phoenicea</i>	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Plegadis falcinellus</i>	Glossy Ibis	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	<i>Pluvialis fulva</i>	Pacific Golden Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Polytelis swainsonii</i>	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Rostratula australis</i>	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	<i>Stagonopleura guttata</i>	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Stictonetta naevosa</i>	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Tringa glareola</i>	Wood Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Tringa nebularia</i>	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Tringa stagnatilis</i>	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Mammalia	<i>Chalinolobus picatus</i>	Little Pied Bat	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Nyctophilus corbeni	Corben's Long-eared Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
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	Reptilia	Tympanocryptis pinguicollis	Grassland Earless Dragon	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Austrostipa wakoolica	A spear-grass	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pilularia novae-hollandiae	Austral Pillwort	Endangered	Category 3	Not Listed	
Plantae	Flora	Swainsona sericea	Silky Swainson-pea	Vulnerable	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

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

Data obtained 14/11/2017

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Annexure F

NSW SafeWork Dangerous Goods Search Results



SafeWork NSW

Locked Bag 2906, Lisarow NSW 2252

Customer Experience 13 10 50

ABN 81 913 830 179 | www.safework.nsw.gov.au

Our Ref: D17/208486
Your Ref: James Morrow

11 September 2017

Attention: James Morrow
Ground Doctor Pty Ltd
PO BOX 6278
Dubbo NSW 2830

Dear Mr Morrow

RE SITE: Lot 102 DP 1059150 Uncle Bills Rd Lake Cowal NSW

I refer to your site search request received by SafeWork NSW on 4 September 2017 requesting information on Storage of Hazardous Chemicals for the above site.

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

For further information or if you have any questions, please call us on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely


Customer Service Officer
Customer Experience - Operations
SafeWork NSW

SITE SEARCH FOR SCHEDULE 11 HAZARDOUS CHEMICALS ON PREMISES

This application must be accompanied with:

- a letter of authorisation from the owner of the land to be searched
- a clear map showing the actual location of the land to be searched

How to fill in this form

Please type directly into the form. When complete, save a copy before emailing or printing.

If completing by hand, please print clearly and mark box(es) with a where required.

Lodgement instructions

Email (preferred): licensing@safework.nsw.gov.au
(credit card payments only)

Post: Customer Experience – Operations,
SafeWork NSW, Locked Bag 2906, Lisarow, NSW,
2252.

Email or post the application – do not send more than once.

For assistance call 13 10 50

Visit the website www.safework.nsw.gov.au to find your nearest office.

Privacy compliance statement

This information is collected by SafeWork NSW (the Regulator) for the purposes of undertaking an evaluation, assessment and processing of a notification of lead risk work under the WHS Regulation.

This information may also be used by the Regulator for the purposes of confirming applicant details, to establish and maintain an external database and to assist the Regulator and its inspectorate with its work generally. It may also be provided to other state, territory and the Commonwealth regulatory authorities.

Except for the purposes of prosecution and unless such disclosure is otherwise required by law, the information will not be accessed by other third parties in a way that would identify the individual without the consent of that individual.

You may also apply to the Regulator to access and correct any information about yourself if that information is inaccurate, incomplete, not relevant or out of date. Applications should be made in writing to: Privacy Contact Officer, SafeWork NSW, Locked Bag 2906, Lisarow, NSW 2252.

SECTION 1. BUSINESS NAME OR INDIVIDUAL APPLYING FOR SITE SEARCH

SECTION 2: POSTAL ADDRESS OF THE APPLICANT

Unit number/Street number/Property number
(include Lot or DP/PO Box/GPO Box/Private Bag/Locked Bag)

Street name

Suburb

State

Postcode

SECTION 3: CONTACT FOR SITE SEARCH ENQUIRY

Names

Daytime contact number

Email

Mobile number

SECTION 4: STREET ADDRESS OF SITE TO BE SEARCHED

Unit number/Street number/Property number
(include Lot or DP number if applicable)

Street name

Suburb

State

Postcode

Nearest cross street

**SECTION 5: CURRENT/PREVIOUS SITE OCCUPIER'S NAME
(AND TRADING NAME IF APPLICABLE)**

Current

Previous

SECTION 6: LODGEMENT FEES

A fee must be paid on lodgement of the application form.

Refer to the [SafeWork NSW fees schedule](http://www.safework.nsw.gov.au) available at www.safework.nsw.gov.au or call 13 10 50.

Please charge \$. to my: MasterCard Visa

A payment processing fee of 0.40% applies to MasterCard and Visa.

Card number

Card expiry date (MM/YYYY)

Cardholder name (please print name as displayed on credit card)

Cardholder signature

Date (DD/MM/YYYY)

SECTION 7: NAME OF APPLICANT

Name

Applicant's signature

Date (DD/MM/YYYY)

Annexure G

Section 149 Certificates



PO Box 21
WEST WYALONG NSW 2671

Telephone: 02 6972 2266
Facsimile: 02 6972 2145
Email: council@blandshire.nsw.gov.au
Website: www.blandshire.nsw.gov.au

PLANNING CERTIFICATE

Issued under Section 149(2)
Environmental Planning and Assessment Act 1979

Certificate Number: PL2018/0262
Your Reference:
Date of Issue: 10/08/2017

A Kennedy
Suite 2 Level 3
24 McDougall Street
MILTON QLD 4064

Property Number 141450
Assessment Number: 01186-05000000
Property Address: Lake Cowal Road LAKE COWAL NSW 2671
Legal Description: Lot 100 DP 1059150
Owner Lachlan Livestock Health And Pest Authority

This certificate is provided pursuant to Section 149(2) of the Act. At the date of this certificate, the subject land is affected by the following matters:

Names of relevant planning instruments and DCPs

Local Environmental Plans

Bland Local Environmental Plan 2011

Regional Environmental Plan

Nil

State Environmental Planning Policies

SEPP No.1 – Development Standards
SEPP No. 4 – Development without Consent & Miscellaneous Exempt and Complying Development
SEPP No. 6 – Number of Storey's in a Building
SEPP No. 21 – Caravan Parks
SEPP No. 22 – Shops and Commercial Premises

SEPP No. 30 – Intensive Agriculture
 SEPP No. 33 – Hazardous and Offensive Development
 SEPP No. 36 – Manufactured Home Estates
 SEPP No. 50 – Canal Estate Development
 SEPP No. 55 – Remediation of Land
 SEPP No. 62 – Sustainable Aquaculture
 SEPP No. 64 – Advertising and Signage
 SEPP No. 65 – Design Quality of Residential Flat Development
 SEPP (Housing for Seniors or People with a Disability) 2004
 SEPP (Building Sustainability Index: BASIX) 2004
 SEPP (Major Developments) 2005
 SEPP (Mining, Petroleum Production and Extractive Industries) 2007
 SEPP (Temporary Structures and Places of Public Entertainment) 2007
 SEPP (Infrastructure) 2007
 SEPP (Rural Lands) 2008
 SEPP (Exempt and Complying Development Codes) 2008

Draft Planning Instruments

Nil

Development Control Plans

Bland Development Control Plan 2012

Zoning and land use under relevant LEPs

Zoning

Lot 100 DP 1059150

RU1 Primary Production

1. Objectives of zone

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within the zone and land uses within adjoining zones.
- To ensure that development on land within this zone does not unreasonably increase the demand for public services or public facilities.

2. Permitted without consent

Environmental protection works; Extensive agriculture; Home-based child care; Home occupations; Roads

3. Permitted with consent

Agriculture; Air transport facilities; Airstrips; Animal boarding or training establishments; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Cellar door premises; Cemeteries; Community facilities; Correctional centres; Depots; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities; Environmental facilities; Extractive industries; Farm buildings; Farm stay accommodation; Flood mitigation works; Forestry; Freight transport facilities; Heavy industrial storage establishments; Heavy industries; Helipads; Home businesses; Home industries; Home occupations (sex services); Industrial

training facilities; Information and education facilities; Intensive livestock agriculture; Intensive plant agriculture; Jetties; Landscaping material supplies; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (major); Recreation facilities (outdoor); Roadside stalls; Rural industries; Rural workers' dwellings; Veterinary hospitals; Water recreation structures

4. Prohibited

Any development not specified in item 2 or 3

Minimum land dimensions for the erection of a dwelling house

Lot 100 DP 1059150

200 Ha

Does the land include or comprise critical habitat?

No

Is the land located in a conservation area?

No

Is there an item of environmental heritage situated on the land?

Lot 100 DP 1059150

No

Complying Development

Is complying development permitted to be carried out on the subject land?

Yes

Coastal Protection

Is the land affected by the operation of section 38 or 39 of the Coastal Protection Act 1979?

No

Mine Subsidence

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961?

No

Road Widening and Road Realignment

Is the land affected by road widening or road realignment?

No

Council and other public authority policies on hazard risk restrictions

Is the land affected by a Council or other public authority policy that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding)?

No

Flood related development controls information

Is development on the land or part of the land for the purposes of a dwelling house, dual occupancies, multi dwelling housing or residential flat buildings (not including development for group homes or seniors housing) subject to flood related development controls?

No

Is development on the land or part of the land for any other purpose subject to flood related development controls?

No

Land reserved for acquisition

Does any environmental planning instrument or proposed planning instrument make provision in relation to the acquisition of the land by a public authority?

No

Contributions plans

Contribution Plans that apply to the land:

- Bland Shire Council Section 94A Development Contributions Plan
- Bland Shire Council Section 94 Traffic Generating Development Contributions Plan

Biodiversity certified land

Is the land biodiversity certified land (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995)?

No

Biobanking agreements

Is there a biobanking agreement for the land?

No

Bush fire prone land

Is the land identified as being bush fire prone land?

Lot 100 DP 1059150

None of the land is bush fire prone

Property vegetation plans

Does a property vegetation plan apply to the land?

Lot 100 DP 1059150

No

Orders under Trees (Disputes between Neighbours) Act 2006

Has an order been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work on the land in relation to a tree?

No

Directions under Part 3A

Is there a direction by the Minister in force under section 75P (2) (c) of the Act?

No

Site compatibility certificates and conditions for seniors housing

Is there a current site compatibility certificate (seniors housing) of which the Council is aware in respect of proposed development on the land?

No

Note: Development consent has not been granted for Housing for Seniors or People with a Disability on the land.

Site compatibility certificates for infrastructure

Is there a current site compatibility certificate (infrastructure) of which the Council is aware in respect of proposed development on the land?

No

Site compatibility certificates and conditions for affordable rental housing

Is there a current site compatibility certificate (affordable rental housing) of which the Council is aware?

No

Note: Development consent has not been granted for Affordable Rental Housing on the land.

Paper Subdivision

Has a development plan been adopted by a relevant authority that is applicable to the land?

No

Is the land proposed to be subject to a consent ballot?

No

Site Verification Certificates

Is there a current site verification certificate in respect of the land?

No

Additional matters – Section 59(2) Contaminated Land Management Act 1997

Is the land significantly contaminated within the meaning of the Contaminated Land Management Act 1997?

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

Is the land subject to a management order within the meaning of the Contaminated Land Management Act 1997?

Council has no record that the land is subject to a management order at the date this certificate was issued.

Is the land subject to a voluntary management proposal within the meaning of the Contaminated Land Management Act 1997?

Council has no record that the land is subject to an approved voluntary management proposal at the date this was issued.

Is the land subject to an ongoing maintenance order within the meaning of the Contaminated Land Management Act 1997?

Council has no record that the land is subject to an ongoing maintenance order at the date this certificate was issued.

Is the land subject to a site audit within the meaning of Contaminated Land Management Act 1997?

Council has no record that the land is the subject of a site audit at the date this certificate was issued.

Section 149(5) Additional Information

Tree Preservation Order

Is the Bland Tree Preservation Order applicable to the subject land?

Lot 100 DP 1059150

No

Development Consents

Have any Development Consents been granted with respect to the land within the previous five (5) years?

No

The preceding information is provided pursuant to Section 149(2) of the *Environmental Assessment Act 1979* as prescribed by Schedule 4 of the *Environmental Planning and Assessment Regulation 2000* and is applicable to the subject land as of the date of this certificate.

Adele Casey
Director Corporate, Community and Development Services

10 August 2017



PO Box 21
WEST WYALONG NSW 2671

Telephone: 02 6972 2266
Facsimile: 02 6972 2145
Email: council@blandshire.nsw.gov.au
Website: www.blandshire.nsw.gov.au

PLANNING CERTIFICATE

Issued under Section 149(2)
Environmental Planning and Assessment Act 1979

Certificate Number: PL2018/0261
Your Reference:
Date of Issue: 10/08/2017

A Kennedy
Suite 2 Level 3
24 McDougall Street
MILTON QLD 4064

Property Number 134200
Assessment Number: 01185-03000000
Property Address: Lake Cowal Road LAKE COWAL NSW 2671
Legal Description: Lot 101 DP 1059150
Lot 102 DP 1059150
Owner Evolution Mining (Cowal) Pty Limited

This certificate is provided pursuant to Section 149(2) of the Act. At the date of this certificate, the subject land is affected by the following matters:

Names of relevant planning instruments and DCPs

Local Environmental Plans

Bland Local Environmental Plan 2011

Regional Environmental Plan

Nil

State Environmental Planning Policies

SEPP No.1 – Development Standards
SEPP No. 4 – Development without Consent & Miscellaneous Exempt and Complying Development
SEPP No. 6 – Number of Storey's in a Building
SEPP No. 21 – Caravan Parks

SEPP No. 22 – Shops and Commercial Premises
 SEPP No. 30 – Intensive Agriculture
 SEPP No. 33 – Hazardous and Offensive Development
 SEPP No. 36 – Manufactured Home Estates
 SEPP No. 50 – Canal Estate Development
 SEPP No. 55 – Remediation of Land
 SEPP No. 62 – Sustainable Aquaculture
 SEPP No. 64 – Advertising and Signage
 SEPP No. 65 – Design Quality of Residential Flat Development
 SEPP (Housing for Seniors or People with a Disability) 2004
 SEPP (Building Sustainability Index: BASIX) 2004
 SEPP (Major Developments) 2005
 SEPP (Mining, Petroleum Production and Extractive Industries) 2007
 SEPP (Temporary Structures and Places of Public Entertainment) 2007
 SEPP (Infrastructure) 2007
 SEPP (Rural Lands) 2008
 SEPP (Exempt and Complying Development Codes) 2008

Draft Planning Instruments

Nil

Development Control Plans

Bland Development Control Plan 2012

Zoning and land use under relevant LEPs

Zoning

Lot 101 DP 1059150	RU1 Primary Production
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Lot 102 DP 1059150	RU1 Primary Production
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1. Objectives of zone

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within the zone and land uses within adjoining zones.
- To ensure that development on land within this zone does not unreasonably increase the demand for public services or public facilities.

2. Permitted without consent

Environmental protection works; Extensive agriculture; Home-based child care; Home occupations; Roads

3. Permitted with consent

Agriculture; Air transport facilities; Airstrips; Animal boarding or training establishments; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Cellar door premises; Cemeteries; Community facilities; Correctional centres; Depots; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities;

Environmental facilities; Extractive industries; Farm buildings; Farm stay accommodation; Flood mitigation works; Forestry; Freight transport facilities; Heavy industrial storage establishments; Heavy industries; Helipads; Home businesses; Home industries; Home occupations (sex services); Industrial training facilities; Information and education facilities; Intensive livestock agriculture; Intensive plant agriculture; Jetties; Landscaping material supplies; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (major); Recreation facilities (outdoor); Roadside stalls; Rural industries; Rural workers' dwellings; Veterinary hospitals; Water recreation structures

4. Prohibited

Any development not specified in item 2 or 3

Minimum land dimensions for the erection of a dwelling house

Lot 101 DP 1059150

200 Ha

Lot 102 DP 1059150

200 Ha

Does the land include or comprise critical habitat?

No

Is the land located in a conservation area?

No

Is there an item of environmental heritage situated on the land?

Lot 101 DP 1059150

No

Lot 102 DP 1059150

No

Complying Development

Is complying development permitted to be carried out on the subject land?

Yes

Coastal Protection

Is the land affected by the operation of section 38 or 39 of the Coastal Protection Act 1979?

No

Mine Subsidence

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961?

No

Road Widening and Road Realignment

Is the land affected by road widening or road realignment?

No

Council and other public authority policies on hazard risk restrictions

Is the land affected by a Council or other public authority policy that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding)?

No

Flood related development controls information

Is development on the land or part of the land for the purposes of a dwelling house, dual occupancies, multi dwelling housing or residential flat buildings (not including development for group homes or seniors housing) subject to flood related development controls?

No

Is development on the land or part of the land for any other purpose subject to flood related development controls?

No

Land reserved for acquisition

Does any environmental planning instrument or proposed planning instrument make provision in relation to the acquisition of the land by a public authority?

No

Contributions plans

Contribution Plans that apply to the land:

- Bland Shire Council Section 94A Development Contributions Plan
- Bland Shire Council Section 94 Traffic Generating Development Contributions Plan

Biodiversity certified land

Is the land biodiversity certified land (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995)?

No

Biobanking agreements

Is there a biobanking agreement for the land?

No

Bush fire prone land

Is the land identified as being bush fire prone land?

Part Lot 101 DP 1059150

None of the land is bush fire prone

Part Lot 102 DP 1059150

None of the land is bush fire prone

Property vegetation plans

Does a property vegetation plan apply to the land?

Part Lot 101 DP 1059150

No

Part Lot 102 DP 1059150

No

Orders under Trees (Disputes between Neighbours) Act 2006

Has an order been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work on the land in relation to a tree?

No

Directions under Part 3A

Is there a direction by the Minister in force under section 75P (2) (cl) of the Act?

No

Site compatibility certificates and conditions for seniors housing

Is there a current site compatibility certificate (seniors housing) of which the Council is aware in respect of proposed development on the land?

No

Note: Development consent has not been granted for Housing for Seniors or People with a Disability on the land.

Site compatibility certificates for infrastructure

Is there are current site compatibility certificate (infrastructure) of which the Council is aware in respect of proposed development on the land?

No

Site compatibility certificates and conditions for affordable rental housing

Is there a current site compatibility certificate (affordable rental housing) of which the Council is aware?

No

Note: Development consent has not been granted for Affordable Rental Housing on the land.

Paper Subdivision

Has a development plan been adopted by a relevant authority that is applicable to the land?

No

Is the land proposed to be subject to a consent ballot?

No

Site Verification Certificates

Is there a current site verification certificate in respect of the land?

No

Additional matters – Section 59(2) Contaminated Land Management Act 1997

Is the land significantly contaminated within the meaning of the Contaminated Land Management Act 1997?
Council has no record that the land is significantly contaminated at the date of this certificate was issued.
Is the land subject to a management order within the meaning of the Contaminated Land Management Act 1997?
Council has no record that the land is subject to a management order at the date this certificate was issued.
Is the land subject to a voluntary management proposal within the meaning of the Contaminated Land Management Act 1997?
Council has no record that the land is subject to an approved voluntary management proposal at the date this was issued.
Is the land subject to an ongoing maintenance order within the meaning of the Contaminated Land Management Act 1997?
Council has no record that the land is subject to an ongoing maintenance order at the date this certificate was issued.
Is the land subject to a site audit within the meaning of Contaminated Land Management Act 1997?
Council has no record that the land is the subject of a site audit at the date this certificate was issued.

Section 149(5) Additional Information

Tree Preservation Order

Is the Bland Tree Preservation Order applicable to the subject land?	
Lot 101 DP 1059150	No
Lot 102 DP 1059150	No

Development Consents

Have any Development Consents been granted with respect to the land within the previous five (5) years?

CDC/2013/006	Storage shed for Industrial material (Lake Cowal Gold Mine)
DA2017/0066	New Modular Building

The preceding information is provided pursuant to Section 149(2) of the *Environmental Assessment Act 1979* as prescribed by Schedule 4 of the *Environmental Planning and Assessment Regulation 2000* and is applicable to the subject land as of the date of this certificate.

Adele Casey
Director Corporate, Community and Development Services

10 August 2017