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Preliminary Site Investigation

Patyegarang Project

Reference No. 30012988
Prepared for Metropolitan Local Aboriginal Land Council
14 July 2023

SMEC INTERNAL REF. 30012988

Document Control

Document:	Preliminary Site Investigation
File Location:	\\AUSYFSV003\Group\projects\30012988 - Belrose Subdivision Land Cap and Soil\140 Reporting
Project Name:	Patyegarang Project
Project Number:	30012988
Revision Number:	3

Revision History

Revision No.	Date	Reason for revision	Prepared by	Reviewed by	Approved for Issue by
0	5 November 2020	Issue to Client	Lewis Smith and Sam Vaughan	Manuel Fernandez	Daniel Saunders
1	28 September 2022	Update Client reference	Pauline Voukidis	Daniel Saunders	Daniel Saunders
2	29 September 2022	Update Figure 1.1	Pauline Voukidis	Daniel Saunders	Daniel Saunders
3	14 July 2023	Update project details	Pauline Voukidis	Steven Drysdale	Steven Drysdale

Issue Register

Distribution List	Date Issued	Number of Copies
Metropolitan Local Aboriginal Land Council	14 July 2023	1 pdf

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Table of Contents

Appendices

List of Tables

EXECUTIVE SUMMARY

SMEC Australia Pty Ltd (SMEC) was engaged by Metropolitan Local Aboriginal Land Council (MLALC) to carry out a Preliminary Site Investigation (PSI) with respect to contaminated land and salinity for the Patyegarang Project, a proposed Belrose residential development off Morgan Road, Belrose, 2085, NSW (the Site). SMEC understand that the PSI is required to support a Development Application for the Site. The Site is located within the North-East Subregion of the Sydney Metropolitan Region and the Northern Beaches Council Local Government Area. The Site is approximately 72 hectares in size.

The objectives of the investigation were to:

- Assess the potential for contamination to be present on Site from past or present activities
- Assess the salinity constraints of the Site
- Provide recommendations on the need for further investigations management based on the findings.

To meet the contamination objectives, the following scope of works were carried out:

- Review published information relating to the Site including geological, soil landscape, topographical, and/or land use maps
- Review of historical aerial photographs
- Review of NSW Environmental Protection Authority (EPA) contaminated land and POEO licence online databases
- A search of nearby registered groundwater bores
- Review of a range of other sources of information as part of a records search by Lotsearch
- A Site walkover by an experienced Environmental Scientist to observe site conditions
- Collection and analysis of seven soil samples for salinity testing and two suspected asbestos containing material (ACM) fragments for preliminary assessment purposes
- Development of a preliminary Conceptual Site model
- Preparing this report presenting the findings of the assessment and making conclusions and recommendations as per the objectives.

The Site history review indicated that the Site appears to have been mainly unused bushland since at least the early 1930s, but some periodic patchy clearing with tracks have been apparent in parts of the Site in the 1950s and 1960s. The reason for the patchy clearing and activities associated with this are not known. Nearby surrounding land use appears to have typically been bushland with some agricultural (possibly orchards) and residential.

Whilst the Site predominantly appears to have been disused bushland, the use of the Site during which bare patches appeared in the 1950s and 1960s is not known and what activities (if any) occurred in these areas. Also, the Site is relatively large and observations were limited to some accessible parts of the Site, not all areas were observed.

Based on the Site history and observations of the surrounding land use three potential areas of environmental concern and associated contaminants of concern were identified at the Site, comprising:

- AEC 1 - Areas with fly tipped waste/stockpiles of unknown origin and quality in areas observed during site walkover (but other areas near current/former roads and tracks could also be affected)
- AEC 2 - Patchy bare areas of the site observed in 1950's and 1960s aerial photographs due to unknown activities (north-west and central areas)
- AEC 3- Offsite rural fire station practices (if fire fighting aqueous film forming foams were used - with PFAS). PFAS is known to be able to migrate relatively long distances and is persistent in the environment.

Our qualitative assessment of the potential for contamination to be present within the identified AECs ranged from low to high. A conceptual site model was developed which indicates that potential contaminants of concern associated with these AECs could impact on soil and groundwater media and a range of on/offsite receptors could be impacted by contamination if it were present, including human receptors and ecological receptors.

Two selected samples of suspected ACM fragments within fly tipped stockpiles in AEC 1 were analysed and confirmed to contain asbestos.

Based on the findings of this report, SMEC recommend the following:

- AEC1 - Areas with fly tipped waste/stockpiles should be clearly identified, assessed and managed as part of future redevelopment work. This is likely to involve classification for offsite disposal. Areas with observed asbestos containing material will need to be managed as asbestos waste in accordance with relevant codes of practice and waste regulations by licenced professionals
- AEC 2 – Further assessment as the likely history of the patchy bare areas. This may include a title search to assess former historical ownership, interviews with residents or a local historical society. Depending on the outcomes, targeted intrusive assessment of these areas is likely warranted to check for evidence of contamination such as filling or subsurface wastes
- AEC 3 – Make contact with the offsite Rural fire station to assess if they have a history of use of PFAS substances and if they have carried out any assessments. We note that this offsite source is a diffuse urban source and if present could affect other areas and properties or could be localised and have no impact to this Site.

It is generally considered that the Site should be able to be made suitable for the proposed residential development with respect to land contamination, subject to the above recommendations of further assessment and also implementing an unexpected finds procedure during construction (such as within the Construction Environmental Management Plan).

In addition to this, if there are any visual or olfactory signs of contamination identified at the Site, further site investigation and risk assessment may be required.

This preliminary assessment indicated that the Site is in a soil landscape where salinity is a limitation. Preliminary testing did not suggest saline soils. Salinity is therefore not considered to be a constraint for this site.

This executive summary must be read in conjunction with the Important Notice and Limitations of this report.

1 Introduction

SMEC Australia Pty Ltd (SMEC) was engaged by Metropolitan Local Aboriginal Land Council (MLALC) to carry out a Preliminary Site Investigation (PSI) with respect to contaminated land and salinity for the Patyegarang Project, a proposed Belrose residential development off Morgan Road, Belrose, 2085, NSW (the Site). SMEC understand that the PSI is required to support a Development Application (DA) for the Site.

1.1 Proposed development

The Site is proposed to be subdivided into 450 dwelling caps and developed for residential purposes, the proposed design will include (but not limited to):

- New road networks
- Neighbourhood services/amenities area
- Development of areas of 'larger lot' and 'typical lot' living areas
- Aboriginal cultural centre/open space
- Green corridor/green buffer
- Environmental conservation area
- Riparian corridor
- Pedestrian bridge

A draft concept plan of the proposed development as provided to SMEC is included in Figure 1-1 below:

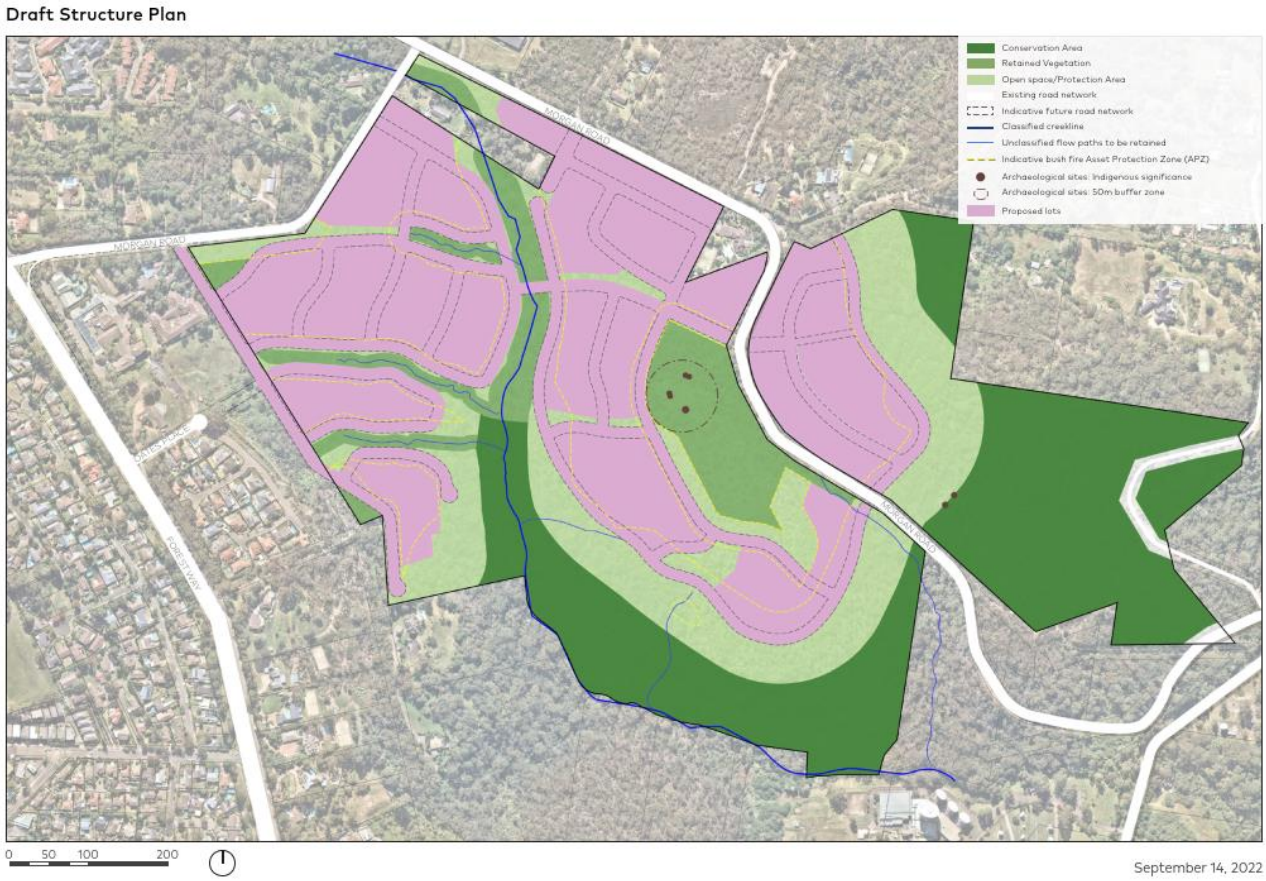

Figure 1-1 - Proposed concept plan

A proposed structure plan provided to SMEC is shown in Figure 6, Appendix A.

1.2 Project objectives

The objectives of the investigation were to:

- Assess the potential for contamination to be present on Site from past or present activities
- Assess the salinity constraints of the Site
- Provide recommendations on the need for further investigations management based on the findings.

1.3 Scope of works

To meet the objectives, the following scope of works were carried out:

- Review published information relating to the Site including geological, soil landscape, topographical, and/or land use maps
- Review of historical aerial photographs
- Review of NSW Environmental Protection Authority (EPA) contaminated land and POEO licence online databases
- A search of nearby registered groundwater bores
- Review of a range of other sources of information as part of a records search by Lotsearch
- A review of publicly available salinity information,
- A Site walkover by an experienced Environmental Scientist to observe site conditions
- Collection and analysis of seven soil samples for salinity testing and two fragments of suspected asbestos containing material (ACM) for preliminary assessment purposes
- Development of a preliminary Conceptual Site model
- Preparing this report presenting the findings of the assessment and making conclusions and recommendations as per the objectives identified in section 1.2.

2 Site information

2.1 Site description

A summary of Site information is presented in Table 2-1.

The Site location and layout are presented in Figure 1, Appendix A.

Table 2-1: Summary of site information

item	description
Title Identifiers	Lot 89-93 (DP752038), Lot 176-178 (DP752038), Lot 189-191 (DP752038), Lot 196-197 (DP752038), Lot 944-948 (DP752038), Lot 953 (DP752038), Lot 2600 (DP752038), Lot 2630 (DP752038), Lot 2 (DP1242330)
Address	Morgan Road, Belrose, 2085, NSW
Area	Approximate area: 72.021 hectares (ha)
Owner	Metropolitan Local Aboriginal Land Council (MLALC)
Zoning	The Site is located within the Northern Beaches Council Local Government Area (LGA) and was un-zoned and listed as "DM Deferred Matter" under Warringah Local Environmental Plan, 2011 at the time of the investigation. Subsequent zoning maps provided to SMEC have the Site listed as C2, RE2 and R2.
Current Land use	Undeveloped bushland
Proposed land use	Residential development
Surrounding land use	**North:** Typically bushland and several estate residential properties. Flewys Tyres 24hr Roadside Service is located approximately 250 metres (m) north east of the Site. Glenaeon Retirement Village is located approximately 250 m north west of the Site. **South:** Typically bushland with residential beyond. Telstra Oxford Falls Cable Landing Station located immediately south of the Site. **East:** Typically bushland with estate residential properties. CC Pines Pty Ltd (builder) is located immediately east of the Site. **West:** Typically low-density residential properties dominate the Belrose suburban area and along Forest Way. An aged care and community centre is located immediately west of the Site.

The Site is separated into two sections, split by Morgan Road. Morgan Road runs along the northern perimeter and then runs in a south eastern direction. This separates the western portion of the Site from the eastern portion of the Site. The western portion of the site covers approximately 51 ha of land and contains the majority of the proposed subdivision. The eastern portion is approximately 21 ha in size with approximately one third of the land use proposed for the subdivision and the remaining proposed as environmental conservation area. Kelly's Way crosses the boundary of the Site at two points along the eastern perimeter.

2.2 Topography and landforms

The topography of the area typically consists of undulating hillsides with some steepened precipices and valleys along the alignment of Snake Creek. The creek typically runs in a north to south direction with smaller tributaries branching from the east and west.

Typical elevation change over the site is approximately 50-60 m observed to fall from both the eastern and western slopes along Snake Creek. A small plateau up to 20 m high is observed along the southern boundary with a steep ridge line falling towards the south. Larger rock outcrop slopes between 15-20 m high sweep from the south to the west boundary with smaller outcrops following the eastern and western valley lines of the creeks. Larger rock slopes greater than 20 m high are also observed along the eastern boundary. The Site elevation slopes from about 158

metres Australian Height Datum (AHD) within the west portion of the Site to about 64m AHD within the south and east portion of the Site.

Topographic contours are presented in Figure 3, Appendix A**.**

2.3 Vegetation

With reference to the Native Vegetation of the Sydney Metropolitan Area: NSW Office of Environment and Heritage (accessed 20 October 2020), the vegetation mapped at Belrose has been assessed as Dry sclerophyll forests, heathlands, freshwater wetlands (west), wet sclerophyll forests (east and south).

The vegetation mapping is presented in Figure 4, Appendix A.

2.4 Site geology

With reference to the 1:100,000 Sydney Geological Map (Sheet 9130) the Site is underlain by Hawkesbury Sandstone of the Wianamatta group of the Triassic Age. This Hawkesbury Sandstone consists of medium to coarse grained quartz sandstone along with very minor shale and laminate lenses.

The regional geology is presented in Figure 5, Appendix A.

2.5 Site lithology

With reference to the NSW Office of Environment and Heritage eSPADE Soil Landscape Viewer (accessed 27 October 2020), the lithology at the Site features five different soil landscapes. These are Gymea, Hawkesbury, Hornsby, Lambert and Oxford Falls. The landscape limitations for each are presented in Table 2-2.

Table 2-2 Soil Landscapes and limitation

Soil landscape	Landscape limitations
Gymea	• Erosion hazard • Rock outcrop • Rockfall hazard (localised) • Steep zones (localised) • Shallow soils
Hawkesbury	• Mass movement hazard • Rockfall hazard • Steep zones • Severe erosion hazard • Rock outcrop • Shallow soils
Hornsby	• Mass movement hazard (localised) • Steep slopes (localised) • Erosion hazard (localised) • Highly reactive soils • Soil Limitations.
Lambert	• Seasonal waterlogging • Rock outcrop • Shallow depth • Erosion hazard

Soil landscape	Landscape limitations
	• Perched watertables (localised)
Oxford Falls	• Seasonal waterlogging • Rock outcrop (localised) • Erosion hazard • Flood hazard (localised) • Shallow soils (localised)

2.6 Acid sulfate soil risk

The NSW government eSPADE website, accessed 28 October 2020, indicates that the Site is situated outside of areas of known coastal ASS risk. The CSIRO ASRIS risk maps, accessed 28 October 2020, indicates that the Site is located within an area of 'Extremely low probability of occurrence'.

2.7 Hydrology and hydrogeology

Snake Creek flows approximately north-south through the central portion of the western area of the Site and along the southern border of the Site.

SMEC completed a search of the Department of Water and Energy Online Database on 22 October 2020 to identify groundwater bores within the vicinity of the Site. The search indicated that three bores are registered under the database within a 500-metre radius of the Site. The nearest groundwater bore to the Site (GW014470) is located approximately 167m south east of the Site. Borehole GW014469 is located 204m west of the Site and borehole GW018366 is located 494 m west of the Site. No standing water level was recorded for these groundwater boreholes which reached depths of 25 m, 18 m and 25 m, respectively. The boreholes intended purpose are listed as 'Domestic, Stock', 'Domestic, Stock' and 'Not known', respectively.

The groundwater data is presented in the Hydrogeology & Groundwater section in the Lotsearch report in Appendix B.

The Hydrogeology Map of Australia (Geoscience Australia) indicates the site is in an area with porous, extensive aquifers of low to moderate productivity.

3 Site history and observations

3.1 General

Site history information was reviewed from the following information sources:

- Review of historical aerial photography (1930, 1943, 1955, 1956, 1961, 1965, 1970, 1978, 1982, 1986, 1991, 1994, 2000, 2009, 2014, 2020)
- Review of historical maps (1920, 1942, 1975)
- Review of GoogleEarth, Google maps and Minview satellite imagery (various images from 2005-2019)
- A search of NSW EPA Contaminated Land and licence records under the *Protection of the Environment and Operations (POEO) Act*
- Review of EPA records, historical business directories and a number of other records through a search of records by Lotsearch

3.2 Historical aerial photography

Historical aerial photos reviewed during this study (1943 to 2020) are presented within Appendix B. Site features and surrounding Site conditions are summarised in Table 3-1 below:

Table 3-1 Historical aerial photography review

Year	Descriptions	
	On-site	Off-site
1930 B/W	The Site appears to comprise of trees and bushland. The Site has a narrow trail that travels from north central portion of the Site to the south-east of the Site.	Typically surrounded by bushland. An area nearby to the west appears to be an orchard. Some clearing is evident west of Forest Way. A parcel of land to the south east of the Site has been cleared of vegetation. Road extends from cleared land to the east, in the same apparent alignment as current-day Oxford Falls Rd. Cleared land appears to have a small structure and agricultural land.
1943 B/W	Similar to 1930 except, additional trails appear to have been created along the northern boundary.	Nearby land is typically bushland similar to 1930. A portion of land north east of the Site has been cleared of trees. Some land parcels south west and north west have been developed with the clearing of land and construction of structures and agricultural land. The area to the south east of the Site contain at least nine small structures.
1955 B/W	Some patchy bare areas are apparent in the north western portion of the Site where vegetation appears to have been cleared. This cleared land is connected to the existing trails that connect to Forest Way. Some vegetation clearing appears to have taken place in the north eastern portion. Remainder of Site still appears to be bushland.	Clearing of vegetation appears to have occurred north of the Site. This area is connected to trails that run along the northern boundary of the Site.
1956 B/W	Similar to 1955 but with some vegetation appears to have been cleared in the central portion of the Site. The cleared land connects to the existing trails on-site. The majority of the Site still comprises of trees and bushland.	Small areas of vegetation have been cleared south of the Site connecting to the developments immediately south east of the Site. The developed area to the south east of the Site appears to have expanded in a west direction along the southern boundary of the Site.
1961 B/W	Generally similar to 1956, except the cleared areas in the north-west are less visible with vegetation covering some of these. Connecting trails appear from the central portion of the Site to the south east. Trail resembles Morgan Road alignment.	The area north east of the Site appears to have further vegetation clearing and agricultural land development. There are numerous structures in land cleared areas to the south-east, the land use is unclear, but could be agricultural. A structure that appears to be a water storage facility has been constructed approximately 400 m north-west of the Site.
1965 B/W	Generally similar to previous photograph, except bare areas of land are again apparent in the north-west and central areas. Some tracks are more prominent	More land clearing is evident north and north-east with some structures. Further development along Forest Way.

Year	Descriptions	
1970 B/W	Generally similar to previous photograph.	Morgan Road has been constructed along the northern boundary and through the pre-existing trail which ran from north to the south east of the Site. Several residential structures have been constructed off Forest Way. Structures in the expanded area immediately south east of the Site have been demolished.
1978 B/W	Generally similar to previous photograph with some vegetation regrowth in bare areas	Remaining structures in the area immediately south east of the Site have been demolished. Immediately west of the Site, buildings appear constructed inferred to be what is now a community centre consisting of aged care facilities and a church.
1982 Colour	Generally similar to previous photograph.	Two small structures have been constructed in the inlet of the Site boundary in the north west of the Site. Two low-density residential structures appear to have been constructed to the north west of the Site.
1986 Colour	Generally similar to previous photograph.	Generally similar to previous photo. A second, relatively smaller, water storage tank has been constructed adjacent to the first water storage tank to the north west of the Site.
1991 Colour	A small area in the north eastern portion of the Site has been cleared of vegetation.	An inferred telecommunications facility has been constructed immediately south of the Site with what appear to be large circular dishes. At least five structures approximately 200 m north east of the Site have been demolished. An area 150 m west of the Site and adjacent to Forest way has been cleared of vegetation.
1994 Colour	Generally similar to previous photograph.	Immediately west of the Site, the construction of an additional structure to the community centre appears in progress. Another inferred telecommunications facility has been constructed approximately 150 m to the south east of the Site.
2000 Colour	Generally similar to previous photograph.	The area 150 m west of the Site and adjacent to Forest way has completed construction for a residential block and the community centre structure has also completed construction. A tennis court has been constructed at the rear of the parcel of land in the inlet of the boundary at the North west of the Site.
2009 Colour	The eastern portion of the Site appears to have had some clearing of vegetation. The vegetation is sparser on the eastern portion compared to the western portion.	A parking lot and two structures have been constructed 150 m east of the Site.
2014 Colour	Generally similar to previous photograph.	Generally similar to previous photograph.
2020 Colour	Generally similar to previous photograph.	Generally similar to previous photograph.

3.3 Historical business activities

A search of historical Business Directory Records (1948-1993) indicated that several historical businesses have operated within a 150m radius of the Site.

Only businesses qualitatively assessed to have the potential to be sources of contamination have been included within Table 3-2 below.

Table 3-2 Summary of historical business activites proximal to the Site

Business activity	Business address	Distance and direction from Site	Inferred up/down hydraulic gradient of site
Motor garages and engineers (1958-1962)	Belrose Service Station, Forest Way, Belrose	212 m west	Up-gradient
Motor garages and service stations (records 1971-1993)	Ampol Belrose Service Station, Pringle Ave, Belrose	493 m west	Up-gradient

3.4 Publicly Available Information Review

A review of publicly available information was reviewed 19 October 2020 and summarised below. The information is presented in Appendix B.

3.4.1 Contaminated Land Search

A search of the NSW EPA Contaminated Land records was conducted on 19 October 2020. A Caltex Service Station, is located approximately 872m south-west of the Site, inferred up-gradient. The service station is categorised as, 'regulation under CLM Act Not required', this indicates that the EPA have completed an assessment of the contamination and decided that regulation under the *Contaminated Land Management Act 1997* is not required. There are no other sites registered on the NSW EPA Contaminated Land Register within a 1km radius of the Site.

3.4.2 POEO Database Search

A search of the NSW EPA Protection of the Environment Operations register on 19 October 2020 showed there was one POEO licenced site located within a one kilometre radius of the Site**.** This is the Belrose Resource Recovery Centre located 935 m north west of the project site, inferred up-gradient. The centre is operating under the Environmental Protection Licence (EPL) 13312 for the following activities:

- Recovery of general waste
- Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste
- Waste storage - other types of waste

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

A search of the NSW EPA Protection of the Environment Operations register on 19 October 2020 showed there were four former POEO licenced activities located within a one kilometre radius of the Site. This included the Belrose Resource Recovery Centre located 935 m north west of the project site. The activities that were surrendered on 12 April 2001 include:

- Composting
- Waste disposal by application to land
- Waste storage - other types of waste
- Waste storage - waste tyres

The search presented three former POEO licenced activities on-site including non-scheduled application of herbicides on waterways throughout NSW prior to November 2000.

3.4.4 National Waste Management Site Database

A search of the National Waste Management Site Database was carried out 19 October 2020. One site was within the dataset buffer of 1km. Belrose Waste and Recycling Centre is located 935 m north west of the Site. This was listed as an operational landfill.

3.4.5 Other searches

A range of other sources of information was carried out as part of a records search by Lotsearch. The results are included in Appendix B**.** A rural fire service station is located 542 north west of the Site. The search did not reveal other pertinent information relevant to the Site with respect to potential contamination sources/activities.

With reference to MinView Geoscience, NSW government website, accessed 4 November 2020, suggests that a sand quarry that has not been operational since the 1970's is located immediately off-site. The nonoperational sand quarry was located approximately 150 m north of the north western corner of the Site.

3.5 Site history summary

The Site appears to have been mainly unused bushland since at least the early 1930's, but some periodic patchy clearing with tracks have been apparent in parts of the site in the 1950's and 1960's. The reason for the patchy clearing and activities associated with this are not known. Nearby surrounding land use appears to have typically been bushland with some agricultural (possibly orchards, other) and residential.

3.6 Site observations

An experienced Environmental Scientist from SMEC conducted a Site walkover and noted observations of the Site on 15 October 2020. Due to the relatively large Site and the limited time available, the entire Site could not be observed in detail. Selected Site photographs from the walkover are included in Appendix C.

During the Site walkover the following key observations were made:

- The Site currently has no apparent use and predominantly comprises bushland. The Site vegetation generally comprises bushes and grasses interspersed with mature trees.
- Morgan Road bisects two portions of the Site. The portion of the Site to the south and south-west of Morgan Road comprises a large valley feature, Snake Creek is orientated approximately north-south through the base of the valley. The sides of the valley comprise a series of sandstone cliff features interspersed with moderately sloping vegetated slopes.
- The portion of the Site located to the east of Morgan Road slopes down to the east and south-east towards Kellys Way.
- At the time of the Site walkover, Snake Creek contained water and was noted to be flowing in a generally southerly direction, the water appeared clear with no apparent odours. A series of channels (tributaries of Snake Creek) (presented on Figure 1, Appendix A), ran parallel with the sloping valley sides towards Snake Creek, the majority of the observed channels did not contain water at the time of the walkover, however, some of the channels were noted to contain silty orange water which did not appear to be flowing (see Photograph 5, Appendix C).
- At several locations within the Site and just off Morgan Road, evidence of fly tipped waste was noted, generally the waste was present in small stockpiles, bricks, cement, plastic and tiles were noted. In one location, located near to the south-east extent of the Site immediately off Morgan Road (as presented on Figure 2, Appendix A), suspected asbestos sheeting was noted in a semi buried condition (Photograph 6, Appendix C), other apparently fly tipped building waste was observed in the vicinity of the suspected asbestos sheeting eg bricks/tiles. At another location near the south-eastern extent of the Site located immediately off Kelly's way a single suspected asbestos fragment was observed on the ground surface. Fly tipping examples presented in Photographs 7-9 Appendix C.
- At both the locations where suspected asbestos containing material was observed, selected samples of the fragments were collected and submitted to ALS Environmental laboratory for asbestos ID testing. The sample name and location are shown in Figure 2, Appendix A. The laboratory certificates are included in Appendix D. All observed fragments were noted to be in a 'good condition', ie could not be broken with light hand pressure.
- At least two possible stockpiles/mounds of soil were noted within the north-western portion of the Site (approximate location presented on Figure 2, Appendix A), the 'stockpiles' were located at the end of what

appeared to be an old vehicle track. The ‘stockpiles’ were vegetated, the contents of the ‘stockpiles’ was not able to be observed.

Selected site photographs of the broader landscape to gain a site apprecation are presented in Appendix C.

3.7 Site history data gaps

Whilst the Site predominantly appears to have been disused bushland, the use of the Site during which bare patches appeared in the 1950s and 1960s is not known and what activities (if any) occurred in these areas. Also, the site is relatively large and observations were limited to some accessible parts of the Site, not all areas were observed.

4 Preliminary Conceptual Site Model

4.1 Conceptual Site Model Overview

A Conceptual Site Model (CSM) has been prepared which presents potential source(s), pathway(s) and ecological/human receptor(s) linkages. Potential source(s), pathway(s) and ecological/human receptor(s) were identified during the PSI. The preliminary CSM should form the basis for decisions regarding the scope of works for a detailed assessment and the ongoing contamination management and remediation options (if required).

The CSM is made up of contaminants of potential concern (CoPC) and receptors that could be exposed to the CoPC.

4.2 Sources

Areas of Environmental Concern (AEC) and CoPC were assessed based on Site history information and Site walkover observations.

Identified AEC and CoPC are summarised in Table 4-1 below.

Table 4-1 Summary of identified AEC and CoPC

AEC No.	Potential AEC	likelihood of contamination[1]	Media potentially affected	Contaminants of Potential Concern
1	Areas with fly tipped waste/stockpiles of unknown origin and quality in areas observed during site walkover (but other areas near current/former roads and tracks could also be affected)	High	Soil	Heavy metals, PAHs, TPH, BTEX, Pesticides, PCBs, asbestos (+others depending on fill source)
2	Patchy bare areas of the site observed in 1950's and 1960s aerial photographs due to unknown activities (north-west and central areas)	Low	Soil	Heavy metals, PAHs, TPH, BTEX, Pesticides, PCBs, asbestos (+others depending on activity)
3	Offsite rural Fire station practices (if fire fighting foams with aqueous film forming foams were used - with PFAS). PFAS is known to be able to migrate relatively long distances and is persistent in the environment.	Low	Groundwater and Surface water	PFAS

Notes:

1. This is our qualitative assessment of likelihood of contamination being detected from the data reviewed, not financial or other risk associated if contamination were to be detected.

2. TPH (Total Petroleum Hydrocarbons), BTEX (benzene, toluene, ethylbenzene, xylene), PCB (polychlorinated biphenyl's), heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc)

3. PFAS (Per- and poly-fluoroalkyl substances) are manufactured chemicals used in products that resist heat, oil, stains and water.

AEC's are presented graphically in Figure 2, Appendix A.

4.3 Exposure pathways

The pathways of exposure consist of:

- A transport mechanism

- A route of exposure.

Based on Site information, there is potential for the following contamination pathways to exist at the Site under the proposed development scenario:

- Disturbance of potential soil/groundwater contamination and exposure by ingestion, dermal contact or inhalation
- Air transport of particulates (dust and asbestos fines) and exposure by inhalation (if soil is excavated/disturbed)
- Migration of contaminated run-off and exposure to ecological receptors (aquatic ecosystems) (most likely during construction work)

4.4 Potential receptors

4.4.1 Human receptors

Based on the information available, potential human receptors have been assessed to include:

- Site workers during future construction works
- Residents of the proposed dwellings

4.4.2 Ecological receptors

Based on the information available, the potential ecological receptors may include:

- Flora and fauna in areas within and surrounding the Site
- The aquatic ecosystems of Snake Creek

4.4.3 Potential source-pathway-receptor linkages

Potential source-pathway-receptor (S-P-R) linkages are where soil, surface water and/or groundwater contamination (if present) has the potential for adverse impact on human health or ecological values for the Site via complete exposure pathways. Table 4-2 summarises the plausible source-pathway-receptor linkages for each of the identified human and ecologically sensitive receptors.

Table 4-2 Potential S-P-R Linkages

Source	Pathway	Receptor
AEC 1 and 2	• Oral ingestion of potentially contaminated soil. • Inhalation of contaminated dust/asbestos fines • Dermal contact with contamination • Transport to aquatic receptors via sediment/erosion/leaching	• Site workers during future construction works. • Future Site residents • Neighbours • Ecological receptors (terrestrial organisms and aquatic ecosystems in receiving waters)
AEC 3	• Transport to aquatic receptors via migration in groundwater and surface water • Direct exposure to humans via groundwater or surface water is unlikely based on limited data	• Ecological receptors (aquatic ecosystems in receiving waters)

5 Salinity

5.1 Soil salinity

Salinity is the accumulation of salt in land and water to a level that damages the natural and built environment (NSW Office of Environment and Heritage, 2017). Salinisation is the process where salts stored in the soil profile and/or groundwater are mobilised by the movement of water. Subsequent evaporation and accumulation can cause an increase in salt levels in groundwater, surface water and soils to the extent that land and aquatic flora and fauna, soil structure, and building materials such as concrete and steel may be affected.

The mobilisation of salinity can be caused by changes in the existing water cycle through water use or climate changes. In urban areas, the processes which cause salinity can be intensified by increased volumes of water being added to the natural system, through changes to the groundwater flow regimes and exposure of freshly cut saline soils to the weathering process. More specifically, salinity is associated with several issues including:

- degradation of water quality resulting in decreasing plant growth, in lower crop yields and degraded stock water supplies
- reducing overall soil health, resulting in reduced productivity
- changes in soil chemistry reducing soil stability resulting in increased erosion, soil loss, and effects on slope stability
- increased volume (load) and/or concentration (EC) of salinity in creeks and streams can degrade water supplies, affect irrigated agriculture and horticulture and adversely impact river ecosystems.
- salinity has the potential to damage infrastructure, for example, buildings, roads and pipes.

With reference to the Australian Government eSPADE website (accessed 28 October 2020) the Site is noted to comprise five different soil landscapes, as follows:

- Hawkesbury
- Gymea
- Lambert
- Hornsby
- Oxford falls

The majority of the Site is mapped as comprising Hawkesbury or Lambert soil landscapes.

The soil landscape reports associated with each soil landscape do not list salinity as a limitation.

The Site is reportedly underlain by Hawkesbury Sandstone which is not typically considered to be associated with salinity issues as the sandstone is considered highly permeable, resulting in continual flushing and removal of salts in the landscape.

5.2 Salinity soil sampling

On 15 October 2020, a SMEC Environmental Scientist attended the Site to collect soil samples for salinity testing purposes. Samples were collected within the immediate vicinity of drainage line and near Snake Creek. All samples were collected using a new pair of nitrile gloves, samples were collected directly into laboratory prepared sampling containers and placed immediately into an ice filled chest. The samples were then transported to the laboratory with a completed chain of custody including analysis request.

Laboratory results are summarised in Table 5-1below:

Table 5-1 Summary of soil salinity results

Sample Name	Sample Depth	pH (1:5)	Electrical conductivity (Ec 1:5) (µS/cm)	Salinity Class [*1]
SS01	0.0-0.1	6.2	98	Non-saline
SS02	0.0-0.1	6.4	45	Non-saline
SS03	0.0-0.1	5.2	19	Non-saline
SS04	0.0-0.1	6.2	16	Non-saline
SS05	0.0-0.1	5.3	14	Non-saline
SS08	0.0-0.1	4.2	48	Non-saline
SS09	0.0-0.1	5.2	63	Non-saline

[*1] Salinity class has been calculated based on comparison to Table 1: Salinity Classes in electrical conductivity as EC1:5 (https://www.agric.wa.gov.au/soil-salinity/measuring-soil-salinity).

6 Conclusions and recommendations

Contaminated Land

The Site history review indicated that the Site appears to have been mainly unused bushland since at least the early 1930s, but some periodic patchy clearing with tracks have been apparent in parts of the Site in the 1950s and 1960s. The reason for the patchy clearing and activities associated with this are not known. Nearby surrounding land use appears to have typically been bushland with some agricultural (possibly orchards) and residential.

Whilst the Site predominantly appears to have been disused bushland, the use of the Site during which bare patches appeared in the 1950s and 1960s is not known and what activities (if any) occurred in these areas. Also, the Site is relatively large and observations were limited to some accessible parts of the Site, not all areas were observed.

Based on the Site history and observations of the surrounding land use three potential areas of environmental concern and associated contaminants of concern were identified at the Site, comprising:

- AEC 1 - Areas with fly tipped waste/stockpiles of unknown origin and quality in areas observed during site walkover (but other areas near current/former roads and tracks could also be affected)
- AEC 2 - Patchy bare areas of the site observed in 1950's and 1960s aerial photographs due to unknown activities (north-west and central areas)
- AEC 3- Offsite rural fire station practices (if fire fighting aqueous film forming foams were used - with PFAS). PFAS is known to be able to migrate relatively long distances and is persistent in the environment.

Our qualitative assessment of the potential for contamination to be present within the identified AECs ranged from low to high. A conceptual site model was developed which indicates that potential contaminants of concern associated with these AECs could impact on soil and groundwater media and a range of on/offsite receptors could be impacted by contamination if it were present, including human receptors and ecological receptors.

Two selected samples of suspected ACM fragments within fly tipped stockpiles in AEC 1 were analysed and confirmed to contain asbestos.

Based on the findings of this report, SMEC recommend the following:

- AEC1 - Areas with fly tipped waste/stockpiles should be clearly identified, assessed and managed as part of future redevelopment work. This is likely to involve classification for offsite disposal. Areas with observed asbestos containing material will need to be managed as asbestos waste in accordance with relevant codes of practice and waste regulations by licenced professionals
- AEC 2 – Further assessment as the likely history of the patchy bare areas. This may include a title search to assess former historical ownership, interviews with residents or a local historical society. Depending on the outcomes, targeted intrusive assessment of these areas is likely warranted to check for evidence of contamination such as filling or subsurface wastes
- AEC 3 – Make contact with the offsite Rural fire station to assess if they have a history of use of PFAS substances and if they have carried out any assessments. We note that this offsite source is a diffuse urban source and if present could affect other areas and properties or could be localised and have no impact to this Site.

It is generally considered that the Site should be able to be made suitable for the proposed residential development with respect to land contamination, subject to the above recommendations of further assessment and also implementing an unexpected finds procedure during construction (such as within the Construction Environmental Management Plan).

In addition to this, if there are any visual or olfactory signs of contamination identified at the Site, further site investigation and risk assessment may be required.

Salinity

This preliminary assessment indicated that the Site is in a soil landscape where salinity is a limitation. Preliminary testing did not suggest saline soils. Salinity is therefore not considered to be a constraint for this site.

7 Limitations

The findings of this this report are the result of methodologies used in accordance with normal practices and standards. We consider that they represent a reasonable interpretation of the general conditions of the Site at the time they were assessed and at the time of writing this report, but under no circumstances, can it be considered that these findings represent the actual state of the Site in all areas. The sampling carried out was preliminary in nature and does not characterise the Site.

In preparing this report, current guidelines for assessment and management of contaminated land were followed. This work has been conducted in good faith in accordance with SMECs understanding of the client's brief and general accepted practice for environmental consulting.

This report does not provide information on hazardous building materials in structures, subsurface utilities and soil waste classification.

8 References

DUAP (1998) Managing Land contamination – Planning Guidelines SEPP55 – Remediation of Land

espade.environment.nsw.gov.au © State of NSW and Department of Planning, Industry and Environment 2020

Minview, Geoscience website (minview.geoscience.nsw.gov.au)

National Environment Protection (Assessment of Site Contamination) Measure 1999, Amendment 2013

NSW EPA (2020) Contaminated Land Guidelines: Consultants Reporting on Contaminated Land

NSW EPA (website) Contaminated Land Record of Notices URL: http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx accessed 26/10/2019

NSW EPA (website) POEO Public Register URL: http://www.epa.nsw.gov.au/prpoeo/index.htm accessed 26/10/2019

NSW Government (website), Department of Primary Industries, Office of Water URL: http://realtimedata.water.nsw.gov.au/water.stm?ppbm=GROUND_WATER&gw&3&gwkm_url accessed 26/10/2019

NSW Office of Environment and Heritage 1:100,000 Blacktown Landscape Map

NSW Office of Environment and Heritage, Guidelines for Consultants Reporting on Contaminated Sites (2011)

State Environmental Planning Policy No.55 – Remediation of Land, 1998

Appendix A Figures

SMEC

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SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

0 60 120 180 240
Meters

1:5,500

Legend

- Site Boundary
- Watercourse
- Road
- Vehicular Track

SOURCES:
1. Roads and Waterways © Six Maps 2020
2. Basemap © World Topographic Map: Esri, HERE, Garmin, USGS, NGA
World Imagery: Maxar

PROJECT:	Belrose Subdivision
PROJECT NO:	30012988
FIGURE NO:	1
FIGURE TITLE:	Location Overview
CREATED BY:	AR15136
DATE:	29/10/2020
VERSION:	DRAFT 1
PAGE SIZE:	A3

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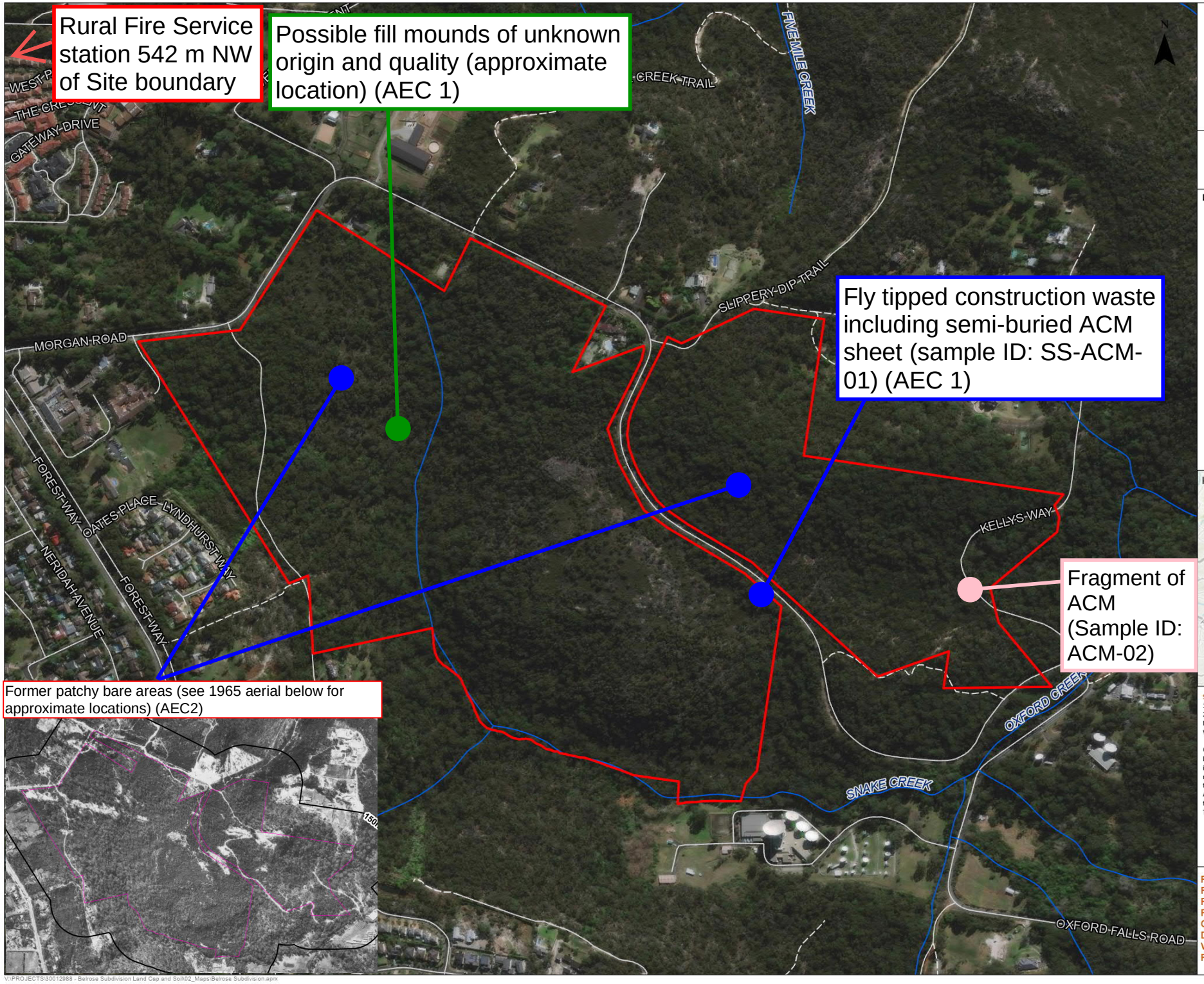

SMEC
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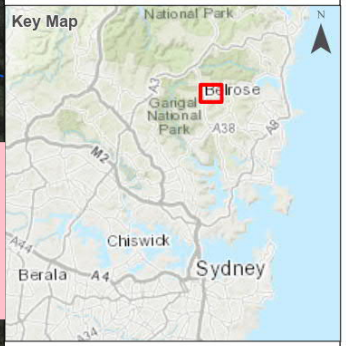
SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

0 60 120 180 240
Meters
1:5,500

Legend
- Site Boundary
- Watercourse
- Road
- Vehicular Track



SOURCES:
1. Roads and Waterways © Six Maps 2020
2. Basemap © World Topographic Map: Esri, HERE, Garmin, USGS, NGA
World Imagery: Maxar

PROJECT:	Belrose Subdivision
PROJECT NO:	30012988
FIGURE NO:	2
FIGURE TITLE:	Potential AECs
CREATED BY:	AR15136
DATE:	29/10/2020
VERSION:	DRAFT 1
PAGE SIZE:	A3

V:\PROJECTS\30012988 - Belrose Subdivision Land Cap and Soil\02_Maps\Belrose Subdivision.aprx

SMEC

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0 40 80 120 160

Meters
1:4,500

Legend

- Site Boundary
- 2m Contours
- Watercourse
- Road
- Vehicular Track

Key Map

SOURCES:
1. Roads and Waterways © Six Maps 2020
2. Contours © LotSearch
3. Basemap © World Topographic Map: Esri, HERE, Garmin, USGS, NGA
World Imagery: Maxar

PROJECT:	Belrose Subdivision
PROJECT NO:	30012988
FIGURE NO:	3
FIGURE TITLE:	Site Topography
CREATED BY:	AR15136
DATE:	29/10/2020
VERSION:	DRAFT 1
PAGE SIZE:	A3

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Figure 4: Vegetation

Ecological Constraints - Native Vegetation & RAMSAR Wetlands

Morgan Road Belrose, NSW 2085

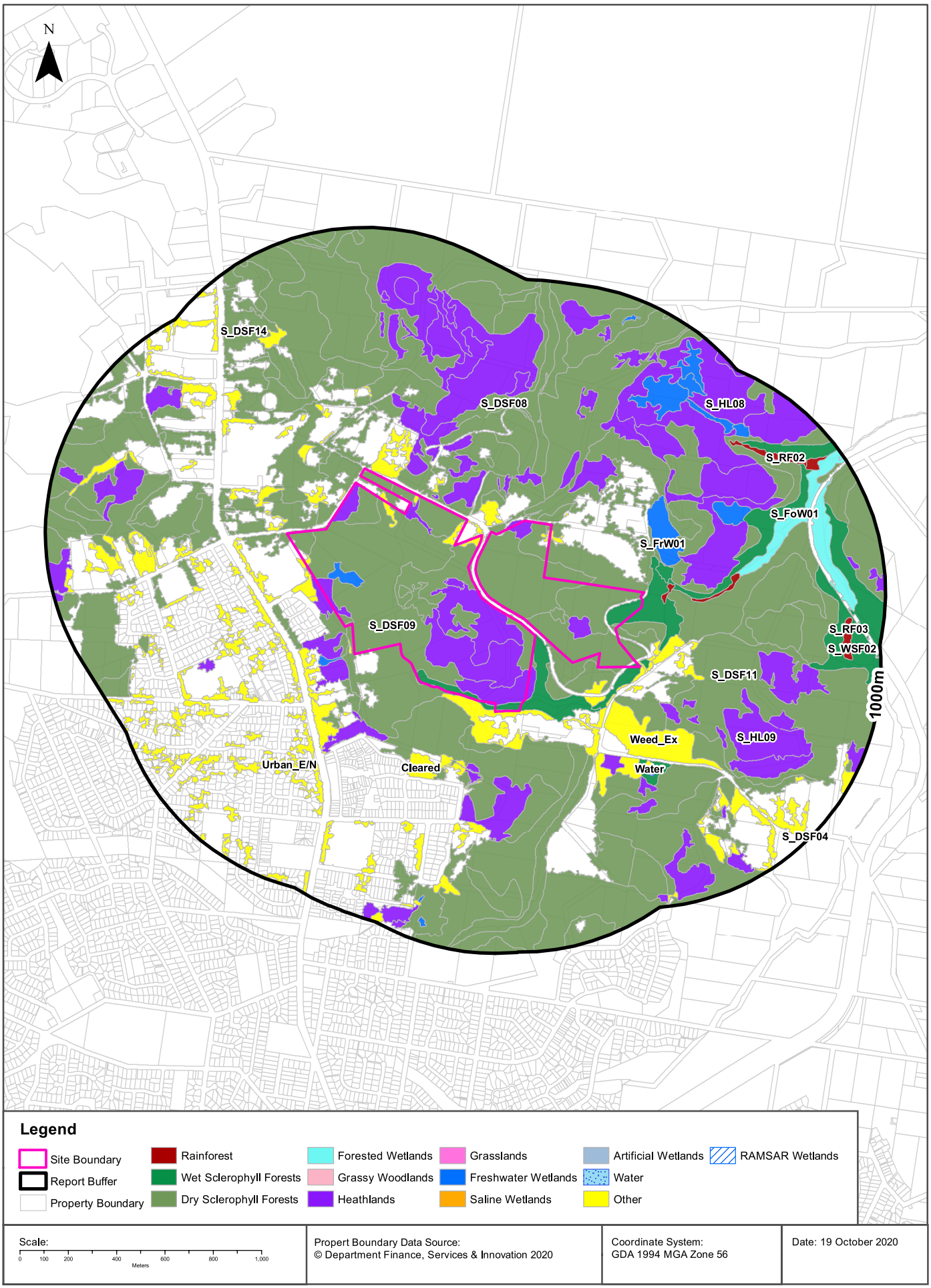

Figure 5: Geology

SMEC
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PROJECT NO: 30012988
CREATED BY: AR15136
DATE: 27/10/2020
VERSION: DRAFT 1
PAGE SIZE: A3

0 75 150 225 300
Meters

1:5,000

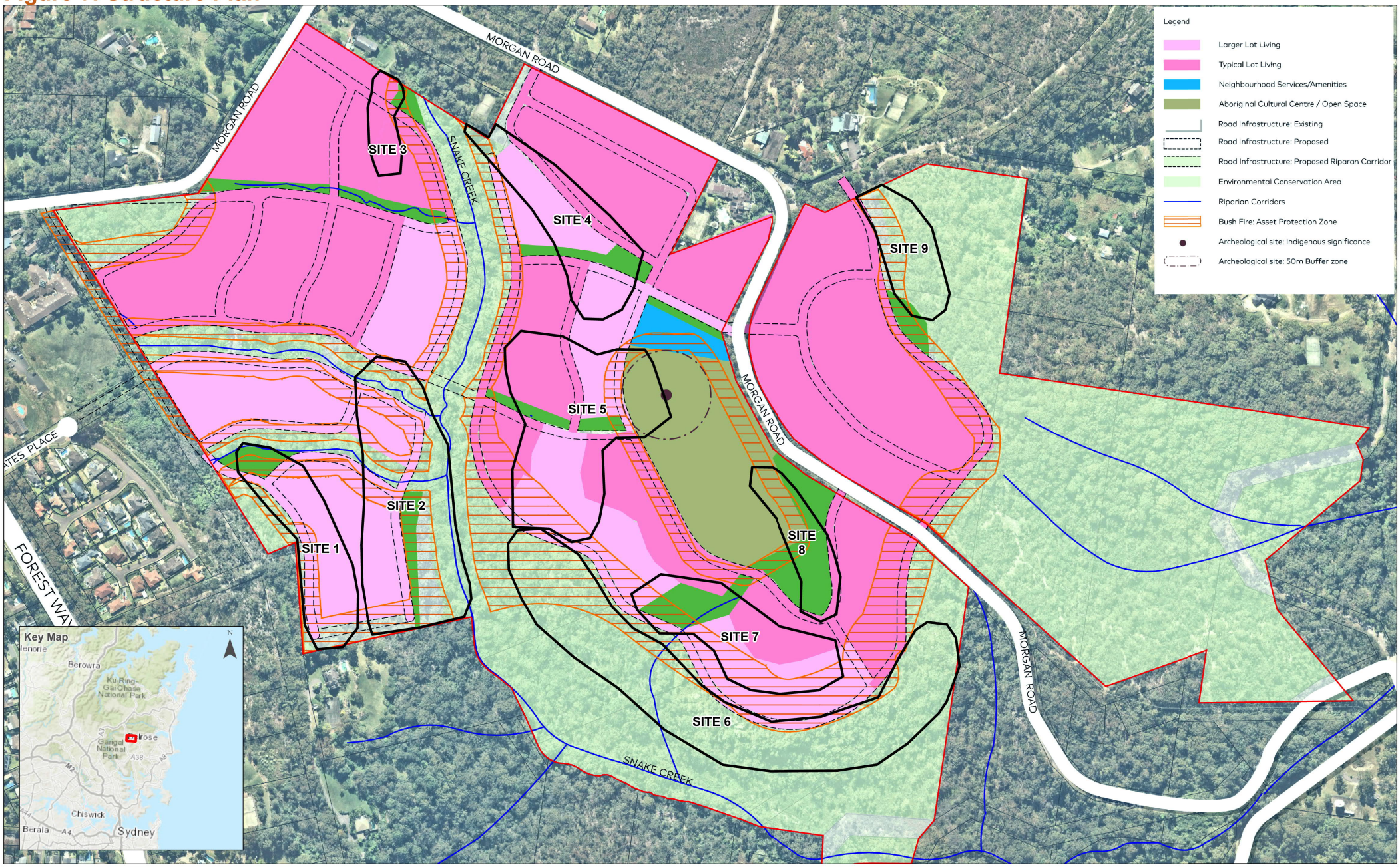
Geological Units

- Medium to coarse grained quartz sandstone, very minor shale and laminate lenses
- Volcanic breccia, varying amounts of sedimentary breccia, and basalt.

SOURCES:
1. Geology © NSW Government 2020
2. Basemap © World Topographic Map: Esri, HERE, Garmin, USGS, NGA
World Imagery: Maxar

V:\PROJECTS\30012988 - Belrose Subdivision Land Cap and Soil\02_Maps\Belrose Subdivision.aprx

Figure 6: Structure Plan



SMEC
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SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

PROJECT:	Belrose Preliminary Site Investigation
PROJECT NO:	30012988
CREATED BY:	AR15136
DATE:	29/10/2020
VERSION:	DRAFT 1
PAGE SIZE:	A3

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Meters
1:4,000

SOURCES:
1. Map provided by Top Spring
2. Basemap © World Topographic Map: Esri, HERE, Garmin, USGS, NGA

V:\PROJECTS\30012988 - Belrose Subdivision Land Cap and Soil\02_Maps\Belrose Subdivision.aprx

Appendix B Lotsearch report

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 19 Oct 2020 15:03:23

Reference: LS015459 EP

Address: Morgan Road Belrose, NSW 2085

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	NSW Department of Finance, Services & Innovation	13/05/2020	13/05/2020	Quarterly	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	11/09/2020	11/09/2020	Monthly	1000	0	0	1
Contaminated Land Records of Notice	Environment Protection Authority	28/09/2020	28/09/2020	Monthly	1000	0	0	0
Former Gasworks	Environment Protection Authority	29/09/2020	11/10/2017	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	15/05/2020	07/03/2017	Quarterly	1000	0	0	1
National Liquid Fuel Facilities	Geoscience Australia	12/08/2020	13/07/2012	Quarterly	1000	0	0	1
EPA PFAS Investigation Program	Environment Protection Authority	12/10/2020	07/05/2020	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	14/10/2020	14/10/2020	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	14/10/2020	14/10/2020	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	28/09/2020	28/09/2020	Monthly	2000	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	14/10/2020	14/10/2020	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	04/02/2020	13/12/2018	Annually	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	25/09/2020	25/09/2020	Monthly	1000	0	0	3
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	25/09/2020	25/09/2020	Monthly	1000	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	25/09/2020	25/09/2020	Monthly	1000	3	3	7
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150	-	46	46
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	0	0
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	0	25
Points of Interest	NSW Department of Finance, Services & Innovation	30/03/2020	30/03/2020	Quarterly	1000	0	1	29
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	30/03/2020	30/03/2020	Quarterly	1000	0	0	1
Tanks (Points)	NSW Department of Customer Service - Spatial Services	30/03/2020	30/03/2020	Quarterly	1000	0	0	1
Major Easements	NSW Department of Finance, Services & Innovation	30/03/2020	30/03/2020	Quarterly	1000	0	0	7
State Forest	Forestry Corporation of NSW	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	21/01/2020	30/09/2019	Annually	1000	0	0	1
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Botany Groundwater Management Zones	NSW Department of Planning, Industry and Environment	15/03/2018	01/10/2005	As required	1000	0	0	0

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	0	58
Geological Units 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		None planned	1000	1	-	4
Geological Structures 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		None planned	1000	3	-	10
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	19/05/2017	17/02/2011	As required	1000	1	1	1
Soil Landscapes	NSW Department of Planning, Industry and Environment	12/08/2014		None planned	1000	6	-	8
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	01/10/2020	03/07/2020	Monthly	500	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	1	1
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 Department of Planning, Industry and Environment	12/05/2017	01/01/2002	None planned	1000	-	-	-
Mining Subsidence Districts	NSW Department of Customer Service - Subsidence Advisory NSW	30/03/2020	30/03/2020	Quarterly	1000	0	0	0
Current Mining Titles	NSW Department of Industry	29/07/2020	29/07/2020	Monthly	1000	0	0	0
Mining Title Applications	NSW Department of Industry	29/07/2020	29/07/2020	Monthly	1000	0	0	0
Historic Mining Titles	NSW Department of Industry	29/07/2020	29/07/2020	Monthly	1000	14	14	14
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	01/10/2020	07/12/2018	Monthly	1000	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	01/10/2020	25/09/2020	Monthly	1000	1	4	43
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/08/2020	20/11/2019	Quarterly	1000	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/08/2020	20/11/2019	Quarterly	1000	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	24/07/2020	02/07/2020	Quarterly	1000	0	0	0
Environmental Planning Instrument Heritage	NSW Department of Planning, Industry and Environment	01/10/2020	11/09/2020	Monthly	1000	1	1	4
Bush Fire Prone Land	NSW Rural Fire Service	07/10/2020	14/12/2019	Weekly	1000	2	2	3
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000	25	27	33
Ramsar Wetlands of Australia	Department of the Agriculture, Water and the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	1	2	3
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	1	2	4
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	13/10/2020	13/10/2020	Weekly	10000	-	-	-

Site Diagram

Morgan Road Belrose, NSW 2085

Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 720210m^2

Total Perimeter: 6405m

Scale: 0 25 50 100 150 200 250 Meters

Data Sources: Aerial Imagery © Aerometrex Pty Ltd

Disclaimers:

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

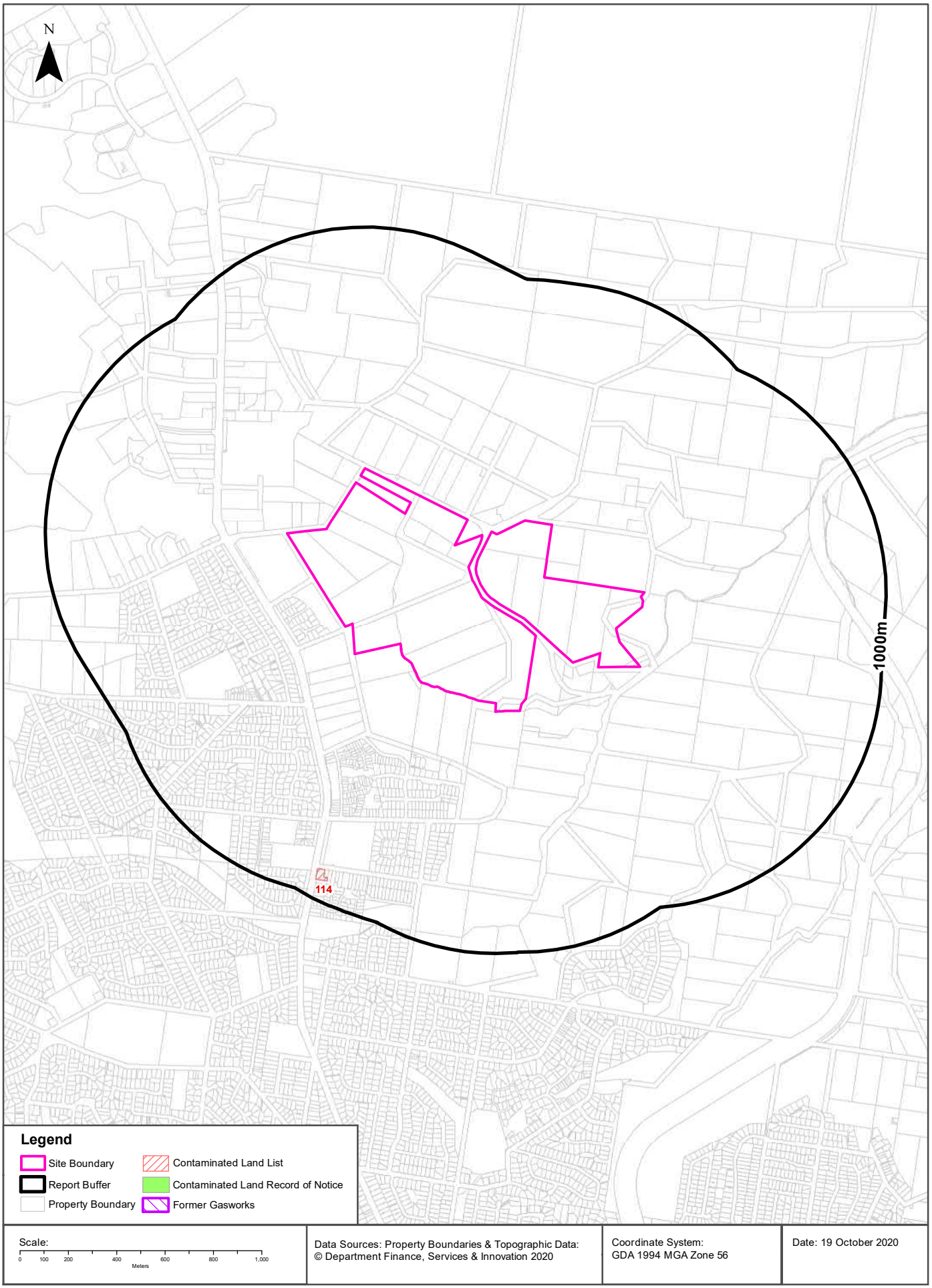
Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.

Coordinate System: GDA 1994 MGA Zone 56

Date: 19 October 2020

Contaminated Land

Morgan Road Belrose, NSW 2085



Contaminated Land

Morgan Road Belrose, NSW 2085

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
114	Caltex Service Station	157 Forest Way	Belrose	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	872m	South West

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

Contaminated Land

Morgan Road Belrose, NSW 2085

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

Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit
http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm

Former Gasworks

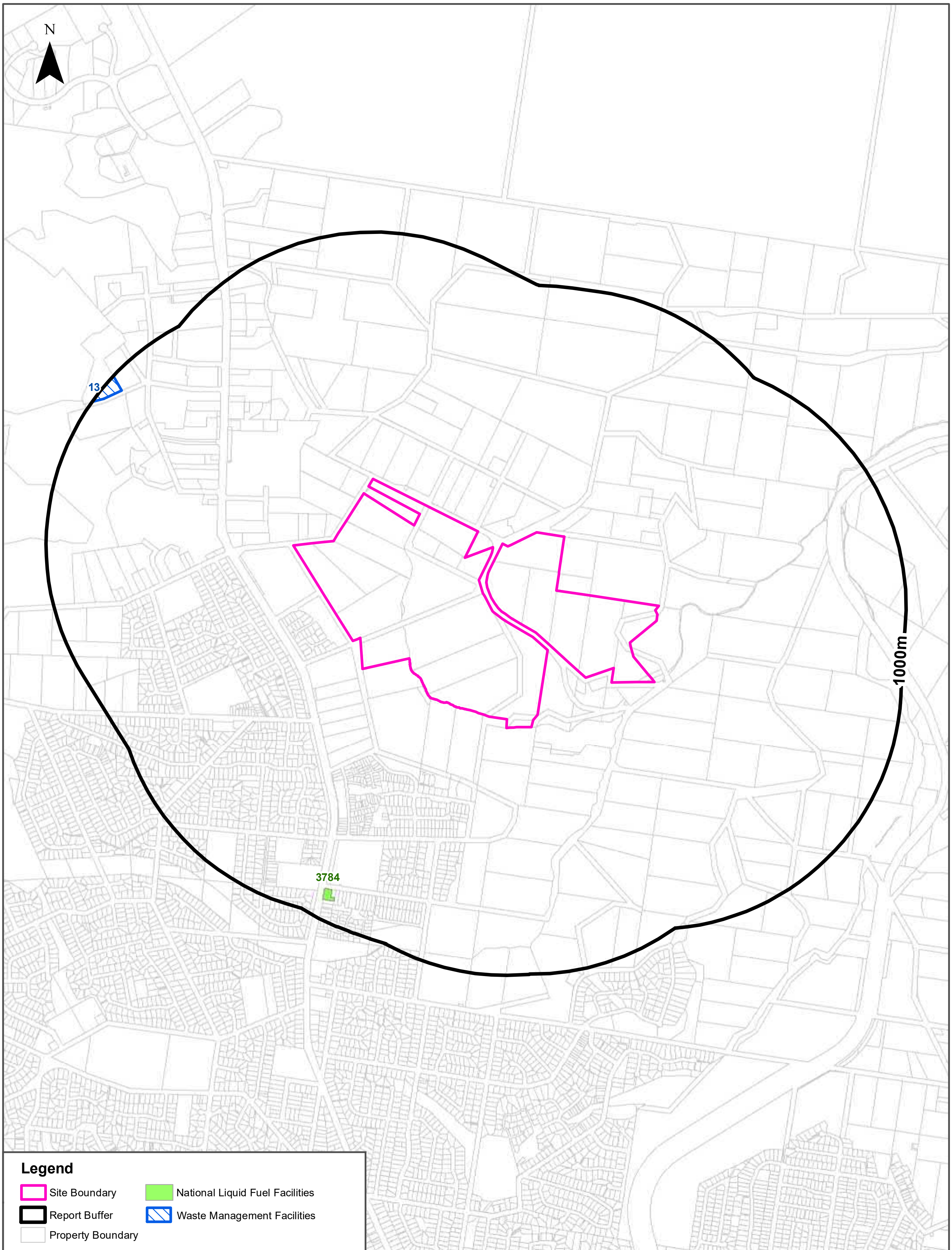
Former Gasworks within the dataset buffer:

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

Former Gasworks Data Source: Environment Protection Authority

Waste Management & Liquid Fuel Facilities

Morgan Road Belrose, NSW 2085



Scale: 0 100 200 400 600 800 1,000 Meters	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2020	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 October 2020

Waste Management & Liquid Fuel Facilities

Morgan Road Belrose, NSW 2085

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
13	WSN Environmental Solutions	Belrose Waste and Recycling Centre	Crozier Road	Belrose	Landfill	Operational			Original information on waste management site collected by DEWHA in 2009	Premise Match	935 m	North West

National Liquid Fuel Facilities

National Liquid Fuel Facilties within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist (m)	Direction
3784	Caltex	Caltex Woolworths Belrose	157 Forest Way	Belrose	Petrol Station	Operational		25/07/2011	Premise Match	872m	South West

PFAS Investigation & Management Programs

Morgan Road Belrose, NSW 2085

EPA PFAS Investigation Program

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

Id	Site	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

EPA PFAS Investigation Program: Environment Protection Authority

Defence PFAS Investigation Program

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

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

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

Defence PFAS Management Program

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

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

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

Airservices Australia National PFAS Management Program

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

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

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

Morgan Road Belrose, NSW 2085

Defence 3 Year Regional Contamination Investigation Program

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

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

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

EPA Other Sites with Contamination Issues

Morgan Road Belrose, NSW 2085

EPA Other Sites with Contamination Issues

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

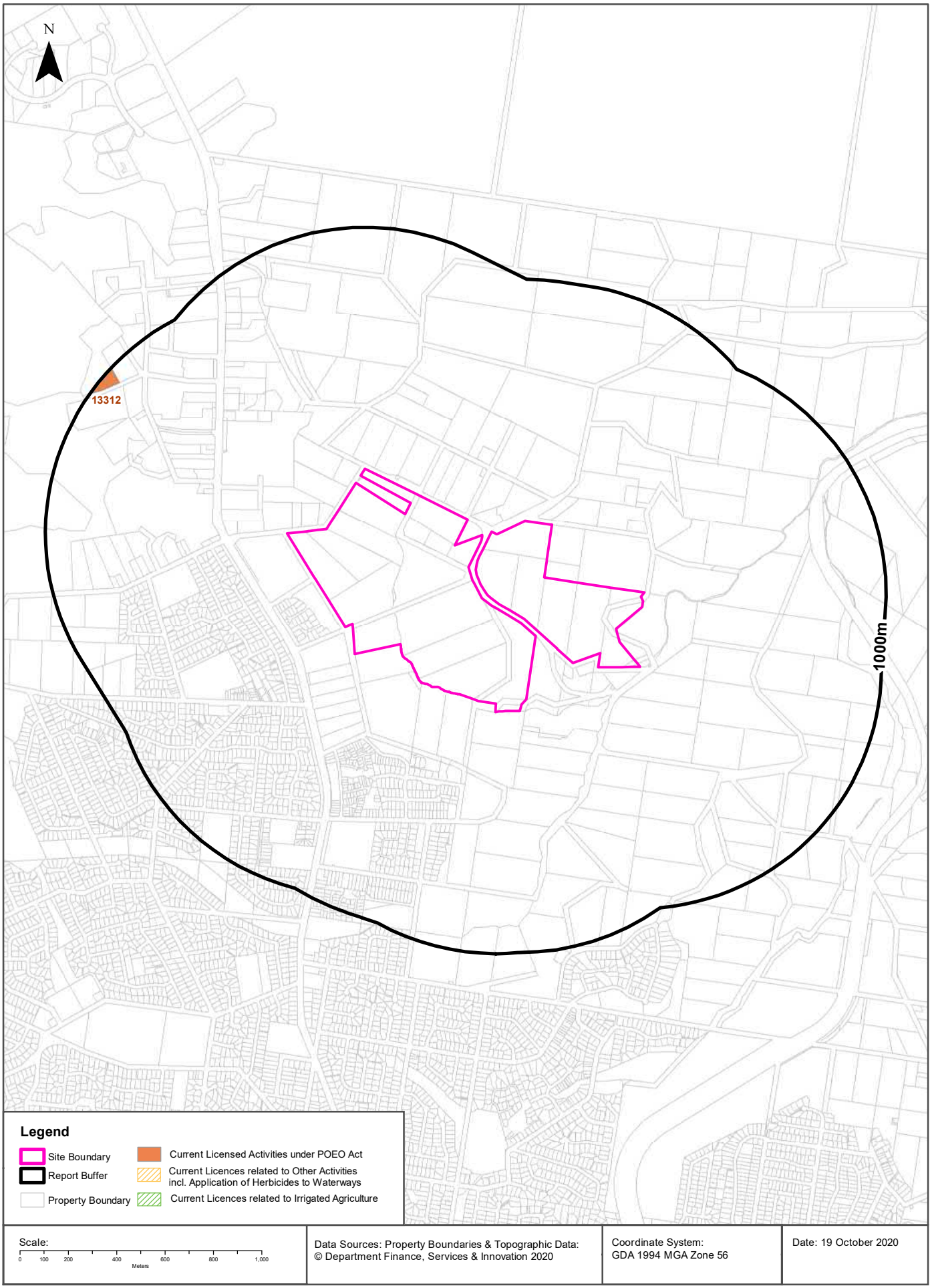
- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

Sites within the dataset buffer:

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

Current EPA Licensed Activities

Morgan Road Belrose, NSW 2085



EPA Activities

Morgan Road Belrose, NSW 2085

Licensed Activities under the POEO Act 1997

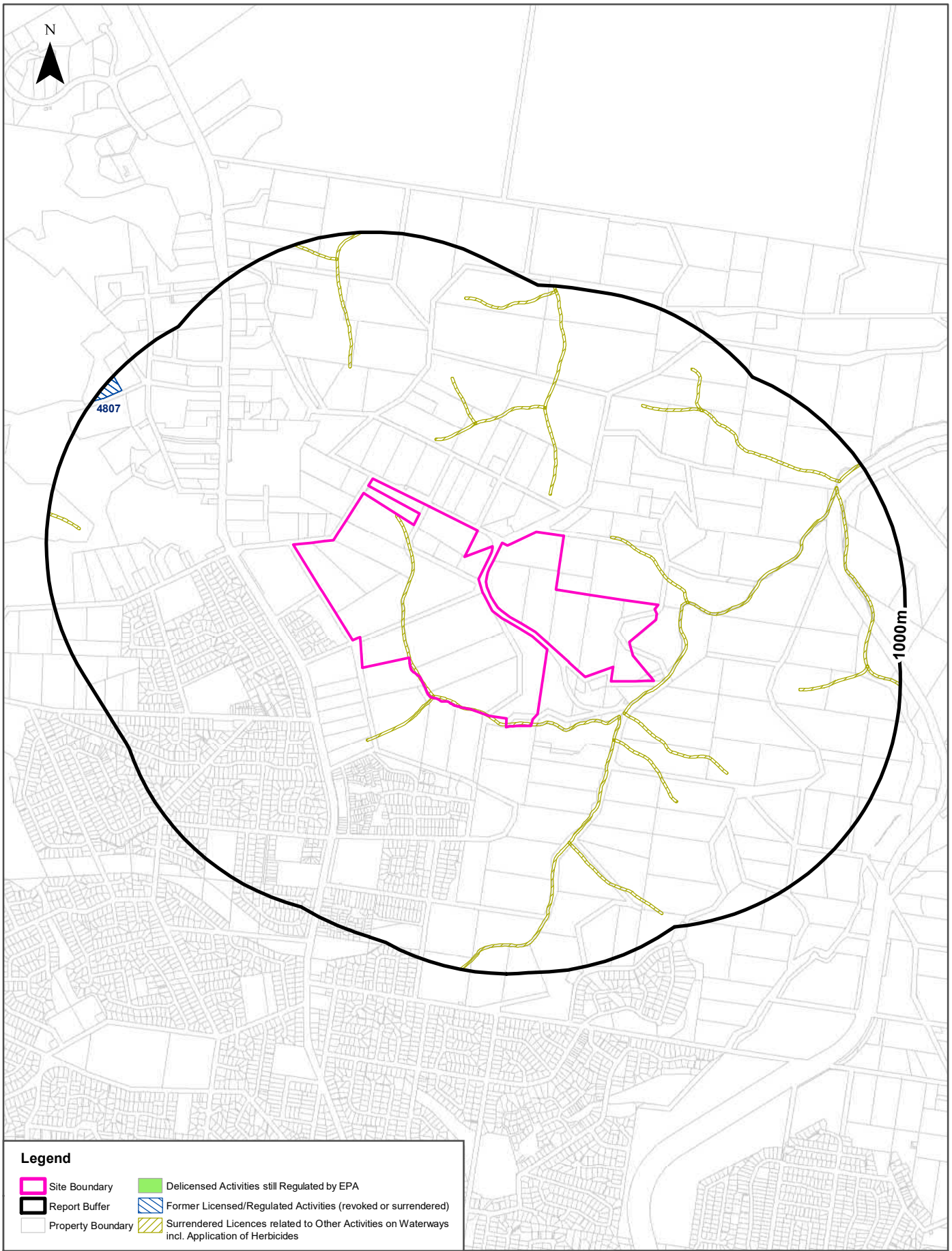
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
13312	SUEZ RECYCLING & RECOVERY PTY LTD	BELROSE RESOURCE RECOVERY CENTRE	CROZIER ROAD	BELROSE	Recovery of general waste	Premise Match	935m	North West
13312	SUEZ RECYCLING & RECOVERY PTY LTD	BELROSE RESOURCE RECOVERY CENTRE	CROZIER ROAD	BELROSE	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	Premise Match	935m	North West
13312	SUEZ RECYCLING & RECOVERY PTY LTD	BELROSE RESOURCE RECOVERY CENTRE	CROZIER ROAD	BELROSE	Waste storage - other types of waste	Premise Match	935m	North West

POEO Licence Data Source: Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Morgan Road Belrose, NSW 2085



EPA Activities

Morgan Road Belrose, NSW 2085

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

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

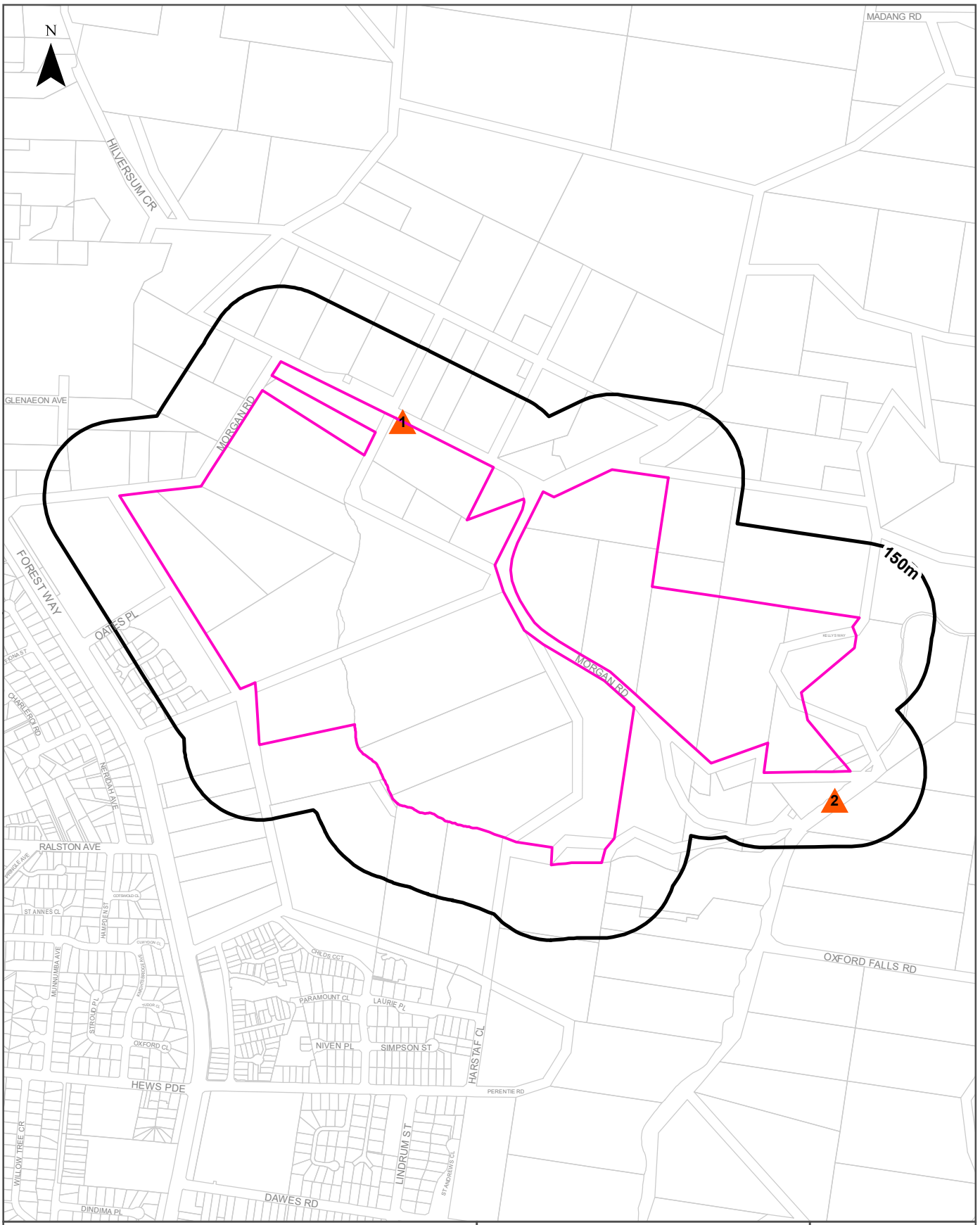
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	Onsite
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	Onsite
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	Onsite
4807	WASTE ASSETS MANAGEMENT CORPORATION	BELROSE WASTE AND RECYCLING CENTRE, CROZIER ROAD, BELROSE	Surrendered	12/04/2001	Composting	Premise Match	935m	North West
4807	WASTE ASSETS MANAGEMENT CORPORATION	BELROSE WASTE AND RECYCLING CENTRE, CROZIER ROAD, BELROSE	Surrendered	12/04/2001	Waste disposal by application to land	Premise Match	935m	North West
4807	WASTE ASSETS MANAGEMENT CORPORATION	BELROSE WASTE AND RECYCLING CENTRE, CROZIER ROAD, BELROSE	Surrendered	12/04/2001	Waste storage - other types of waste	Premise Match	935m	North West
4807	WASTE ASSETS MANAGEMENT CORPORATION	BELROSE WASTE AND RECYCLING CENTRE, CROZIER ROAD, BELROSE	Surrendered	12/04/2001	Waste storage - waste tyres	Premise Match	935m	North West

Former Licensed Activities Data Source: Environment Protection Authority

Historical Business Directories

Morgan Road Belrose, NSW 2085



Legend

- Site Boundary
- Buffer 150m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale: 0 140 280 420 560 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 19 October 2020

Historical Business Directories

Morgan Road Belrose, NSW 2085

Business Directory Records 1950-1991
Premise or Road Intersection Matches

Universal Business Directory records from years 1991, 1986, 1982, 1978, 1975, 1970, 1965, 1961 & 1950, mapped to a premise or road intersection within the dataset buffer:

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

Business Directory Records 1950-1991
Road or Area Matches

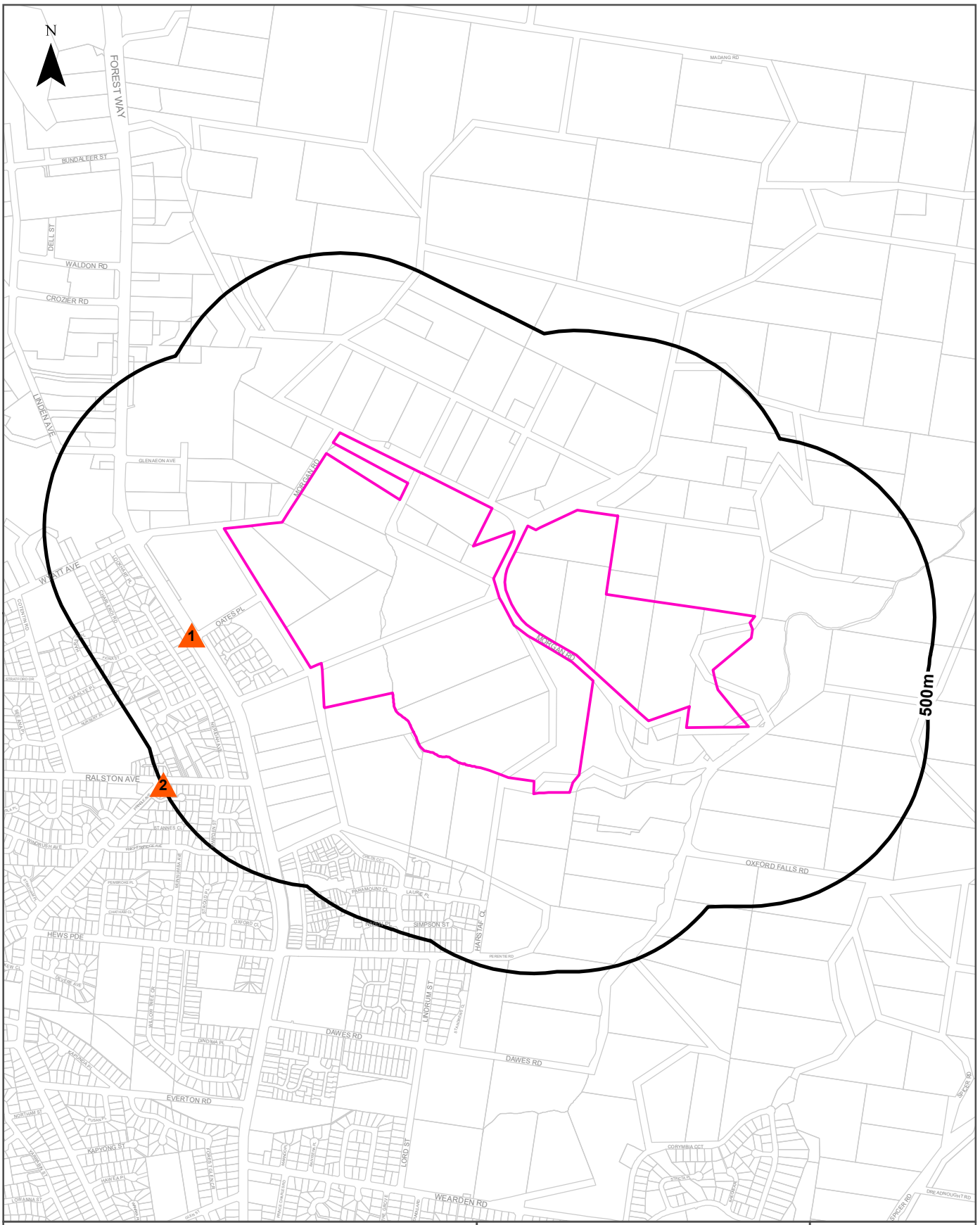
Universal Business Directory records from years 1991, 1986, 1982, 1978, 1975, 1970, 1965, 1961 & 1950, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
1	DOG &/OR CAT BOARDING KENNELS.	Blue Cross Kennels, Morgan Rd, Belrose. 2085	24488	1986	Road Match	0m
	RESTAURANTS.	Kameraigal, 175 Morgan Rd., Belrose. 2085	81948	1986	Road Match	0m
	DOG &/OR CAT BOARDINGKENNELS. (D5100)	Blue Cross Kennels, Morgan Rd., Belrose. 2085.	21859	1982	Road Match	0m
	RESTAURANTS. (R5180)	Kameraigal, 175 Morgan Rd., Belrose. 2085.	71086	1982	Road Match	0m
	DOG &/OR CAT BOARDING KENNELS.	Blue Cross Kennels, Morgan Rd., Belrose. 2085	19301	1978	Road Match	0m
	RESTAURANTS.	Kameraigal. 175 Morgan Rd, Belrose. 2085	63075	1978	Road Match	0m
	DOG &/OR CAT BOARDING KENNELS.	Blue Cross Kennels, Morgan Rd., Belrose. 2085	22240	1975	Road Match	0m
	DOG &/OR CAT BOARDING KENNELS.	Blue Cross Kennels, Morgan Rd., Belrose. 2085	22241	1975	Road Match	0m
	DOG &/OR CAT BREEDERS.	Blue Cross Kennels, Morgan Rd., Belrose. 2085	22261	1975	Road Match	0m
	RESTAURANTS.	Kameraigal., 175 Morgan Rd., Belrose. 2085	73855	1975	Road Match	0m
2	MEAT EXPORTERS.	Consolidated Processing Industries Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100	53249	1986	Road Match	20m
	STOCK FOODS MFRS. &/OR DIST.	Consolidated Processing Industries Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100	89363	1986	Road Match	20m
	MEAT EXPORTERS.	Fracs Meat Supply, Oxford Falls Rd., Oxford Falls. 2100	53252	1986	Road Match	20m
	MEAT EXPORTERS.	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100	53263	1986	Road Match	20m
	TALLOW MERCHANTS &/OR REFINERS.	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100	92006	1986	Road Match	20m
	STOCK FOODS MFRS. &/OR DIST.	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls., 2100	89380	1986	Road Match	20m
	MEAT EXPORTERS. (M1800)	Consolidated Processing Industries Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100.	46854	1982	Road Match	20m
	MEAT MEAL MFRS. (M1840)	Consolidated Processing Industries Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100.	46874	1982	Road Match	20m
	BUTCHERS - WHOLESALE. (B8120)	Fracs Meat Supply, Oxford Falls Rd., Oxford Falls. 2100.	11890	1982	Road Match	20m
	MEAT EXPORTERS. (M1800)	Fracs Meat Supply, Oxford Falls Rd., Oxford Falls. 2100.	46857	1982	Road Match	20m
	STOCK FOODS MFRS. &/OR DISTS. (S7065)	Sagon Pty, Ltd., Oxford Falls Rd., Oxford Falls. 2100.	77318	1982	Road Match	20m
	MEAT EXPORTERS. (M1800)	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100.	46867	1982	Road Match	20m
	MEAT MEAL MFRS. (M1840)	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100.	46875	1982	Road Match	20m
	TALLOW MERCHANTS &/OR REFINERS. (T0275)	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100.	79024	1982	Road Match	20m
	MEAT EXPORTERS	Consolidated Processing Industries Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100	41938	1978	Road Match	20m
	MEAT MEAL MFRS.	Consolidated Processing Industries Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100	41963	1978	Road Match	20m
	BUTCHERS - WHOLESALE.	Fracs Meat Supply, Oxford Falls Rd., Oxford Falls. 2100	10184	1978	Road Match	20m
	MEAT EXPORTERS	Fracs Meat Supply, Oxford Falls Rd., Oxford Falls. 2100	41942	1978	Road Match	20m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
2	MEAT EXPORTERS	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100	41954	1978	Road Match	20m
	MEAT MEAL MFRS.	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100	41964	1978	Road Match	20m
	STOCK FOODS MFRS. &/OR DISTS.	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100	68537	1978	Road Match	20m
	TALLOW MERCHANTS &/OR REFINERS.	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100	69562	1978	Road Match	20m
	BUTCHERS - WHOLESALE	Fracs Meat Supply Pty. Ltd., Oxford Falls Rd, Oxford Falls. 2100	11524	1975	Road Match	20m
	MEAT EXPORTERS.	Fracs Meat Supply Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100.	49497	1975	Road Match	20m
	MEAT EXPORTERS.	Illinois Meat Corp. Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100.	49500	1975	Road Match	20m
	STOCK FOODS MFRS. &/OR DISTS.	Sagon Pty. Ltd, Oxford Falls Rd, Oxford Falls. 2100	81003	1975	Road Match	20m
	TALLOW MERCHANTS &/OR REFINERS.	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100	82081	1975	Road Match	20m
	MEAT EXPORTERS.	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls. 2100.	49514	1975	Road Match	20m
	BUTCHERS-WHOLESALE (B868)	Fracs Meat Pty. Ltd., Oxford Falls Rd., Oxford Falls	274913	1970	Road Match	20m
	MEAT EXPORTERS (M188)	Fracs Meat Supply Pty. Ltd., Oxford Falls Rd., Oxford Falls	325939	1970	Road Match	20m
	MEAT EXPORTERS (M188)	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls	325953	1970	Road Match	20m
	STOCK FOODS MANUFACTURERS &/OR DISTRIBUTORS	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls	365900	1970	Road Match	20m
	TALLOW MERCHANTS &/OR REFINERS (T040)	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls	367060	1970	Road Match	20m
	Meat Exporters	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls	110561	1965	Road Match	20m
	TALLOW MERCHANTS &/OR REFINERS	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls	149936	1965	Road Match	20m
	Tyre Dealers, Retreaders & Vulcanizers	Sagon Pty. Ltd., Oxford Falls Rd., Oxford Falls	154769	1965	Road Match	20m

Dry Cleaners, Motor Garages & Service Stations

Morgan Road Belrose, NSW 2085



Legend

- Site Boundary
- Buffer 500m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale: 0 200 400 600 800 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 19 October 2020

Historical Business Directories

Morgan Road Belrose, NSW 2085

Dry Cleaners, Motor Garages & Service Stations 1948-1993 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.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

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

Dry Cleaners, Motor Garages & Service Stations 1948-1993 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.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
1	MOTOR GARAGES & ENGINEERS.	Belrose Service Station., Forest Way., Belrose	28903	1962	Road Match	212m
	MOTOR GARAGES & ENGINEERS	Belrose Service Station, Forest Way., BELROSE	346632	1961	Road Match	212m
	MOTOR GARAGES & ENGINEERS	Belrose Garage, Forest Way Belrose	13629	1959	Road Match	212m
	MOTOR GARAGES & ENGINEERS	Belrose Service Station, Forest Way Belrose	13630	1959	Road Match	212m
	MOTOR GARAGES & ENGINEERS	Forest Way Motor Traders, Forest Way Belrose	13631	1959	Road Match	212m
	MOTOR GARAGE/ENGINEERS.	Belrose Garage., Forest Way Belrose	633	1958	Road Match	212m
	MOTOR GARAGE/ENGINEERS.	Forest Way Motor Traders Forest Way., Belrose	4112	1958	Road Match	212m
2	MOTOR GARAGES & SERVICE STATIONS.	Ampol Belrose Service Station, Pringle Ave., Belrose. 2085	18449	1993	Road Match	493m
	Motor Garages & Service Stations	Ampol Belrose Service Station, Pringle Ave., Belrose. 2085	53460	1991	Road Match	493m
	MOTOR GARAGES & SERVICE STATIONS.	Ampol Belrose Service Station, Pringle Ave Belrose. 2085	5807	1990	Road Match	493m
	MOTOR GARAGE & SERVICE STATIONS.	Ampol Belrose, Pringle Ave., Belrose. 2085	64293	1989	Road Match	493m
	MOTOR GARAGES & SERVICE STATIONS.	Ampol Belrose, Pringle Ave., Belrose. 2085	53400	1988	Road Match	493m
	MOTOR GARAGES & SERVICE STATIONS.	Ampol Belrose, Pringle Ave., Belrose. 2085	63912	1986	Road Match	493m
	MOTOR GARAGES & SERVICE STATIONS.	Ampol Belrose., Pringle Ave., Belrose. 2085	38936	1985	Road Match	493m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ampol Belrose, Pringle Ave., Belrose. 2085	22317	1984	Road Match	493m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ampol Belrose., Pringle Ave., Belrose 2085	8908	1983	Road Match	493m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Ampol Belrose, Pringle Ave., Belrose. 2085.	55993	1982	Road Match	493m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ampol Belrose., Pringle Ave., Belrose. 2085	65693	1981	Road Match	493m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ampol Belrose., Pringle Ave., Belrose. 2085	50137	1980	Road Match	493m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ampolbelrose., Pringle Ave., Belrose. 2085.	35669	1979	Road Match	493m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ampol Belrose, Pringle Ave., Belrose. 2085	49273	1978	Road Match	493m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ampol Belrose., Pringle Ave., Belrose 2085	23972	1976	Road Match	493m
	MOTOR GARAGES &/OR ENGINEERS.	Belrose AutoPort. (Ampol)., Pringle Ave., Belrose. 2085	58430	1975	Road Match	493m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
2	MOTOR GARAGES &/OR ENGINEERS.	Belrose Auto Port., Pringle Ave Belrose	7565	1972	Road Match	493m
	MOTOR GARAGES &/OR ENGINEERS.	Belrose Auto Port., Pringle Ave Belrose	56324	1971	Road Match	493m

Aerial Imagery 2020

Morgan Road Belrose, NSW 2085

Data Sources: Aerial Imagery © Aerometrex Pty Ltd

Coordinate System:
GDA 1994 MGA Zone 56

Date: 19 October 2020

Aerial Imagery 2014

Morgan Road Belrose, NSW 2085

Scale:
0 125 250 375 500
Meters

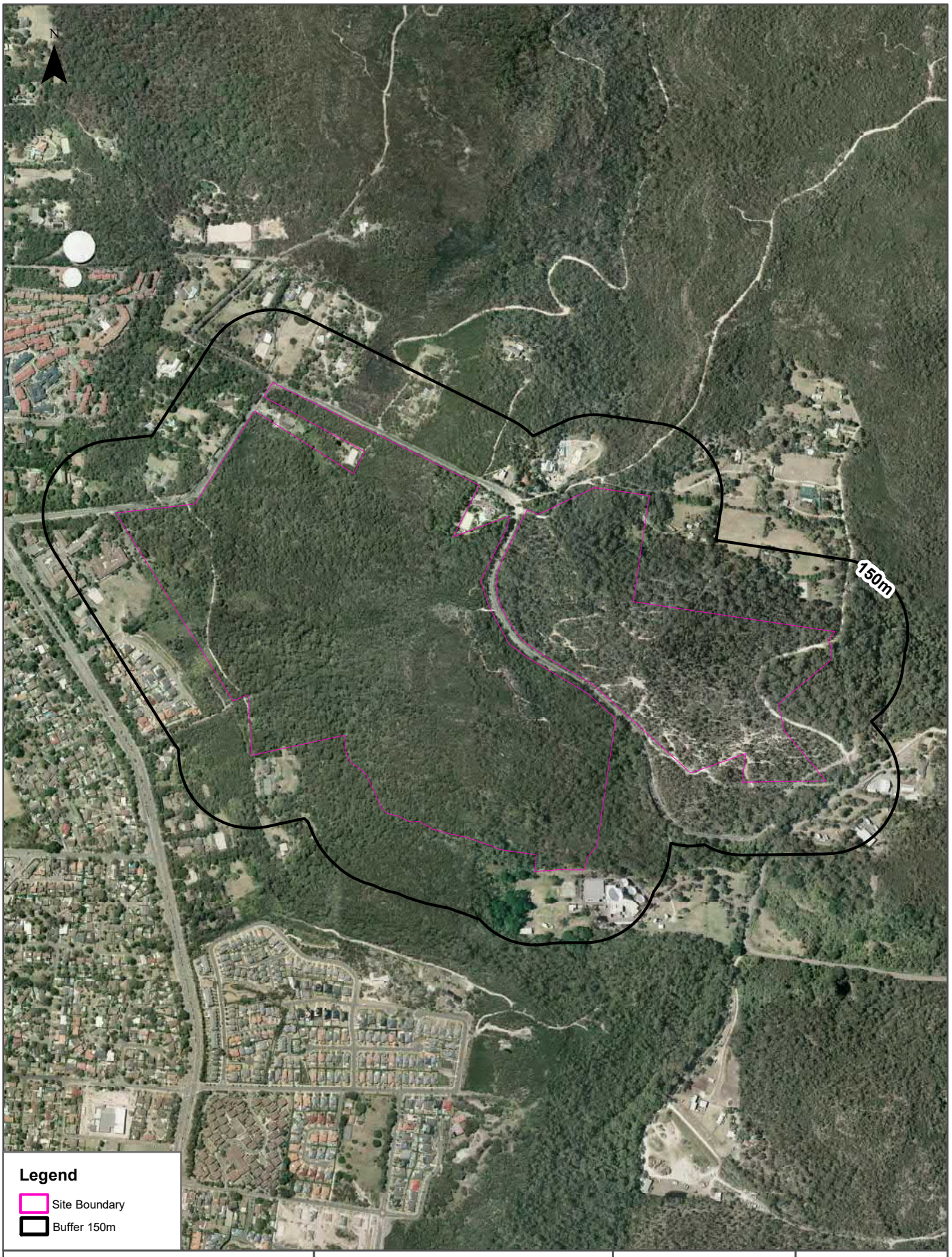
Data Sources: Aerial Imagery © Aerometrex Pty Ltd

Coordinate System:
GDA 1994 MGA Zone 56

Date: 19 October 2020

Aerial Imagery 2009

Morgan Road Belrose, NSW 2085



Scale:	Data Sources: Aerial Imagery © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 October 2020

0 125 250 375 500
Meters

Aerial Imagery 2000

Morgan Road Belrose, NSW 2085

Scale:
0 125 250 375 500
Meters

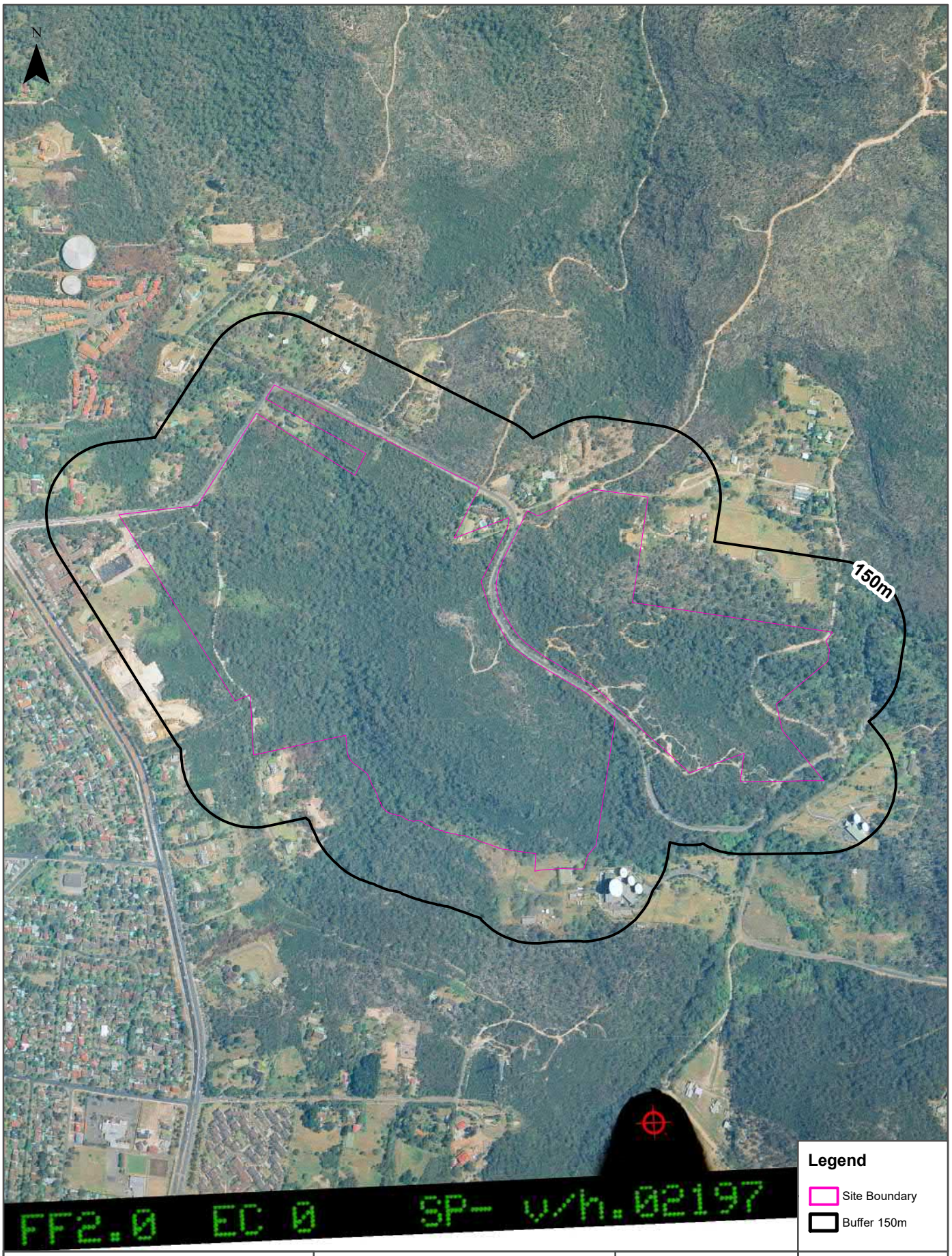
Data Sources: Aerial Imagery © Aerometrex Pty Ltd

Coordinate System:
GDA 1994 MGA Zone 56

Date: 19 October 2020

Aerial Imagery 1994

Morgan Road Belrose, NSW 2085

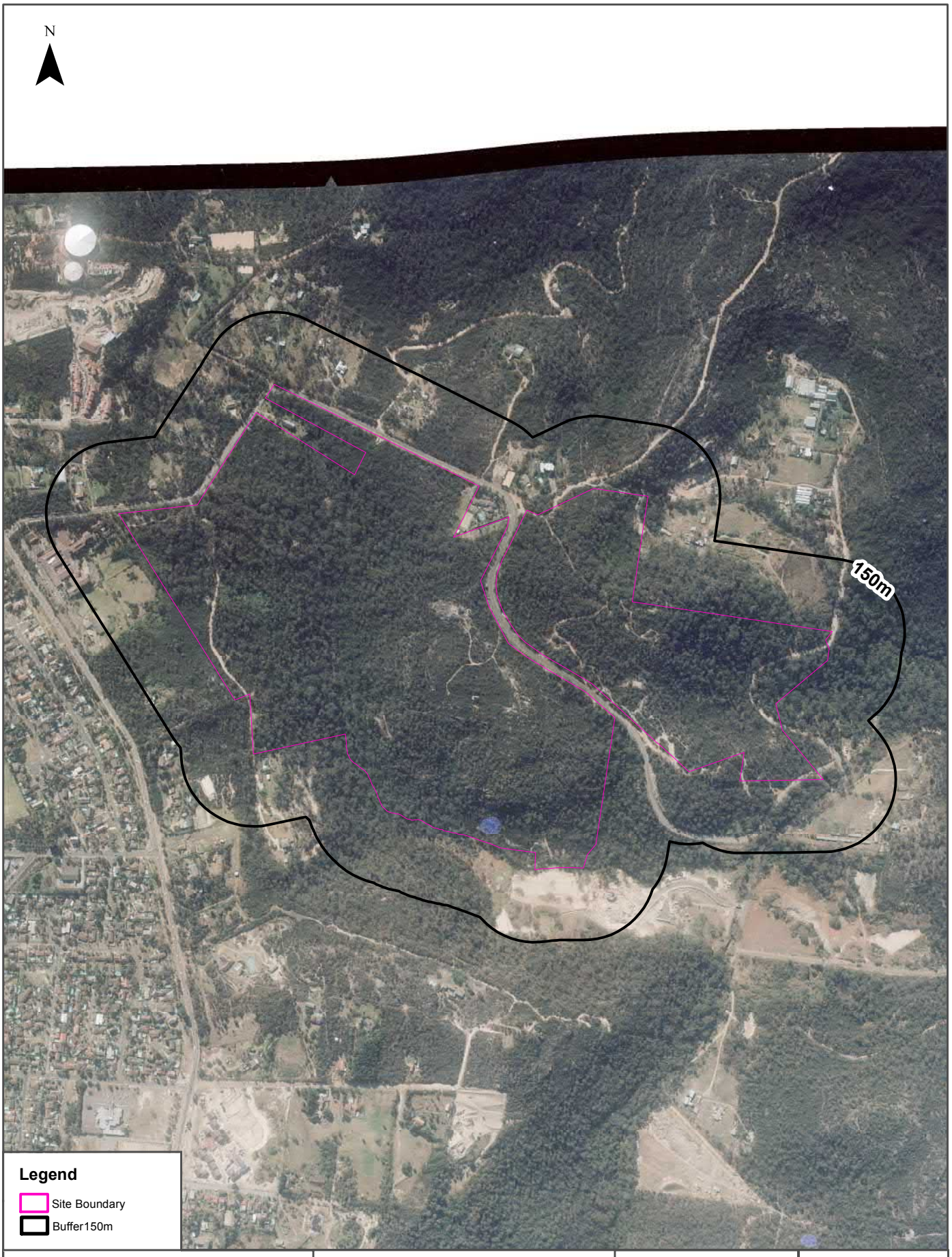


Aerial Imagery 1991

Morgan Road Belrose, NSW 2085

Aerial Imagery 1986

Morgan Road Belrose, NSW 2085



Aerial Imagery 1982

Morgan Road Belrose, NSW 2085

Scale: 0 125 250 375 500 Meters

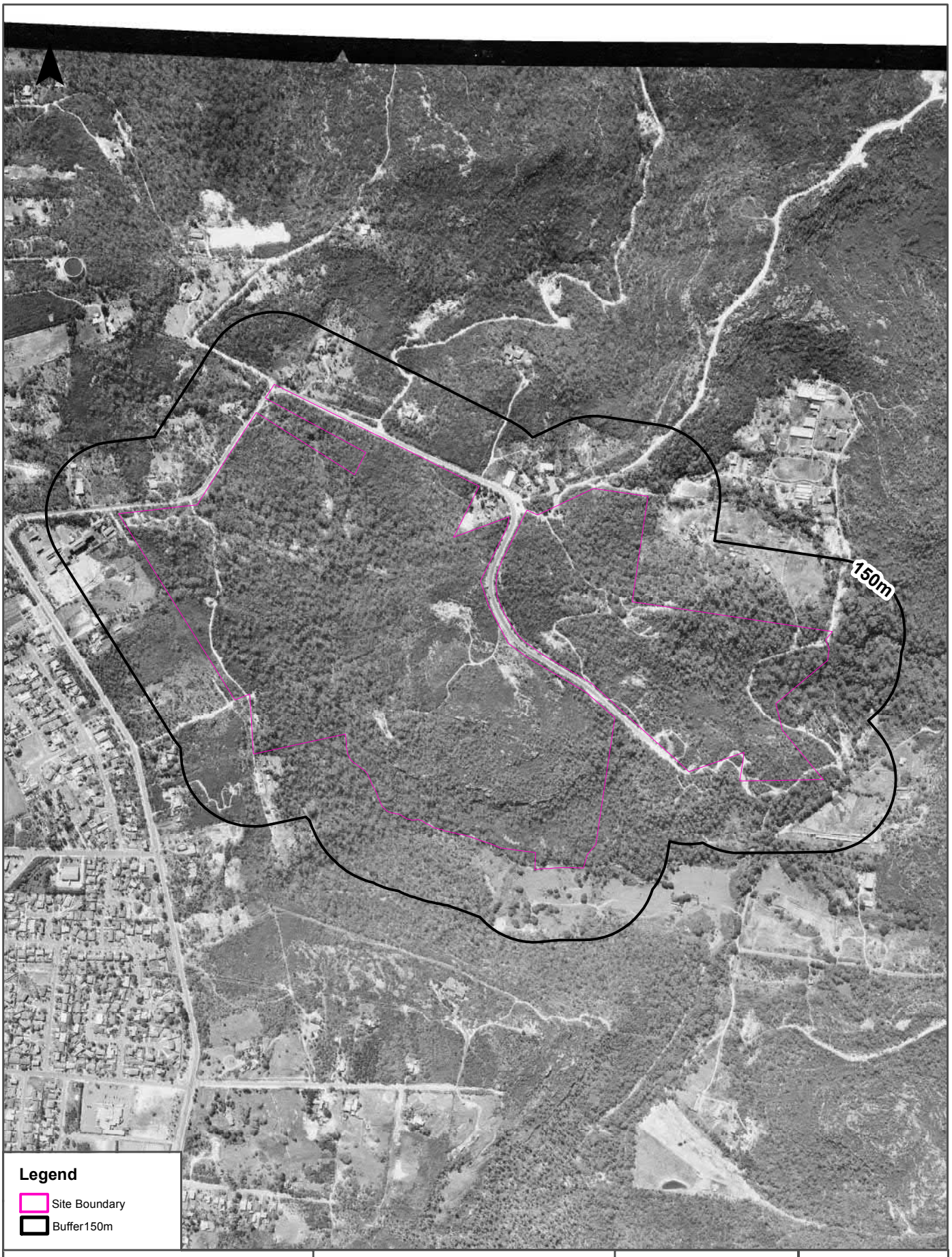
Data Source Aerial Imagery:
© NSW Department of Customer Service

Coordinate System:
GDA 1994 MGA Zone 56

Date: 19 October 2020

Aerial Imagery 1978

Morgan Road Belrose, NSW 2085



Aerial Imagery 1970

Morgan Road Belrose, NSW 2085

Scale: 0 125 250 375 500 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 October 2020

Aerial Imagery 1965

Morgan Road Belrose, NSW 2085

Legend

Site Boundary

Buffer150m

Scale: 0 125 250 375 500 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 October 2020

Aerial Imagery 1961

Morgan Road Belrose, NSW 2085

Legend

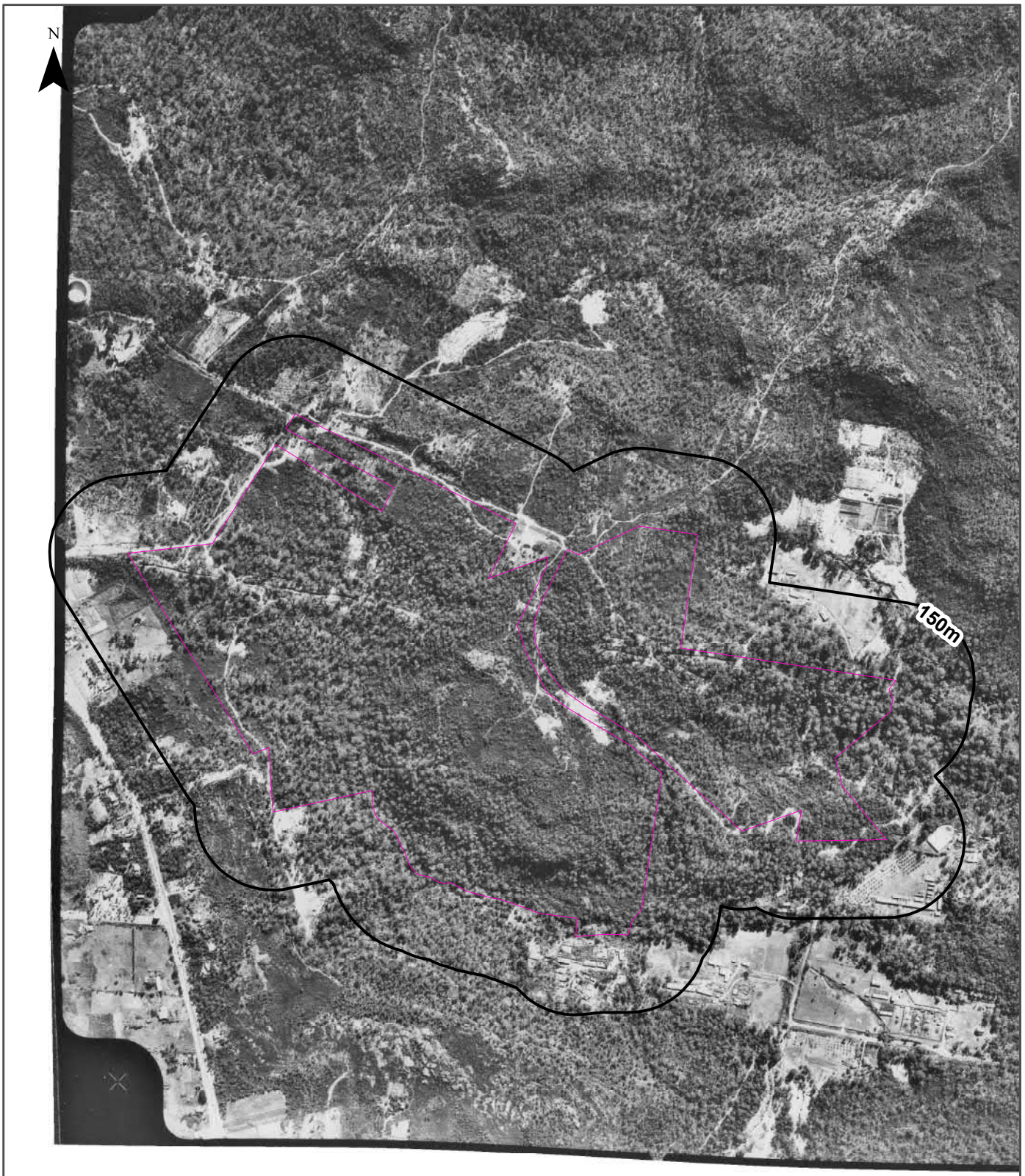
Site Boundary

Buffer150m

Scale: 0 125 250 375 500 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 October 2020

Aerial Imagery 1961

Morgan Road Belrose, NSW 2085



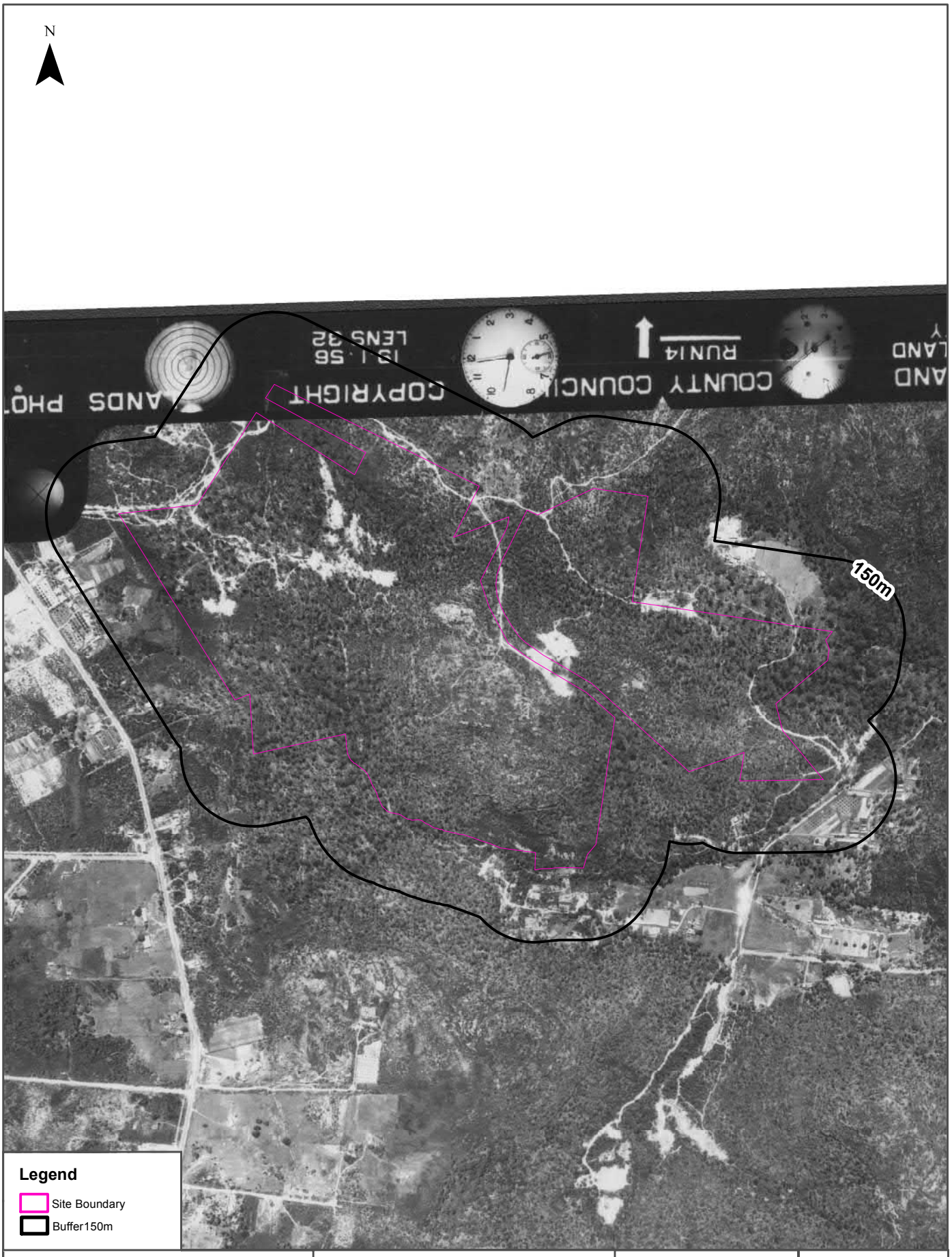
Legend

- Site Boundary
- Buffer150m

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 19 October 2020
0 125 250 375 500 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1956

Morgan Road Belrose, NSW 2085



Aerial Imagery 1955

Morgan Road Belrose, NSW 2085

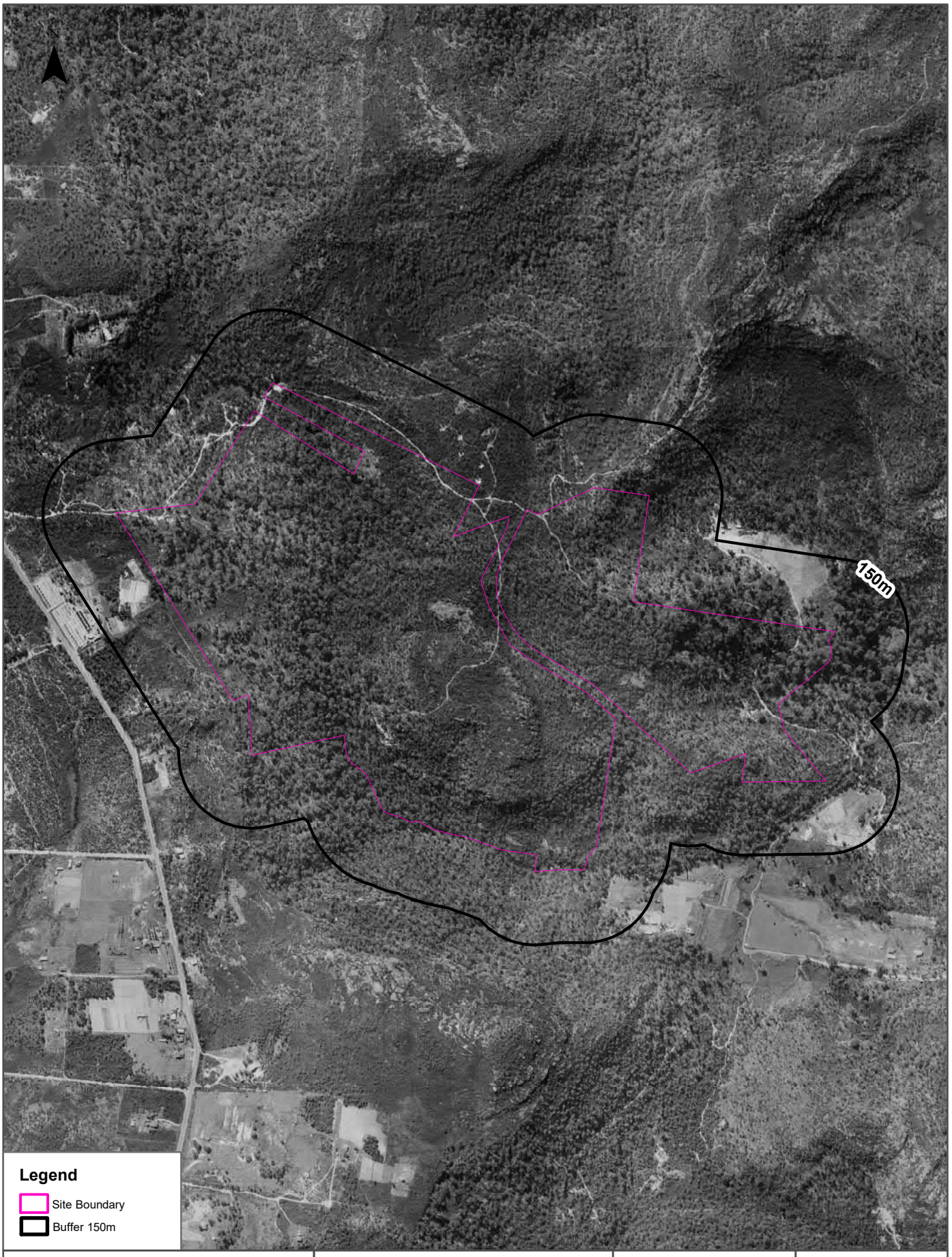
Legend

- Site Boundary
- Buffer150m

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 19 October 2020
0 125 250 375 500 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1943

Morgan Road Belrose, NSW 2085



Data Sources: Aerial Imagery © Aerometrex Pty Ltd

Coordinate System:
GDA 1994 MGA Zone 56

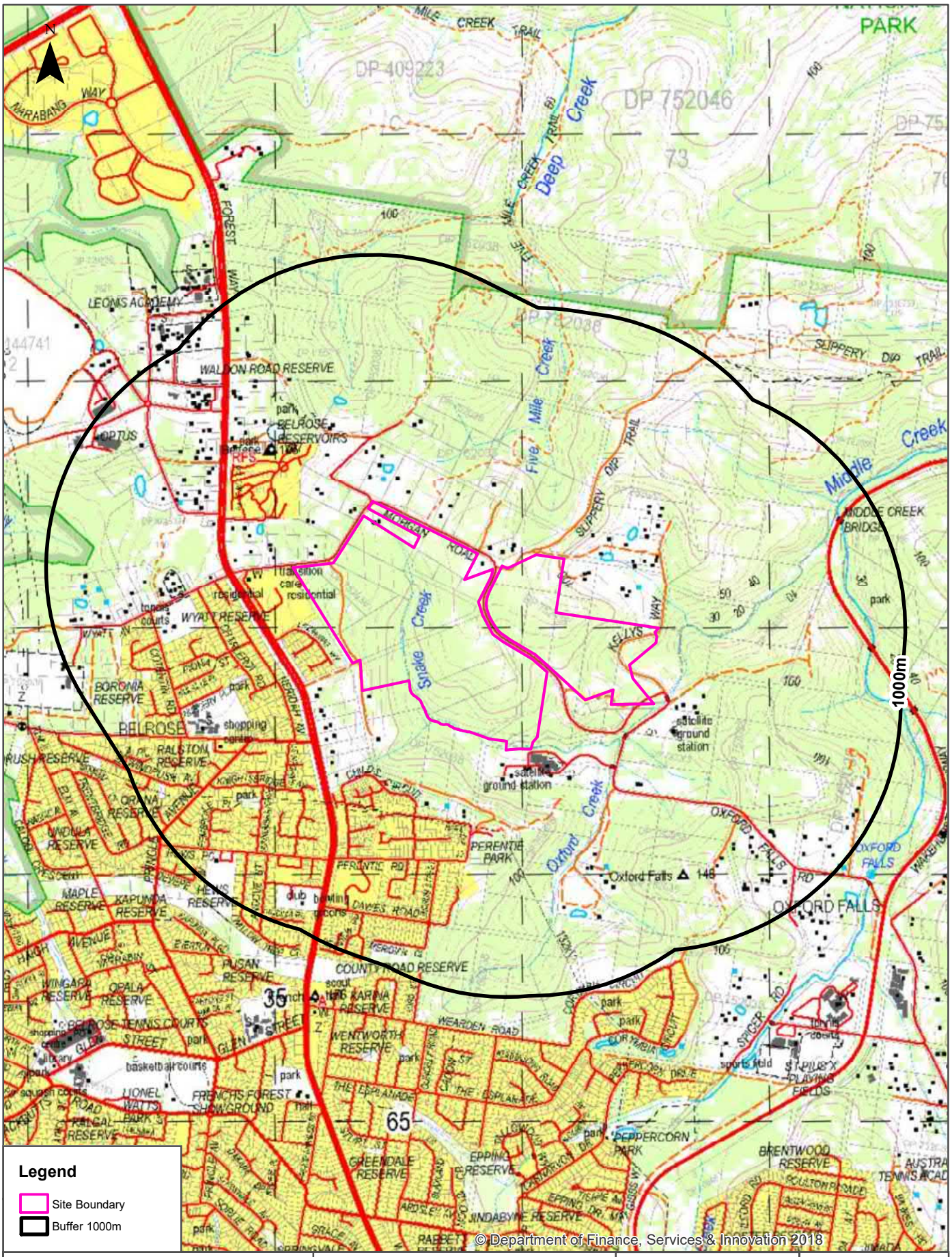
Date: 19 October 2020

Aerial Imagery 1930

Morgan Road Belrose, NSW 2085

Topographic Map 2015

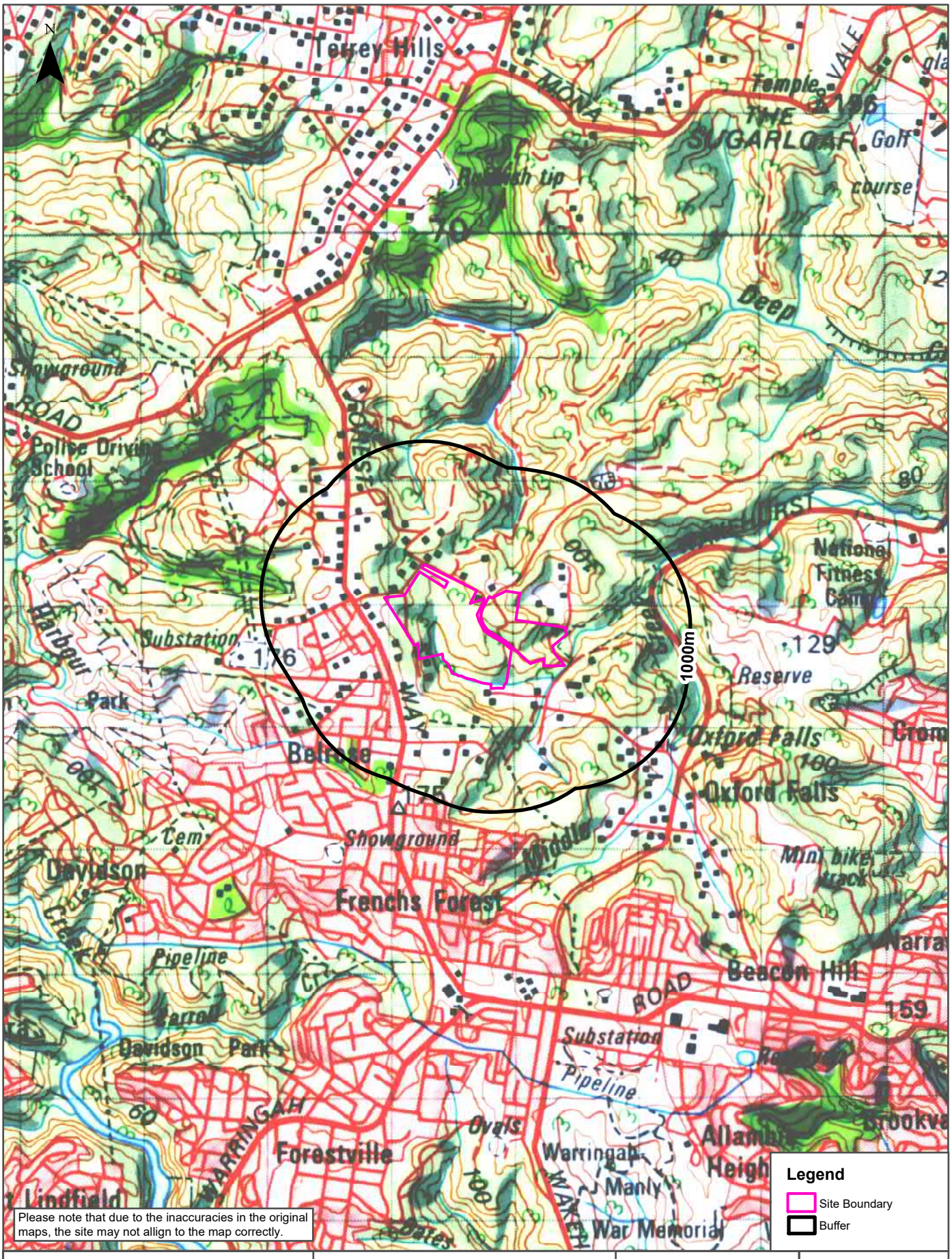
Morgan Road Belrose, NSW 2085



Scale:	Data Sources: Topographic Map Data © NSW Land and Property Information	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 October 2020

Historical Map 1975

Morgan Road Belrose, NSW 2085

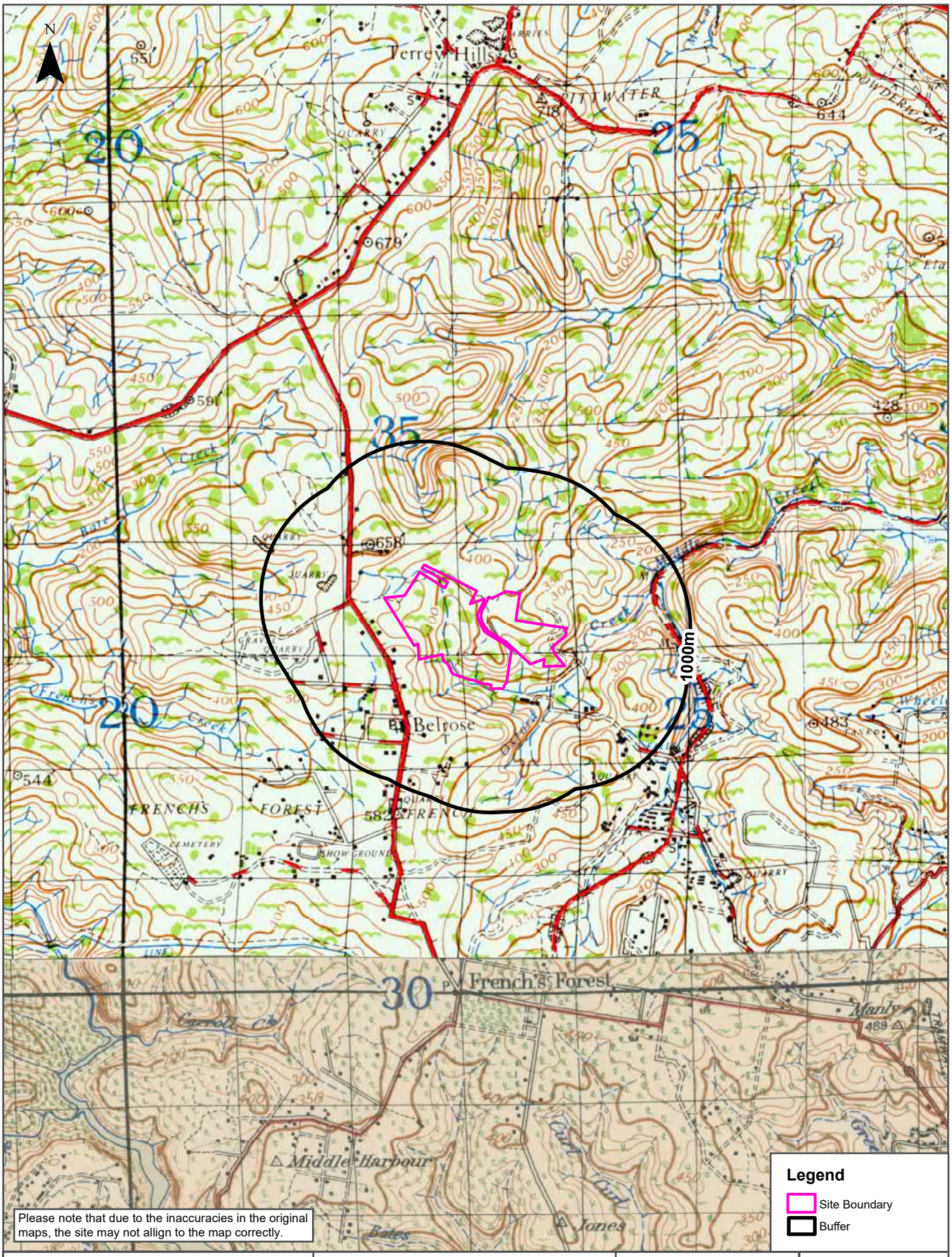


Scale:	Data Sources: NATMAP 1:100,000 Topographic Maps Geoscience Australia	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 October 2020

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

Historical Map c.1942

Morgan Road Belrose, NSW 2085



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Meters

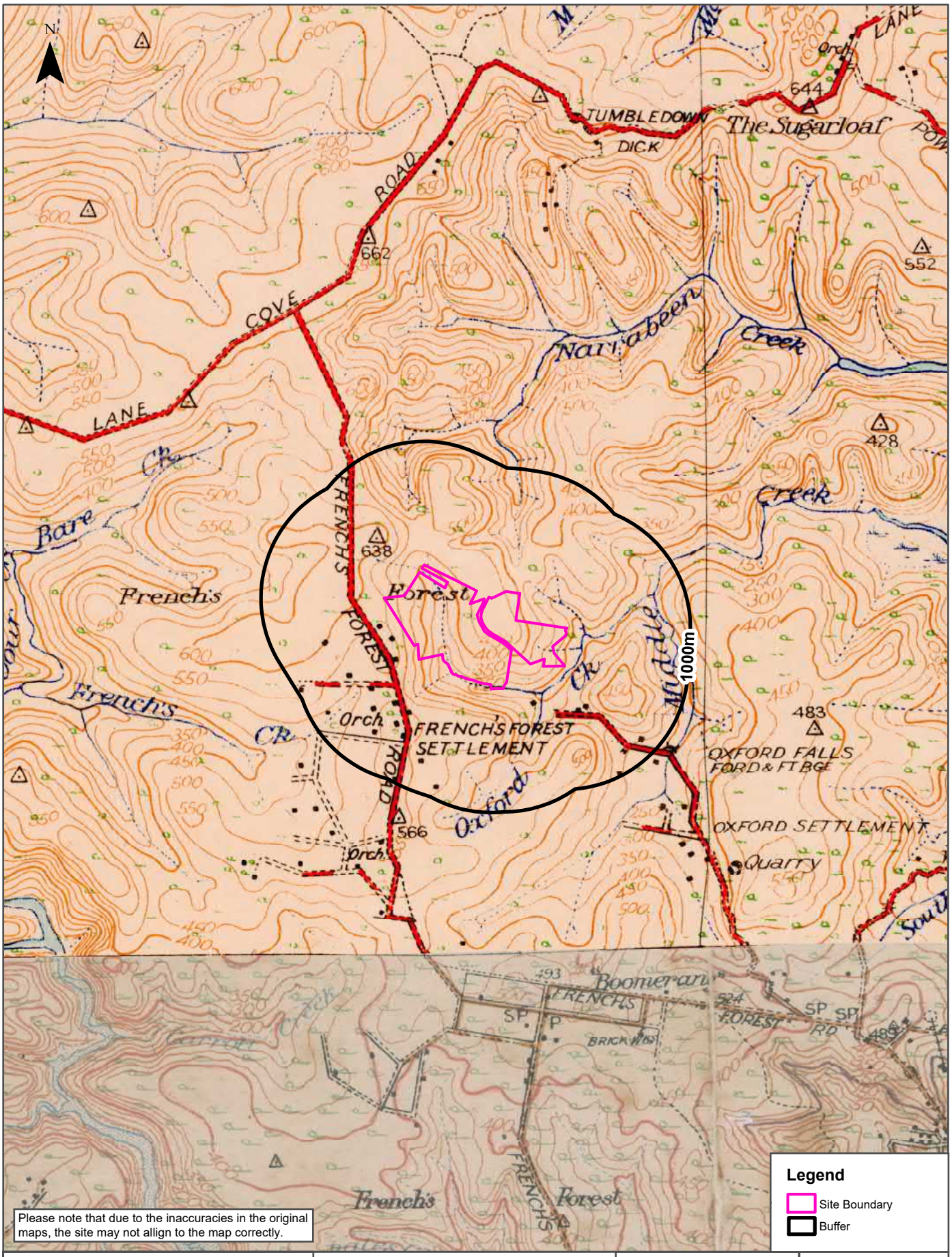
Data Sources: Australia 1:63360,
Produced by Australian Section Imperial General Staff

Coordinate System:
GDA 1994 MGA Zone 56

Date: 19 October 2020

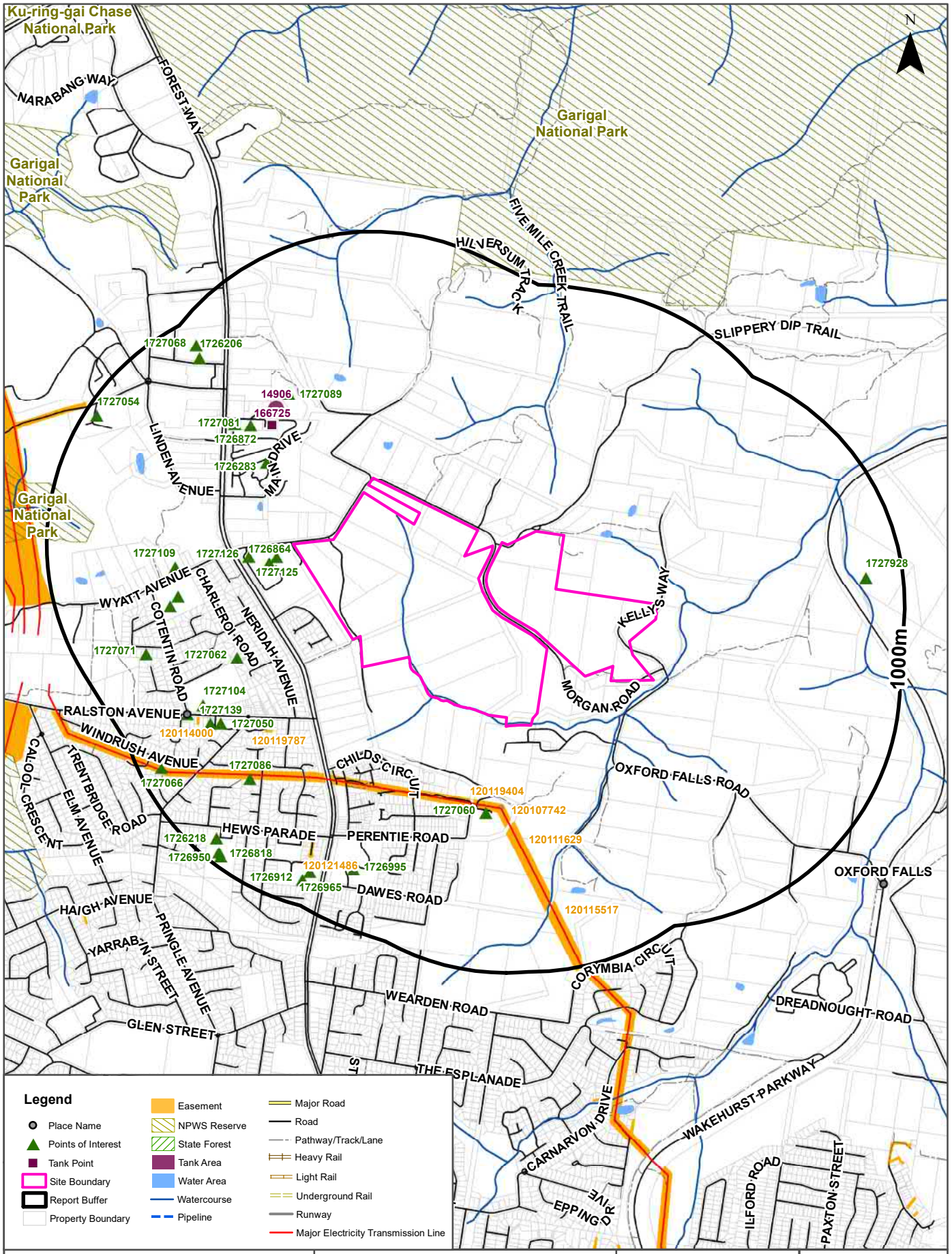
Historical Map c.1920

Morgan Road Belrose, NSW 2085



Topographic Features

Morgan Road Belrose, NSW 2085



Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2020

Coordinate System: GDA 1994 MGA Zone 56

Date: 19 October 2020

Topographic Features

Morgan Road Belrose, NSW 2085

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
1727125	Community Home	NORTHERN SYDNEY TRANSITIONAL CARE UNIT	84m	West
1726864	Nursing Home	UNITING WESLEY GARDENS BELROSE	122m	West
1727126	Place Of Worship	UNITING CHURCH	186m	West
1726283	Retirement Village	GLENAEON RETIREMENT VILLAGE	348m	North West
1727060	Park	PERENTIE PARK	360m	South
1727062	Park	Park	436m	West
1727089	Park	Park	482m	North West
1727109	Primary School	JOHN COLET SCHOOL	487m	West
1727081	Park	Park	511m	North West
1727075	Park	WYATT RESERVE	513m	West
1726872	Firestation - Bush	BELROSE RFB	542m	North West
1727093	Sports Court	TENNIS COURTS	558m	West
1727050	Shopping Centre	BELROSE VILLAGE SHOPPING CENTRE	617m	South West
1727086	Park	Park	643m	South West
1727104	Primary School	BELROSE PUBLIC SCHOOL	655m	West
1727139	Park	RALSTON RESERVE	657m	South West
1727101	Suburb	BELROSE	729m	West
1727071	Park	BORONIA RESERVE	740m	West
1726995	Retirement Village	BELROSE COUNTRY CLUB	769m	South West
1726206	Community Facility	WAKEHURST RUGBY CLUB	846m	North West
1727928	Park	Park	848m	East
1726965	Sports Field	BOWLING GREENS	858m	South West
1727068	Park	WALDON ROAD RESERVE	895m	North West
1726912	Club	BELROSE BOWLING CLUB	896m	South West
1726218	Community Facility	WAKEHURST SOCCER CLUB	910m	South West
1727066	Park	ORANA RESERVE	911m	South West
1726818	Sports Field	Sports Field	950m	South West
1727054	Transmission Station	OPTUS	952m	North West
1726950	Park	HEWS RESERVE	959m	South West

Topographic Features

Morgan Road Belrose, NSW 2085

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
14906	Water	Operational	BELROSE RESERVOIRS	01/01/2009	448m	North West

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
166725	Water	Operational		25/08/2000	460m	North West

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
120107742	Primary	Undefined		316m	South
120119404	Primary	Undefined		330m	South West
120111629	Primary	Undefined		390m	South
120119787	Primary	Undefined		447m	South West
120114000	Primary	Undefined		692m	South West
120115517	Primary	Undefined		719m	South
120121486	Primary	Undefined		720m	South West

Topographic Features

Morgan Road Belrose, NSW 2085

State Forest

What State Forest exist within the dataset buffer?

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

National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N0076	NATIONAL PARK	Garigal National Park	19/04/1991	810m	West

Elevation Contours (m AHD)

Morgan Road Belrose, NSW 2085

Hydrogeology & Groundwater

Morgan Road Belrose, NSW 2085

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the dataset buffer:

Description
Porous, extensive aquifers of low to moderate productivity

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

Botany Groundwater Management Zones

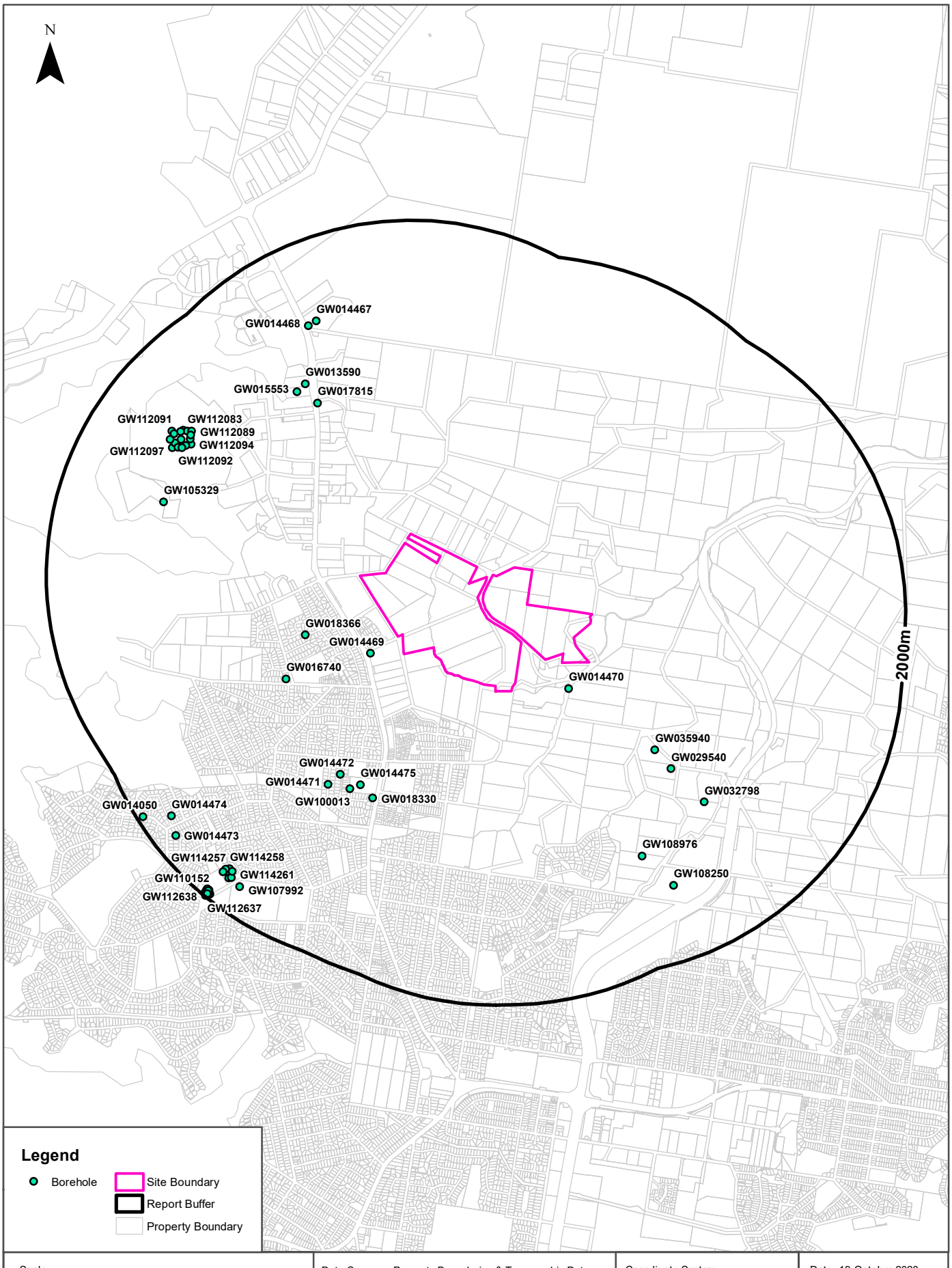
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

Management Zone No.	Restriction	Distance	Direction
N/A	No records in buffer		

Botany Groundwater Management Zones Data Source : NSW Department of Primary Industries

Groundwater Boreholes

Morgan Road Belrose, NSW 2085



Hydrogeology & Groundwater

Morgan Road Belrose, NSW 2085

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW014470	10BL006200, 10WA108070	Well	Private	Domestic, Stock	Domestic, Stock		01/01/1956	4.20	4.30					167m	South East
GW014469	10BL006244, 10WA108071	Bore open thru rock	Private	Domestic, Farming	Domestic		01/01/1955	27.10	27.10	Fresh				204m	West
GW018366		Bore open thru rock	Other Govt		Not Known		01/01/1960	30.40	30.50					494m	West
GW035940	10BL030095, 10BL142114, 10WA108241	Bore open thru rock	Private	Domestic, Irrigation, Stock	Irrigation		01/12/1970	54.80	54.90					700m	South East
GW016740	10BL007147	Bore open thru rock	Private	Domestic, Irrigation, Stock	General Use		01/01/1958	36.80	36.90					747m	West
GW029540	10BL023120, 10WA108150	Bore open thru rock	Private	Domestic, Farming	Domestic, Stock			31.60	31.70					860m	South East
GW014472	10BL006865	Bore open thru rock	Private	Irrigation	Irrigation		01/11/1956	25.20	25.30	Good				870m	South West
GW014475	10BL009433	Bore	Private	Recreation (groundwater)	Irrigation		01/01/1954	23.70						881m	South West
GW100013	10BL156437, 10WA109379	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		07/09/1995	51.00	51.00	80	30.00	0.170		928m	South West
GW018330	10BL009434	Bore open thru rock	Private	Recreation (groundwater)	Irrigation		01/07/1959	3.66	3.66	Good				932m	South West
GW014471	10BL008894, 10WA108089	Bore open thru rock	Private	Stock	General Use		01/09/1958	45.70	45.70					962m	South West
GW017815	10BL009740	Bore open thru rock	Private	Domestic, Irrigation	Irrigation		01/10/1959	30.40	30.50					1021m	North West
GW015553	10BL006429	Bore open thru rock	Private	Domestic, Irrigation, Poultry (groundwater)	General Use		01/03/1957	41.60	41.60	0-500 ppm				1157m	North West
GW032798	10BL025754, 10WA108157	Bore open thru rock	Private	Domestic	Domestic		01/09/1970	32.00	32.00					1157m	South East

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW013590	10BL008595	Bore open thru rock	Private	Irrigation	General Use		01/10/1958	30.40	30.50					1166m	North West
GW108976	10BL602109, 10WA109224	Bore	Private	Domestic, Stock	Domestic, Stock		27/06/2008	150.00		315	30.00	0.350		1283m	South East
GW105329	10BL163306, 10BL163307, 10WA109421	Bore		Industrial - Sand & Gravel, Test Bore	Industrial - Sand & Gravel		12/08/2004	202.00	202.00		74.00	25.000		1336m	West
GW112094	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		29/04/1996	7.00	7.00					1363m	North West
GW112086	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		08/03/2013	19.15	19.15					1384m	North West
GW112088	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		31/01/1996	13.45	13.45					1388m	North West
GW112096	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		08/03/2013	11.00	11.00					1397m	North West
GW112090	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		01/02/1996	6.00	6.00					1401m	North West
GW112089	10BL160670	Bore	Private	Monitoring Bore	Monitoring Bore		01/02/1996	4.00	4.00					1412m	North West
GW112092	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		01/02/1996	4.00	4.00					1418m	North West
GW112082	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		02/02/1996	23.00	23.00					1431m	North West
GW112083	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		01/02/1996	24.56	24.56					1434m	North West
GW112097	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		23/10/1996	4.00	4.00					1447m	North West
GW112087	10BL160670	Bore	Private	Monitoring Bore	Monitoring Bore		02/05/1996	5.61	5.61					1450m	North West
GW112093	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		01/05/1996	20.81	20.81					1457m	North West
GW112085	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		29/04/1996	5.45	5.45					1464m	North West
GW014468	10BL010608, 10WA108096	Bore open thru rock	Private	Domestic	Domestic		01/03/1960	49.60	50.30					1476m	North West
GW014467	10BL010869, 10WA108097	Bore open thru rock	Private	Domestic	Domestic		01/11/1959	29.50	29.60					1483m	North West
GW112095	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		23/10/1996	24.00	24.00					1489m	North West
GW112084	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		29/04/1996	29.72	29.72					1491m	North West
GW112091	10BL160670	Bore	Other Govt	Monitoring Bore	Monitoring Bore		01/02/1996	13.00	13.00					1511m	North West
GW108250	10BL601185, 10BL601714, 10WA109487	Bore		Recreation (groundwater), Test Bore	Recreation (groundwater)		29/01/2007	90.00	90.00	370	21.00	4.450		1524m	South East
GW114258	10BL605299	Bore	Private	Monitoring Bore	Monitoring Bore	Stockland - Belrose	18/01/2013	6.00	6.00					1764m	South West
GW114259	10BL605299	Bore	Private	Monitoring Bore	Monitoring Bore	Stockland Belrose	14/01/2013	6.00	6.00					1766m	South West
GW114257	10BL605299	Bore	Private	Monitoring Bore	Monitoring Bore	Stockland - Belrose	21/01/2013	10.00	10.00					1783m	South West
GW114255	10BL605299	Bore	Private	Monitoring Bore	Monitoring Bore	Stockland - Belrose	25/01/2013	25.00	25.00					1790m	South West
GW114261	10BL605299	Bore	Private	Monitoring Bore	Monitoring Bore	Stockland - Belrose	16/01/2013	6.00	6.00					1800m	South West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW114256	10BL605299	Bore	Private	Monitoring Bore	Monitoring Bore	Stockland - Belrose	22/01/2013	25.00	25.00					1806m	South West
GW014474	10BL007713, 10WA108079	Bore open thru rock	Private	Farming, Stock	General Use		01/01/1958	17.90	18.00					1807m	South West
GW114260	10BL605299	Bore	Private	Monitoring Bore	Monitoring Bore	Stockland Belrose	18/01/2013	25.00	25.00					1813m	South West
GW107992	10BL600216, 10BL601490, 10WA109493	Bore		Recreation (groundwater), Test Bore	Recreation (groundwater)		22/11/2006	185.00	185.00	137	80.00	0.150		1818m	South West
GW014473	10BL008216, 10WA108085	Bore open thru rock	Private	Domestic, Farming	General Use		01/11/1958	21.00	21.00	Good				1858m	South West
GW110152	10BL165917	Bore	Private	Monitoring Bore	Monitoring Bore		20/07/2005	8.00	8.00					1952m	South West
GW110151	10BL165917	Bore	Private	Monitoring Bore	Monitoring Bore		20/07/2005	8.00	8.00					1954m	South West
GW110149	10BL165917	Bore	Private	Monitoring Bore	Monitoring Bore		20/07/2005	9.00	9.00					1958m	South West
GW014050	10BL007658, 10WA108078	Bore open thru rock	Private	Domestic, Farming, Stock	Domestic, Stock		01/03/1958	30.40	30.50					1959m	South West
GW110150	10BL165917	Bore	Private	Monitoring Bore	Monitoring Bore		20/07/2005	7.00	7.00					1964m	South West
GW112639	10BL603206	Bore	Private	Monitoring Bore	Monitoring Bore	Woolworths	04/08/2009	8.00	8.00					1968m	South West
GW110148	10BL165917	Bore	Private	Monitoring Bore	Monitoring Bore		02/06/2009	6.00	6.00					1969m	South West
GW110154	10BL165917	Bore	Private	Monitoring Bore	Monitoring Bore		20/07/2005	8.00	8.00					1977m	South West
GW112638	10BL603206	Bore	Private	Monitoring Bore	Monitoring Bore	Woolworths	04/08/2009	8.00	8.00					1981m	South West
GW112637	10BL603206	Bore	Private	Monitoring Bore	Monitoring Bore	Woolworths	04/08/2009	8.00	8.00					1984m	South West
GW110147	10BL165917	Bore	Private	Monitoring Bore	Monitoring Bore		20/07/2005	8.00	8.00					1986m	South West
GW110153	10BL165917	Bore	Private	Monitoring Bore	Monitoring Bore		20/07/2005	8.00	8.00					1993m	South West

Hydrogeology & Groundwater

Morgan Road Belrose, NSW 2085

Driller's Logs

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

Groundwater No	Drillers Log	Distance	Direction
GW014470	0.00m-1.82m Soil 1.82m-4.26m Rock	167m	South East
GW014469	0.00m-27.12m Sand Water Supply	204m	West
GW018366	0.00m-0.60m Soil 0.60m-30.48m Sandstone Water Supply	494m	West
GW035940	0.00m-0.30m Topsoil Sandy 0.30m-0.60m Gravel Clay 0.60m-3.96m Driller 3.96m-40.23m Sandstone White Water Supply 40.23m-54.86m Sandstone Grey Water Supply	700m	South East
GW016740	0.00m-0.60m Clay 0.60m-24.38m Sandstone 24.38m-24.99m Clay Water Supply 24.99m-26.82m Sandstone 26.82m-27.12m Clay Water Supply 27.12m-29.87m Sandstone 29.87m-30.17m Clay Water Supply 30.17m-33.52m Sandstone 33.52m-34.13m Clay Water Supply 34.13m-36.57m Sandstone 36.57m-36.88m Clay Water Supply	747m	West
GW029540	0.00m-2.13m Sand Loose 2.13m-3.04m Clay Sandy 3.04m-6.09m Sandstone Light Brown Water Supply 6.09m-9.75m Sand Grey 9.75m-12.19m Sandstone 12.19m-14.02m Sandstone Hard 14.02m-15.24m Sandstone Soft Water Supply 15.24m-17.06m Sandstone White Hard 17.06m-18.28m Sandstone Soft 18.28m-19.81m Sandstone Dark 18.28m-19.81m Pipe Clay Fine Interlayere 19.81m-21.33m Sandstone Very Hard 21.33m-24.38m Sandstone White 21.33m-24.38m Clay Fine Interlayere 24.38m-25.90m Sandstone White Hard 25.90m-31.69m Sandstone Grey Water Supply	860m	South East
GW014472	0.00m-0.30m Topsoil 0.30m-4.57m Driller 4.57m-25.29m Sandstone Water Supply	870m	South West
GW100013	0.00m-1.50m CLAY 1.50m-3.00m WEATHERED SANDSTONE 3.00m-51.00m HAWKESBURY SANDSTONE	928m	South West
GW018330	0.00m-3.66m Sandstone Water Supply	932m	South West
GW014471	0.00m-42.67m Sandstone Water Supply 42.67m-43.28m Clay Gravel Water Supply 43.28m-45.72m Sandstone	962m	South West
GW017815	0.00m-3.65m Soil Clay 3.65m-30.48m Sandstone Water Supply	1021m	North West
GW015553	0.00m-1.21m Soil Gravel 1.21m-4.57m Shale Clay 4.57m-41.60m Sandstone Water Supply	1157m	North West

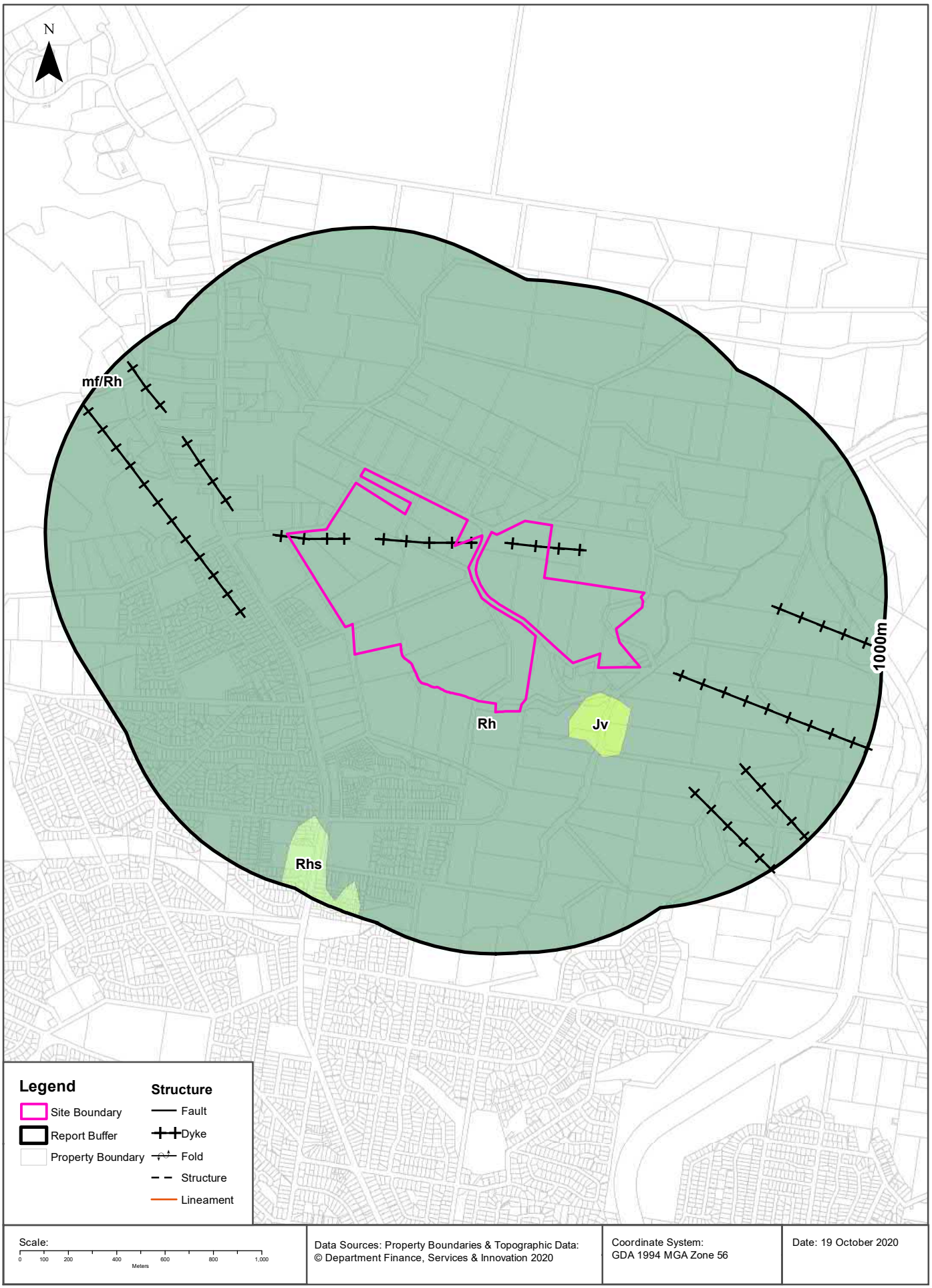
Groundwater No	Drillers Log	Distance	Direction
GW032798	0.00m-0.60m Topsoil Black 0.60m-1.82m Sand White 1.82m-6.40m Sandstone Red 6.40m-9.75m Sandstone White Water Supply 9.75m-16.45m Sandstone 16.45m-18.89m Sandstone Dark Brown 18.89m-19.81m Sandstone White 19.81m-20.42m Sandstone Grey 20.42m-32.00m Sandstone White Water Supply	1157m	South East
GW013590	0.00m-1.82m Soil 1.82m-30.48m Sandstone Water Supply	1166m	North West
GW105329	0.00m-32.50m SANDSTONE/IRONSTONE 32.50m-202.00m SANDSTONE	1336m	West
GW014468	0.00m-0.61m Soil 0.61m-50.29m Sandstone Water Supply	1476m	North West
GW014467	0.00m-1.52m Soil 1.52m-29.56m Sandstone	1483m	North West
GW108250	0.00m-0.50m CLAY 0.50m-2.50m SANDSTONE WEATHEREAD 2.50m-4.00m SANDY CLAY 4.00m-8.00m SANDSTONE WEATHEREAD 8.00m-9.00m SHALE 9.00m-28.00m SANDSTONE GREY 28.00m-31.00m SANDSTONE BROWN QUARTZ 31.00m-34.00m SANDSTONE GREY 34.00m-34.20m SANDSTONE FRACTURED 34.20m-42.00m SANDSTONE GREY 42.00m-44.00m SANDSTONE QUARTZ 44.00m-44.50m SANDSTONE FRACTURED 44.50m-53.00m SILTSTONE 53.00m-57.00m SANDSTONE GREY 57.00m-59.00m SANDSTONE QUARTZ 59.00m-63.00m SANDSTONE GREY 63.00m-65.50m SANDSTONE QUARTZ 65.50m-81.00m SANDSTONE GREY 81.00m-83.00m SANDSTONE QUARTZ 83.00m-90.00m SANDSTONE GREY	1524m	South East
GW014474	0.00m-0.60m Soil 0.60m-17.98m Sandstone Water Supply	1807m	South West
GW107992	0.00m-24.50m SANDSTONE WEATHEREAD 24.50m-25.50m SANDY CLAY 25.50m-29.00m SANDSTONE,QUARTZ 29.00m-36.00m SANDSTONE GREY 36.00m-36.50m SANSDSTONE GREY FRACTURED 36.50m-69.00m SANDSTONE GREY 69.00m-72.00m SANDSTONE SHALE BANDS 72.00m-76.00m SANDSTONE GREY 76.00m-85.00m SANDSTONE,SILTSTONE,QUARTZ 85.00m-88.00m SANDSTONE GREY,QUARTZ 88.00m-115.00m SANDSTONE GREY 115.00m-116.00m SANDSTONE GREY,SHALE 116.00m-127.00m SANDSTONE GREY 127.00m-128.00m SILTSTONE 128.00m-136.50m SANDSTONE GREY 136.50m-138.00m SANDSTONE GREY,QUARTZ SILT 138.00m-157.00m SANDSTONE GREY 157.00m-166.00m SANDSTONE GREY,QUARTZ 166.00m-174.00m SANDSTONE GREY 174.00m-175.00m SILTSTONE 175.00m-176.00m SANDSTONE GREY 176.00m-177.00m SANDSTONE GREY,QUARTZ 177.00m-179.50m SANDSTONE GREY 179.50m-183.00m SANDSTONE GREY,QUARTZ 183.00m-185.00m SANDSTONE GREY	1818m	South West
GW014473	0.00m-0.30m Soil 0.30m-21.03m Sandstone Water Supply	1858m	South West
GW110152	0.00m-0.80m TOPSOIL,BROWN,LOOSE,MOIST 0.80m-1.70m CLAY SILTY MODERATE PLASTICITY YELLOW,SOFT,MOIST 1.70m-2.70m CLAY GRAVELS,MODERATE PLASTICITY BROWN,FIRM 2.70m-8.00m SANDSTONE	1952m	South West
GW110151	0.00m-0.60m TOPSOIL,BROWN,LOOSE,MOIST 0.60m-1.10m SANDY CLAY, YELLOW FIRM,MOIST 1.10m-1.75m CLAY 1.75m-2.50m CLAY,SANDY,BECOMING WEATHERED SANDSTONE 2.50m-3.00m WEATHERED SANDSTONE 3.00m-8.00m SANDSTONE	1954m	South West

Groundwater No	Drillers Log	Distance	Direction
GW110149	0.00m-3.20m FILL,BLENDED SHALE AND CRUSHED SANDSTONE 3.20m-4.20m CLAY,GRAVELS,MODERATE PLASTICITY BROWN,FIRM 4.20m-9.00m SANDSTONE	1958m	South West
GW014050	0.00m-0.60m Soil 0.60m-30.48m Sandstone White Water Supply	1959m	South West
GW110150	0.00m-0.80m TOPSOIL BROWN,LOOSE, MOIST 0.80m-1.50m FILL,SAND,LOOSE,MOIST 1.50m-1.70m CLAY,LOW PLASTICITY,BROWN 1.70m-7.00m SANDSTONE WHITE	1964m	South West
GW112639	0.00m-1.50m FILL 1.50m-3.00m SANDSTONE WEATHERED 3.00m-8.00m SANDSTONE FRACTURED	1968m	South West
GW110154	0.00m-3.20m FILL,CRUSHED SANDSTONE 3.20m-3.50m CLAY,NON PLASTIC,BROWN,HARD,MOIST 3.50m-8.00m SANDSTONE WEATHERED	1977m	South West
GW112638	0.00m-1.50m FILL 1.50m-3.00m SANDSTONE WEATHERED 3.00m-8.00m SANDSTONE FRACTURED	1981m	South West
GW112637	0.00m-1.50m FILL 1.50m-3.00m SANDSTONE WEATHERED 3.00m-8.00m SANDSTONE FRACTURED	1984m	South West
GW110147	0.00m-1.50m FILL,SAND,CRUSHED SANDSTONE,LOOSE, MOIST 1.50m-2.10m CLAY,SANDY,NON PLASTIC,ORANGE,FIRM 2.10m-8.00m SANDSTONE WEATHERED	1986m	South West
GW110153	0.00m-0.60m TOPSOIL,GRAVEL PIECES,BROWN,LOOSE,DRY 0.60m-1.60m CLAY,GRAVEL TRACES,NON PLASTIC,FIRM,DRY 1.60m-8.00m SANDSTONE WHITE	1993m	South West

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp

Geology 1:100,000

Morgan Road Belrose, NSW 2085



Geology

Morgan Road Belrose, NSW 2085

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Jv	Volcanic breccia, varying amounts of sedimentary breccia, and basalt.				Jurassic		Sydney	1:100,000
mf/Rh							Sydney	1:100,000
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000
Rhs	Shale. Laminate				Triassic		Sydney	1:100,000

Geological Structures

What are the Geological Structures onsite?

Feature	Name	Description	Map Sheet	Dataset
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Dataset
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000

Geological Data Source : NSW Department of Industry, Resources & Energy

Naturally Occurring Asbestos Potential

Morgan Road Belrose, NSW 2085

Naturally Occurring Asbestos Potential

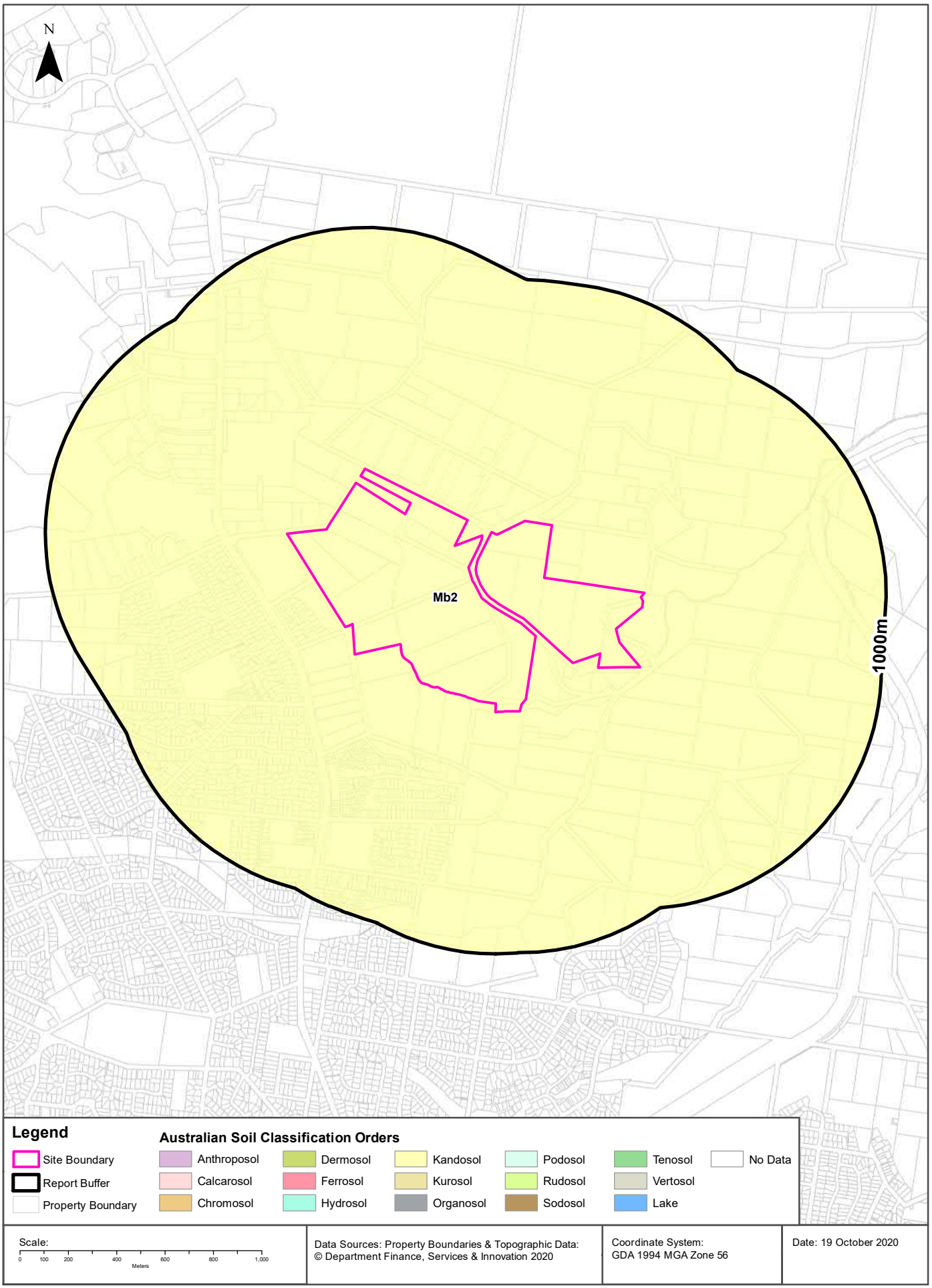
Naturally Occurring Asbestos Potential within the dataset buffer:

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

Atlas of Australian Soils

Morgan Road Belrose, NSW 2085



Soils

Morgan Road Belrose, NSW 2085

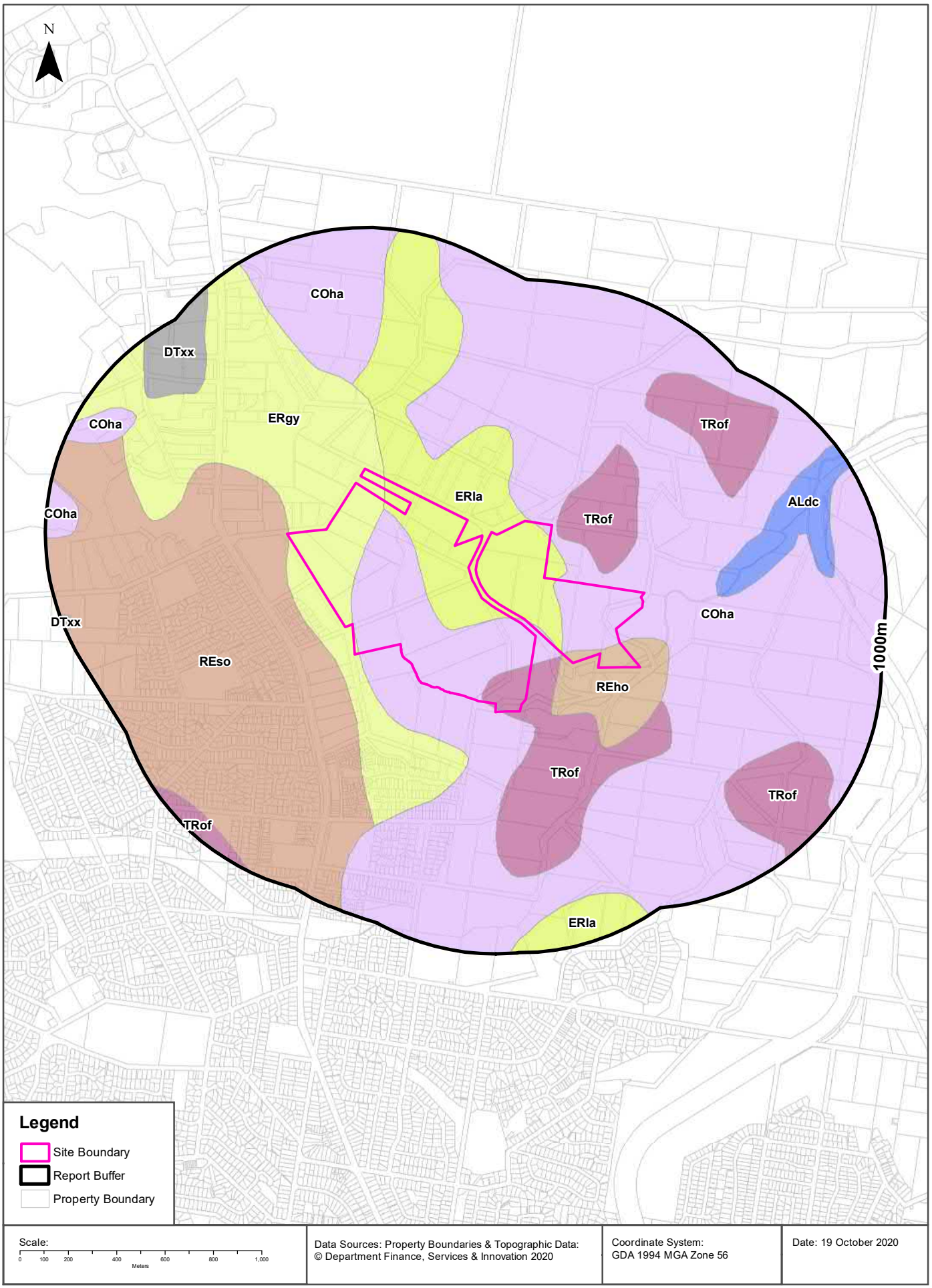
Atlas of Australian Soils

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

Map Unit Code	Soil Order	Map Unit Description	Distance
Mb2	Kandosol	Dissected sandstone plateau of moderate to strong relief with sandstone pillars, ledges, and slabs-- level to undulating ridges, irregularly benched slopes, steep ridges, cliffs, canyons, narrow sandy valleys: chief soils are (i) on areas of gentle to moderate relief, acid yellow leached earths (Gn2.74) and (Gn2.34) and acid leached yellow earths (Gn2.24)-sometimes these soils contain ironstone gravel; and (ii) on, or adjacent to, areas of strong relief, siliceous sands (Uc1.2), leached sands (Uc2.12) and (Uc2.2), and shallow forms of the above (Gn2) soils. Associated are: (i) on flat to gently undulating remnants of the original plateau surface, leached sands (Uc2.3), siliceous sands (Uc1.2), sandy earths (Uc5.22), and (Gn2) soils as for (i) above (these areas are in part comparable with unit Cb29); (ii) on flat ironstone gravelly remnants of the original plateau surface, (Gn2) soils as for unit Mb5(i); (iii) on gently undulating ridges where interbedded shales are exposed, shallow, often stony (Dy3.41), (Dr2.21), and related soils similar to unit Tb35; (iv) narrow valleys of (Uc2.3) soils flanked by moderate slopes of (Dy3.41) soils; (v) escarpments of steep hills with shallow (Dy) and (Dr) soils between sandstone pillars; and (vi) shallow (Um) soils, such as (Um6.21) on steep hills of basic rocks. As mapped, minor areas of units Mg20, Mm1, and Mw8 are included. Data are limited.	0m

Soil Landscapes

Morgan Road Belrose, NSW 2085



Soils

Morgan Road Belrose, NSW 2085

Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
COha	HAWKESBURY		COLLUVIAL	Sydney	1:100,000
ERgy	GYMEA		EROSIONAL	Sydney	1:100,000
ERla	LAMBERT		EROSIONAL	Sydney	1:100,000
REho	HORNSBY		RESIDUAL	Sydney	1:100,000
REso	SOMERSBY		RESIDUAL	Sydney	1:100,000
TRof	OXFORD FALLS		TRANSFERRAL	Sydney	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALdc	DEEP CREEK		ALLUVIAL	Sydney	1:100,000
COha	HAWKESBURY		COLLUVIAL	Sydney	1:100,000
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Sydney	1:100,000
ERgy	GYMEA		EROSIONAL	Sydney	1:100,000
ERla	LAMBERT		EROSIONAL	Sydney	1:100,000
REho	HORNSBY		RESIDUAL	Sydney	1:100,000
REso	SOMERSBY		RESIDUAL	Sydney	1:100,000
TRof	OXFORD FALLS		TRANSFERRAL	Sydney	1:100,000

Acid Sulfate Soils

Morgan Road Belrose, NSW 2085

Environmental Planning Instrument - Acid Sulfate Soils

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

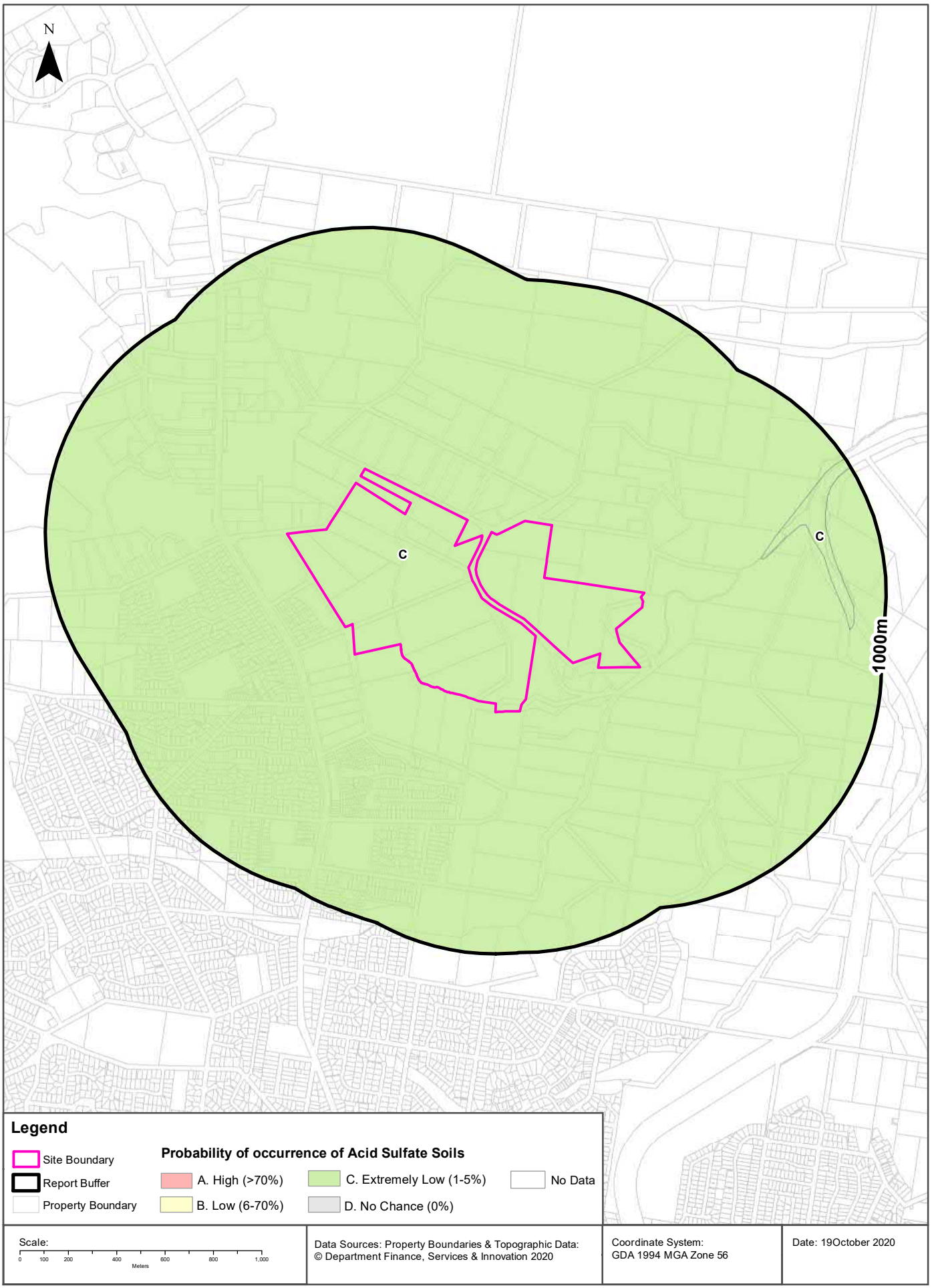
Soil Class	Description	EPI Name
N/A		

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

Soil Class	Description	EPI Name	Distance	Direction
N/A				

Atlas of Australian Acid Sulfate Soils

Morgan Road Belrose, NSW 2085



Acid Sulfate Soils

Morgan Road Belrose, NSW 2085

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

Dryland Salinity

Morgan Road Belrose, NSW 2085

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

Mining

Morgan Road Belrose, NSW 2085

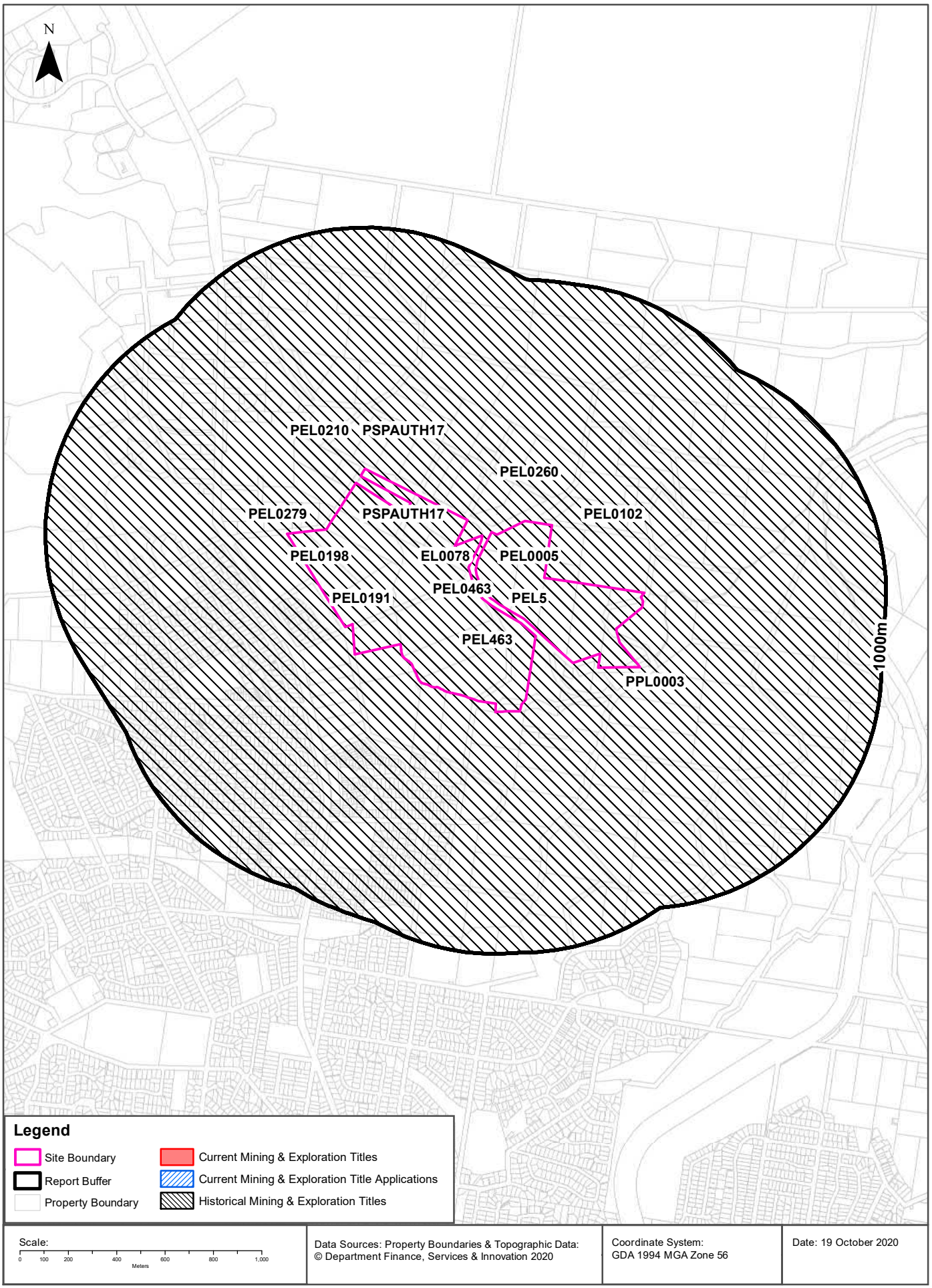
Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

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

Mining & Exploration Titles

Morgan Road Belrose, NSW 2085



Mining

Morgan Road Belrose, NSW 2085

Current Mining & Exploration Titles

Current Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Grant Date	Expiry Date	Last Renewed	Operation	Resource	Minerals	Dist (m)	Dir'
N/A	No Records in Buffer								

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

Current Mining & Exploration Title Applications

Current Mining & Exploration Title Applications within the dataset buffer:

Application Ref	Applicant	Application Date	Operation	Resource	Minerals	Dist (m)	Dir'
N/A	No Records in Buffer						

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

Mining

Morgan Road Belrose, NSW 2085

Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist (m)	Dir'
EL0078	CONTINENTAL OIL CO OF AUSTRALIA LIMITED	01 Feb 1967	01 Feb 1968	MINERALS		0m	Onsite
PEL0005	AGL UPSTREAM INVESTMENTS PTY LIMITED	11/11/1993	4/03/2015	PETROLEUM	Petroleum	0m	Onsite
PEL0102	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	Onsite
PEL0191	NORTHWEST OIL AND MINERALS CO NL			PETROLEUM	Petroleum	0m	Onsite
PEL0198	JOHN STREVENS (TERRIGAL) NL			PETROLEUM	Petroleum	0m	Onsite
PEL0210	THE AUSTRALIAN GAS LIGHT COMPANY (AGL), NORTH BULLI COLLIERIES PTY LTD			PETROLEUM	Petroleum	0m	Onsite
PEL0260	NORTH BULLI COLLIERIES PTY LTD, AGL PETROLEUM OPERATIONS PTY LTD, THE AUSTRALIAN GAS LIGHT CO.	9/09/1981	8/03/1993	PETROLEUM	Petroleum	0m	Onsite
PEL0279	THE ELECTRICITY COMMISSION OF NSW (TRADING AS PACIFIC POWER)	17/04/1990	11/11/1993	PETROLEUM	Petroleum	0m	Onsite
PEL0463	DART ENERGY (APOLLO) PTY LTD	22/10/2008	6/03/2015	PETROLEUM	Petroleum	0m	Onsite
PEL463	DART ENERGY (APOLLO) PTY LTD			MINERALS		0m	Onsite
PEL5	AGL UPSTREAM INVESTMENTS PTY LIMITED			MINERALS		0m	Onsite
PPL0003	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	Onsite
PSPAUTH17	MACQUARIE ENERGY PTY LTD			MINERALS		0m	Onsite
PSPAUTH17	MACQUARIE ENERGY PTY LTD	8/03/2007	7/03/2008	PETROLEUM	Petroleum	0m	Onsite

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

State Environmental Planning Policy

Morgan Road Belrose, NSW 2085

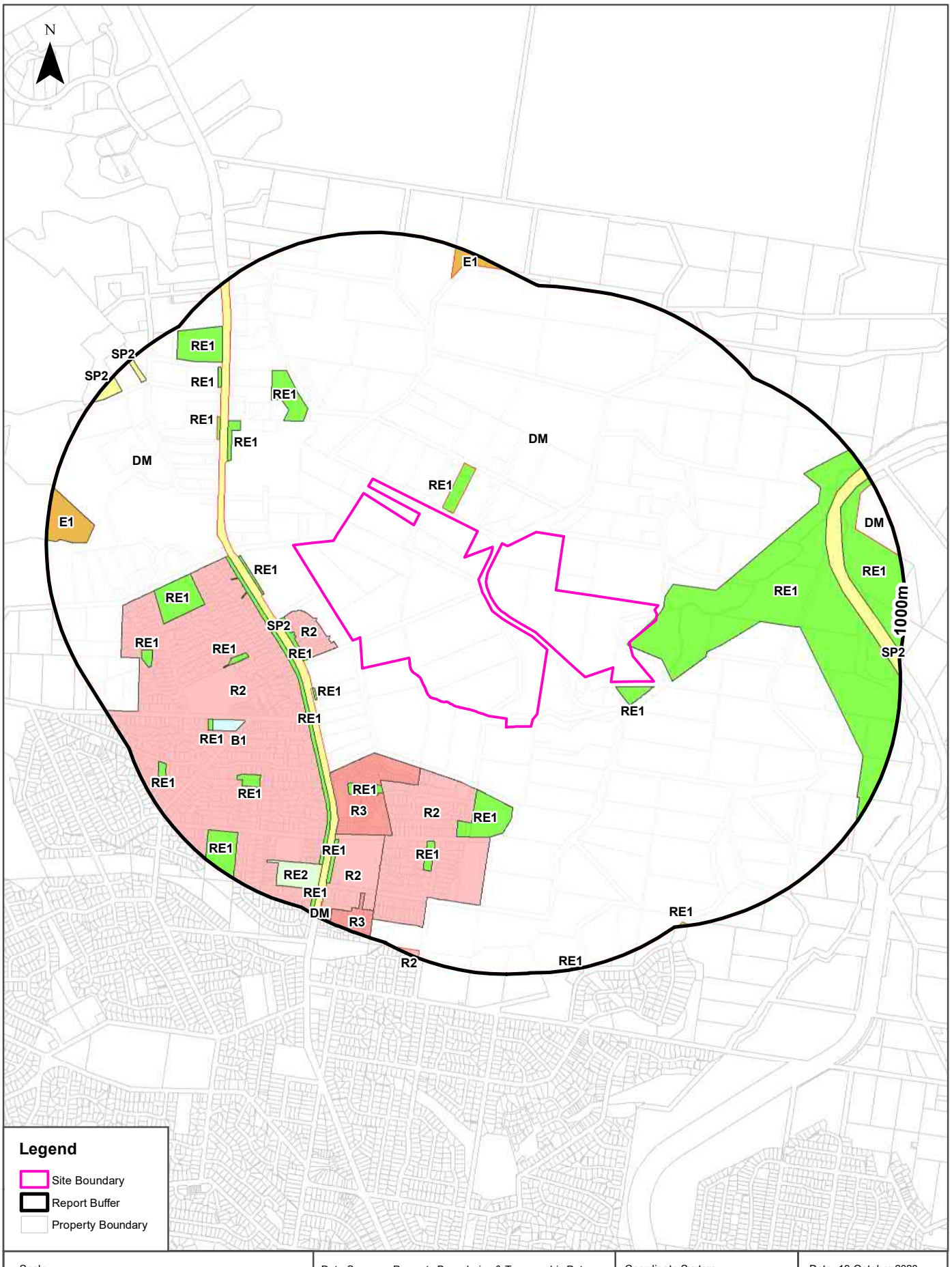
State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

Map Id	Precinct	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
N/A	No Records in Buffer							

EPI Planning Zones

Morgan Road Belrose, NSW 2085



Environmental Planning Instrument

Morgan Road Belrose, NSW 2085

Land Zoning

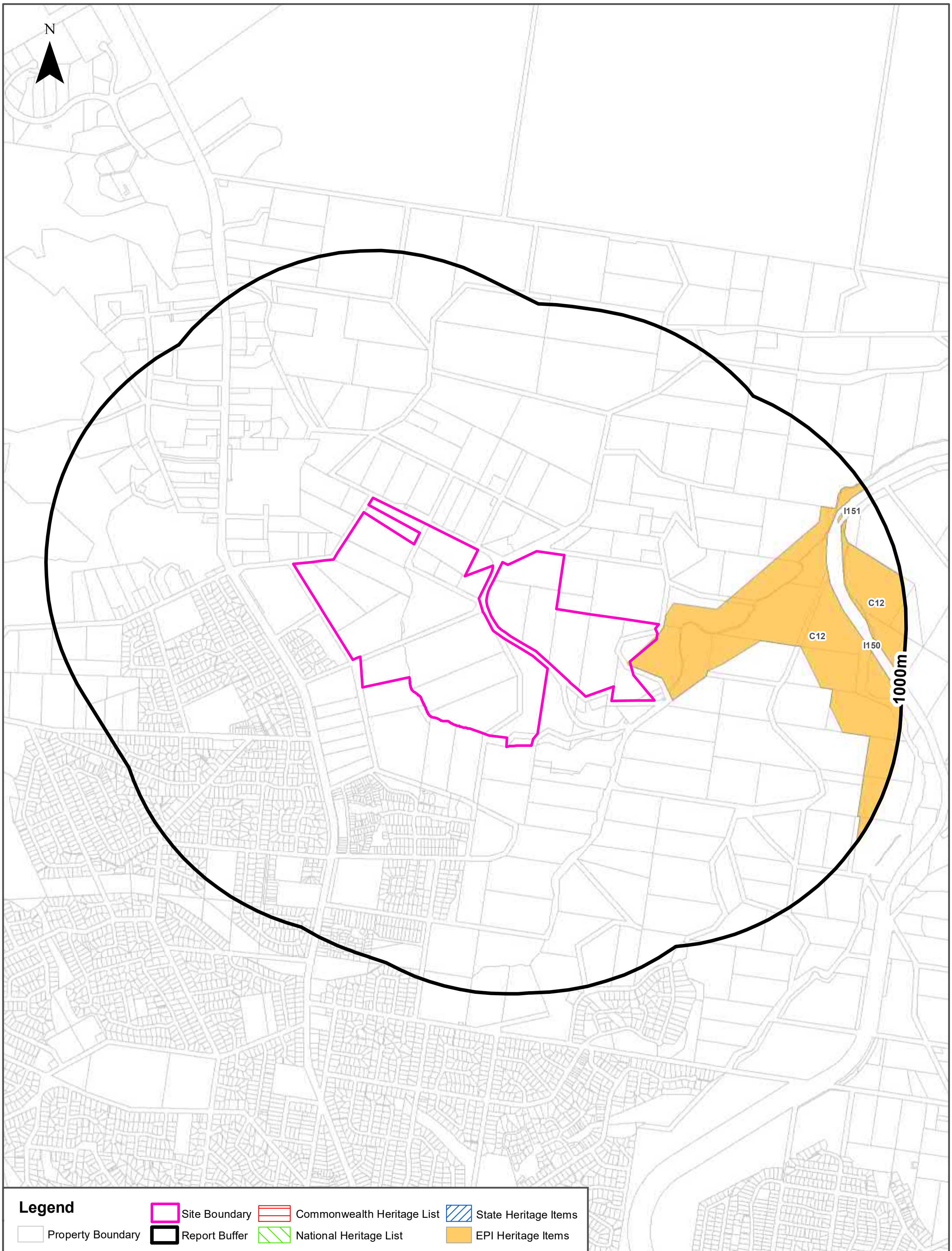
What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
DM	Deferred Matter		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		0m	Onsite
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		0m	East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		20m	North
R2	Low Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		66m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		183m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		205m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		210m	South West
SP2	Infrastructure	Classified Road	Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		213m	East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		246m	South West
R2	Low Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		261m	South West
DM	Deferred Matter		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		267m	West
R2	Low Density Residential		Warringah Local Environmental Plan 2011	30/06/2017	30/06/2017	11/09/2020	Amendment No 19	276m	South
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		276m	South
R3	Medium Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		283m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		369m	North West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		392m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		409m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		427m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		428m	North West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		521m	North West
B1	Neighbourhood Centre		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		523m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	30/06/2017	30/06/2017	11/09/2020	Amendment No 19	546m	South
R2	Low Density Residential		Warringah Local Environmental Plan 2011	14/02/2014	14/02/2014	11/09/2020	Amendment No 2	588m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		598m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		639m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		684m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		707m	North West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		710m	West

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		767m	East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		774m	North West
RE2	Private Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		809m	South West
E1	National Parks and Nature Reserves		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		810m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		835m	South West
R3	Medium Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		838m	South
DM	Deferred Matter		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		853m	East
E1	National Parks and Nature Reserves		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		872m	North East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		885m	South West
SP2	Infrastructure	W & R Management Facility	Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		897m	North West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		904m	South West
DM	Deferred Matter		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		939m	South West
R2	Low Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		969m	South
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		981m	South East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	11/09/2020		992m	South

Heritage Items

Morgan Road Belrose, NSW 2085



Scale: 0 100 200 400 600 800 1,000 Meters	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2020 Heritage - NSW Crown Copyright - Planning & Environment	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 October 2020

Heritage

Morgan Road Belrose, NSW 2085

Commonwealth Heritage List

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

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

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

National Heritage List

What are the National Heritage List Items located within the dataset buffer?
Note. Please click on Place Id to activate a hyperlink to online website.

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

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

State Heritage Register - Curtilages

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

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

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

Environmental Planning Instrument - Heritage

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

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
C12	Oxford Falls Conservaton Area	Conservation Area - Landscape	Local	Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017	0m	Onsite
C12	Oxford Falls Conservaton Area	Conservation Area - Landscape	Local	Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017	767m	East
I151	Middle Creek Bridge No. 2	Item - General	Local	Warringah Local Environmental Plan 2011	30/05/2014	30/05/2014	30/06/2017	833m	East

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I150	Middle Creek Bridge No. 1	Item - General	Local	Warringah Local Environmental Plan 2011	30/05/2014	30/05/2014	30/06/2017	858m	East

Heritage Data Source: NSW Crown Copyright - Planning & Environment

Natural Hazards

Morgan Road Belrose, NSW 2085

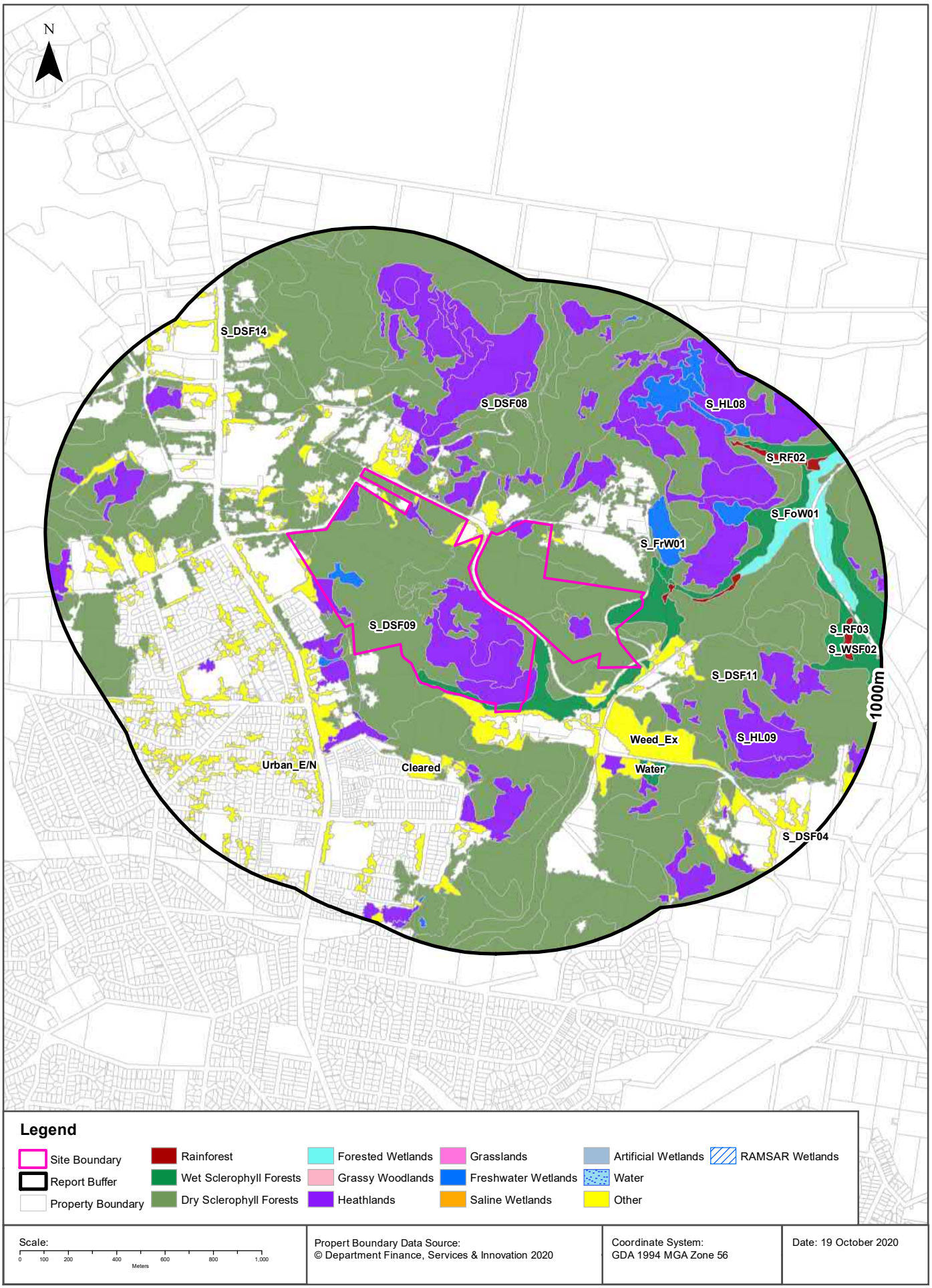
Bush Fire Prone Land

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

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	0m	Onsite
Vegetation Category 1	0m	Onsite
Vegetation Category 2	511m	West

Ecological Constraints - Native Vegetation & RAMSAR Wetlands

Morgan Road Belrose, NSW 2085



Ecological Constraints

Morgan Road Belrose, NSW 2085

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Direction
S_DSF09	S_DSF09: Coastal Sandstone Gully Forest			12: Dry xeric shrubs	11: Roads/trails	1: Low	A.costata/E.piperita/C.gummifera/S.glomulifera/E.resinifera	0m	Onsite
S_DSF09	S_DSF09: Coastal Sandstone Gully Forest			12: Dry xeric shrubs	11: Roads/trails	1: Low	A.costata/E.sieberi/E.piperita/C.gummiferaE.resinifera/E.umbra	0m	Onsite
S_DSF09	S_DSF09: Coastal Sandstone Gully Forest			12: Dry xeric shrubs	13: Weeds	2: Moderate	A.costata/E.sieberi/E.piperita/C.gummiferaE.resinifera/E.umbra	0m	Onsite
S_DSF09	S_DSF09: Coastal Sandstone Gully Forest			12: Dry xeric shrubs	14: Canopy gaps	2: Moderate	A.costata/E.sieberi/E.piperita/C.gummiferaE.resinifera/E.umbra	0m	Onsite
S_DSF09	S_DSF09: Coastal Sandstone Gully Forest			12: Dry xeric shrubs	22: Fire	1: Low	A.costata/E.piperita/C.gummifera/S.glomulifera/E.resinifera	0m	Onsite
S_DSF09	S_DSF09: Coastal Sandstone Gully Forest			15: Grassy natives and exotics	13: Weeds	3: High	A.costata/E.sieberi/E.piperita	0m	Onsite
S_DSF11	S_DSF11: Sydney North Exposed Sandstone Woodland			11: Semi sheltered dry/mesic	99: No visible disturbance	5: No visible disturbance	E.haemastoma/B.serrata	0m	Onsite
S_DSF11	S_DSF11: Sydney North Exposed Sandstone Woodland			19: Dense heath	11: Roads/trails	1: Low	E.haemastoma/B.serrata	0m	Onsite
S_DSF11	S_DSF11: Sydney North Exposed Sandstone Woodland			19: Dense heath	14: Canopy gaps	2: Moderate	E.haemastoma/B.serrata	0m	Onsite
S_DSF11	S_DSF11: Sydney North Exposed Sandstone Woodland			19: Dense heath	14: Canopy gaps	3: High	E.haemastoma/B.serrata	0m	Onsite
S_DSF11	S_DSF11: Sydney North Exposed Sandstone Woodland			19: Dense heath	19: Clearing/Part clearing	4: Very high	E.haemastoma/B.serrata	0m	Onsite
S_DSF11	S_DSF11: Sydney North Exposed Sandstone Woodland			19: Dense heath	22: Fire	1: Low	E.haemastoma/B.serrata	0m	Onsite
S_FrW01	S_FrW01: Coastal Upland Damp Heath Swamp	Coastal Upland Swamp		18: Swampy sedges, shrubs, ferns and herbs	13: Weeds	3: High	B.ericifolia/Hakea spp/sedges	0m	Onsite
S_HL08	S_HL08: Coastal Sandstone Heath-Mallee			19: Dense heath	11: Roads/trails	1: Low	A.distyla/B.ericifolia/Leptospermum spp/A.hispida	0m	Onsite
S_HL08	S_HL08: Coastal Sandstone Heath-Mallee			19: Dense heath	11: Roads/trails	1: Low	E.luehmaniana/C.gummifera/E.haemastoma	0m	Onsite
S_HL08	S_HL08: Coastal Sandstone Heath-Mallee			19: Dense heath	13: Weeds	2: Moderate	A.distyla/B.ericifolia/Leptospermum spp/A.hispida	0m	Onsite
S_HL08	S_HL08: Coastal Sandstone Heath-Mallee			19: Dense heath	13: Weeds	3: High	A.distyla/B.ericifolia/Leptospermum spp/A.hispida	0m	Onsite
S_HL08	S_HL08: Coastal Sandstone Heath-Mallee			19: Dense heath	22: Fire	1: Low	A.distyla/B.ericifolia/Leptospermum spp/A.hispida	0m	Onsite

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Direction
S_HL08	S_HL08: Coastal Sandstone Heath-Mallee			19: Dense heath	25: Edge disturbances only	1: Low	A.distyla/B.ericifolia/Leptospermum spp/A.hispida	0m	Onsite
S_HL08	S_HL08: Coastal Sandstone Heath-Mallee			19: Dense heath	99: No visible disturbance	5: No visible disturbance	A.distyla/B.ericifolia/Leptospermum spp/A.hispida	0m	Onsite
S_HL09	S_HL09: Coastal Sandstone Rock Plate Heath			19: Dense heath	21: Pioneering shrubs	1: Low	Exposed rockplates with low heath	0m	Onsite
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			10: Mesic/rainforest	13: Weeds	2: Moderate	A.costata/E.piperitaE.umbra/C.gummifera	0m	Onsite
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			10: Mesic/rainforest	13: Weeds	3: High	A.costata/E.piperitaE.umbra/C.gummifera	0m	Onsite
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/Native	0m	Onsite
Weed_Ex	Weed_Ex: Weeds and Exotics			00: Not assessed	00: Not assessed	0: Not assessed	Exotic Species >90%cover	0m	Onsite
S_DSF14	S_DSF14: Sydney Ironstone Bloodwood-Silvertop Ash Forest	Duffys Forest Ecological Community		15: Grassy natives and exotics	13: Weeds	3: High	E.sieberi/C.gummifera/E.haemastoma	4m	North West
S_RF03	S_RF03: Coastal Warm Temperate Rainforest			10: Mesic/rainforest	99: No visible disturbance	5: No visible disturbance	C.apetalum/A.smithii/L.australis/S.glandulosum	72m	East
Cleared	Cleared			00: Not assessed	00: Not assessed	0: Not assessed	Cleared	177m	East
S_DSF08	S_DSF08: Coastal Sandstone Riparian Forest			10: Mesic/rainforest	11: Roads/trails	1: Low	E.piperita/A.costata/T.laurina	191m	North
S_FoW01	S_FoW01: Coastal Alluvial Bangalay Forest	River Flat Eucalypt Forest		15: Grassy natives and exotics	13: Weeds	3: High	E.botryoides	382m	East
Water	Water			00: Not assessed	00: Not assessed	0: Not assessed	Water	415m	South East
S_RF02	S_RF02: Coastal Sandstone Gallery Rainforest			10: Mesic/rainforest	13: Weeds	2: Moderate	C.apetalum/A.smithii/L.australis/S.glandulosum	708m	North East
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			10: Mesic/rainforest	13: Weeds	3: High	A.costata/E.piperitaE.umbra/C.gummifera	953m	South East

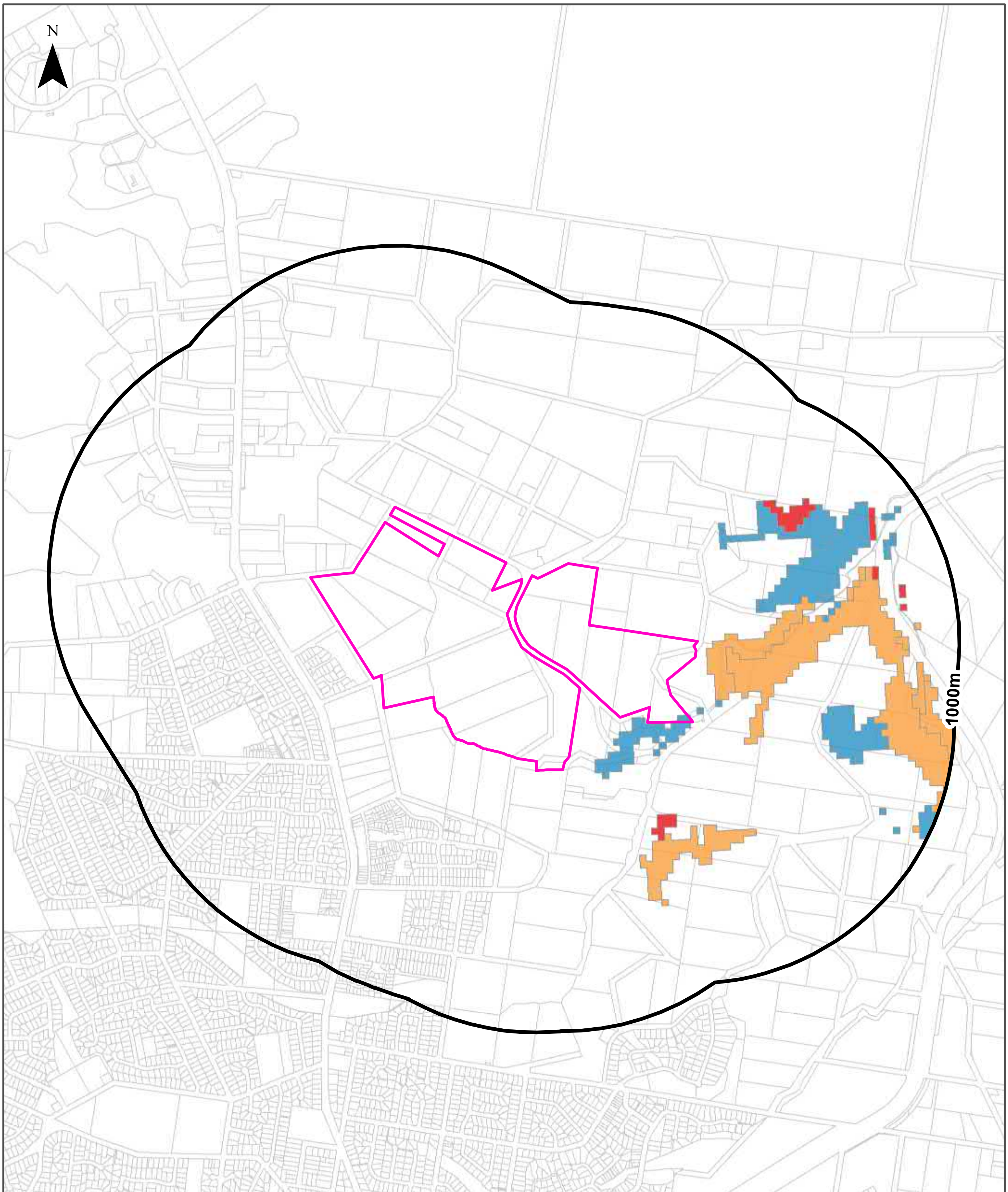
Ramsar Wetlands

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					

Ecological Constraints - Groundwater Dependent Ecosystems Atlas

Morgan Road Belrose, NSW 2085



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: 0 100 200 400 600 800 1,000 Meters	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2020	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 October 2020

Ecological Constraints

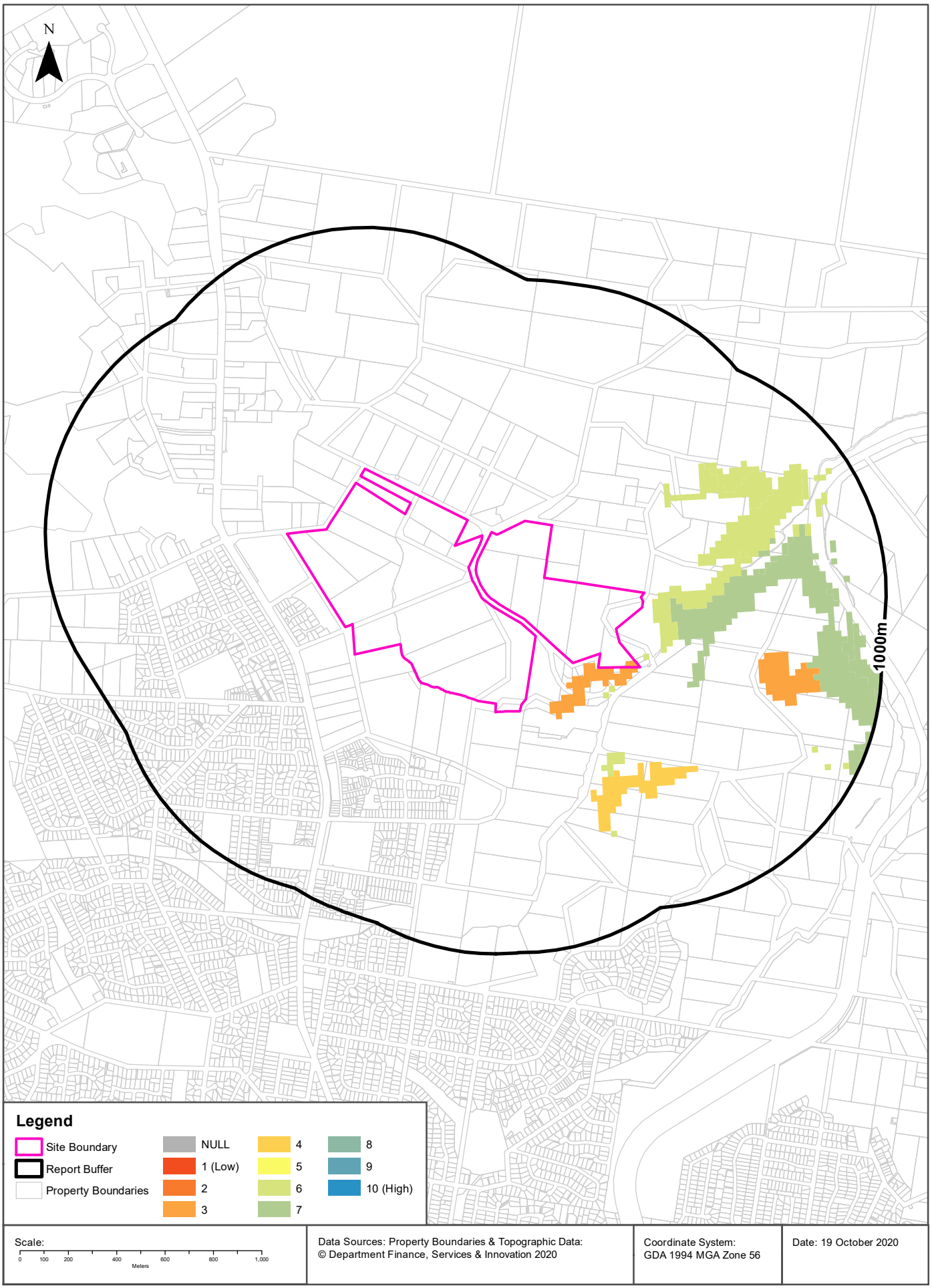
Morgan Road Belrose, NSW 2085

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	Low potential GDE - from national assessment	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	0m
Terrestrial	Moderate potential GDE - from national assessment	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	37m
Terrestrial	High potential GDE - from national assessment	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	349m

Ecological Constraints - Inflow Dependent Ecosystems Likelihood

Morgan Road Belrose, NSW 2085



Ecological Constraints

Morgan Road Belrose, NSW 2085

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	3	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	0m
Terrestrial	6	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	28m
Terrestrial	7	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	107m
Terrestrial	4	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	395m

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

Ecological Constraints

Morgan Road Belrose, NSW 2085

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	Heleioporus australiacus	Giant Burrowing Frog	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Anous stolidus	Common Noddy	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardenna carneipes	Flesh-footed Shearwater	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Ardenna grisea	Sooty Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna pacifica	Wedge-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Arenaria interpres	Ruddy Turnstone	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Botaurus poiciloptilus	Australasian Bittern	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris alba	Sanderling	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris canutus	Red Knot	Not Listed	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ferruginea	Curlew Sandpiper	Endangered	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ruficollis	Red-necked Stint	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris tenuirostris	Great Knot	Vulnerable	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Endangered Population, Vulnerable	Category 3	Not Listed	
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus banksii banksii	Red-tailed Black-Cockatoo (coastal subspecies)	Critically Endangered	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus banksii samueli	Red-tailed Black-Cockatoo (inland subspecies)	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Cecropis daurica	Red-rumped Swallow	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Charadrius leschenaultii	Greater Sand-plover	Vulnerable	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Charadrius mongolus	Lesser Sand-plover	Vulnerable	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Charadrius veredus	Oriental Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Chlidonias leucopterus	White-winged Black Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Cuculus optatus	Oriental Cuckoo	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Diomedea exulans	Wandering Albatross	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Esacus magnirostris	Beach Stone-curlew	Critically Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Eudyptula minor	Little Penguin	Endangered Population	Not Sensitive	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Fregata ariel	Lesser Frigatebird	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Gygis alba	White Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus fuliginosus	Sooty Oystercatcher	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus longirostris	Pied Oystercatcher	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hydroprogne caspia	Caspian Tern	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ixobrychus flavicollis	Black Bittern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Lathamus discolor	Swift Parrot	Endangered	Category 3	Critically Endangered	
Animalia	Aves	Limicola falcinellus	Broad-billed Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa lapponica	Bar-tailed Godwit	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lophochroa leadbeateri	Major Mitchell's Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Macronectes giganteus	Southern Giant Petrel	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Macronectes halli	Northern Giant-Petrel	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Menura alberti	Albert's Lyrebird	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Vulnerable	Category 3	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Neophema splendida	Scarlet-chested Parrot	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Nettapus coromandelianus	Cotton Pygmy-Goose	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius madagascariensis	Eastern Curlew	Not Listed	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Numenius phaeopus	Whimbrel	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Onychoprion fuscata	Sooty Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pachycephala olivacea	Olive Whistler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Philomachus pugnax	Ruff	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pluvialis fulva	Pacific Golden Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	Pterodroma leucoptera leucoptera	Gould's Petrel	Vulnerable	Not Sensitive	Endangered	
Animalia	Aves	Pterodroma solandri	Providence Petrel	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus magnificus	Wompoo Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus regina	Rose-crowned Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus superbus	Superb Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Puffinus assimilis	Little Shearwater	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Stercorarius longicaudus	Long-tailed Jaeger	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Stercorarius pomarinus	Pomarine Jaeger	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sterna hirundo	Common Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sternula albifrons	Little Tern	Endangered	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Thalassarche cauta	Shy Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalassarche chrysostoma	Grey-headed Albatross	Not Listed	Not Sensitive	Endangered	
Animalia	Aves	Thalassarche melanophris	Black-browed Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalasseus bergii	Crested Tern	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Todiramphus chloris	Collared Kingfisher	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa incana	Wandering Tattler	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Tringa nebularia	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Tringa stagnatilis	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Xenus cinereus	Terek Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Mammalia	Arctocephalus forsteri	New Zealand Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus pusillus doriferus	Australian Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Dugong dugon	Dugong	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Eubalaena australis	Southern Right Whale	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Macropus parma	Parma Wallaby	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Macrotis lagotis	Bilby	Presumed Extinct	Not Sensitive	Vulnerable	
Animalia	Mammalia	Megaptera novaeangliae	Humpback Whale	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus australis	Little Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Nyctophilus bifax	Eastern Long-eared Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Perameles nasuta	Long-nosed Bandicoot	Endangered Population	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petrogale penicillata	Brush-tailed Rock-wallaby	Endangered	Not Sensitive	Vulnerable	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Endangered Population, Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Physeter macrocephalus	Sperm Whale	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Pseudomys desertor	Desert Mouse	Critically Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Pseudomys novaehollandiae	New Holland Mouse	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Vespadelus troughtoni	Eastern Cave Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Antaresia stimsoni	Stimson's Python	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Aspidites ramsayi	Woma	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Cacophis harriettae	White-crowned Snake	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Caretta caretta	Loggerhead Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Dermochelys coriacea	Leatherback Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Diplodactylus platyurus	Eastern Fat-tailed Gecko	Endangered	Not Sensitive	Not Listed	
Animalia	Reptilia	Eretmochelys imbricata	Hawksbill Turtle	Not Listed	Not Sensitive	Vulnerable	
Animalia	Reptilia	Myuchelys bellii	Western Sawshelled Turtle, Bell's Turtle	Endangered	Not Sensitive	Vulnerable	
Animalia	Reptilia	Suta flagellum	Little Whip Snake	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Tiliqua occipitalis	Western Blue-tongued Lizard	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Uvidicolus sphyrurus	Border Thick-tailed Gecko	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Varanus rosenbergi	Rosenberg's Goanna	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia bynoeana	Bynoe's Wattle	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia terminalis subsp. terminalis	Sunshine Wattle	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Caladenia tessellata	Thick Lip Spider Orchid	Endangered	Category 2	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Chamaesyce psammogeton	Sand Spurge	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Cryptostylis hunteriana	Leafless Tongue Orchid	Vulnerable	Category 2	Vulnerable	
Plantae	Flora	Darwinia biflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Deyeuxia appressa		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Diuris bracteata		Endangered	Category 2	Extinct	
Plantae	Flora	Epacris purpurascens var. purpurascens		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus camfieldii	Camfield's Stringybark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Genoplesium baueri	Bauer's Midge Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Genoplesium plumosum	Tallong Midge Orchid	Critically Endangered	Category 2	Endangered	
Plantae	Flora	Grammitis stenophylla	Narrow-leaf Finger Fern	Endangered	Category 3	Not Listed	
Plantae	Flora	Grevillea caleyi	Caley's Grevillea	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Grevillea hilliana	White Yiel Yiel	Endangered	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Haloragodendron lucasii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Hibbertia puberula		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Hibbertia superans		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Kunzea rupestris		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Lasiopetalum joyceae		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Leptospermum deanei		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia integrifolia	Macadamia Nut	Not Listed	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca biconvexa	Biconvex Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Microtis angusii	Angus's Onion Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Persoonia laxa		Presumed Extinct	Not Sensitive	Extinct	
Plantae	Flora	Persoonia marginata	Clandulla Geebung	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Persoonia mollis subsp. maxima		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Persoonia pauciflora	North Rothbury Persoonia	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Pimelea curviflora var. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Prostanthera densa	Villous Mint-bush	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Prostanthera marifolia	Seaforth Mintbush	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Rhizanthella slateri	Eastern Australian Underground Orchid	Vulnerable	Category 2	Endangered	
Plantae	Flora	Rhodamnia rubescens	Scrub Turpentine	Critically Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Sarcochilus hartmannii	Hartman's Sarcochilus	Vulnerable	Category 2	Vulnerable	
Plantae	Flora	Senecio spathulatus	Coast Groundsel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetratheca glandulosa		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Tetratheca juncea	Black-eyed Susan	Vulnerable	Not Sensitive	Vulnerable	

Data does not include NSW category 1 sensitive species.

Location Confidences

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

LC Code	Location Confidence
Premise match	Georeferenced to the site location / premise or part of site
General area or suburb match	Georeferenced with the confidence of the general/approximate area
Road match	Georeferenced to the road or rail
Road intersection	Georeferenced to the road intersection
Feature is a buffered point	Feature is a buffered point
Land adjacent to geocoded site	Land adjacent to Georeferenced Site
Network of features	Georeferenced to a network of features

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12. These Terms are subject to New South Wales law.

Appendix C Site photographs

Photograph 1: View looking west, power line and vegetation cleared under powerlines

Photograph 2: Site landscape (site appreciation)

Photograph 3: Dense vegetation and rocky nature of the Site

Photograph 4: Dense vegetation

Photograph 5: Silty orange water with little to no flow

Photograph 6: Asbestos cement sheeting in semi buried condition

Photograph 7: Example of fly tipping

Photograph 8: Example of fly tipping

Photograph 9: Example of fly tipping

Appendix D Laboratory certificates

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2036460**	Page	: 1 of 5
Client	: **SMEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: SAM VAUGHAN	Contact	: Brenda Hong
Address	: PO BOX 1052 NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: 30012988	Date Samples Received	: 16-Oct-2020 17:10
Order number	: 300121777	Date Analysis Commenced	: 20-Oct-2020
C-O-C number	: ----	Issue Date	: 22-Oct-2020 11:38
Sampler	: SAM VAUGHAN		
Site	: ----		
Quote number	: EN/025/20		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Vanessa Phung	Team Leader - Asbestos	Melbourne Asbestos, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- **EA200 Legend**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: N/A - Not Applicable

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SS01	SS02	SS03	SS04	SS05
				Client sampling date / time	15-Oct-2020 00:00	15-Oct-2020 00:00	15-Oct-2020 00:00	15-Oct-2020 00:00	15-Oct-2020 00:00
Compound	CAS Number	LOR	Unit		ES2036460-001	ES2036460-002	ES2036460-003	ES2036460-004	ES2036460-005
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		**6.2**	**6.4**	**5.2**	**6.2**	**5.3**
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		**98**	**45**	**19**	**16**	**14**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SS08	SS09	----	----	----
				Client sampling date / time	15-Oct-2020 00:00	15-Oct-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2036460-006	ES2036460-007	--------	--------	--------
					Result	Result	----	----	----
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		**4.2**	**5.2**	**----**	**----**	**----**
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		**48**	**63**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)				Client sample ID	SS-ACM-01	ACM-02	----	----	----
				Client sampling date / time	15-Oct-2020 00:00	15-Oct-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2036460-008	ES2036460-009	--------	--------	--------
					Result	Result	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg		**Yes**	**Yes**	----	----	----
Asbestos Type	1332-21-4	-	--		**Ch+Am+Cr**	**Ch+Am**	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres		**N/A**	**N/A**	----	----	----
Sample weight (dry)	----	0.01	g		**40.8**	**22.6**	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg		**No**	**No**	----	----	----
Organic Fibre	----	0.1	g/kg		**Yes**	**No**	----	----	----
APPROVED IDENTIFIER:	----	-	--		**V.PHUNG**	**V.PHUNG**	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOLID**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	SS-ACM-01 - 15-Oct-2020 00:00	Asbestos sheeting fragments with attached organic fibres approx 70 x 40 x 4mm.
EA200: Description	ACM-02 - 15-Oct-2020 00:00	Asbestos sheeting fragments with attached dirt matter approx 70 x 35 x 4mm.

QUALITY CONTROL REPORT

Work Order	: **ES2036460**	Page	: 1 of 3
Client	: **SMEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: SAM VAUGHAN	Contact	: Brenda Hong
Address	: PO BOX 1052 NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: 30012988	Date Samples Received	: 16-Oct-2020
Order number	: 300121777	Date Analysis Commenced	: 20-Oct-2020
C-O-C number	: ----	Issue Date	: 22-Oct-2020
Sampler	: SAM VAUGHAN		
Site	: ----		
Quote number	: EN/025/20		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Vanessa Phung	Team Leader - Asbestos	Melbourne Asbestos, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA002: pH 1:5 (Soils) (QC Lot: 3317434)									
ES2036304-001	Anonymous	EA002: pH Value	----	0.1	pH Unit	5.7	5.5	4.46	0% - 20%
ES2036460-004	SS04	EA002: pH Value	----	0.1	pH Unit	6.2	6.3	2.07	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 3317435)									
ES2036304-001	Anonymous	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	296	278	6.27	0% - 20%
ES2036460-004	SS04	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	16	18	11.5	0% - 50%

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA010: Conductivity (1:5) (QCLot: 3317435)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	101	92.0	108

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2036460**	Page	: 1 of 4
Client	: **SMEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: SAM VAUGHAN	Telephone	: +61 2 8784 8555
Project	: 30012988	Date Samples Received	: 16-Oct-2020
Site	: ----	Issue Date	: 22-Oct-2020
Sampler	: SAM VAUGHAN	No. of samples received	: 9
Order number	: 300121777	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA002: pH 1:5 (Soils)						
Soil Glass Jar - Unpreserved						
SS01, SS02, SS03, SS04, SS05, SS08, SS09	----	----	----	21-Oct-2020	20-Oct-2020	**1**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA002: pH 1:5 (Soils)							
Soil Glass Jar - Unpreserved (EA002)							
SS01, SS02, SS03, SS04, SS05, SS08, SS09	**15-Oct-2020**	**20-Oct-2020**	22-Oct-2020	✓	**21-Oct-2020**	20-Oct-2020	×
EA010: Conductivity (1:5)							
Soil Glass Jar - Unpreserved (EA010)							
SS01, SS02, SS03, SS04, SS05, SS08, SS09	**15-Oct-2020**	**20-Oct-2020**	22-Oct-2020	✓	**21-Oct-2020**	17-Nov-2020	✓

Matrix: **SOLID**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Soil Glass Jar - Unpreserved (EA200)							
SS-ACM-01, ACM-02	**15-Oct-2020**	**----**	----	----	**21-Oct-2020**	13-Apr-2021	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Electrical Conductivity (1:5)	EA010	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Electrical Conductivity (1:5)	EA010	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Electrical Conductivity (1:5)	EA010	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	In house: Referenced to Rayment and Lyons 4A1 and APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to Rayment and Lyons 3A1 and APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining

Preparation Methods	Method	Matrix	Method Descriptions
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2036460**

Client	: **SMEC AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: SAM VAUGHAN	Contact	: Brenda Hong
Address	: PO BOX 1052 NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: sam.vaughan@smec.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 30012988	Page	: 1 of 3
Order number	: 300121777	Quote number	: EM2020SMEAUS0016 (EN/025/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: SAM VAUGHAN		

Dates

Date Samples Received	: 16-Oct-2020 17:10	Issue Date	: 16-Oct-2020
Client Requested Due Date	: 23-Oct-2020	Scheduled Reporting Date	: **23-Oct-2020**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 13.2' C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 9 / 9

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Asbestos Identification in Bulk Solids : EA200		
SS-ACM-01	- Soil Glass Jar - Unpreserved	- Snap Lock Bag
ACM-02	- Soil Glass Jar - Unpreserved	- Snap Lock Bag

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - IN-4S pH plus EC (1:5)
ES2036460-001	15-Oct-2020 00:00	SS01	✓
ES2036460-002	15-Oct-2020 00:00	SS02	✓
ES2036460-003	15-Oct-2020 00:00	SS03	✓
ES2036460-004	15-Oct-2020 00:00	SS04	✓
ES2036460-005	15-Oct-2020 00:00	SS05	✓
ES2036460-006	15-Oct-2020 00:00	SS08	✓
ES2036460-007	15-Oct-2020 00:00	SS09	✓

Matrix: **SOLID**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOLID - EA200B Asbestos Identification in Bulk Solids (Excluding
ES2036460-008	15-Oct-2020 00:00	SS-ACM-01	✓
ES2036460-009	15-Oct-2020 00:00	ACM-02	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS INVOICES

- A4 - AU Tax Invoice (INV)	Email	accounts.payable@smec.com

SAM VAUGHAN

- *AU Certificate of Analysis - NATA (COA)	Email	sam.vaughan@smec.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sam.vaughan@smec.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sam.vaughan@smec.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	sam.vaughan@smec.com
- A4 - AU Tax Invoice (INV)	Email	sam.vaughan@smec.com
- Chain of Custody (CoC) (COC)	Email	sam.vaughan@smec.com
- EDI Format - ENMRG (ENMRG)	Email	sam.vaughan@smec.com
- EDI Format - ESDAT (ESDAT)	Email	sam.vaughan@smec.com

SMEC

CHAIN OF CUSTODY FORM

SMEC OFFICE: North Sydney	**TURNAROUND REQUIREMENTS :** Standard Turnaround time (5 day TAT - unless specified)		**LAB:** ALS Laboratory Sydney **ATTENTION:** Sample Receipt - Shane Ellis **DISPATCH TO (ADDRESS & PHONE NO.):** ALS Laboratory, 277-289 Woodpark Road, Smithfield NSW 2164 (02) 8784 8555
PROJECT: 30012988			
PROJECT NUMBER: 300121777	**LAB QUOTE NO.:**	**COC PAGE NUMBER (Circle)** COC: 1 2 3 4 5 OF: 1 2 3 4 5	
PROJECT MANAGER: Sam Vaughan	**CONTACT PH:** 040 10 10 617 (Sam)		10.2°C
SAMPLED BY: Sam Vaughan			
DATE SAMPLED: 15/10/2020	RELINQUISHED BY: SMEC DATE/ TIME: 16/10/20	**RECEIVED BY:** ALS DATE/TIME:	**RELINQUISHED BY:** DATE/TIME:
Email Reports and Invoice to: sam.vaughan@smec.com			**RECEIVED BY:** [illegible] DATE/TIME: 16/10/20 17:10

Special Laboratory Instructions:

SAMPLE DETAILS									Laboratory analysis requested:											COMMENTS
LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX		CONTAINER TYPE & PRESERVATIVE			TOTAL NO. CONTAINERS	EA010 (EC 1:5)	Asbestos ID (EA200B?)	pH									
1	SS01		☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U	1	x		x									
2	SS02		☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U	1	x		x									
3	SS03		☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U	1	x		x									
4	SS04		☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U	1	x		x									
5	SS05		☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U	1	x		x									
6	SS08		☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U	1	x		x									
7	SS09		☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U	1	x		x									
8	SS-ACM-01		☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U	1		x										
9	ACM-02		☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U	1		x										
			☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U													
			☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U													
			☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U													
			☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U													
			☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U													
			☐soil	☐water	☐250ml jar	☐50mL snaplock	☐Vials ☐Glass ☐Plastic Acid preserve N H S U													
							TOTAL													

Environmental Division
Sydney
Work Order Reference
ES2036460

Telephone : + 61-2-8784 8555

local people
global experience

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