

# DETAILED CONTAMINATION INVESTIGATION

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**Lots 18-20 DP 23975, No.27-29 Chapman Street,  
Charlestown**

for

**Alesco Senior College**

**C/o: Avid Project Management Services**

Ref: 2020456

27 August 2020

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## ATTACHMENTS

1. Photographs 1 – 8
2. Drawing 2020456-SIT-01
3. Preliminary Architectural Drawings
4. Engineering Log Sheets
5. Lotsearch Report, Ref: LS014007, dated 12 August 2020
6. Summary of Results
7. Laboratory Report Sheets
8. General Notes

## 1. INTRODUCTION

At your request Agility Engineering have carried out a Detailed Contamination Investigation at Lots 18-20 DP 23975, No.27-29 Chapman Street, Charlestown.

The purpose of this investigation was to determine:

- the type and nature of the existing subsurface soil/rock profile within the site; and
- identify potential contamination present within the subsurface soil profile.

This report should be read in conjunction with the attached "General Notes".

## 2. PROPOSED DEVELOPMENT

Agility Engineering was provided with preliminary architectural drawings prepared by CKDS (project no: 20072, Drawings SK-1004, SK-1101, SK-8001 & SK-8002, dated 24/06/2020) showing the layout of the proposed alterations and additions. It is understood that the existing site structures are to remain onsite with general internal refurbishment for use as an education facility. External disturbance to the ground surface at the site is understood to be limited to the existing carparking area with an extension in the central to southern portion along the western site boundary.

## 3. SITE DESCRIPTION

The subject site is identified as a 1865m<sup>2</sup> generally rectangular shaped lot located on the northern side of Chapman Street. The site was bordered by St Albans Close to the west by developed residential lots with dwellings to the east and by commercial structure (former subsidiary church building) to the north.

The observations detailed in Table 1 below were made during the visual assessment of the site undertaken on 11 August 2020 and are approximately located on drawing 2020456-SIT-01 and in the attached photographs.

Table 1 – Site Details/Observations

Site Detail	Description
Lot and DP	Lots 18-20 DP 23975
Zoning	Lot 18: R3 – Medium Density Residential Lots 19 & 20: B4 – Mixed Use
Approximate size of site:	~1865m <sup>2</sup>
Land use:	

<ul style="list-style-type: none"> <li>• <b>Current/Proposed:</b></li> <li>• <b>Surrounds:</b></li> </ul>	Proposed use as an Educational Facility Low Density Residential; commercial to the south and southeast (Charlestown Square Shopping Centre)
<b>Closest Environmental Receptor</b>	A tributary to Winding Creek is located approximately 50m north of the site.
<b>Closest Human Health Receptor</b>	Residential properties are located directly adjacent the eastern site boundaries. The little Unicorn Early Education Centre is located approximately 150m southeast of the site within the Charlestown Square Shopping Centre.
<b>Site Topography</b>	The site and surrounding area were sloping to the northwest.
<b>Site Vegetation</b>	Good cover of maintained grass and gardens across the entire site. Some mature trees in the northern, north western and southern portions of the site.
<b>Site Drainage</b>	Infiltration and existing stormwater network/surface water runoff
<b>Visual Signs of contamination</b>	Nil.
<b>Signs of erosion</b>	Nil.
<b>Presence of drums or waste</b>	Nil.
<b>Identification of potential asbestos bearing materials</b>	Agility Engineering were advised by the client that the existing structures were noted to have some construction materials containing asbestos in places. It is recommended these materials be removed by a suitably licenced demolition contractor if required to be disturbed during refurbishment, with appropriate clearances undertaken.
<b>Visible signs of plant stress</b>	Nil.
<b>Odours noticeable on site</b>	Nil.
<b>Evidence of current or former petroleum facilities</b>	Nil.
<b>Chemicals stored on site</b>	Nil.
<b>Evidence of waste burial (anecdotal or otherwise)</b>	Nil.

At the time of the investigation, the site supported a church hall, toilet block and amenities building connected by covered awnings, with the structures covering an estimated 60% of the total site area.

#### 4. GEOLOGICAL SETTING

Reference to the 1:100 000 Newcastle Coalfield Regional Geology Map published by Department of Mineral Resources indicates that the site lies within the Mount Hutton Formation of the Boolaroo Subgroup. The Mount Hutton Formation underlies the Hartley Hill Seam and overlies the Australasian Seam. The Mount Hutton Formation normally consists of intermixed sandy shales and shaly sandstones with only occasional occurrences of tuff confined to the south.



The site falls primarily within the Warners Bay Landscape as identified on the “Soil landscapes of the Gosford-Lake Macquarie 1:100 000 Sheet” published by the Department of Land and Water Conservation. The south western corner of the site appears to cross the boundary into the Gateshead Landscape. The Warners Bay Landscape is a residual landscape characterised by undulating to rolling rises and low hills on fine-grained sediments of the Newcastle Coal Measures. The Warners Bay Landscape is predominantly extensively cleared tall open-forest. The site falls within the Gateshead Landscape as identified on the “Soil Landscapes of the Newcastle 1:100 000 Sheet” published by the Department of Land and Water Conservation. The Gateshead Landscape is an erosional landscape characterised by undulating to rolling rises on Permian conglomerate, shale and sandstone in the Awaba Hills. The Gateshead Landscape contains slopes between 5-15% on local reliefs to 100m consists of predominantly cleared woodland and open forest.

## 5. FIELDWORK AND SUBSURFACE CONDITIONS

Fieldwork was undertaken on the 11 August 2020 and consisted of the excavation of seven boreholes in order to assess the typical subsurface conditions of the site. Drawing 2020456-SIT-01 shows the borehole locations.

Boreholes were excavated using 75mm hand auger. The boreholes were undertaken for the purpose of allowing visual tactile assessment of the upper soil profile and the collection of soil samples.

The subsurface profiles encountered in the boreholes are presented on engineering logs in the attachment section of this report. Table 2 and Table 3 below summarises the identified subsurface profiles and their distribution within the excavated boreholes.

Table 2 – Summary of geotechnical units

Geotechnical Unit	Material Type	Material Description
Unit 1	FILL/TOPSOIL	Silty SAND or Gravelly SAND, dark grey to grey
Unit 2	FILL	Gravelly CLAY, low plasticity, with sand, trace charcoal, grey
Unit 3	SLOPEWASH	SAND, with gravel, trace clay, brown/orange
Unit 4	Residual Soil	Silty CLAY, low to medium plasticity, orange mottled white
Unit 5	Extremely weathered conglomerate	Gravelly SAND, orange

Table 3 – Summary of Units at Borehole Locations

Borehole	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
BH1	0.0 – 0.1m	–	0.1 – 0.4m	0.4 – 0.5m	0.5 – 0.6m*
BH2	0.0 – 0.2m	–	0.2 – 0.4m	0.4 – 0.6m	0.6 – 0.7m*
BH3	0.0 – 0.5m	–	0.5 – 0.8m	0.8 – 1.0m*	–
BH4	0.0 – 0.1m	0.1 – 1.0m*	–	–	–
BH5	0.0 – 0.1m	–	0.4 – 0.5m*	–	–
BH6	0.0 – 0.3m	–	0.3 – 0.4m*	0.4 – 0.7m*	–
BH7	0.0 – 0.1m	–	0.1 – 0.3m	0.3 – 0.6m*	–

Note – \* denotes borehole terminated in layer

Neither groundwater nor surface water were observed during the investigation. There was no observation of potentially asbestos containing material within site fill material observed during site investigation works.

## 6. PRELIMINARY CONTAMINATION INVESTIGATION

### 6.1 REVIEW OF HISTORICAL AERIAL PHOTOGRAPHS

Agility reviewed the historical aerial photographs for the years 1954, 1965, 1976, 1983, 1993, 2010, 2015 and 2020 within a 150m radius of the site obtained from Lotsearch Pty Ltd with the full Lotsearch report provided attached to this report.

The historical aerial photographs indicated that in 1954, the subject site and surroundings appeared to be partially cleared with some low-density residential development. The site had been subject to some clearing with no development apparent at this time.

The images for 1965 shows the amenities building in the southern portion of the site had been constructed and the building located at 2 St Albans Close (adjacent to the northern site boundary) has been constructed, with further residential development in the area.

The image 1976 shows the site in its current configuration with residential dwellings cleared and earthworks commence in preparation for the construction of Charlestown Square Shopping Centre.

The only significant change in the area shown in the 1983 image is the completion of the Charlestown Square Shopping Centre, with the 1993 image showing the replacement of residential dwellings to the east of the site with a shopping centre expansion. The 2010 image shows further expansion of the shopping centre to the south (some construction works still being undertaken). The 2020 image shows the site in its current configuration and the shopping centre expansion completed.

## 6.2 REVIEW OF NSW EPA CONTAMINATED LAND DATABASE

Lotsearch undertook a search of the NSW EPA register for Environment Protection licences, applications, notices, audits or pollution studies and reduction programs applicable to the site, and also a search of sites notified as potentially requiring regulation and found the following:

- Five sites were notified to NSW EPA with the closest being an Ausgrid Depot site located approximately 360m north of the site, with the remaining four being service station sites.
- No records of notice (contaminated land) pertaining to the subject site.
- No former gasworks within 1km of the site.
- No waste management sites were located within 1km of the site.
- Five national liquid fuel facilities (all service stations) were located within 1km of the site with the nearest being 275m southeast of the site.
- No records of PFAS investigation sites within 1km of the site.
- No other sites with contamination issues noted within 1km of the site.

For further details, refer to the full Lotsearch report in the attachment section of this report.

## 6.3 GROUNDWATER BORE SEARCH

Lotsearch undertook a groundwater bore search as part of their database searches which indicated a total of forty eight registered groundwater bores within 2000m of the site, generally authorised as test/monitoring bores assumed to be associated with services station with the nearest being 420m southeast of the site. There are no registered groundwater bores on the subject site.

## 6.4 CONCEPTUAL SITE MODEL

The NEPM identifies a conceptual site model (CSM) as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The development of a CSM is an essential part of all site assessments. The NEPM identified the essential elements of a CSM as including:

- Known and potential sources of contamination and contaminants of concern including the mechanism(s) of contamination;
- Potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air);
- Human and ecological receptors;
- Potential and complete exposure pathways; and
- Any potential preferential pathways for vapour migration (if potential for vapours identified).

Each of these elements relevant to the subject site are discussed in the following section.

## **6.5 SOURCES OF CONTAMINATION**

Based on the site investigation and the proposed development, potential sources of contamination identified at the site included:

- Potential contamination of through importation of fill material in the eastern portion of the site:
  - Fill material may have been contaminated prior to being received at site. The depth of contamination may vary based on the depth of fill. Potential contaminants of concern may include hydrocarbons, heavy metals and asbestos;
  - Onsite risks are considered possible and likely limited to direct contact, inhalation of dust particles or ingestion;
  - Offsite risks due to contamination at the site are considered unlikely and limited to leaching of heavy metals and/or hydrocarbons in surface or groundwater and subsequent migration of the contaminant.

## **7. ASSESSMENT CRITERIA**

### **7.1 SOIL ASSESSMENT CRITERIA**

The investigation and screening levels (ISL) utilised for the assessment of the soil on site were sourced from the NEPC 2013. These ISL are not derived as acceptance criteria for contamination at a site, but as levels above which specific consideration of risk, based on the site use and potential exposure, is required. If a risk is determined as present, then remediation and/or management must be undertaken. The ISL guideline criteria used to assess risk to human health and the environmental are based on land use settings.

### **7.2 HEALTH INVESTIGATION LEVELS**

Intentionally conservative health investigation levels (HIL) have been derived for four generic land use settings:

- HIL 'A' Residential with garden/ accessible soil (home grown produce <10% fruit and vegetable intake (no poultry). This category includes children's day care centres, preschools and primary schools.
- HIL 'B' Residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high rise buildings and flats.
- HIL 'C' Public open space such as parks, playgrounds, playing fields (e.g. ovals) secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves).
- HIL 'D' Commercial/industrial such as shops, offices, factories and industrial sites.

### 7.3 ECOLOGICAL INVESTIGATION LEVELS

These levels are considered to apply to soil within two metres of the surface, the root zone and habitation zone of many species.

Ecological investigation levels (EIL) have been determined for arsenic, copper, chromium III, DDT, naphthalene, nickel, lead and zinc in soil based on species sensitivity model and for three generic land use settings:

- Areas of ecological significance – for areas where the primary intention is for the conservation and protection of the natural environment. Protection level of 99%.
- Urban residential areas and public open space – broadly equivalent to the HIL A, HIL B and HIL C land use settings. Protection level of 80%.
- Commercial and industrial land uses – considered to be broadly equivalent to HIL D land use setting. Protection level of 60%.

Methodology for the derivation of EIL for other contaminants is available in the NEPM and requires additional soil character data.

### 7.4 APPROPRIATENESS OF ADOPTED GUIDELINES

The NEPM document has been approved by the NSW EPA for use on potentially contaminated sites and supersedes most of the preceding reference documents.

Best practise in alignment with council's requirements under State Environmental Planning Policy No. 55 (SEPP 55) prescribes assessment on the basis of the most sensitive allowable site use, therefore Agility Engineering considers the criteria as defined for the HIL A - 'residential land use with access to soils' to be conservatively appropriate for assessment of human health risk from the soil at the site. The ecological risk has been assessed under the criteria defined for urban residential and public open space.

The groundwater quality has not been assessed at the site. It is considered unlikely that the site would have impacted groundwater as groundwater was not identified during the investigation which had a maximum depth of 1.0m in BH3 & BH4, with groundwater expected to be greater than 5m from the existing site surface.

## 8. QUALITY ASSURANCE / QUALITY CONTROL

A Quality Assurance and Quality Control (QA/QC) report was undertaken by the laboratory to determine the completeness of data, comparability, representativeness, precision and accuracy based on field and laboratory considerations. The QA/QC report was undertaken in accordance with National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013).

The QA/QC report concluded that the laboratory QA/QC criteria were within acceptable limits indicating field sampling, storage, handling and decontamination procedures and laboratory preparation and analysis procedures were adequate. As such, Agility Engineering considers that the results obtained from the laboratory are reliable as far as can be ascertained from the sampling and analysis undertaken.

The laboratory QA/QC report is contained within the laboratory report sheets attached to this report. Agility Engineering omitted field duplicates, field blanks, trip blanks, trip spikes or equipment washes due to the limited nature of the investigation.

Agility Engineering undertook two duplicate samples which were submitted blind to the laboratory with all relative percentage difference reporting acceptable results. A copy of the quality assurance samples comparison is provided in the attachment section of this report.

## 9. RESULTS

Results were compared to the relevant assessment criteria as shown in attached section of this report.

### 9.1 SOIL RESULTS

Results reported soil contaminant concentrations that were non-detectable or detectable at concentrations below the relevant criteria with the exception of samples shown in Table 4.

Table 4 – Summary of soil results above relevant criteria.

Sample Identification (Depth)	Soil Unit (as described in Table 4)	Analyte	Criteria	Concentration
BH1a (0.0-0.1)	Unit 1	Zinc	7400 <sup>A</sup> 70 <sup>B</sup>	88
BH4a (0.0-0.1)	Unit 1	Zinc	7400 <sup>A</sup> 70 <sup>B</sup>	110
BH5a (0.0-0.1)	Unit 1	Zinc	7400 <sup>A</sup> 70 <sup>B</sup>	110

All units are in mg/kg

<sup>A</sup> National Environmental Protection Measure (NEPM) 1999 (Amended April 2013) Health Investigation Level (HIL) A – residential with soil access

<sup>B</sup> National Environmental Protection Measure (NEPM) 1999 (Amended April 2013) Environmental Investigation Levels (EIL) for Urban Residential/Public Open Space.

Results highlighted in **BOLD** are >250% of the HIL criteria.

## 10. SITE CHARACTERISATION

A total of fourteen soil samples were collected from seven hand auger borehole locations at the site. This is in accordance with the minimum sampling density of seven sampling points recommended by the NSW Sampling Design Guidelines for an area of approximately 0.2ha.

As detailed in Section 6, major contaminants of concern at the site were identified as hydrocarbons, heavy metals and asbestos. Based on this a Detailed Contamination Investigation was undertaken, and all samples were analysed for hydrocarbons and heavy metals.

Based on the historical site use and the potential sources of contamination, samples were collected fill material and natural soils. Soil sample collection consisted of:

- 7 soil samples collected from fill material (Unit 1).
- 1 soil sample collected from fill material (Unit 2).
- 3 soil samples collected from residual soil material (Unit 3).
- 3 soil samples collected from residual soil material (Unit 4).

Based on this, the identified potential contamination sources/potential contaminants of concern and the sampling density, Agility Engineering considers that an adequate number of samples were collected to identify whether the site has contamination present and the general extent, distribution and location of possible contamination. It is noted that the sampling areas were limited to unpaved areas of the site and it is understood that no demolition of the existing hardstand areas is to be undertaken.

Laboratory results identified that shallow fill material 0 – 0.2m begl (soil Unit 1) has elevated concentrations of zinc in some locations above the adopted ecological criteria only. Due to there being no ecological receptors onsite, the limited distribution of elevated concentrations and the concentrations only marginally in excess of ecological criteria it is not considered the identified concentrations pose a risk of harm to human health or the environment.

As such, further investigation of the site is considered to be warranted and the site is considered suitable for the proposed use as an education facility.

## 11. CONCLUSIONS AND RECOMMENDATIONS

This report presents the findings of a Detailed Contamination Investigation undertaken in an area of approximately 1865m<sup>2</sup> located on the land identified as Lots 18-20 DP 23975, No.27-29 Chapman Street, Charlestown.

It is proposed that the existing site structures be retained and refurbished for use as an educational facility.

The scope of works included a site description, review of the site geology, review of historical aerial photographs, a groundwater bore search and the collection and analysis of fourteen soil samples from seven hand auger borehole locations. All soil samples were analysed for hydrocarbons and heavy metals.

Laboratory results reported an elevated zinc concentration above the adopted ecological criteria only in three soil samples (BH1 0.0m – 0.1m besl, BH4 0.0m – 0.1m besl and BH5 0.0m – 0.1m besl).

The extent of the impacted fill material at the site is considered to be limited in depth and distribution at the site.

Based on the findings of the Detailed Contamination Investigation, it is considered further investigation of the site is not warranted and the site is considered suitable for the proposed use as an educational facility.

In the event that any material is to be disposed offsite (at a suitably licensed facility), it will need to be laboratory analysed and classified in accordance with NSW DECCW (2014) Waste Classification Guidelines by an appropriately qualified contaminated land consultant prior to removal from site.

## **12. LIMITATIONS**

Agility Engineering have performed investigation and consulting services for this project in general accordance with current professional and industry standards. The findings contained within this report are the result of site observations, field investigation and limited laboratory test. The extent of testing was limited to discrete test locations and variations that cannot be inferred or predicted may occur in ground conditions between test locations. To the best of our knowledge, information presented in this report represents a reasonable interpretation of the general condition of the site. Under no circumstances, however, do these findings represent the actual state of the site at all points.

The programme of field sampling and interpretations presented within this report are limited in nature and Agility Engineering, or any other reputable consultant, cannot provide unqualified warranties, nor does Agility Engineering assume liability for site conditions not accessible during the time of the investigation.

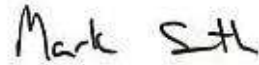


Agility Engineering Consulting Engineers should be contacted immediately should subsurface conditions be found to differ from those described in this report.

**Agility Engineering Pty Ltd**



**Matthew Clark**  
Geo-Environmental Scientist



**Mark Smith**  
Geo-Environmental Engineer  
Director

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# ATTACHMENTS

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**Photograph 1** – Looking north-east towards the subject site from across St Albans Close.



**Photograph 2** – Looking north along the western site boundary from the southwest corner of the site.





**Photograph 3** – Looking east along the southern site boundary (right of shot).





**Photograph 4** – Looking north along the eastern site boundary (retained fill against building).





**Photograph 5** – Looking south along the eastern site boundary (left of shot).





**Photograph 6** – Looking west along northern site boundary (right of shot).





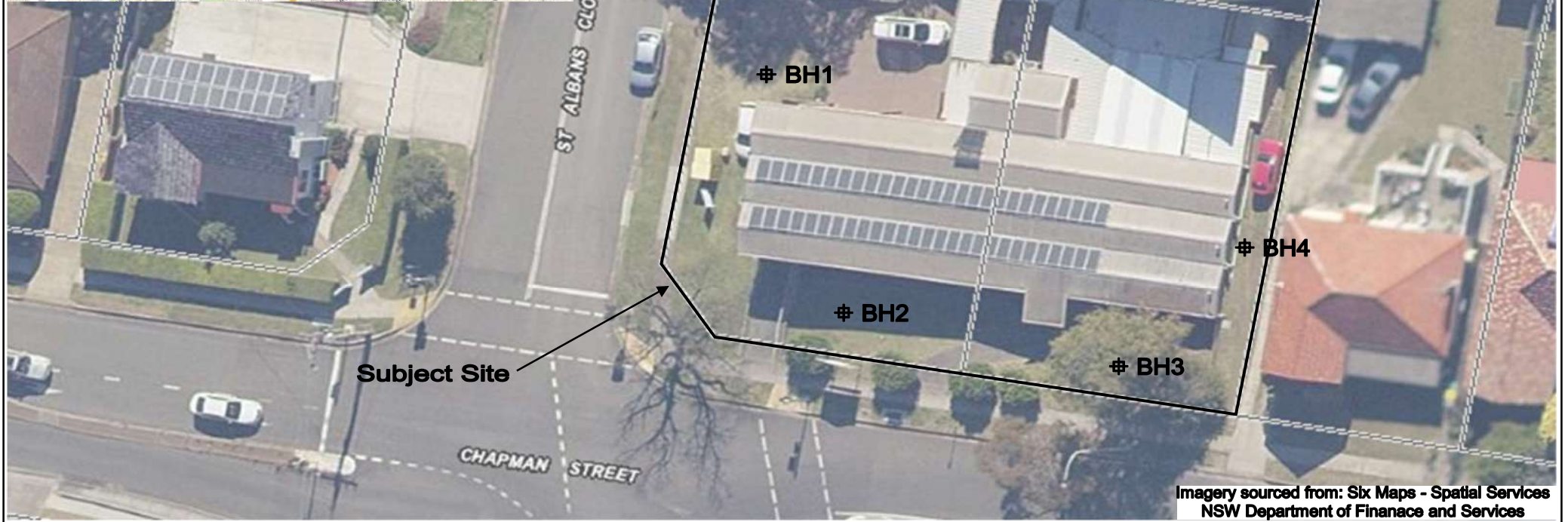
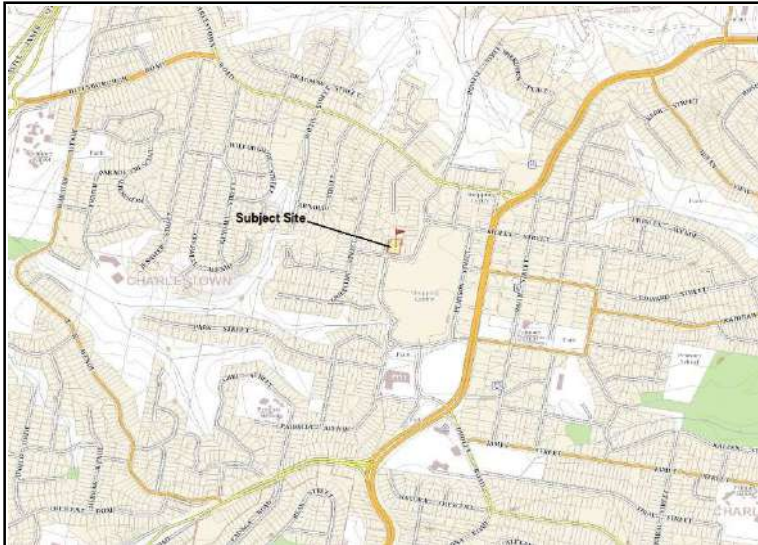
**Photograph 7** – Looking south along western site boundary (right of shot).





**Photograph 8** – Looking east at driveway access to the site located on the western site boundary.





Imagery sourced from: Six Maps - Spatial Services  
NSW Department of Finance and Services



TITLE: Approximate Test Location Plan (Not To Scale)  
CLIENT: Alesco Senior College  
ADDRESS: No.29 Chapman Street, Charlestown  
AGILITY JOB No: 2020456

DRAWN BY: MC

DRAWING No: 2020456-SIT-01

DATE: 17.08.20





## Alesco Senior College

29 Chapman St  
Charlestown  
NSW 2290

Preliminary

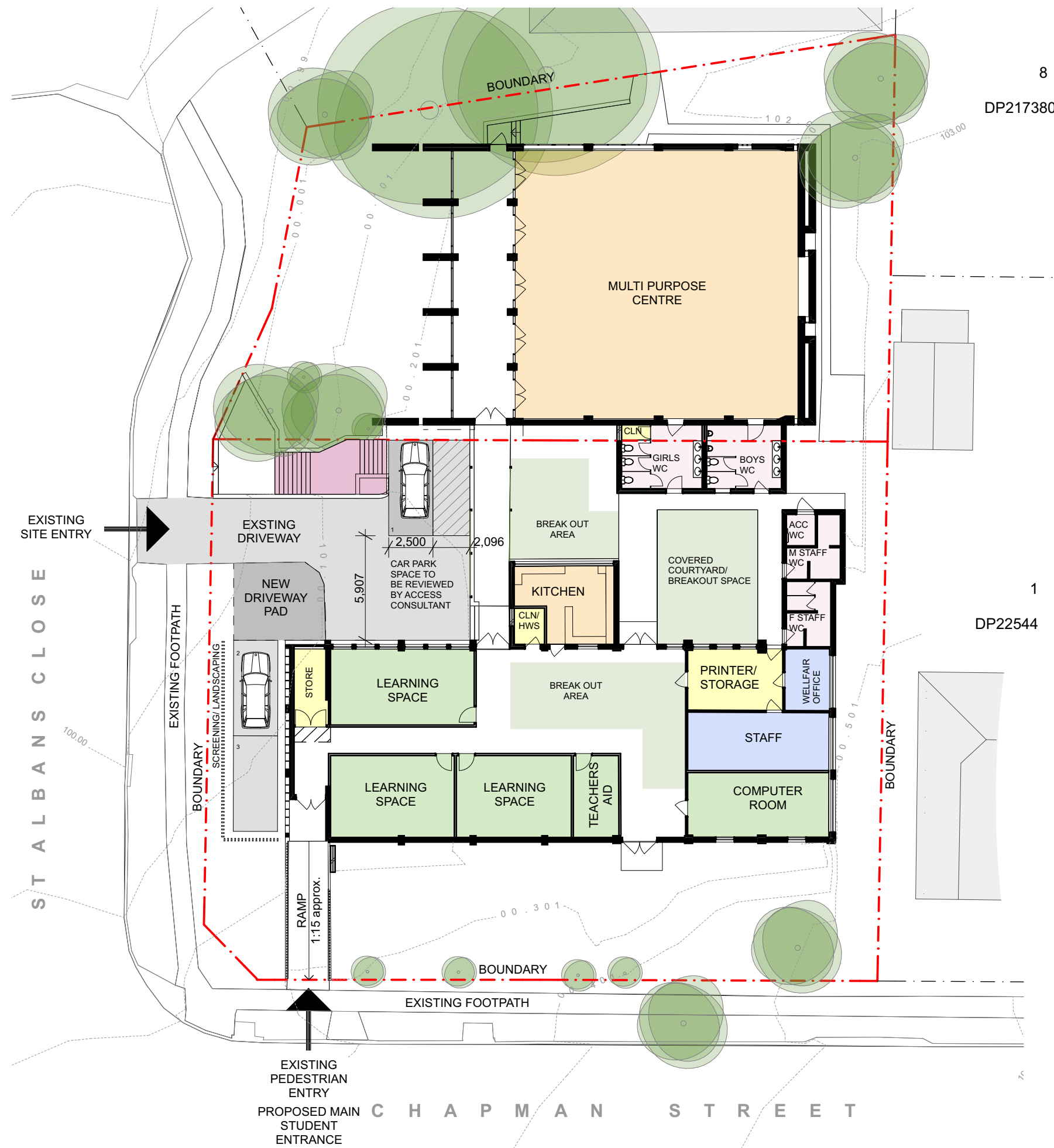




# KEY

- NEW LEARNING SPACES**
  - IT SERVICES
  - AIR CONDITIONING
- BREAK OUT SPACES**
  - INFORMAL GATHERING
  - OPPORTUNITIES FOR COMMUNAL EATING
- STAFF SPACES**
  - IT SERVICES
  - AIR CONDITIONING
- SUPPORTING SPACES**
  - REFURBISHMENT OF EXISTING KITCHEN
  - RE USE OF CHURCH AS SCHOOL HALL
- AMMENITIES**
  - REFURBISHMENT OF HALL BATH ROOMS FOR STAFF
  - CREATION OF STUDENT AMMENITIES IN EXISTING RECTORY

(We note the following:  
 -The existing Halls Male facilities do not contain a WC  
 -The existing Accessible WC does not meet current requirements.)
- SUPPORTING SPACES: STORES**
  - IT SERVICES FOR PRINT STORE
  - CREATION OF NEW CLEANERS STORAGE.
- NEW LANDSCAPE WORKS**
  - STAIR TO BE DEMOLISHED OR PLANTER ADDED



1 Ground Floor Plan  
SCALE 1:250 @ A3

## Architecture | Planning | Interiors

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North Point



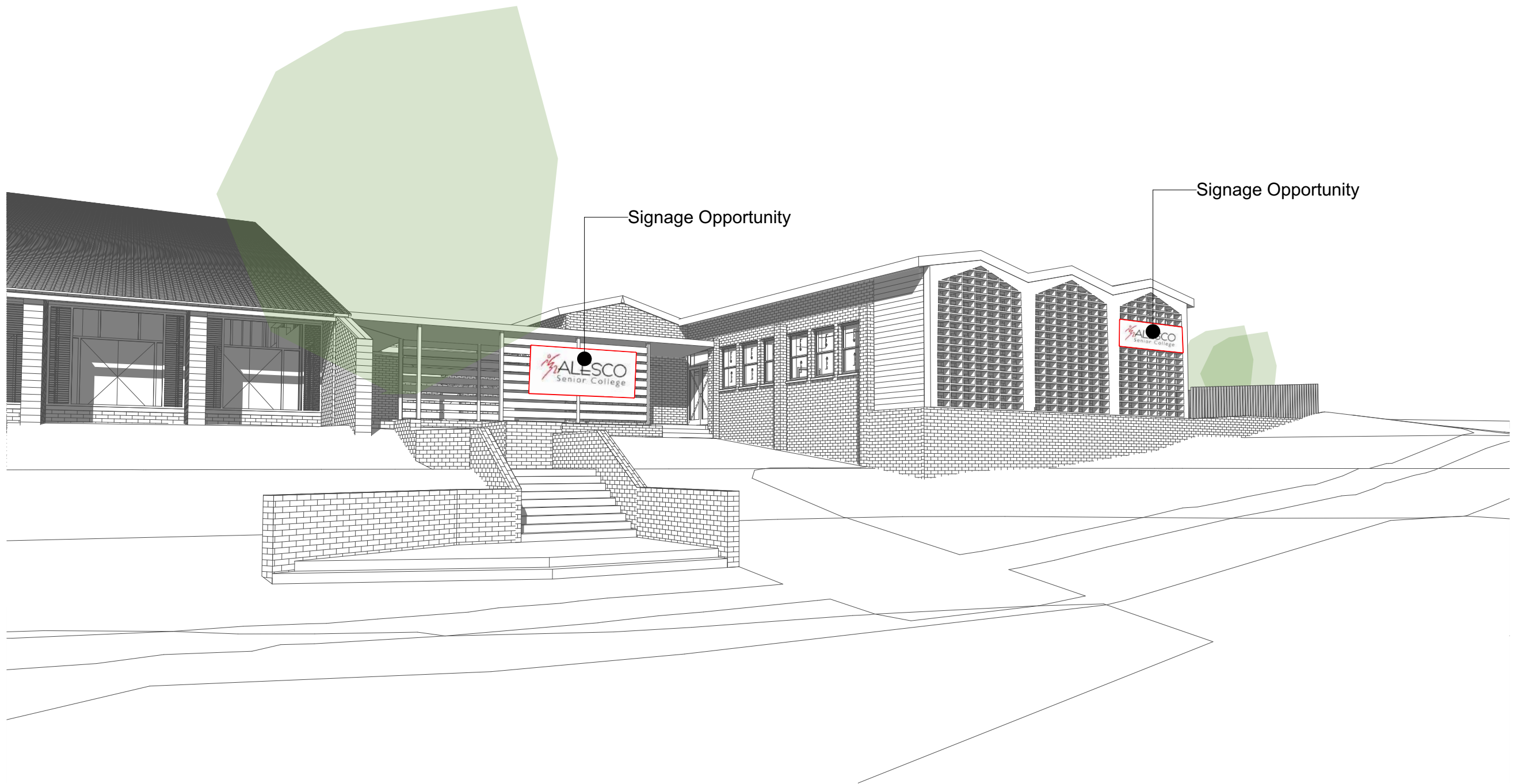
Alesco Senior College  
 project #  
**20072**  
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Proposed Floor Plan  
 drawing #  
**SK-1101**  
 AS SHOWN

issue  
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Preliminary



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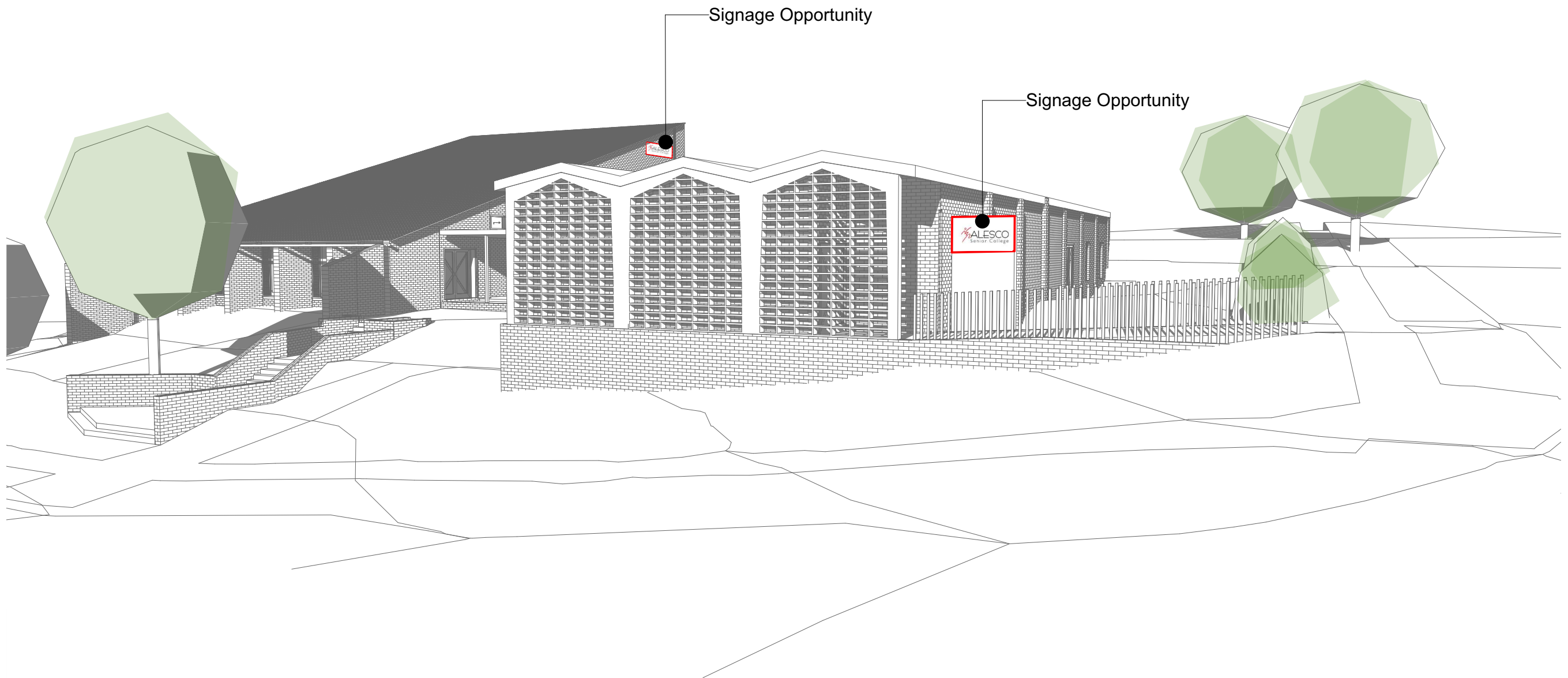
North Point



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3D Images - Signage  
drawing #  
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# ENGINEERING BOREHOLE LOG



**Client:** Alesco Senior College  
**Site Address:** No.29 Chapman Street, Charlestown  
**Job No:** 2020456  
**Location:** See Site Plan  
**Surface RL:** Existing Ground Surface Level

**Borehole No:** BH1  
**Equipment:** 75mm HAND AUGER  
**Date:** 11.08.20  
**Logged By:** MC

Drilling Information				Profile Description					Soil Origin and Additional Comments					
Depth in metres	Progress	Sample type	Water	Graphic Log	USC	Material Description		Consistency		Rel. Density	Rock Str.	Moisture	DCP Blows per 100mm	
						ROCK TYPE, grain size, colour, fabric and texture, weathering								
0.25	D	D	NE			TOPSOIL/FILL: Silty SAND, fine to medium grained, dark grey, trace fine to medium subangular to subrounded gravel		-			M		TOPSOIL/FILL	
						SLOPEWASH: SAND, fine to coarse grained, brown/orange, with fine to medium subrounded to rounded gravel, trace clay		-			W			SLOPEWASH
						Silty CLAY, low to medium plasticity, orange, with fine to medium grained sand, trace fine to medium subrounded to rounded gravel		St			M			
						Extremely Weathered Conglomerate: Gravelly SAND, fine to medium grained, orange, with fine to medium subrounded to rounded gravel		Vlow			SM			BEDROCK
0.50						Hand Auger refusal on extremely weathered conglomerate								
0.75														
1.00														
1.25														
1.50														
1.75														
2.00														
2.25														
2.50														
2.75														
3.00														

Key						
Water	Cohesive Soil Consistency	Non-Cohesive Soil Relative Density	Rock Strength	Moisture	DCP Termination	
NE not encountered	VS very soft	VL very loose	VLow very low	D dry	R Refusal	
NO not observed	S soft	L loose	Low low	SM slightly moist	T Terminated	
— seepage	F firm	MD medium dense	Med medium	M moist		
▽ free standing	St stiff	D dense	High high	W wet		
	VSt very stiff	VD very dense	VHigh very high		<b>Sampling Data</b>	
	H hard		EHigh extremely high		U50 undisturbed 50mm diameter sample	
	Fr friable				D disturbed sample	
					B bulk sample	

# ENGINEERING BOREHOLE LOG



**Client:** Alesco Senior College  
**Site Address:** No.29 Chapman Street, Charlestown  
**Job No:** 2020456  
**Location:** See Site Plan  
**Surface RL:** Existing Ground Surface Level

**Borehole No:** BH2  
**Equipment:** 75mm HAND AUGER  
**Date:** 11.08.20  
**Logged By:** MC

Drilling Information				Profile Description					Soil Origin and Additional Comments			
Depth in metres	Progress	Sample type	Water	Graphic Log	USC	Material Description	Consistency	Rel. Density		Rock Str.	Moisture	DCP Blows per 100mm
						SOIL TYPE, primary soil component characteristics, colour, secondary and minor soil component characteristics ROCK TYPE, grain size, colour, fabric and texture, weathering						
						TOPSOIL/FILL: Silty SAND, fine to medium grained, dark grey, trace fine to medium subangular to subrounded gravel	-			M		TOPSOIL/FILL
0.25		D				SLOPEWASH: SAND, fine to coarse grained, brown/orange, with fine to medium subrounded to rounded gravel, trace clay	-					SLOPEWASH
0.50		D				Silty CLAY, low to medium plasticity, orange, with fine to medium grained sand, trace fine to medium subrounded to rounded gravel	St					RESIDUAL SOIL
0.75						Extremely Weathered Conglomerate: Gravelly SAND, fine to medium grained, orange, with fine to medium subrounded to rounded gravel	Vlow			SM		BEDROCK
1.00						Hand Auger refusal on extremely weathered conglomerate						
1.25												
1.50												
1.75												
2.00												
2.25												
2.50												
2.75												
3.00												

Key						
Water	Cohesive Soil Consistency	Non-Cohesive Soil Relative Density	Rock Strength	Moisture	DCP Termination	
NE not encountered NO not observed — seepage ▽ free standing	VS very soft S soft F firm St stiff VSt very stiff H hard Fr friable	VL very loose L loose MD medium dense D dense VD very dense	VLow very low Low low Med medium High high VHigh very high EHigh extremely high	D dry SM slightly moist M moist W wet	R Refusal T Terminated	
<b>Sampling Data</b> U50 undisturbed 50mm diameter sample D disturbed sample B bulk sample						

# ENGINEERING BOREHOLE LOG



**Client:** Alesco Senior College  
**Site Address:** No.29 Chapman Street, Charlestown  
**Job No:** 2020456  
**Location:** See Site Plan  
**Surface RL:** Existing Ground Surface Level

**Borehole No:** BH3  
**Equipment:** 75mm HAND AUGER  
**Date:** 11.08.20  
**Logged By:** MC

Drilling Information				Profile Description				Soil Origin and Additional Comments		
Depth in metres	Progress	Sample type	Water	Graphic Log	USC	Material Description	Consistency Rel. Density Rock Str.		Moisture	DCP Blows per 100mm
						SOIL TYPE, primary soil component characteristics, colour, secondary and minor soil component characteristics ROCK TYPE, grain size, colour, fabric and texture, weathering				
			NE			FILL: Gravely CLAY, low plasticity, brown mottled orange, fine to coarse subangular to rounded gravel, with fine to coarse grained sand, trace charcoal	-	M		FILL
0.25		D				FILL: SAND, fine to medium grained, grey, trace fine to medium subangular to subrounded gravel	-			
0.50		D				SLOPEWASH: SAND, fine to coarse grained, brown/orange, with fine to medium subrounded to rounded gravel, trace clay	-			SLOPEWASH
0.75						Silty CLAY, low to medium plasticity, orange, with fine to medium grained sand, trace fine to medium subrounded to rounded gravel	St			RESIDUAL SOIL
1.00						Terminated, Limit of Investigation				
1.25										
1.50										
1.75										
2.00										
2.25										
2.50										
2.75										
3.00										

Key						
Water	Cohesive Soil Consistency	Non-Cohesive Soil Relative Density	Rock Strength	Moisture	DCP Termination	
NE not encountered	VS very soft	VL very loose	VLW very low	D dry	R Refusal	
NO not observed	S soft	L loose	Low low	SM slightly moist	T Terminated	
— seepage	F firm	MD medium dense	Med medium	M moist		
▽ free standing	St stiff	D dense	High high	W wet		
	VSt very stiff	VD very dense	VHigh very high		Sampling Data	
	H hard		EHigh extremely high		U50 undisturbed 50mm diameter sample	
	Fr friable				D disturbed sample	
					B bulk sample	

# ENGINEERING BOREHOLE LOG



**Client:** Alesco Senior College  
**Site Address:** No.29 Chapman Street, Charlestown  
**Job No:** 2020456  
**Location:** See Site Plan  
**Surface RL:** Existing Ground Surface Level

**Borehole No:** BH4  
**Equipment:** 75mm HAND AUGER  
**Date:** 11.08.20  
**Logged By:** MC

Drilling Information			Profile Description						Soil Origin and Additional Comments		
Depth in metres	Progress	Sample type	Water	Graphic Log	USC	Material Description	Consistency	Rel. Density		Moisture	DCP Blows per 100mm
						SOIL TYPE, primary soil component characteristics, colour, secondary and minor soil component characteristics				0 5 10 15 20 25	FILL
						ROCK TYPE, grain size, colour, fabric and texture, weathering					
0.25		D	NE			TOPSOIL/FILL: Silty SAND, fine to medium grained, dark grey, trace fine to medium subangular to subrounded gravel	-		M		
0.50						FILL: Gravelly CLAY, low plasticity, brown mottled orange, fine to coarse subangular to rounded gravel, with fine to coarse grained sand, trace charcoal	-				
0.75											
1.00											
1.25						Terminated, Limit of Investigation					
1.50											
1.75											
2.00											
2.25											
2.50											
2.75											
3.00											

Key						
<b>Water</b>	<b>Cohesive Soil Consistency</b>	<b>Non-Cohesive Soil Relative Density</b>	<b>Rock Strength</b>	<b>Moisture</b>	<b>DCP Termination</b>	
NE not encountered	VS very soft	VL very loose	VLW very low	D dry	R Refusal	
NO not observed	S soft	L loose	Low low	SM slightly moist	T Terminated	
— seepage	F firm	MD medium dense	Med medium	M moist		
▽ free standing	St stiff	D dense	High high	W wet		
	VSt very stiff	VD very dense	VHigh very high			
	H hard		EHigh extremely high			
	Fr friable					
<b>Sampling Data</b>						
U50 undisturbed 50mm diameter sample						
D disturbed sample						
B bulk sample						

# ENGINEERING BOREHOLE LOG



**Client:** Alesco Senior College  
**Site Address:** No.29 Chapman Street, Charlestown  
**Job No:** 2020456  
**Location:** See Site Plan  
**Surface RL:** Existing Ground Surface Level

**Borehole No:** BH5  
**Equipment:** 75mm HAND AUGER  
**Date:** 11.08.20  
**Logged By:** MC

Drilling Information				Profile Description					Soil Origin and Additional Comments		
Depth in metres	Progress	Sample type	Water	Graphic Log	USC	Material Description		Consistency Rel. Density Rock Str.		Moisture	DCP Blows per 100mm
						SOIL TYPE, primary soil component characteristics, colour, secondary and minor soil component characteristics					
						ROCK TYPE, grain size, colour, fabric and texture, weathering					
0.25		D	NE			FILL: Gravelly SAND, fine to coarse grained, grey, fine to coarse subrounded to rounded gravel, with clay, trace charcoal		-	W		
0.50		D				SLOPEWASH: Gravelly CLAY, low plasticity, orange mottled white, fine to coarse subrounded to rounded gravel, with fine to coarse grained sand		-			
0.75						Refusal on suspected extremely weathered bedrock					
1.00											
1.25											
1.50											
1.75											
2.00											
2.25											
2.50											
2.75											
3.00											

Key						
Water	Cohesive Soil Consistency	Non-Cohesive Soil Relative Density	Rock Strength	Moisture	DCP Termination	
NE not encountered	VS very soft	VL very loose	VLW very low	D dry	R Refusal	
NO not observed	S soft	L loose	LW low	SM slightly moist	T Terminated	
— seepage	F firm	MD medium dense	Med medium	M moist		
free standing	St stiff	D dense	High high	W wet		
	VSt very stiff	VD very dense	VHigh very high			
	H hard		EHigh extremely high			
	Fr friable					
					<b>Sampling Data</b>	
					U50 undisturbed 50mm diameter sample	
					D disturbed sample	
					B bulk sample	

# ENGINEERING BOREHOLE LOG



**Client:** Alesco Senior College  
**Site Address:** No.29 Chapman Street, Charlestown  
**Job No:** 2020456  
**Location:** See Site Plan  
**Surface RL:** Existing Ground Surface Level

**Borehole No:** BH6  
**Equipment:** 75mm HAND AUGER  
**Date:** 11.08.20  
**Logged By:** MC

Drilling Information				Profile Description					Soil Origin and Additional Comments		
Depth in metres	Progress	Sample type	Water	Graphic Log	USC	Material Description	Consistency	Rel. Density		Moisture	
						SOIL TYPE, primary soil component characteristics, colour, secondary and minor soil component characteristics				DCP Blows per 100mm 0 5 10 15 20 25	
						ROCK TYPE, grain size, colour, fabric and texture, weathering					
0.25			NE			TOPSOIL/FILL: Silty SAND, fine to medium grained, dark grey, trace fine to medium subangular to subrounded gravel	-		M		TOPSOIL/FILL
0.50		D				SLOPEWASH: Gravelly CLAY, low plasticity, brown, fine to coarse subrounded to rounded gravel, with fine to coarse grained sand	-				SLOPEWASH
		D				Silty CLAY, low to medium plasticity, orange, with fine to medium grained sand, trace fine to medium subrounded to rounded gravel	St				RESIDUAL SOIL
0.75						Terminated, Slow progress on very stiff clay	VSt				
1.00											
1.25											
1.50											
1.75											
2.00											
2.25											
2.50											
2.75											
3.00											

Key						
Water	Cohesive Soil Consistency	Non-Cohesive Soil Relative Density	Rock Strength	Moisture	DCP Termination	
NE not encountered	VS very soft	VL very loose	VLW very low	D dry	R Refusal	
NO not observed	S soft	L loose	Low low	SM slightly moist	T Terminated	
— seepage	F firm	MD medium dense	Med medium	M moist		
free standing	St stiff	D dense	High high	W wet		
	VSt very stiff	VD very dense	VHigh very high			
	H hard		EHigh extremely high			
	Fr friable					
					<b>Sampling Data</b>	
					U50 undisturbed 50mm diameter sample	
					D disturbed sample	
					B bulk sample	

# ENGINEERING BOREHOLE LOG



**Client:** Alesco Senior College  
**Site Address:** No.29 Chapman Street, Charlestown  
**Job No:** 2020456  
**Location:** See Site Plan  
**Surface RL:** Existing Ground Surface Level

**Borehole No:** BH7  
**Equipment:** 75mm HAND AUGER  
**Date:** 11.08.20  
**Logged By:** MC

Drilling Information				Profile Description					Soil Origin and Additional Comments		
Depth in metres	Progress	Sample type	Water	Graphic Log	USC	Material Description		Consistency Rel. Density Rock Str.		Moisture	DCP Blows per 100mm
						SOIL TYPE, primary soil component characteristics, colour, secondary and minor soil component characteristics					
						ROCK TYPE, grain size, colour, fabric and texture, weathering					
0.25		D	NE			FILL: SAND, fine to medium grained, grey, trace fine to medium subangular to subrounded gravel		-	M		
						SLOPEWASH: Gravelly CLAY, low plasticity, brown, fine to coarse subrounded to rounded gravel, with fine to coarse grained sand		-			
0.50		D				Silty CLAY, low to medium plasticity, orange, with fine to medium grained sand, trace fine to medium subrounded to rounded gravel		St			
								VSt			
0.75						Terminated, Slow progress on very stiff clay					
1.00											
1.25											
1.50											
1.75											
2.00											
2.25											
2.50											
2.75											
3.00											

Key						
Water	Cohesive Soil Consistency	Non-Cohesive Soil Relative Density	Rock Strength	Moisture	DCP Termination	
NE not encountered	VS very soft	VL very loose	VLW very low	D dry	R Refusal	
NO not observed	S soft	L loose	Low low	SM slightly moist	T Terminated	
— seepage	F firm	MD medium dense	Med medium	M moist		
free standing	St stiff	D dense	High high	W wet		
	VSt very stiff	VD very dense	VHigh very high			
	H hard		EHigh extremely high			
	Fr friable					
					Sampling Data	
					U50 undisturbed 50mm diameter sample	
					D disturbed sample	
					B bulk sample	



# LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

**Date: 12 Aug 2020 14:50:30**

**Reference: LS014007 EP**

**Address: 29 Chapman Street, Charlestown, NSW 2290**

**Disclaimer:**

The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features. You should obtain independent advice before you make any decision based on the information within the report. The detailed terms applicable to use of this report are set out at the end of this report.



## Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Finance, Services & Innovation	12/05/2020	12/05/2020	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	13/07/2020	13/07/2020	Monthly	1000	0	0	5
Contaminated Land Records of Notice	Environment Protection Authority	27/07/2020	27/07/2020	Monthly	1000	0	0	3
Former Gasworks	Environment Protection Authority	23/07/2020	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	0
National Liquid Fuel Facilities	Geoscience Australia	12/08/2020	13/07/2012	Quarterly	1000	0	0	5
EPA PFAS Investigation Program	Environment Protection Authority	03/08/2020	07/05/2020	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	11/08/2020	11/08/2020	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	11/08/2020	11/08/2020	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	29/07/2020	29/07/2020	Monthly	2000	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	14/07/2020	14/07/2020	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	15/07/2020	15/07/2020	Monthly	1000	0	0	1
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	15/07/2020	15/07/2020	Monthly	1000	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	15/07/2020	15/07/2020	Monthly	1000	0	0	3
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	259	260
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150	-	2	32
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	2	28
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	0	13
Points of Interest	NSW Department of Finance, Services & Innovation	30/03/2020	30/03/2020	Quarterly	1000	1	1	40
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	30/03/2020	30/03/2020	Quarterly	1000	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	30/03/2020	30/03/2020	Quarterly	1000	0	0	0
Major Easements	NSW Department of Finance, Services & Innovation	30/03/2020	30/03/2020	Quarterly	1000	0	0	2
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	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	2
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	48
Geological Units 1:250,000	NSW Department of Planning, Industry and Environment	20/08/2014		None planned	1000	1	-	2
Geological Structures 1:250,000	NSW Department of Planning, Industry and Environment	20/08/2014		None planned	1000	0	-	1
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	2	-	4
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	15/07/2020	01/05/2020	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	1	1	1
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	9	9	9
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	15/07/2020	07/12/2018	Monthly	1000	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	15/07/2020	05/06/2020	Monthly	1000	2	3	48
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2020	20/11/2019	Quarterly	1000	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2020	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	15/07/2020	05/06/2020	Monthly	1000	0	0	6
Bush Fire Prone Land	NSW Rural Fire Service	04/02/2020	14/12/2019	Quarterly	1000	0	0	4
Lower Hunter and Central Coast Regional Vegetation Survey	NSW Office of Environment & Heritage	28/02/2015	16/11/2009	As required	1000	1	1	6
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	0	0	3
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	9
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	07/08/2020	07/08/2020	Weekly	10000	-	-	-

# Site Diagram

29 Chapman Street, Charlestown, NSW 2290

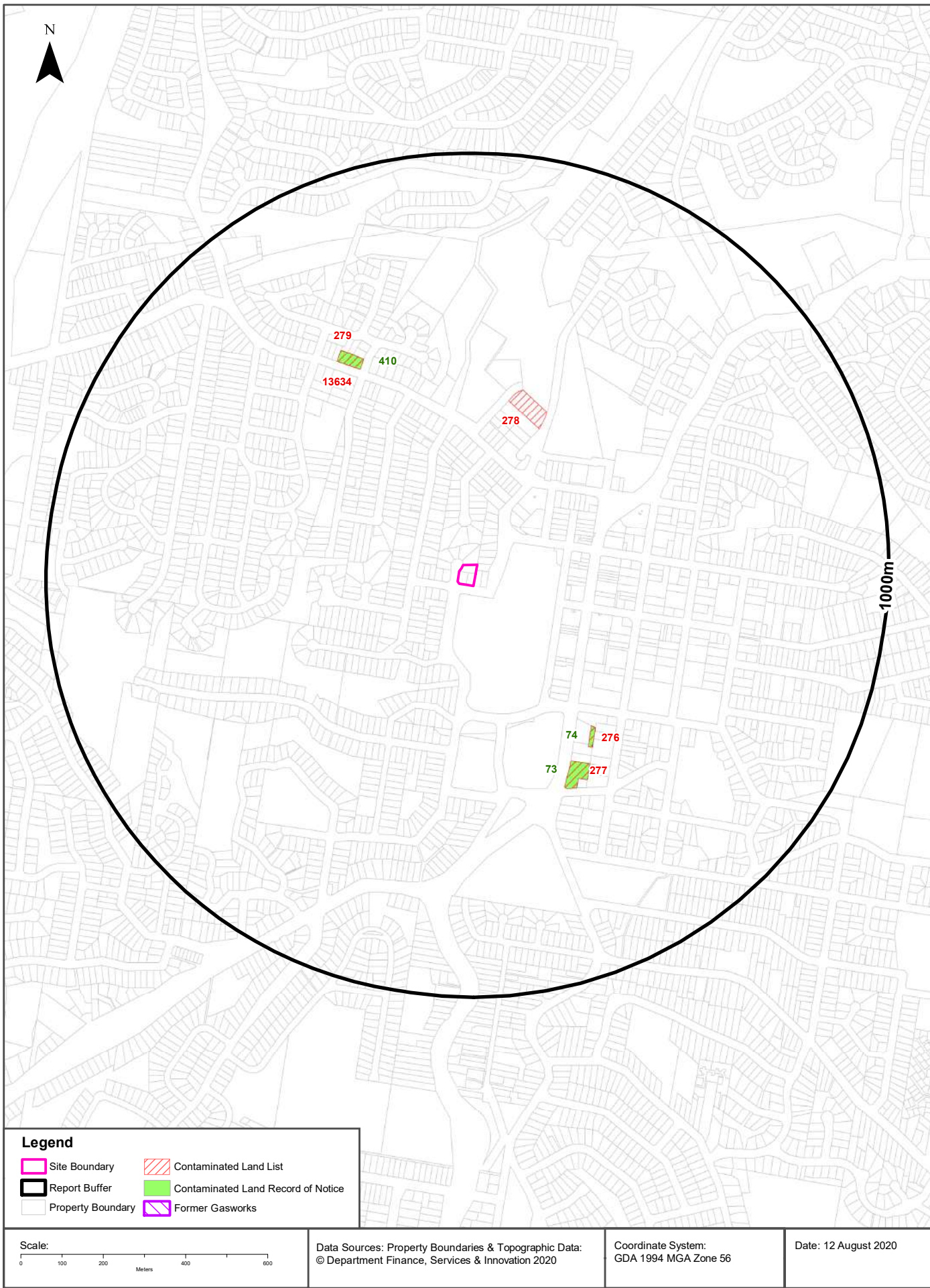


<b>Legend</b>  <div><div></div> Site Boundary</div> <div><div></div> Internal Parcel Boundaries</div>	<b>Total Area:</b> 1868m <sup>2</sup> <b>Total Perimeter:</b> 171m	
	<small>Disclaimers:</small> Measurements are approximate only and may have been simplified or smaller lengths removed for readability.  Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.	
	<small>Scale:</small> 0 5 10 Meters	<small>Data Sources:</small> Aerial Imagery © Aerometrex Pty Ltd
	<small>Coordinate System:</small> GDA 1994 MGA Zone 56	<small>Date:</small> 11 August 2020



# Contaminated Land

29 Chapman Street, Charlestown, NSW 2290



## Contaminated Land

29 Chapman Street, Charlestown, NSW 2290

### 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
278	Ausgrid Powell Street Depot	8 Powell STREET	Charlestown	Other Industry	Regulation under CLM Act not required	Current EPA List	Premise Match	363m	North
276	Caltex Woolworths (Former BP)	91-93 Pacific Highway	Charlestown	Service Station	Contamination formerly regulated under the CLM Act	Current EPA List	Premise Match	444m	South East
277	Caltex Service Station	81 Pacific Highway	Charlestown	Service Station	Contamination currently regulated under CLM Act	Current EPA List	Premise Match	486m	South East
279	7-Eleven Charlestown	273 Charlestown Road	Charlestown	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	536m	North West
13634	Shell Service Station	273 Charlestown ROAD	CHARLESTOW N	Service Station	N/A - Site no longer on EPA Contaminated Land List	Previous EPA List	Premise Match	536m	North 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.

EPA site management class	Explanation
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

## Contaminated Land

29 Chapman Street, Charlestown, NSW 2290

### Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
74	Caltex Woolworths (Former BP)	91-93 Pacific Highway	Charlestown	5 former	3297	Premise Match	444m	South East
73	Caltex Service Station	81 Pacific Highway	Charlestown	2 current and 3 former	3318	Premise Match	486m	South East
410	Shell Service Station	273 Charlestown ROAD	Charlestown	1 current	3450	Premise Match	536m	North West

Contaminated Land Records of Notice Data Source: Environment Protection Authority

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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					

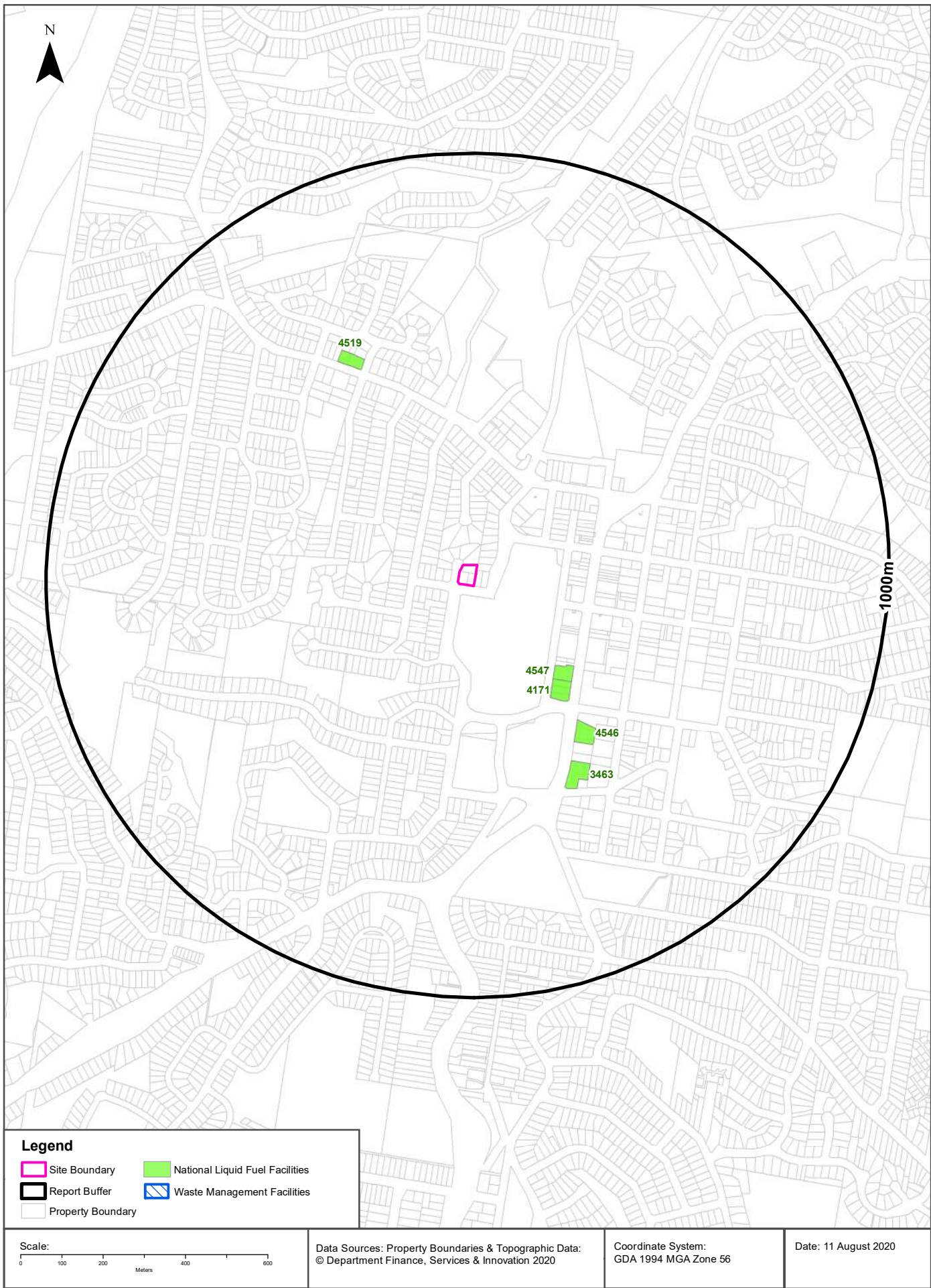
Former Gasworks Data Source: Environment Protection Authority

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# Waste Management & Liquid Fuel Facilities

29 Chapman Street, Charlestown, NSW 2290





## Waste Management & Liquid Fuel Facilities

29 Chapman Street, Charlestown, NSW 2290

### National Waste Management Site Database

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

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

Waste Management Facilities Data Source: Geoscience Australia

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### National Liquid Fuel Facilities

National Liquid Fuel Facilities within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist (m)	Direction
4547	BP	BP Charlestown	138 Pacific Highway	Charlestown	Petrol Station	Operational		25/07/2011	Premise Match	275m	South East
4171	Shell	Coles Express Charlestown	128-132 Pacific Highway	Charlestown	Petrol Station	Operational		25/07/2011	Premise Match	296m	South East
4546	BP	BP Charlestown	93 Pacific Highway	Charlestown	Petrol Station	Operational		25/07/2011	Premise Match	409m	South East
3463	Caltex	Caltex Charlestown	81 Pacific Highway	Charlestown	Petrol Station	Operational		25/07/2011	Premise Match	486m	South East
4519	Liberty	BP Charlestown	273 Charlestown Road	Charlestown	Petrol Station	Operational		25/07/2011	Premise Match	536m	North West

National Liquid Fuel Facilities Data Source: Geoscience Australia

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# PFAS Investigation & Management Programs

29 Chapman Street, Charlestown, NSW 2290

## 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  
© State of New South Wales through the Environment Protection Authority

## Defence PFAS Investigation Program

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

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

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

## Defence PFAS Management Program

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

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

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

## Airservices Australia National PFAS Management Program

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

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

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

## Defence Sites

29 Chapman Street, Charlestown, NSW 2290

### 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

29 Chapman Street, Charlestown, NSW 2290

### EPA Other Sites with Contamination Issues

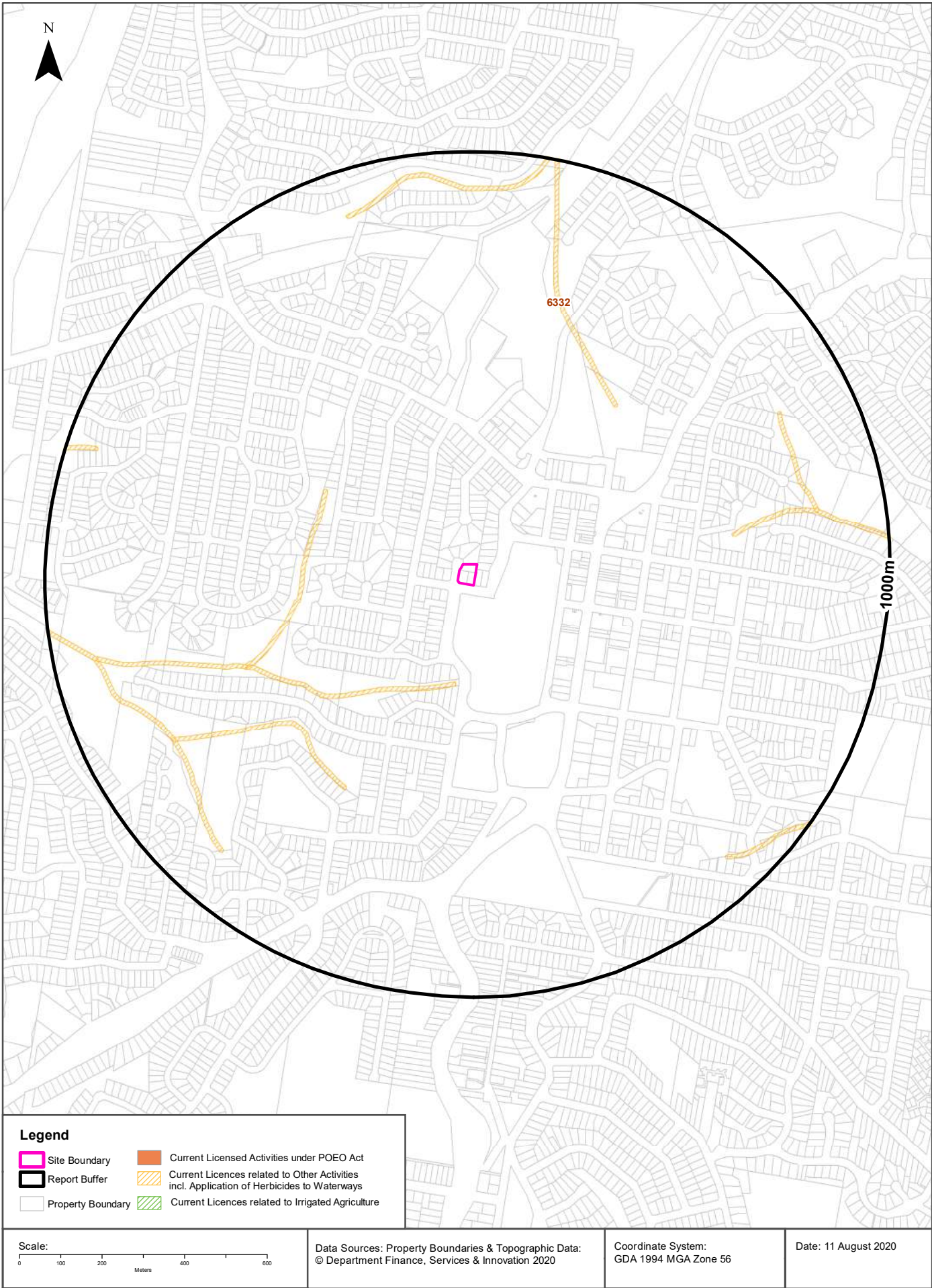
This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

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

Sites within the dataset buffer:

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

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



## EPA Activities

29 Chapman Street, Charlestown, NSW 2290

## Licensed Activities under the POEO Act 1997

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

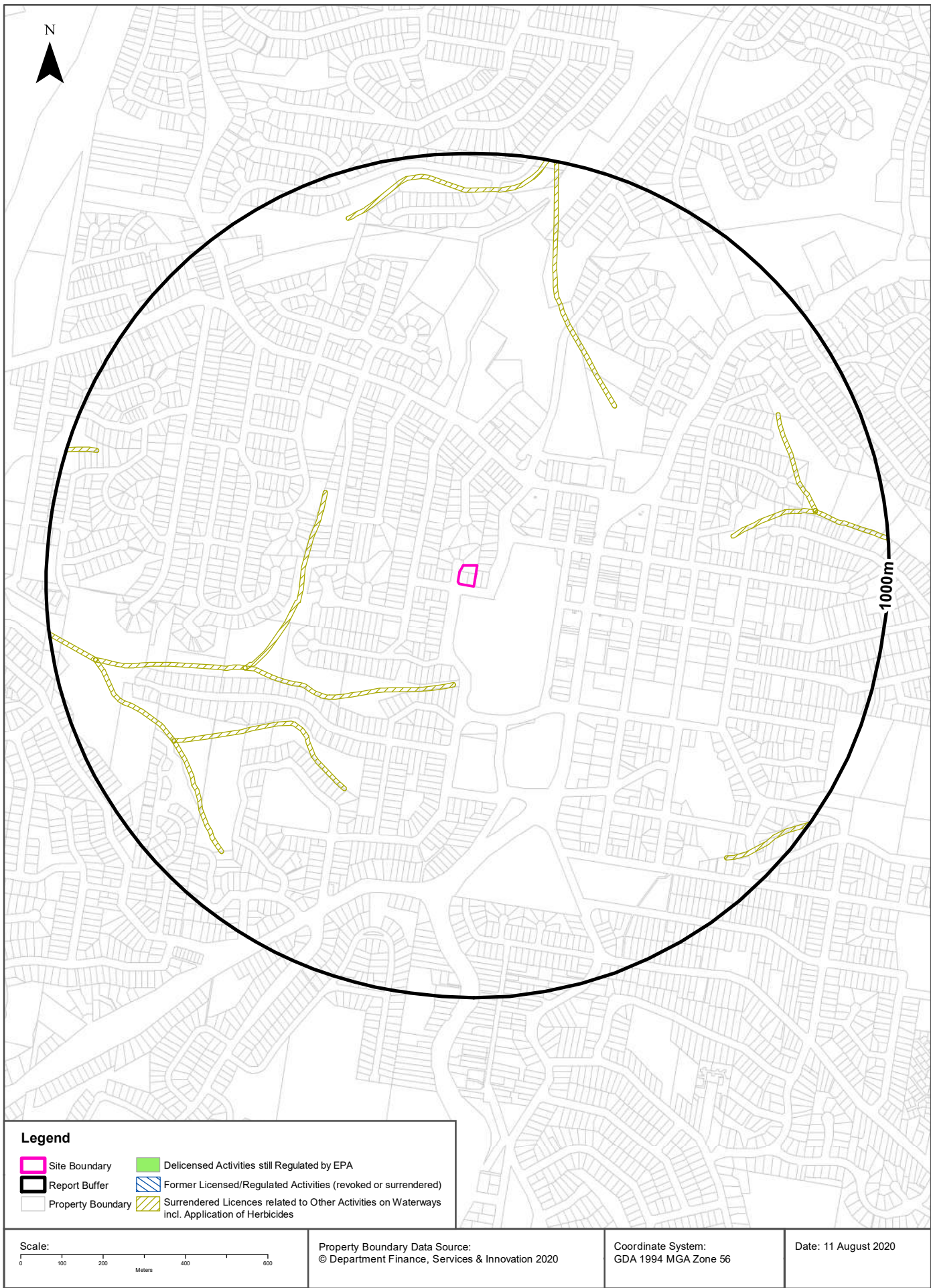
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
6332	LAKE MACQUARIE CITY COUNCIL	-	-	SPEERS POINT	Other activities	Network of Features	239m	South West

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority



**Delicensed & Former Licensed EPA Activities**  
29 Chapman Street, Charlestown, NSW 2290



## EPA Activities

29 Chapman Street, Charlestown, NSW 2290

### Delicensed Activities still regulated by the EPA

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

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

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

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

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

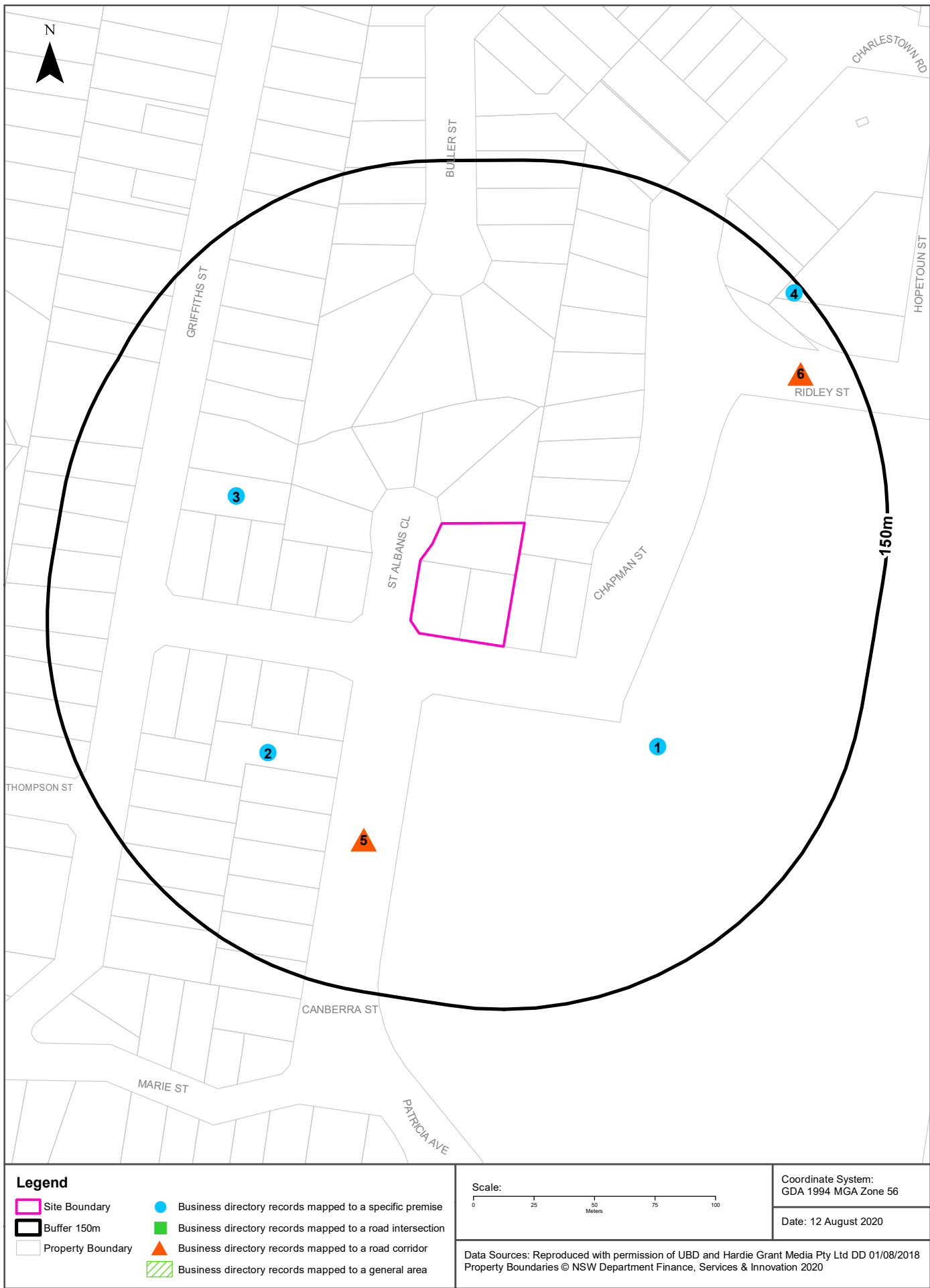
Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	238m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	238m	-
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	238m	-

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



# Historical Business Directories

29 Chapman Street, Charlestown, NSW 2290



# Historical Business Directories

29 Chapman Street, Charlestown, NSW 2290

## Business Directory Records 1950-1991 Premise or Road Intersection Matches

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	BOOKSELLERS - RETAIL	A B C., Shop 205 Upper Level Charlestown Sq Charlestown, Newcastle	82053	1991	Premise Match	24m	South East
	GIFT SHOPS.	A B C., Shop 205 Upper Level Charlestown Sq Charlestown, Newcastle	86189	1991	Premise Match	24m	South East
	INSURANCE COMPANIES – LIFE	A M P K6 Lower Level., Charlestown Sq Charlestown, Newcastle	87656	1991	Premise Match	24m	South East
	INSURANCE COMPANIES GENERAL	A M P., K6 Lower Level Charlestown Sq Charlestown, Newcastle	87682	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - JEANS & DENIMS.	Abaction., 55 Middle Level Charlestown Sq Charlestown, Newcastle	83215	1991	Premise Match	24m	South East
	GIFT SHOPS.	Abbey Gift., Shop 7 Lower Level Charlestown Sq Charlestown, Newcastle	86190	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - SPORTSWEAR,	Adiachon., 55 Middle Level Charlestown Sq Charlestown, Newcastle	83497	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Adiachon., 55 Middle Level Charlestown Sq Charlestown, Newcastle	83236	1991	Premise Match	24m	South East
	CAFES, TEA ROOMS &/OR COFFEE LOUNGES,	AIS Cafe Court., 9 Lower Level Charlestown Sq Charlestown, Newcastle	82634	1991	Premise Match	24m	South East
	PIE MAKERS.	AIS Pies & Pavs., 11 Lower Level Charlestown Sq Charlestown, Newcastle	90440	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	AIS Pies & Pavs., 11 Lower Level Charlestown Sq Charlestown, Newcastle	92385	1991	Premise Match	24m	South East
	JEWELLERS - RETAIL.	Angus & Coote., 49 Middle Level Charlestown Sq Charlestown, Newcastle	87777	1991	Premise Match	24m	South East
	BOOKSELLERS - RETAIL	Angus & Robertson., 37 Middle Level Charlestown Sq Charlestown, Newcastle	82054	1991	Premise Match	24m	South East
	STATIONERS - RETAIL.	Angus & Robertson., 37 Middle Level Charlestown Sq Charlestown, Newcastle	92092	1991	Premise Match	24m	South East
	FOOTWEAR RETAILERS.	AthleteS Foot 111 Middle Level., Charlestown Sq Charlestown, Newcastle	85800	1991	Premise Match	24m	South East
	BALLOONS & PARTY SUPPLIES,	Balloon Boutique., 234A Upper Level Charlestown Sq Charlestown, Newcastle	81711	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Beeks E7 Upper Level., Charlestown Sq Charlestown, Newcastle	92405	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Best & Less., 56 Middle Level Charlestown Sq Charlestown, Newcastle	83242	1991	Premise Match	24m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	CLOTHING - RETAIL - MENS &/OR BOYS WEAR	Best & Less., 56 Middle Level Charlestown Sq Charlestown, Newcastle	83431	1991	Premise Match	24m	South East
	BAKERS.	Bill's Hot Bread 10 Lower Level., Charlestown Sq Charlestown, Newcastle	81675	1991	Premise Match	24m	South East
	RECORD &/OR CASSETTE BARS.	Brash's., 233 Upper Level Charlestown Sq Charlestown, Newcastle	91026	1991	Premise Match	24m	South East
	NEWSAGENTS.	Brockhill's Newsagency., 121 Middle Level Charlestown Sq Charlestown, Newcastle	89870	1991	Premise Match	24m	South East
	STATIONERS - RETAIL.	Brockhill's Newsagency., 121 Middle Level Charlestown Sq Charlestown, Newcastle	92095	1991	Premise Match	24m	South East
	NEWSAGENTS.	Brockhill's Newsagency., 15 Lower Level Charlestown Sq Charlestown, Newcastle	89871	1991	Premise Match	24m	South East
	CAFES, TEA ROOMS &/OR COFFEE LOUNGES,	Cafe Cocoa Rica 108 Middle Level., Charlestown Sq Charlestown, Newcastle	82640	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Cattle Roast E1 Upper Level., Charlestown Sq Charlestown, Newcastle	92428	1991	Premise Match	24m	South East
	ELECTRICAL SUPPLIES &/OR APPLIANCES - RETAIL	Chandlers., 45 Middle Level Charlestown Sq Charlestown, Newcastle	84769	1991	Premise Match	24m	South East
	GIFT SHOPS.	Charlestown Gallery., 47A Middle Level Charlestown Sq Charlestown, Newcastle	86209	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Charlies Chopsticks E10 Upper Level., Charlestown Sq Charlestown, Newcastle	92431	1991	Premise Match	24m	South East
	POULTRY DEALERS - RETAIL.	Chickadee Fresh Chicken., 14 Lower Level Charlestown Sq Charlestown, Newcastle	90624	1991	Premise Match	24m	South East
	DRY CLEANERS & PRESSERS.	Classic Dry Cleaners., 30 Lower Level Charlestown Sq Charlestown, Newcastle	84395	1991	Premise Match	24m	South East
	BUTCHERS - RETAIL.	Cleaver's Meats., 26 Lower Level Charlestown Sq Charlestown, Newcastle	82504	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LINGERIE.	Close To You., 57 Middle Level Charlestown Sq Charlestown, Newcastle	83414	1991	Premise Match	24m	South East
	FOOTWEAR REPAIRERS	Cobbler's Key The., 31 Lower Level Charlestown Sq Charlestown, Newcastle	85761	1991	Premise Match	24m	South East
	LOCKSMITHS &/OR KEY CUTTERS.	Cobbler's Key The., 31 Lower Level Charlestown Sq Charlestown, Newcastle	88113	1991	Premise Match	24m	South East
	SUPERMARKETS	Coles New World Supermarket., 1A Lower Level Charlestown Sq Charlestown, Newcastle	92265	1991	Premise Match	24m	South East
	BOOKSELLERS - RETAIL	Collins Booksellers F., 25 Middle Level Charlestown Sq Charlestown, Newcastle	82062	1991	Premise Match	24m	South East
	PHOTOGRAPHIC DEVELOPING, PRINTING &/OR COLOURING SERVICES,	Colourcare., 129 Middle Level Charlestown Sq Charlestown, Newcastle	90364	1991	Premise Match	24m	South East
	BANKS,	Commonwealth Banking Corporation., 20 Lower Level Charlestown Sq Charlestown, Newcastle	81743	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Cookie Man Kiosk., 3 Lower Level Charlestown Sq Charlestown, Newcastle	92444	1991	Premise Match	24m	South East
	CAKE SHOPS &/OR PASTRYCOOKS.	Copper Kettle Cakes., 25 Lower Level Charlestown Sq Charlestown, Newcastle	82720	1991	Premise Match	24m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	GIFT SHOPS.	Copperart., 34 Middle Level Charlestown Sq Charlestown, Newcastle	86213	1991	Premise Match	24m	South East
	DELICATESSENS.	Cut Price Deli., 24 Lower Level Charlestown Sq Charlestown, Newcastle	84075	1991	Premise Match	24m	South East
	CONFECTIONERY - RETAIL.	Darrel Lea So., Middle Level Charlestown Sq Charlestown, Newcastle	83897	1991	Premise Match	24m	South East
	FISH MERCHANTS - RETAIL	Deepwater Seafood., 32 Lower Level Charlestown Sq Charlestown, Newcastle	85651	1991	Premise Match	24m	South East
	JEWELLERS - RETAIL.	Diamond Traders., 234 Upper Level Charlestown Sq Charlestown, Newcastle	87789	1991	Premise Match	24m	South East
	CHEMISTS - PHARMACEUTICAL.	Dibben Scott Chemist 105 Middle Level., Charlestown Sq Charlestown, Newcastle	82998	1991	Premise Match	24m	South East
	DISCOUNT HOUSES	Dollars & Sense., 2 Lower Level Charlestown Sq Charlestown, Newcastle	84262	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Donut., Shop 27 Lower Level Charlestown Sq Charlestown, Newcastle	92465	1991	Premise Match	24m	South East
	OPTOMETRISTS.	Dougherty Paul., 39A Middle Level Charlestown Sq Charlestown, Newcastle	90084	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Eat-N-Run., 22 Lower Level Charlestown Sq Charlestown, Newcastle	92473	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR	Elliotts Menswear., 134 Middle Level Charlestown Sq Charlestown, Newcastle	83440	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Events., 213 Upper Level Charlestown Sq Charlestown, Newcastle	83273	1991	Premise Match	24m	South East
	RECORD &/OR CASSETTE BARS.	Fantasy Sounds., 1 Lower Level Charlestown Sq Charlestown, Newcastle	91029	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Flookies., 204 Upper Level Charlestown Sq Charlestown, Newcastle	83281	1991	Premise Match	24m	South East
	PICTURE FRAME MFRS. &/OR PICTURE FRAMERS	Framing Corner., 239 Upper Level Charlestown Sq Charlestown, Newcastle	90433	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR	FrithS Mensland., 46 Middle Level Charlestown Sq Charlestown, Newcastle	83446	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR	GentlemanS Outfitters., 229 Upper Level Charlestown Sq Charlestown, Newcastle	83448	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - SPORTSWEAR,	GentlemanS Outfitters., 229 Upper Level Charlestown Sq Charlestown, Newcastle	83508	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Gerhards Bratwurst E8 Upper Level., Charlestown Sq Charlestown, Newcastle	92489	1991	Premise Match	24m	South East
	OPTICAL PRESCRIPTION DISPENSERS.	Gibb & Beeman (Spectacle Makers) Pty Ltd., 39A Middle Level Charlestown Sq Charlestown, Newcastle	90054	1991	Premise Match	24m	South East
	GIFT SHOPS.	Gift Perfection., 39 Middle Level Charlestown Sq Charlestown, Newcastle	86222	1991	Premise Match	24m	South East
	JEWELLERS - RETAIL.	Goldmark., 112 Middle Level Chadestown Sq Charlestown, Newcastle	87792	1991	Premise Match	24m	South East
	DEPARTMENTAL STORES.	Grace Bros Middle Level., Charlestown Sq Charlestown, Newcastle	84231	1991	Premise Match	24m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	GIFT SHOPS.	Granny Mays Paper., Shop 110 Middle Level Charlestown Sq Charlestown, Newcastle	86226	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Growing Concern., 210 Upper Level Charlestown Sq Charlestown, Newcastle	83289	1991	Premise Match	24m	South East
	JEWELLERS - RETAIL.	GypsyS., 206 Lower Level Charlestown Sq Charlestown, Newcastle	87795	1991	Premise Match	24m	South East
	HANDBAGS &/OR GLOVES RETAIL	Handbags International., 53 Middle Level Charlestown Sq Charlestown, Newcastle	86946	1991	Premise Match	24m	South East
	TRAVEL GOODS - RETAIL.	Handbags International., 53 Middle Level Charlestown Sq Charlestown, Newcastle	93089	1991	Premise Match	24m	South East
	HEALTH FOODS - RETAIL.	Health Plus., 9A Lower Level Charlestown Sq Charlestown, Newcastle	87069	1991	Premise Match	24m	South East
	HOSPITAL &/OR MEDICAL BENEFITS FUNDS.	Hospitals Contribution Fund., Shop 201 Upper Level Charlestownsquare Charlestown, Newcastle	87233	1991	Premise Match	24m	South East
	CREDIT UNIONS.	Hunter United Credit Union., 237 Upper Level Charlestown Sq Charlestown, Newcastle	84010	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	J D S Donuts., 127 Middle Level Charlestown Sq Charlestown, Newcastle	92521	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Jeans West., 211 Upper Level Charlestown Sq Charlestown, Newcastle	83301	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR	Jeans West., 211 Upper Level Charlestown Sq Charlestown, Newcastle	83458	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - JEANS & DENIMS.	Just Jeans., 51 Middle Level Charlestown Sq Charlestown, Newcastle	83224	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Just Jeans., 51 Middle Level Charlestown Sq Charlestown, Newcastle	83307	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR	Just Jeans., 51 Middle Level Charlestown Sq Charlestown, Newcastle	83460	1991	Premise Match	24m	South East
	DEPARTMENTAL STORES.	K Mart., 2A Lower Level Charlestown Sq Charlestown, Newcastle	84233	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Katies., 116 Middle Level Charlestown Sq Charlestown, Newcastle	83309	1991	Premise Match	24m	South East
	HANDBAGS &/OR GLOVES RETAIL	KayS Bag Store., 42 Middle Level Charlestown Sq Charlestown, Newcastle	86948	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Kebabs & Crepes E2 Upper Level., Charlestown Sq Charlestown, Newcastle	92539	1991	Premise Match	24m	South East
	JEWELLERS - RETAIL.	Kleins., 113 Middle Level Charlestown Sq Charlestown, Newcastle	87802	1991	Premise Match	24m	South East
	MUSICAL INSTRUMENT &/OR SHEET MUSIC DEALERS.	Lathams Music 106 Middle Level., Charlestown Sq Charlestown, Newcastle	89836	1991	Premise Match	24m	South East
	MANCHESTER GOODS RETAIL.	Lincraft., 215 Upper Level Charlestown Sq Charlestown, Newcastle	88171	1991	Premise Match	24m	South East
	FOOTWEAR RETAILERS.	Linden Shoe Salon., 36 Middle Level Charlestown Sq Charlestown, Newcastle	85822	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Look 115., Middle Level Charlestown Sq Charlestown, Newcastle	83324	1991	Premise Match	24m	South East
	CONFECTIONERY - RETAIL.	Lot n Pops., 128 Middle Level Charlestown Sq Charlestown, Newcastle	83903	1991	Premise Match	24m	South East
	LOTTERY KIOSKS.	Lot to K4 Lower Level., Charlestown Sq Charlestown, Newcastle	88127	1991	Premise Match	24m	South East



Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	CLOTHING - RETAIL - MENS &/OR BOYS WEAR	Lowes Manhattan., 131 Middle Level Charlestown Sq Charlestown, Newcastle	83464	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Lp 9., 43 Middle Level Charlestown Sq Charlestown, Newcastle	83326	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Maiden Lane 101 Middle Level., Charlestown Sq Charlestown, Newcastle	83328	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Mama Lisa Pasta E6 Upper Level., Charlestown Sq Charlestown, Newcastle	92560	1991	Premise Match	24m	South East
	CURTAINS - RETAIL.	Mansours., 448 Middle Level Charlestown Sq Charlestown, Newcastle	84033	1991	Premise Match	24m	South East
	MANCHESTER GOODS RETAIL.	Mansours., 44B Middle Level Charlestown Sq Charlestown, Newcastle	88172	1991	Premise Match	24m	South East
	CAFES, TEA ROOMS &/OR COFFEE LOUNGES,	MardiS Coffee Shop pe., 40A Upper Level Charlestown Sq Charlestown, Newcastle	82674	1991	Premise Match	24m	South East
	FOOTWEAR RETAILERS	Mathers Flints Shoes 104 Middle Level., Charlestown Sq Charlestown, Newcastle	85779	1991	Premise Match	24m	South East
	HOSPITAL &/OR MEDICAL BENEFITS FUNDS.	Medical Benefits Fund Of Aust Ltd., 124 Middle Level Charlestown Sq Charlestown, Newcastle	87240	1991	Premise Match	24m	South East
	HOSPITAL &/OR MEDICAL BENEFITS FUNDS.	Medicare., 122 Middle Level Charlestown Sq Charlestown, Newcastle	87242	1991	Premise Match	24m	South East
	JEWELLERS - RETAIL.	Mehrilles The Jewellers., 5 Lower Level Charlestown Sq Charlestown, Newcastle	87807	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Milai., 200A Upper Level Charlestown Sq Charlestown, Newcastle	83336	1991	Premise Match	24m	South East
	CAFES, TEA ROOMS &/OR COFFEE LOUNGES,	Mozart Coffee., Shop 203 Upper Level Charlestown Sq Charlestown, Newcastle	82677	1991	Premise Match	24m	South East
	ICE CREAM PARLOURS.	Mr Whippy., 23 Lower Level Charlestown Sq Charlestown, Newcastle	87484	1991	Premise Match	24m	South East
	BUTCHERS - RETAIL.	Mulligans., 21 Lower Level Charlestown Sq Charlestown, Newcastle	82558	1991	Premise Match	24m	South East
	FLORISTS - RETAIL.	My Florist., 16 Lower Level Charlestown Sq Charlestown, Newcastle	85722	1991	Premise Match	24m	South East
	HOSPITAL &/OR MEDICAL BENEFITS FUNDS.	N I B Health Fund., 123 Middle Level Charlestown Sq Charlestown, Newcastle	87246	1991	Premise Match	24m	South East
	BANKS,	National Australia Bank., 238 Upper Level Charlestown Sq Charlestown, Newcastle	81770	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	New York., 214 Upper Level Charlestown Sq Charlestown, Newcastle	83340	1991	Premise Match	24m	South East
	CHINA, CROCKERY, CRYSTAL, CUTLERY, EARTHENWARE, GLASSWARE RETAIL	Nik Nak., 17 Lower Level Charlestown Sq Charlestown, Newcastle	83077	1991	Premise Match	24m	South East
	GIFT SHOPS.	Nik Nak., 17 Lower Level Charlestown Sq Charlestown, Newcastle	86249	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Noni B., 38 Middle Level Charlestown Sq Charlestown, Newcastle	83342	1991	Premise Match	24m	South East
	PHOTOGRAPHIC DEVELOPING, PRINTING &/OR COLOURING SERVICES,	Novak Camera House., 19 Lower Level Charlestown Sq Charlestown, Newcastle	90373	1991	Premise Match	24m	South East
	PHOTOGRAPHIC EQUIPMENT &/OR SUPPLIES MFRS. &/OR IMPS. &/OR DIST.	Novak Camera House., 19 Lower Level Charlestown Sq Charlestown, Newcastle	90394	1991	Premise Match	24m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	PHOTOGRAPHIC EQUIPMENT &/OR SUPPLIES RETAIL.	Novak Camera House., 19 Lower Level Charlestown Sq Charlestown, Newcastle	90400	1991	Premise Match	24m	South East
	PHOTOGRAPHIC EQUIPMENT HIRING SERVICES	Novak Camera House., 19 Lower Level Charlestown Sq Charlestown, Newcastle	90403	1991	Premise Match	24m	South East
	PHOTOGRAPHIC EQUIPMENT REPAIRERS.	Novak Camera House., 19 Lower Level Charlestown Sq Charlestown, Newcastle	90410	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Now What To Wear., 44A Middle Level Charlestown Sq Charlestown, Newcastle	83346	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR	Now What To Wear., 44A Middle Level Charlestown Sq Charlestown, Newcastle	83466	1991	Premise Match	24m	South East
	ICE CREAM PARLOURS.	Olivers K5., Lower Level Charlestown Sq Charlestown, Newcastle	87486	1991	Premise Match	24m	South East
	SURFBOARDS &/OR SURFING EQUIPMENT MFRS. &/OR DIST.	Pacific Dreams., 406 Middle Level Charlestown Sq Charlestown, Newcastle	92296	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - SPORTSWEAR,	Pacific Dreams., 40B Middle Level Charlestown Sq Charlestown, Newcastle	83513	1991	Premise Match	24m	South East
	HAIRDRESSERS – LADIES &/OR BEAUTY SALONS	Pandoras Hair Witchery., 207 Upper Level Charlestown Sq Charlestown, Newcastle	86749	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Patisserie E5 Upper Level., Charlestown Sq Charlestown, Newcastle	92595	1991	Premise Match	24m	South East
	FOOTWEAR RETAILERS	Payless Shoes., 52 Middle Level Charlestown Sq Charlestown, Newcastle	85785	1991	Premise Match	24m	South East
	BUILDING SOCIETIES.	Permanent Building Society., 41 Middle Level Charlestown Sq Charlestown, Newcastle	82366	1991	Premise Match	24m	South East
	CHEMISTS - PHARMACEUTICAL.	Piggot Chris., 8 Lower Level Charlestown Sq Charlestown, Newcastle	83036	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Pirates Cove E3 Upper Level., Charlestown Sq Charlestown, Newcastle	92603	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	PortmanS., 231 Upper Level Charlestown Sq Charlestown, Newcastle	83358	1991	Premise Match	24m	South East
	PERFUME &/OR COSMETICS - RETAIL.	Priceline., 58 Middle Level Charlestown Sq Charlestown, Newcastle	90262	1991	Premise Match	24m	South East
	JEWELLERS - RETAIL.	ProudS., 135 Middle Level Charlestown Sq Chadestown, Newcastle	87810	1991	Premise Match	24m	South East
	RADIO SALES &/OR SERVICE.	Radio Rentals., 126 Middle Level Charlestown Sq Charlestown, Newcastle	90890	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR	Reuben F Scarf., 119 Middle Level Charlestown Sq Charlestown, Newcastle	83469	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Rockmans., 35 Middle Level Charlestown Sq Charlestown, Newcastle	83366	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR	Roger David., 132 Middle Level Charlestown Sq Charlestown, Newcastle	83474	1991	Premise Match	24m	South East
	SEWING MACHINE – DOMESTIC - SALES &/OR SERVICE	Sew City Janome., 109 Middle Level Charlestown Sq Charlestown, Newcastle	91692	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Shinta Boutique., 48A Middle Level Charlestown Sq Charlestown, Newcastle	83378	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Silhouette., 133 Middle Level Charlestown Sq Charlestown, Newcastle	83379	1991	Premise Match	24m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	ANTIQUÉ DEALERS.	Silver Sword Antiques., 130 Middle Level Charlestown Sq Charlestown, Newcastle	81441	1991	Premise Match	24m	South East
	FRUITERERS &/OR GREENGROCERS.	Simply Fresh., 33 Lower Level Charlestown Sq Charlestown, Newcastle	85956	1991	Premise Match	24m	South East
	CONFECTIONERY - RETAIL.	Simply Irresistable - The Sweet Emporium., 202A Upper Level Charlestown Sq Charlestown, Newcastle	83904	1991	Premise Match	24m	South East
	GIFT SHOPS.	Skinny's Hideout., 235 Upper Level Charlestown Sq Charlestown, Newcastle	86262	1991	Premise Match	24m	South East
	LEATHER GOODS - RETAIL.	Skinny's Hideout., 235 Upper Level Charlestown Sq Charlestown, Newcastle	88005	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Snow Gums., 209 Upper Level Charlestown Sq Charlestown, Newcastle	83385	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Spudz/Sangsters E4 Upper Level., Charlestown Sq Charlestown, Newcastle	92635	1991	Premise Match	24m	South East
	BUTCHERS - RETAIL.	Stampede Meats., 12 Lower Level Charlestown Sq Charlestown, Newcastle	82588	1991	Premise Match	24m	South East
	GIFT SHOPS.	Stephanies., 118 Middle Level Charlestown Sq Charlestown, Newcastle	86264	1991	Premise Match	24m	South East
	GREETING CARD MFRS. &/OR DIST.	Stephanies., 118 Middle Level Charlestown Sq Charlestown, Newcastle	86491	1991	Premise Match	24m	South East
	HANDBAGS &/OR GLOVES RETAIL	Strandbags., 227 Upper Level Charlestown Sq Charlestown, Newcastle	86953	1991	Premise Match	24m	South East
	TRAVEL GOODS - RETAIL.	Strandbags., 227 Upper Level Charlestown Sq Charlestown, Newcastle	93091	1991	Premise Match	24m	South East
	JEWELLERS - RETAIL.	Sunflower Fashion Jewellery., 228 Upper Level Charlestown Sq Charlestown, Newcastle	87816	1991	Premise Match	24m	South East
	SUNGLASSES - RETAIL	Sunglass World., 103 Middle Level Charlestown Sq Charlestown, Newcastle	92235	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Sussans., 136 Middle Level Charlestown Sq Charlestown, Newcastle	83392	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LINGERIE.	Sussans., 136 Middle Level Charlestown Sq Charlestown, Newcastle	83425	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	Suzanne Grae 102 Middle Level., Charlestown Sq Charlestown, Newcastle	83397	1991	Premise Match	24m	South East
	ELECTRICAL SUPPLIES &/OR APPLIANCES - RETAIL	Tandy., 4 Lower Level Charlestown Sq Charlestown, Newcastle	84794	1991	Premise Match	24m	South East
	ELECTRONIC EQUIPMENT MFRS. &/OR DIST	Tandy., 4 Lower Level Charlestown Sq Charlestown, Newcastle	84849	1991	Premise Match	24m	South East
	TRAVEL AGENCIES.	Thomas Cook Travel., 236 Upper Level Charlestown Sq Charlestown, Newcastle	93084	1991	Premise Match	24m	South East
	TAKE-AWAY FOODS	Thurst Thurst E9 Upper Level., Charlestown Sq Charlestown, Newcastle	92654	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR	Tie Rack., 226 Upper Level Charlestown Sq Charlestown, Newcastle	83479	1991	Premise Match	24m	South East
	AMUSEMENT MACHINES.	Timeout Entertainment Centre., 240 Upper Level Charlestown Sq Charlestown, Newcastle	81411	1991	Premise Match	24m	South East
	JEWELLERS - RETAIL.	VivienS Jewellers., 230 Upper Level Charlestown Sq Charlestown, Newcastle	87820	1991	Premise Match	24m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	ICE CREAM PARLOURS.	WendyS., 51A Middle Level Charlestown Sq Charlestown, Newcastle	87489	1991	Premise Match	24m	South East
	GIFT SHOPS.	WhatS New 107 Middle Level., Charlestown Sq Charlestown, Newcastle	86277	1991	Premise Match	24m	South East
	FOOTWEAR RETAILERS	Williams The Shoemen., 54 Middle Level Charlestown Sq Charlestown, Newcastle	85794	1991	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR	WotS Hot., 232 Upper Level Charlestown Sq Charlestown, Newcastle	83407	1991	Premise Match	24m	South East
	LAMINATED MATERIALS &/OR PRODUCTS MFRS. &/OR DISTS.	Zap Copies., 123A Middle Level Charlestown Sq Charlestown, Newcastle	87937	1991	Premise Match	24m	South East
	PRINTERS - INSTANT	Zap Copies., 123A Middle Level Charlestown Sq R Charlestown, Newcastle	90673	1991	Premise Match	24m	South East
	ANIMAL &/OR BIRD DEALERS.	Allan's Pet Shop, 43 Upper Level, Charlestown Sq., Charlestown Newcastle	170403	1982	Premise Match	24m	South East
	PIE MAKERS.	Al's Bakehouse, 32 Lower Level, Charlestown Sq., Charlestown Newcastle	178163	1982	Premise Match	24m	South East
	TAKE-AWAY FOODS.	Al's Cafe Court, 9 Lower Level, Charlestown Sq., Charlestown Newcastle	179873	1982	Premise Match	24m	South East
	JEWELLERS &/OR WATCHMAKERS -RETAIL.	Angus & Coote, 48 Upper Level, Charlestown Sq., Charlestown Newcastle	175888	1982	Premise Match	24m	South East
	BOOKSELLERS &/OR STATIONERS-RETAIL.	Angus & Robertson, 37 Upper Level, Charlestown Sq., Charlestown Newcastle	170923	1982	Premise Match	24m	South East
	STATIONERS - RETAIL.	Angus & Robertson, 37 Upper Level, Charlestown Sq., Charlestown Newcastle	179599	1982	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR.	Anne Harding, 40 Upper Level, Charlestown Sq., Charlestown Newcastle	172002	1982	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR.	Arpel, 51 Upper Level, Charlestown Sq., Charlestown Newcastle	172005	1982	Premise Match	24m	South East
	LEATHER GOODS - RETAIL.	Arpel, 51 Upper Level, Charlestown Sq., Charlestown Newcastle	176042	1982	Premise Match	24m	South East
	BAKERS - BREAD.	Bill's Hot Bread, 22 Lower Level, Charlestown Sq., Charlestown Newcastle	170624	1982	Premise Match	24m	South East
	JEWELLERS - COSTUME MFRS. &/OR W/SALERS &/OR IMPS.	Blondie's Gift & Jewellery, 35 Upper Level, Charlestown Sq., Charlestown Newcastle	175882	1982	Premise Match	24m	South East
	GIFT SHOPS.	Blondie's Gilt & Jewellery, 35 Upper Level, Charlestown Sq., Charlestown Newcastle	174612	1982	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR.	Callan Menswear, 49 Upper Level, Charlestown Sq., Charlestown Newcastle	172159	1982	Premise Match	24m	South East
	SPORTSWEAR RETAILERS.	Callan Menswear, 49 Upper Level, Charlestown Sq., Charlestown Newcastle	179502	1982	Premise Match	24m	South East
	TOBACCONISTS - RETAIL.	Century Tobacconist, 7 Lower Level, Charlestown Sq., Charlestown Newcastle	180095	1982	Premise Match	24m	South East
	BUSINESS AGENTS &/OR BROKERS.	Chapman, Cohn Real Estate, 59 Upper Level, Charlestown Sq., Charlestown Newcastle	171314	1982	Premise Match	24m	South East
	REAL ESTATE AGENTS &/OR VALUERS.	Chapman, Cohn Real Estate, 59 Upper Level, Charlestown Sq., Charlestown Newcastle	178669	1982	Premise Match	24m	South East
	HOTEL &/OR MOTEL BROKERS.	Chapman, Colin Real Estate, 59 Upper Level, Charlestown Sq., Charlestown Newcastle	175456	1982	Premise Match	24m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	FRUITERERS &/OR GREENGROCERS.	Charlestown Square Fruit Mart, 14 Lower Level, Charlestown Sq., Charlestown Newcastle	174352	1982	Premise Match	24m	South East
	POULTRY DEALERS - RETAIL.	Chickadee Fresh Chicken, 33 Lower Level, Charlestown Sq., Charlestown Newcastle	178380	1982	Premise Match	24m	South East
	CYCLE DEALERS &/OR ACCESSORIES.	Clarke's Toyland, 2 Lower Level, Charlestown Sq., Charlestown Newcastle	172512	1982	Premise Match	24m	South East
	FISHING TACKLE RETAILERS.	Clarke's Toyland, 2 Lower Level, Charlestown Sq., Charlestown Newcastle	174116	1982	Premise Match	24m	South East
	HOBBY &/OR HANDICRAFT SUPPLIES.	Clarke's Toyland, 2 Lower Level, Charlestown Sq., Charlestown Newcastle	175387	1982	Premise Match	24m	South East
	TOY DEALERS - RETAIL	Clarke's Toyland, 2 Lower Level, Charlestown Sq., Charlestown Newcastle	180161	1982	Premise Match	24m	South East
	BUTCHERS - RETAIL.	Cleaver's, The, 26 Lower Level, Charlestown Sq., Charlestown Newcastle	171368	1982	Premise Match	24m	South East
	FOOTWEAR MFRS. - BOOTS &/OR SHOES.	Cobbler's Shop 31 Lower Level, Charlestown Sq., Charlestown Newcastle	174210	1982	Premise Match	24m	South East
	BOOT &/OR SHOE REPAIRERS.	Cobbler's Shop, 31 Lower Level, Charlestown Sq., Charlestown Newcastle	170951	1982	Premise Match	24m	South East
	LOCKSMITHS &/OR KEY CUTTERS.	Cobbler's Shop, 31 Lower Level, Charlestown Sq., Charlestown Newcastle	176109	1982	Premise Match	24m	South East
	ENGRAVERS - JEWELLER.	Cobbler's Shop, 31 Lower Level, Charlestown Sq., Charlestown Newcastle	173903	1982	Premise Match	24m	South East
	BANKS.	Commonwealth Banking Corporation, 20 Lower Level, Charlestown Sq., Charlestown Newcastle	170724	1982	Premise Match	24m	South East
	PASTRYCOOKS &/OR CAKE SHOPS.	Copper Kettle, 25 Lower Level, Charlestown Sq., Charlestown Newcastle	178002	1982	Premise Match	24m	South East
	DELICATESSENS.	Cut Price Deli, 24 Lower Level, Charlestown Sq., Charlestown Newcastle	172570	1982	Premise Match	24m	South East
	SPORTING GOODS - RETAIL.	Cutmore, Garry Sports World, 53 Upper Level, Charlestown Sq., Charlestown Newcastle	179470	1982	Premise Match	24m	South East
	JEWELLERS &/OR WATCHMAKERS -RETAIL.	Diamond Connection, The, 5 Lower Level, Charlestown Sq., Charlestown Newcastle	175898	1982	Premise Match	24m	South East
	CHEMISTS - PHARMACEUTICAL.	Dibben, Phil, 50 Upper Level, Charlestown Sq., Charlestown, Newcastle	171806	1982	Premise Match	24m	South East
	RESTAURANTS.	Donut Shop, 27 Lower Level, Charlestown Sq Newcastle	178838	1982	Premise Match	24m	South East
	TAKE-AWAY FOODS.	Donut Shop, 27 Lower Level, Charlestown Sq., Charlestown Newcastle	179895	1982	Premise Match	24m	South East
	TAKE-AWAY FOODS.	Eat-N-Run, 17 Lower Level, Charlestown Sq., Charlestown, Newcastle	179897	1982	Premise Match	24m	South East
	SANDWICH &/OR LUNCHEON SHOPS.	Eat-N-Run, 17 Lower Level, Charlestown Sq., Charlestown, Newcastle	179049	1982	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR.	Elliotts Menswear, 52 Upper Level, Charlestown Sq., Charlestown Newcastle	172165	1982	Premise Match	24m	South East
	FOOTWEAR RETAILERS.	Far' Shoes, 12 Lower Level, Charlestown Sq., Charlestown Newcastle	174227	1982	Premise Match	24m	South East
	FISH SHOPS.	Fish Bowl, 30 Lower Level, Charlestown Sq., Charlestown Newcastle	174080	1982	Premise Match	24m	South East



Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MUSICAL INSTRUMENTS &/OR SHEET MUSIC - RETAIL.	Foleys, 54 Upper Level, Charlestown Sq., Charlestown Newcastle	177602	1982	Premise Match	24m	South East
	DEPARTMENTAL STORES.	Fosseys, 46 Upper Level, Charlestown Sq., Charlestown Newcastle	172691	1982	Premise Match	24m	South East
	OPTOMETRISTS REGISTERED.	Gibb 6 Beeman, 39A Upper Level, - Charlestown Sq., Charlestown Newcastle	177781	1982	Premise Match	24m	South East
	HEALTH FOODS - RETAIL.	Health Plus, 13 Lower Level, Charlestown Sq., Charlestown Newcastle	175324	1982	Premise Match	24m	South East
	ELECTRICAL SUPPLIES &/OR APPLIANCES - RETAIL.	Homecrafts, 3 Lower Level, Charlestown Sq., Charlestown Newcastle	173235	1982	Premise Match	24m	South East
	TRAVEL AGENCIES &/OR BOOKING OFFICES.	Howard Smith Travel, 42 Upper Level, Charlestown Sq., Charlestown Newcastle	180313	1982	Premise Match	24m	South East
	CLOTHING - RETAIL - JEANS & DENIMS.	Jeans N Gear, 47 Upper Level, Charlestown Sq., Charlestown Newcastle	171995	1982	Premise Match	24m	South East
	MILLINERY - RETAIL.	Jeans N Gear, 47 Upper Level, Charlestown Sq., Charlestown Newcastle	176520	1982	Premise Match	24m	South East
	SPORTSWEAR RETAILERS.	Jeans N Gear, 47 Upper Level, Charlestown Sq., Charlestown Newcastle	179510	1982	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR.	Jenz Shop, 8 Lower Level, Charlestown Sq., Charlestown Newcastle	172068	1982	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR.	Johns, 56 Upper Level, Charlestown Sq., Charlestown Newcastle	172071	1982	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR.	Johns, 56 Upper Level, Charlestown Sq., Charlestown Newcastle	172182	1982	Premise Match	24m	South East
	DEPARTMENTAL STORES.	Johns, 56 Upper Level, Charlestown Sq., Charlestown Newcastle	172694	1982	Premise Match	24m	South East
	DEPARTMENTAL STORES.	K Mart, Lower Level, Charlestown Sq., Charlestown Newcastle	172695	1982	Premise Match	24m	South East
	BUILDING SOCIETIES.	Level, Charlestown Sq., Charlestown Newcastle	171260	1982	Premise Match	24m	South East
	FOOTWEAR RETAILERS.	Linden Shoe Salon, 36 Upper Level, Charlestown Sq., Charlestown Newcastle	174246	1982	Premise Match	24m	South East
	CLOTHING - RETAIL - MENS &/OR BOYS WEAR.	Lowes, 34 Upper Level, Charlestown Sq., Charlestown Newcastle	172187	1982	Premise Match	24m	South East
	LOTTERIES &/OR ART UNIONS.	Lucky Thistle, Kiosk 2, Lower Level, Charlestown Sq., Charlestown Newcastle	176126	1982	Premise Match	24m	South East
	RESTAURANTS.	Mardi's Coffee Shoppe, 41 Upper Level, Charlestown Sq., Charlestown Newcastle	178867	1982	Premise Match	24m	South East
	BUTCHERS - RETAIL.	Maskey's Duality Meats, 21 Lower Level, Charlestown Sq., Charlestown Newcastle	171413	1982	Premise Match	24m	South East
	MILK BARS.	Mr.Whippy, 23 Lower Level, Charlestown Sq., Charlestown, Newcastle	176498	1982	Premise Match	24m	South East
	TAKE-AWAY FOODS.	MrWhippy, 23 Lower Level, Charlestown Sq., Charlestown Newcastle	179936	1982	Premise Match	24m	South East
	HOSPITAL &/OR MEDICAL BENEFITS FUNDS.	Mts. Health Fund, 23A Lower Level, Charlestown Sq., Charlestown, Newcastle	175420	1982	Premise Match	24m	South East
	BUILDING SOCIETIES.	Newcastle Permanent Building Society, 15 Lower Level, Charlestown Sq., Charlestown Newcastle	171285	1982	Premise Match	24m	South East
	CHINA CROCKERY, CRYSTAL, CUTLERY, EARTHENWARE, GLASSWARE DEALERS.	Nik Nak, 18 Lower Level, Charlestown Sq., Charlestown Newcastle	171886	1982	Premise Match	24m	South East
	GIFT SHOPS.	Nik Nak, 18 Lower Level, Charlestown Sq., Charlestown Newcastle	174662	1982	Premise Match	24m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	PHOTOGRAPHIC SUPPLIES.	Novak's Camera House, 19 Lower Level, Charlestown Sq., Charlestown Newcastle	178131	1982	Premise Match	24m	South East
	HAIRDRESSERS - LADIES &/OR BEAUTY SALONS.	Pandoras, 48A Upper Level, Charlestown Sq., Charlestown Newcastle	175090	1982	Premise Match	24m	South East
	CHEMISTS - PHARMACEUTICAL.	Piggot, C. & S., 11 Lower Level, Charlestown Sq Newcastle	171848	1982	Premise Match	24m	South East
	CANE PRODUCTS.	Regal Cane, 57 Upper Level, Charlestown Sq., Charlestown Newcastle	171577	1982	Premise Match	24m	South East
	NOVELTY GOODS MFRS. &/OR IMPS. &/OR W/SALERS.	Regal Cane, 57 Upper Level, Charlestown Sq., Charlestown Newcastle	177682	1982	Premise Match	24m	South East
	FLORISTS - RETAIL.	Rose's Florist, 16 Lower Level, Charlestown Sq., Charlestown Newcastle	174151	1982	Premise Match	24m	South East
	GIFT SHOPS.	Shinta, 45 Upper Level, Charlestown Sq., Charlestown Newcastle	174671	1982	Premise Match	24m	South East
	GIFT SHOPS.	Shop 39, 39 Upper Level, Charlestown Sq., Charlestown Newcastle	174672	1982	Premise Match	24m	South East
	GIFT SHOPS.	Skinny's Hideout, 44C Upper Level, Charlestown Sq., Charlestown Newcastle	174673	1982	Premise Match	24m	South East
	LEATHER GOODS - RETAIL.	Skinny's Hideout, 44C Upper Level, Charlestown Sq., Charlestown Newcastle	176047	1982	Premise Match	24m	South East
	WALLPAPER MERCHANTS.	Smith, Ross Wallpapers, 1 Lower Level, Charlestown Sq Newcastle	180497	1982	Premise Match	24m	South East
	PAINT - SOLVENT THINNER - MFRS. &/OR W/SALERS.	Smith, Ross Wallpapers, 1 Lower Level, Charlestown Sq., Charlestown Newcastle	177869	1982	Premise Match	24m	South East
	GIFT SHOPS.	Stephanies, 10 Lower Level, Charlestown Sq., Charlestown Newcastle	174674	1982	Premise Match	24m	South East
	GREETING CARD MFRS. &/OR DIST.	Stephanies, 10 Lower Level, Charlestown Sq., Charlestown Newcastle	174846	1982	Premise Match	24m	South East
	CLOTHING - RETAIL - LADIES &/OR GIRLS WEAR.	Stoned, 38 Upper Level, Charlestown Sq., Charlestown Newcastle	172135	1982	Premise Match	24m	South East
	DRY CLEANERS & PRESSERS.	Valentine Dry Cleaners, 29 Lower Level, Charlestown Sq, Charlestown Newcastle	172855	1982	Premise Match	24m	South East
	CLOTHING - RETAIL - BABY &/OR CHILDRENS WEAR.	Vipapan, 55 Upper Level, Charlestown Sq., Charlestown Newcastle	171984	1982	Premise Match	24m	South East
	SPORTSWEAR RETAILERS.	Vipapan, 55 Upper Level, Charlestown Sq., Charlestown Newcastle	179526	1982	Premise Match	24m	South East
	FURNITURE - HOUSEHOLD RETAIL.	Wills Furniture, 44A Upper Level, Charlestown Sq., Charlestown Newcastle	174493	1982	Premise Match	24m	South East
	NEWSAGENTS.	Witherdin, Hilton, 58 Upper Level, Charlestown. Sq., Charlestown Newcastle	177667	1982	Premise Match	24m	South East
	STATIONERS - RETAIL.	Witherdin, Hilton, 58 Upper Level, Charlestown. Sq., Charlestown Newcastle	179614	1982	Premise Match	24m	South East
2	SURVEYOR LAND	Asquith & De Witt Pty Ltd., 7 Canberra St Charlestown, Newcastle	92309	1991	Premise Match	55m	South West
	SURVEYORS - MINING.	Asquith & De Witt Pty Ltd., 7 Canberra St Charlestown, Newcastle	92330	1991	Premise Match	55m	South West
3	POLITICAL BODIES	Liberal Party (Newcastle), 34 Griffiths Rd., Charlestown., Newcastle	633245	1970	Premise Match	58m	West
4	PATHOLOGISTS.	Macquarie Pathology Services., 1A Hopetoun St Charlestown, Newcastle	90244	1991	Premise Match	139m	North East

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## Business Directory Records 1950-1991

### Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
5	CLUBS &/OR SPORTING BODIES.	Charlestown Bowling Club. Canberra St., Charlestown Newcastle	172217	1982	Road Match	27m
	CARRIERS/CARTAGE CONTRACTORS	Williams, N. E. Pty. Ltd., Canberra St., Charlestown, Newcastle	626190	1970	Road Match	27m
6	LIBRARIES . (LENDING) &/OR BOOK EXCHANGES.	Charlestown Library., Ridley St Charlestown, Newcastle	88016	1991	Road Match	104m
	ACCOUNTANTS & AUDITORS.	Kilpatrick Lake & Co., Ridley St Charlestown, Newcastle	81156	1991	Road Match	104m
	BUILDING SOCIETIES.	Permanent Building Society., Ridley St Charlestown, Newcastle	82368	1991	Road Match	104m
	SOLICITORS	Turnbull Hill & Partners., Ridley St Charlestown, Newcastle	91888	1991	Road Match	104m
	BANKS,	Westpac Banking Corporation., Ridley St Charlestown, Newcastle	81809	1991	Road Match	104m
	INSURANCE COMPANIES GENERAL.	D.B.E. Insurance Ltd., Ridley St., Charlestown. Aberdeen Newcastle	175817	1982	Road Match	104m
	HAIRDRESSERS - MENS.	Irwin A., Ridley St., Charlestown Newcastle	175164	1982	Road Match	104m
	OPTOMETRISTS REGISTERED.	Walker, E. A., Ridley St., Charlestown Newcastle	177788	1982	Road Match	104m
	DENTISTS	Cameron, J. A., The Arcade, Ridley St., Charlestown., Newcastle	626968	1970	Road Match	104m
	GOVERNMENT DEPTS.	Commonwealth Electoral Division of Shorthand, Ridley St., Charlestown, Newcastle	629269	1970	Road Match	104m
	SOLICITORS	Cope, Turnbull & Hill, Ridley St., Charlestown., Newcastle	634369	1970	Road Match	104m
	MEDICAL PRACTITIONERS	Fink, N. F. R., Ridley St., Charlestown, Newcastle	630857	1970	Road Match	104m
	HAIRDRESSERS-GENT'S	Irwin, A., Ridley St., Newcastle	629601	1970	Road Match	104m
	DELICATESSENS	Jullanna's Delicatessen, Ridley St., Charlestown, Newcastle	626934	1970	Road Match	104m
	ACCOUNTANTS & AUDITORS	Kilpatrick, O. H., Ridley St., Charlestown, Newcastle	624330	1970	Road Match	104m
	SOLICITORS	Kilpatrick, T. Ridley St., Charlestown, Newcastle	634378	1970	Road Match	104m
	BUTCHERS-RETAIL (3860)	McGavin, W. Pty. Ltd., The Arcade, Ridley St., Charlestown, Newcastle	625781	1970	Road Match	104m
	REPAIRERS	Metal Roofing Pty. Ltd., Ridley St., Charlestown, Newcastle	633844	1970	Road Match	104m
	BUILDING SOCIETIES & COMPANIES (B824)	Newcastle Permanent Building Society Ltd., Ridley St., Charlestown., Newcastle	625649	1970	Road Match	104m
	BUTCHERS-RETAIL (3860)	Sault, T. A. & D., Ridley St., Charlestown, Newcastle	625813	1970	Road Match	104m
	MEDICAL PRACTITIONERS	Silver, D. D. & Harden, P., Ridley St., Charlestown, Newcastle	630935	1970	Road Match	104m
	MEDICAL PRACTITIONERS	Silver, D. D., Ridley St., Charlestown, Newcastle	630936	1970	Road Match	104m
	PAINTERS-SPRAY	Tyler, A. V., 46 Ridley St., Charlestown, Newcastle	632813	1970	Road Match	104m
	OPTOMETRISTS-REGISTERED	Walker, E. A., 48 Ridley St., Charlestown, Newcastle	632650	1970	Road Match	104m
	MEDICAL PRACTITIONERS	Finlayson, J., Ridley St., Charlestown., Newcastle	135341	1961	Road Match	104m
	MEDICAL PRACTITIONERS	Morris, T., Ridley St., Charlestown, Newcastle	135381	1961	Road Match	104m
	PAINTERS, PAPERHANGERS/DECORATORS	Tyler, A. V., 46 Ridley St., Charlestown, Newcastle	137268	1961	Road Match	104m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
6	PAINTERS-SPRAY	Tyler, A. V., 46 Ridley St., Charlestown, Newcastle	137283	1961	Road Match	104m
	CHEMISTS-PHARMACEUTICAL	William's Pharmacy, Ridley St., Charlestown, Newcastle	130501	1961	Road Match	104m
	PAINTERS, PAPERHANGERS & DECORATORS	Tyle Bros. 46 Ridley Street., Charlestown Newcastle	127352	1950	Road Match	104m

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# Dry Cleaners, Motor Garages & Service Stations

29 Chapman Street, Charlestown, NSW 2290



## 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 80 160 240 320 Meters

Coordinate System:  
GDA 1994 MGA Zone 56

Date: 12 August 2020

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018  
Property Boundaries © NSW Department Finance, Services & Innovation 2020



## Historical Business Directories

29 Chapman Street, Charlestown, NSW 2290

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

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	DRY CLEANERS & PRESSERS.	Classic Dry Cleaners., 30 Lower Level Charlestown Sq Charlestown, Newcastle	84395	1991	Premise Match	24m	South East
	DRY CLEANERS & PRESSERS.	Valentine Dry Cleaners, 29 Lower Level, Charlestown Sq, Charlestown Newcastle	172855	1982	Premise Match	24m	South East
2	MOTOR GARAGES & SERVICE STATIONS	Ampol Service Station., 314 Charlestown Rd Charlestown, Newcastle	89273	1991	Premise Match	177m	North East
3	DRY CLEANERS & PRESSERS.	Charlestown Dry Cleaners G., D13 Hilltop Plaza Charlestown, Newcastle	84394	1991	Premise Match	215m	North East
4	DRY CLEANERS & PRESSERS.	Highway Dry Cleaners, 202 Pacific Highway., Charlestown Newcastle	172841	1982	Premise Match	250m	East
5	DRY CLEANERS, PRESSERS/DYERS	Valentine Dry Cleaners 149 Pacific Hghwy., Charlestown, Newcastle	627204	1970	Premise Match	293m	East
6	MOTOR GARAGES & SERVICE STATIONS	Bp Northbound Charlestown., 132 Pacific Hwy Charlestown, Newcastle	89303	1991	Premise Match	296m	South East
	MOTOR GARAGES & SERVICE STATIONS	RichoS Auto Service Centre., 128 Pacific Hwy Charlestown, Newcastle	89399	1991	Premise Match	296m	South East
	MOTOR GARAGES & SERVICE STATIONS	Shell Charlestown Service Station., 128 Pacific Hwy Charleston, Newcastle	89406	1991	Premise Match	296m	South East
	MOTOR GARAGES & OR ENGINEERS & OR SERVICE STATIONS.	Charlestown Automotive Repairs. 130 Pacific Highway., Charlestown Newcastle	177157	1982	Premise Match	296m	South East
	MOTOR GARAGES & OR ENGINEERS & OR SERVICE STATIONS.	Shell Charlestown Service Centre 128 Pacific Highway., Charlestown Newcastle	177272	1982	Premise Match	296m	South East
	MOTOR GARAGES & OR ENGINEERS	Clement, J. Charlestown Automotive Repairs, 130 Pacific Hghwy, Charlestown, Newcastle	631867	1970	Premise Match	296m	South East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Seashell Auto Port, 128 Pacific Hghwy., Charlestown, Newcastle	632274	1970	Premise Match	296m	South East
7	MOTOR GARAGES & OR ENGINEERS & OR SERVICE STATIONS.	Cummings Automotive Services Pty. Ltd., 331 Charlestown Rd. Charlestown Newcastle	177158	1982	Premise Match	300m	North East
8	MOTOR GARAGES & OR ENGINEERS	Apex Service Station, 109-115 Pacific Hghwy., Charlestown, Newcastle	631841	1970	Premise Match	305m	South East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Apex Service Station, 109-115 Pacific Hghwy., Charlestown, Newcastle	632156	1970	Premise Match	305m	South East
9	MOTOR GARAGES & OR ENGINEERS	Durham's Garage, 185 Pacific Highway., Charlestown, Newcastle	136279	1961	Premise Match	308m	East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC..	Kay's Garage, 185 Pacific Highway., Charlestown, Newcastle	136650	1961	Premise Match	308m	East
	MOTOR GARAGES & OR ENGINEERS	Kay's Garage, 185 Pacific Highway., Charlestown, Newcastle	136312	1961	Premise Match	308m	East
	MOTOR GARAGES & OR ENGINEERS	Searant & Hazell 185 Pacific Highway, Charlestown Newcastle	127019	1950	Premise Match	308m	East
	MOTOR GARAGES & OR ENGINEERS	Searant and Hazell, 185 Pacific Highway., Charlestown Newcastle	127036	1950	Premise Match	308m	East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
10	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Charlestown Auto Port, 215 Pacific Highway., Charlestown, Newcastle	177156	1982	Premise Match	364m	East
	MOTOR GARAGES &/OR ENGINEERS	Charlestown Auto Port, 215 Pacific Hghwy., Charlestown, Newcastle	631865	1970	Premise Match	364m	East
11	MOTOR GARAGES & SERVICE STATIONS	Bp Charlestown Service Station., 93 Pacific Hway Charlestown, Newcastle	89294	1991	Premise Match	409m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Charlestown Service Station, 93 Pacific Highway., Charlestown Newcastle	177121	1982	Premise Match	409m	South East
12	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Mobil Service Station, 219 Pacific Highway., Charlestown Newcastle	177237	1982	Premise Match	473m	East
	MOTOR GARAGES &/OR ENGINEERS	Clarke's Mobil Service Station, 219 Pacific Hghwy, Charlestown., Newcastle	631866	1970	Premise Match	473m	East
13	MOTOR GARAGES & SERVICE STATIONS	Caltex Charlestown Service Station., 81 Pacific Hway Charlestown, Newcastle	89313	1991	Premise Match	486m	South East

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

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
14	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ampol Service Station. Charlestown Rd., Charlestown, Newcastle	177097	1982	Road Match	220m
15	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	David's Datsun. Pacific Highway. Gateshead Newcastle	177160	1982	Road Match	267m
	MOTOR GARAGES & ENGINEERS	Gateshead Service Station, Pacific Hghwy., Gateshead	635929	1970	Road Match	267m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Gateshead Service Station, Pacific Hghwy., Gateshead	635932	1970	Road Match	267m
	MOTOR GARAGES & ENGINEERS	Golden Fleece Service Station, Pacific Hghwy., Gateshead	635930	1970	Road Match	267m
	DRY CLEANERS, PRESSERS/DYERS	Highway Dry Cleaners, Pacific Hghwy., Charlestown, Newcastle	627215	1970	Road Match	267m
	MOTOR GARAGES &/OR ENGINEERS	Charlestown Motors, Pacific Highway., Charlestown, Newcastle	136267	1961	Road Match	267m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC..	Charlestown Motors, Pacific Highway., Charlestown, Newcastle	136615	1961	Road Match	267m
	MOTOR GARAGES & ENGINEERS	Gateshead Service Station, Pacific Highway., Gateshead	150771	1961	Road Match	267m
	MOTOR SERVICE STATIONS-PETROL, ETC..	Gateshead Service Station, Pacific Highway., Gateshead	150772	1961	Road Match	267m
	DRY CLEANERS, PRESSERS/DYERS	Highway Dry Cleaners, Pacific Highway., Charlestown, Newcastle	131318	1961	Road Match	267m
	MOTOR GARAGES &/OR ENGINEERS	Charlestown Motors, 391 Pacific Highway., Charlestown Newcastle	126964	1950	Road Match	267m
16	MOTOR GARAGES &/OR ENGINEERS	Caledonian Service Station, 327 Ida St., Charlestown, Newcastle	631859	1970	Road Match	463m

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# Aerial Imagery 2020

29 Chapman Street, Charlestown, NSW 2290



Scale: 0 20 40 60 80 Meters	Data Sources: Aerial Imagery © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 11 August 2020
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# Aerial Imagery 2015

29 Chapman Street, Charlestown, NSW 2290



Scale:  
0 20 40 60 80  
Meters

Data Sources: Aerial Imagery © Aerometrex Pty Ltd

Coordinate System:  
GDA 1994 MGA Zone 56

Date: 11 August 2020



Aerial Imagery 2010

29 Chapman Street, Charlestown, NSW 2290



Scale: 0 20 40 60 80 Meters	Data Sources: Aerial Imagery © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 11 August 2020
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Scale: 0 20 40 60 80 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 26 August 2020
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Aerial Imagery 1993

29 Chapman Street, Charlestown, NSW 2290



Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 10 August 2020
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Aerial Imagery 1983

29 Chapman Street, Charlestown, NSW 2290



Scale: 0 20 40 60 80 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 10 August 2020
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Aerial Imagery 1976

29 Chapman Street, Charlestown, NSW 2290





Aerial Imagery 1965

29 Chapman Street, Charlestown, NSW 2290



Scale: 0 20 40 60 80 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 10 August 2020
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Aerial Imagery 1954

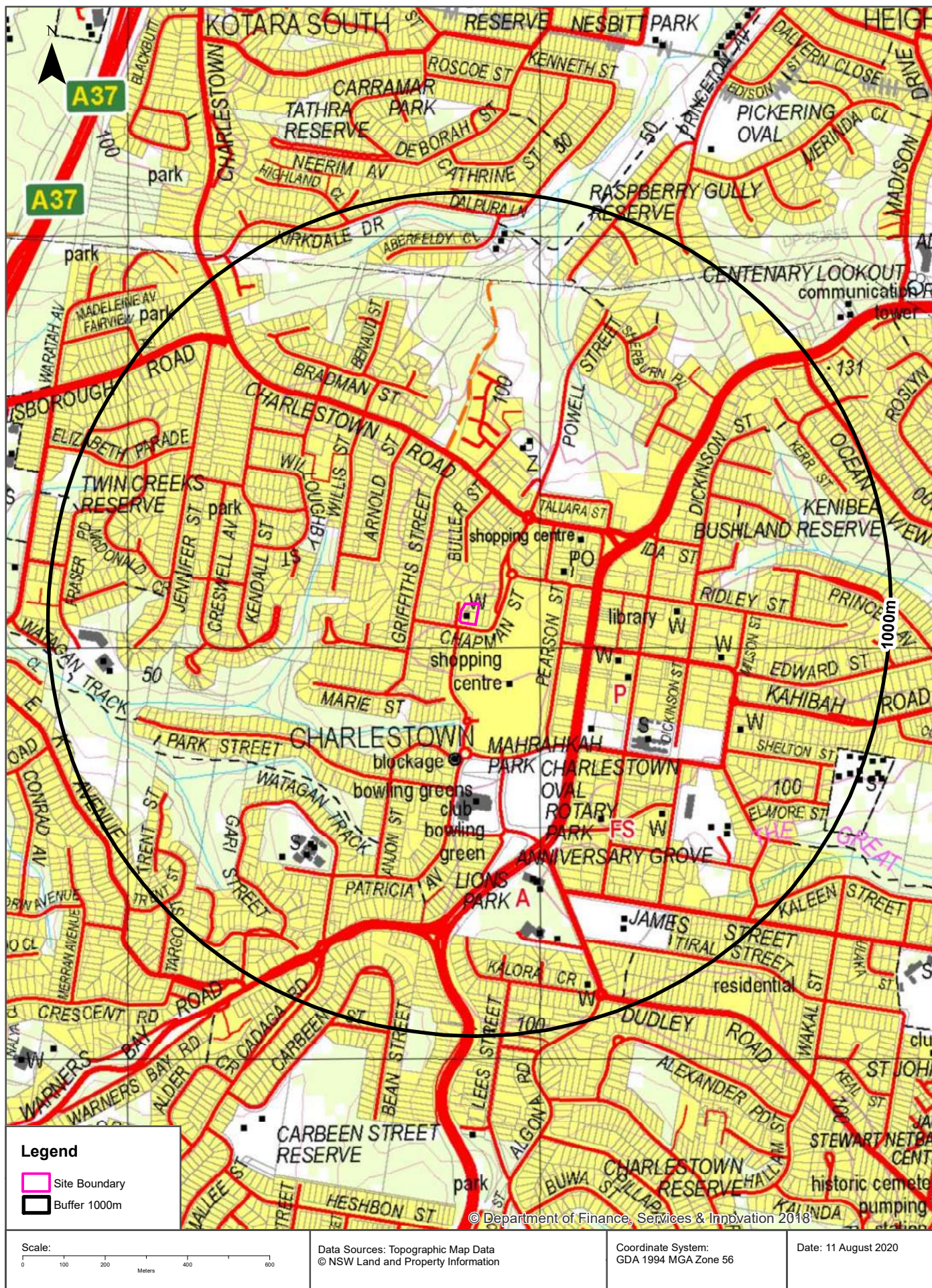
29 Chapman Street, Charlestown, NSW 2290





# Topographic Map 2015

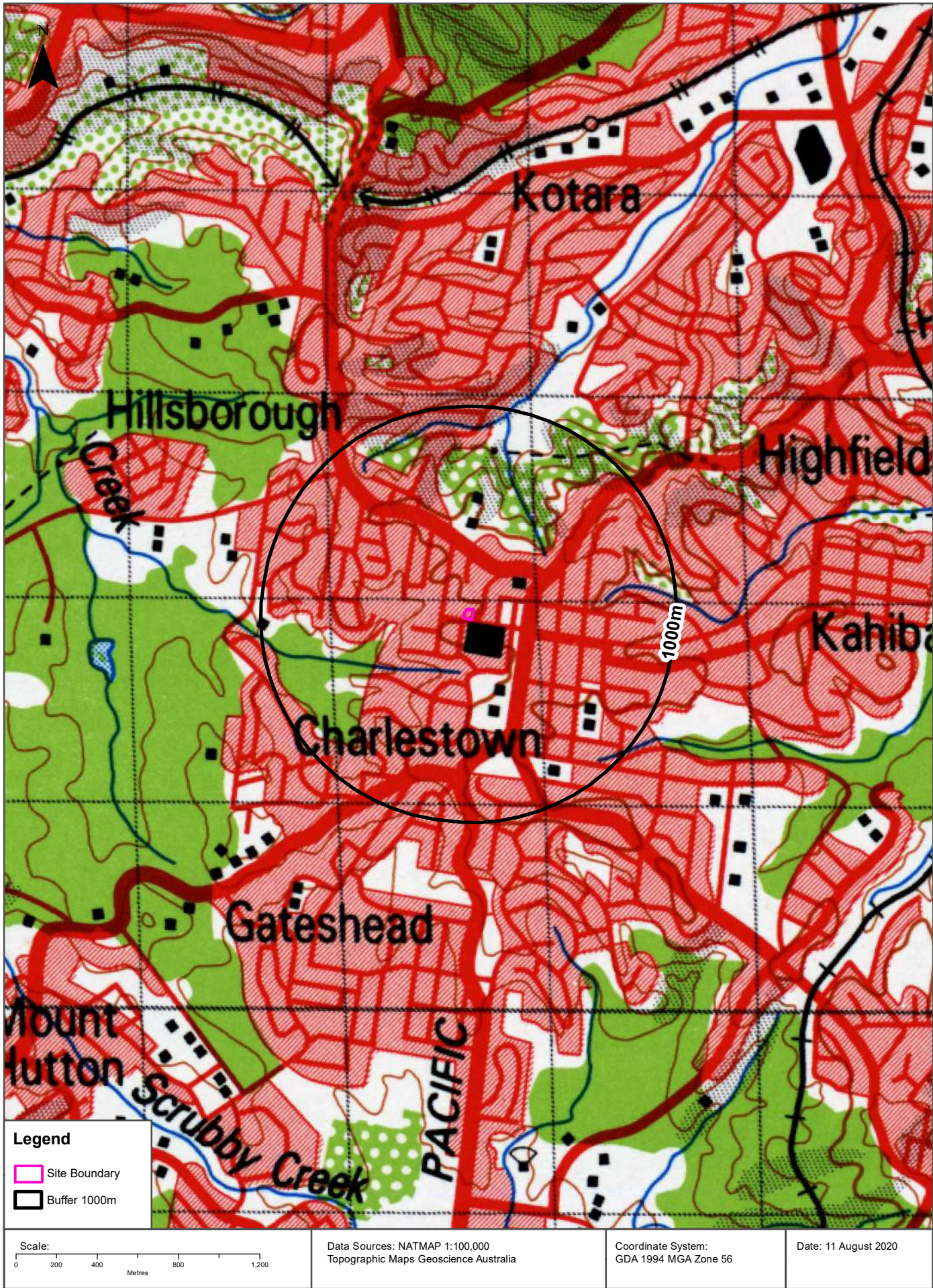
29 Chapman Street, Charlestown, NSW 2290





# Historical Map 1981

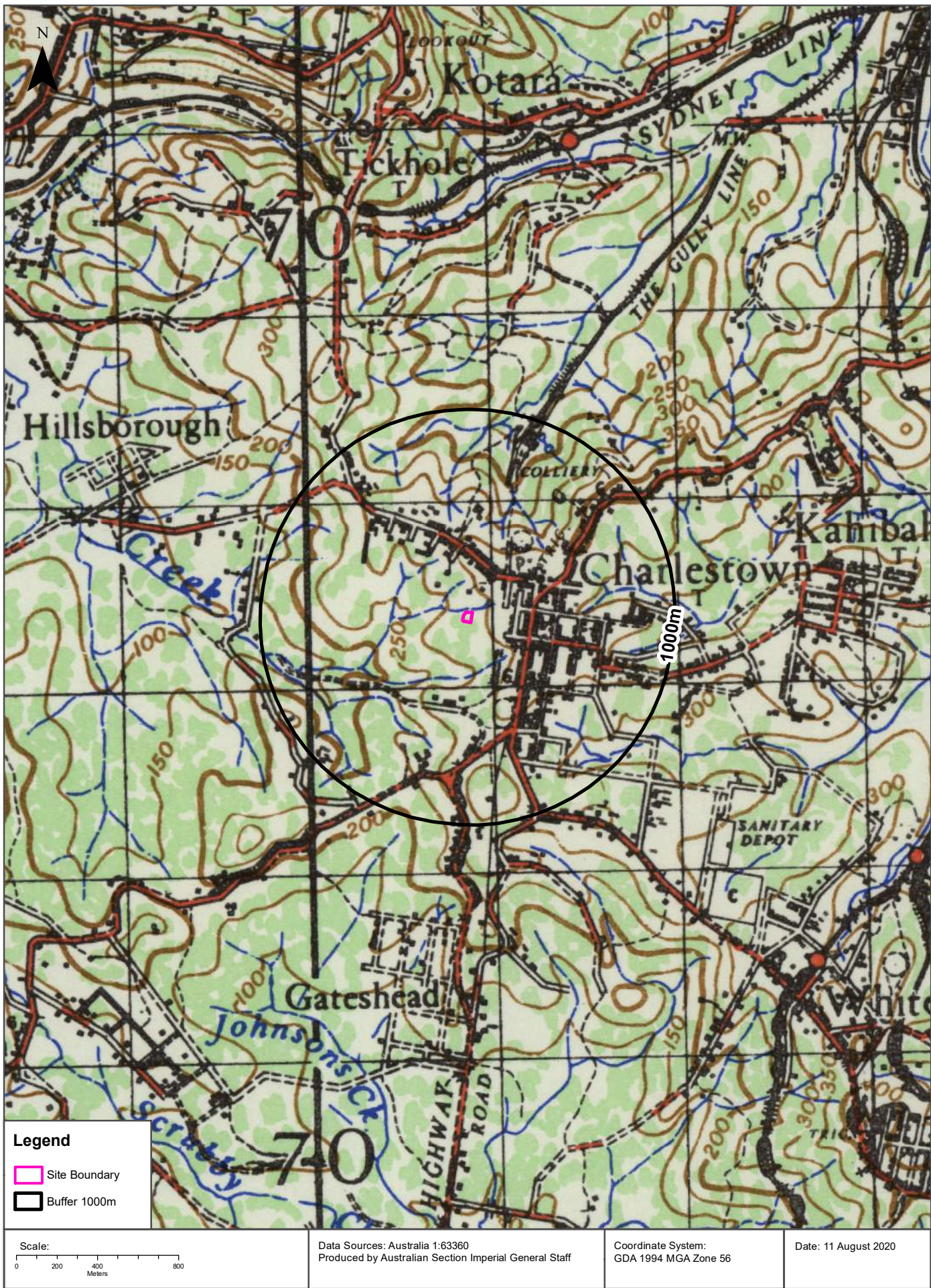
29 Chapman Street, Charlestown, NSW 2290





# Historical Map c.1941

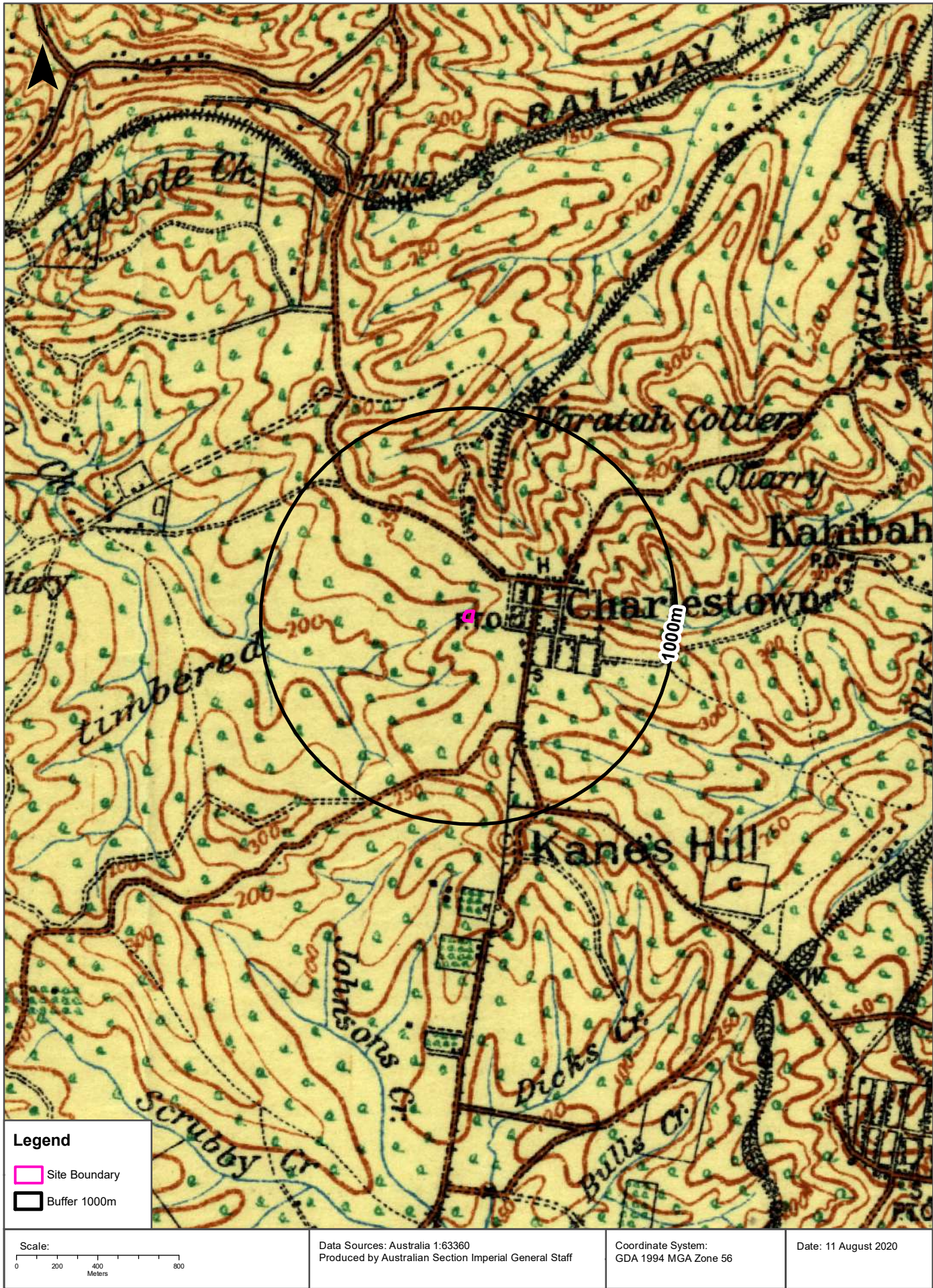
29 Chapman Street, Charlestown, NSW 2290





Historical Map c.1913

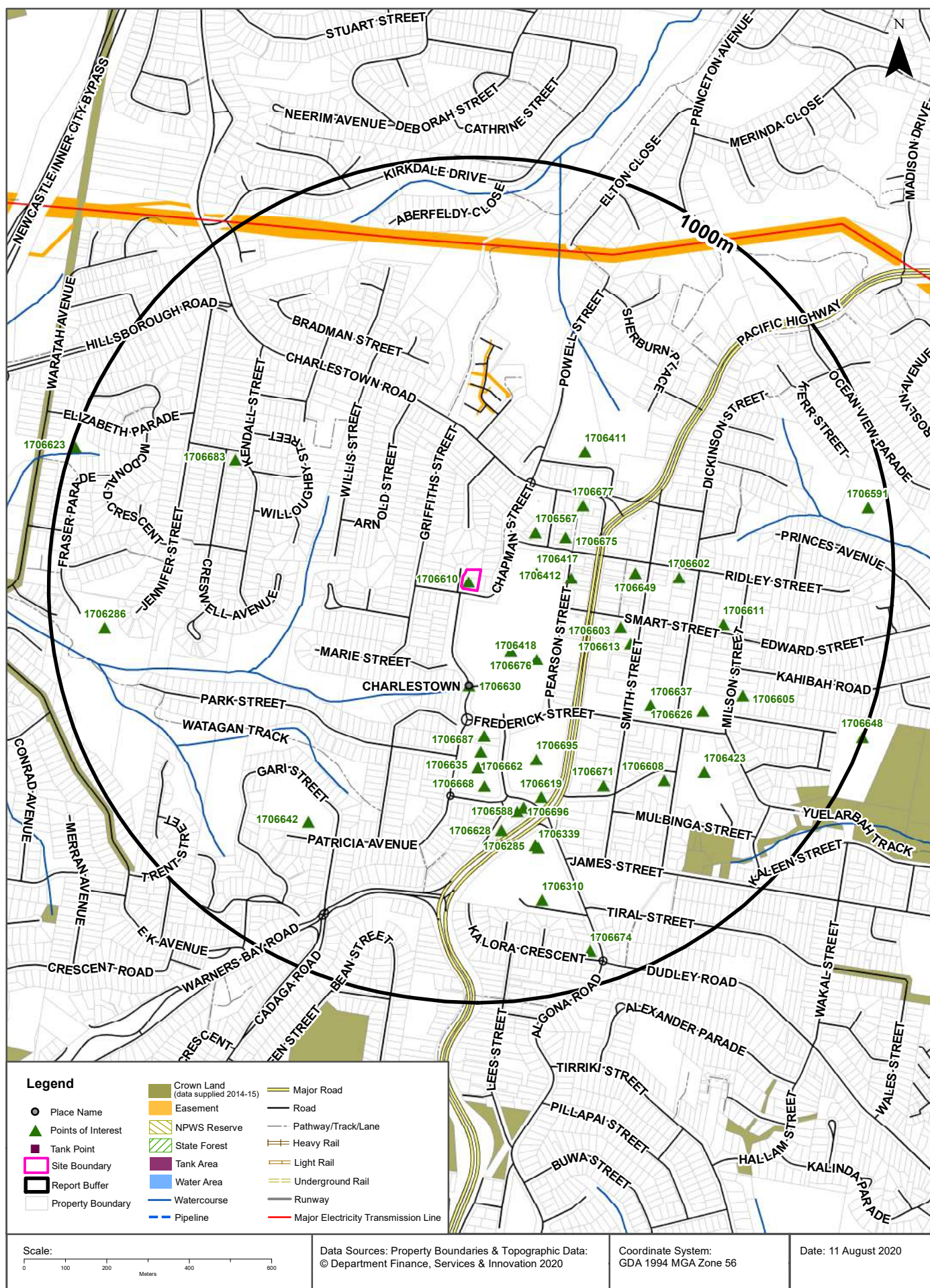
29 Chapman Street, Charlestown, NSW 2290





# Topographic Features

29 Chapman Street, Charlestown, NSW 2290



# Topographic Features

29 Chapman Street, Charlestown, NSW 2290

## Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
1706610	Place Of Worship	ANGLICAN CHURCH	0m	Onsite
1706417	Parking Area	Parking Area	135m	East
1706567	Community Medical Centre	LAKE MACQUARIE CHILD AND ADOLESCENT MENTAL HEALTH	160m	North East
1706676	Shopping Centre	CHARLESTOWN SQUARE	166m	South East
1706675	Post Office	CHARLESTOWN POST OFFICE	219m	North East
1706418	Parking Area	Parking Area	220m	South East
1706412	Bus Interchange	CHARLESTOWN BUS INTERCHANGE	220m	East
1706630	Suburb	CHARLESTOWN	232m	South
1706677	Shopping Centre	HILLTOP PLAZA	292m	North East
1706687	Park	MAHRAKHAH PARK	352m	South
1706603	Place Of Worship	PRESBYTERIAN CHURCH	358m	East
1706649	Library	CHARLESTOWN LIBRARY	374m	East
1706411	Parking Area	Parking Area	382m	North East
1706662	Sports Field	BOWLING GREENS	390m	South
1706613	Police Station	CHARLESTOWN POLICE STATION	392m	East
1706635	Club	CHARLESTOWN BOWLING CLUB	429m	South
1706695	Sports Field	CHARLESTOWN OVAL	434m	South
1706668	Sports Field	BOWLING GREEN	474m	South
1706602	Place Of Worship	CHRISTADELPHIAN CHURCH	480m	East
1706637	Primary School	CHARLESTOWN PUBLIC SCHOOL	503m	South East
1706619	Park	ROTARY PARK	524m	South
1706588	Park	CHARLESTOWN PARK	538m	South
1706696	Park	ANNIVERSARY GROVE	544m	South
1706671	Fire Station	CHARLESTOWN FIRE STATION	563m	South East
1706628	Park	LIONS PARK	583m	South
1706611	Place Of Worship	CATHOLIC CHURCH	601m	East
1706683	Park	Park	619m	North West
1706626	Park	ATTUNGA PARK	620m	South East
1706285	Community Facility	CHARLESTOWN AMBULANCE COORDINATION CENTRE	634m	South
1706339	Ambulance Station	NORTHERN AMBULANCE CONTROL CENTRE	641m	South
1706608	Place Of Worship	SEVENTH DAY ADVENTIST CHURCH	645m	South East

Map Id	Feature Type	Label	Distance	Direction
1706642	Primary School	CHARLESTOWN SOUTH PUBLIC SCHOOL	679m	South West
1706605	Place Of Worship	UNITING CHURCH	691m	South East
1706423	Swimming Pool Facility	CHARLESTOWN SWIMMING CENTRE	704m	South East
1706310	Community Facility	WANSEY COMMUNITY DIALYSIS CENTRE	766m	South
1706286	Community Facility	ALLAMBI YOUTH SERVICES	869m	West
1706674	Place Of Worship	CHURCH OF CHRIST	916m	South
1706591	Park	KENIBEA BUSHLAND RESERVE	949m	East
1706623	Park	TWIN CREEKS RESERVE	990m	West
1706648	Primary School	ST JOSEPH'S PRIMARY SCHOOL	998m	East

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

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## Topographic Features

29 Chapman Street, Charlestown, NSW 2290

### Tanks (Areas)

What are the Tank Areas located within the dataset buffer?

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

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
	No records in buffer					

### Tanks (Points)

What are the Tank Points located within the dataset buffer?

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

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
	No records in buffer					

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

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## Major Easements

What Major Easements exist within the dataset buffer?

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

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120120435	Primary	Undefined		376m	North
120119219	Primary	Undefined		773m	North West

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

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## Topographic Features

29 Chapman Street, Charlestown, NSW 2290

### State Forest

What State Forest exist within the dataset buffer?

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

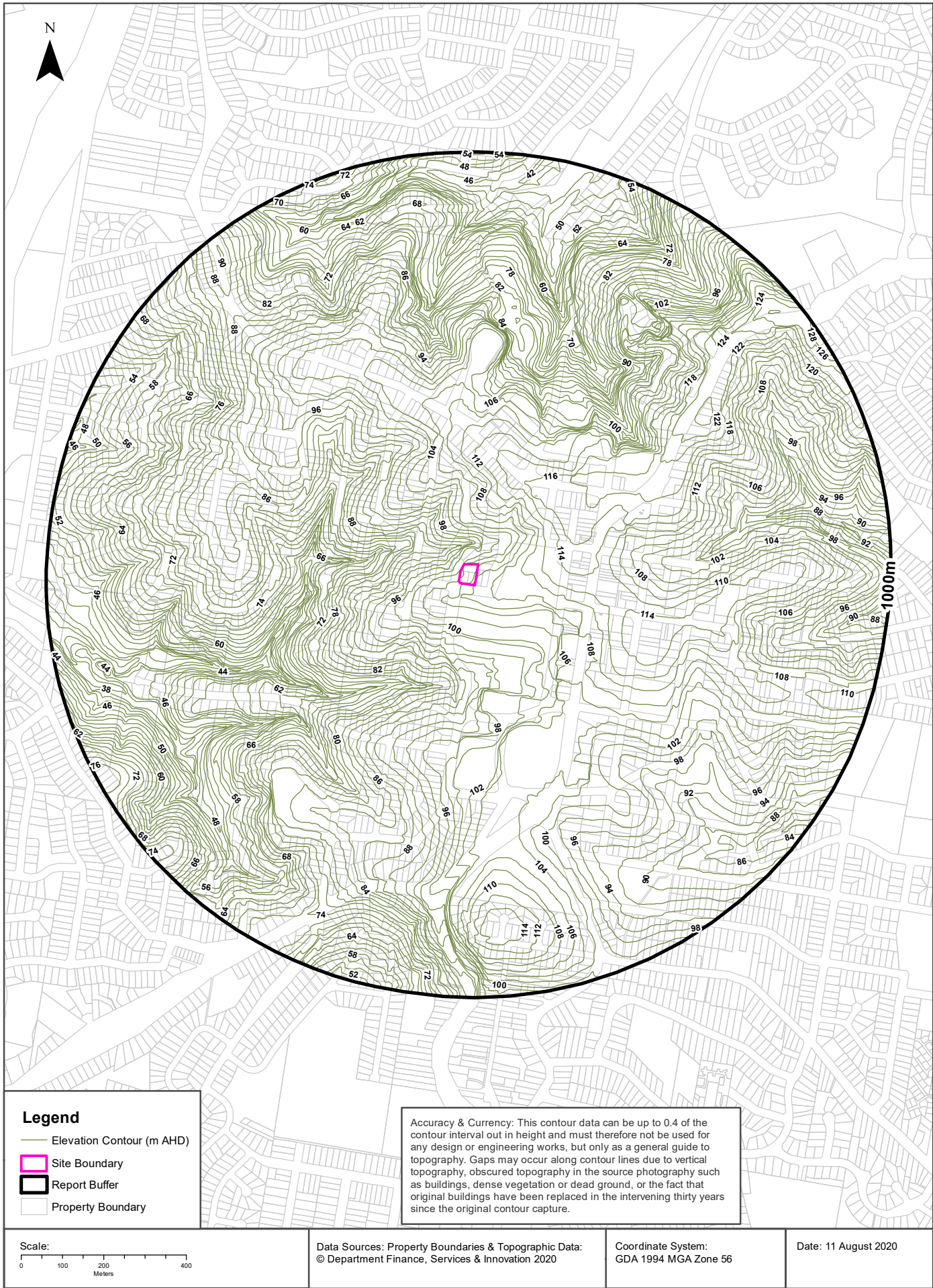
State Forest Data Source: © NSW Department of Finance, Services & Innovation (2018)  
Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

### National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

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

NPWS Data Source: © NSW Department of Finance, Services & Innovation (2018)  
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Legend

- Elevation Contour (m AHD)
- Site Boundary
- Report Buffer
- Property Boundary

Accuracy & Currency: This contour data can be up to 0.4 of the contour interval out in height and must therefore not be used for any design or engineering works, but only as a general guide to topography. Gaps may occur along contour lines due to vertical topography, obscured topography in the source photography such as buildings, dense vegetation or dead ground, or the fact that original buildings have been replaced in the intervening thirty years since the original contour capture.

Scale:  
0 100 200 400  
Meters

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

Coordinate System:  
GDA 1994 MGA Zone 56

Date: 11 August 2020

## Hydrogeology & Groundwater

29 Chapman Street, Charlestown, NSW 2290

### Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the dataset buffer:

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

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

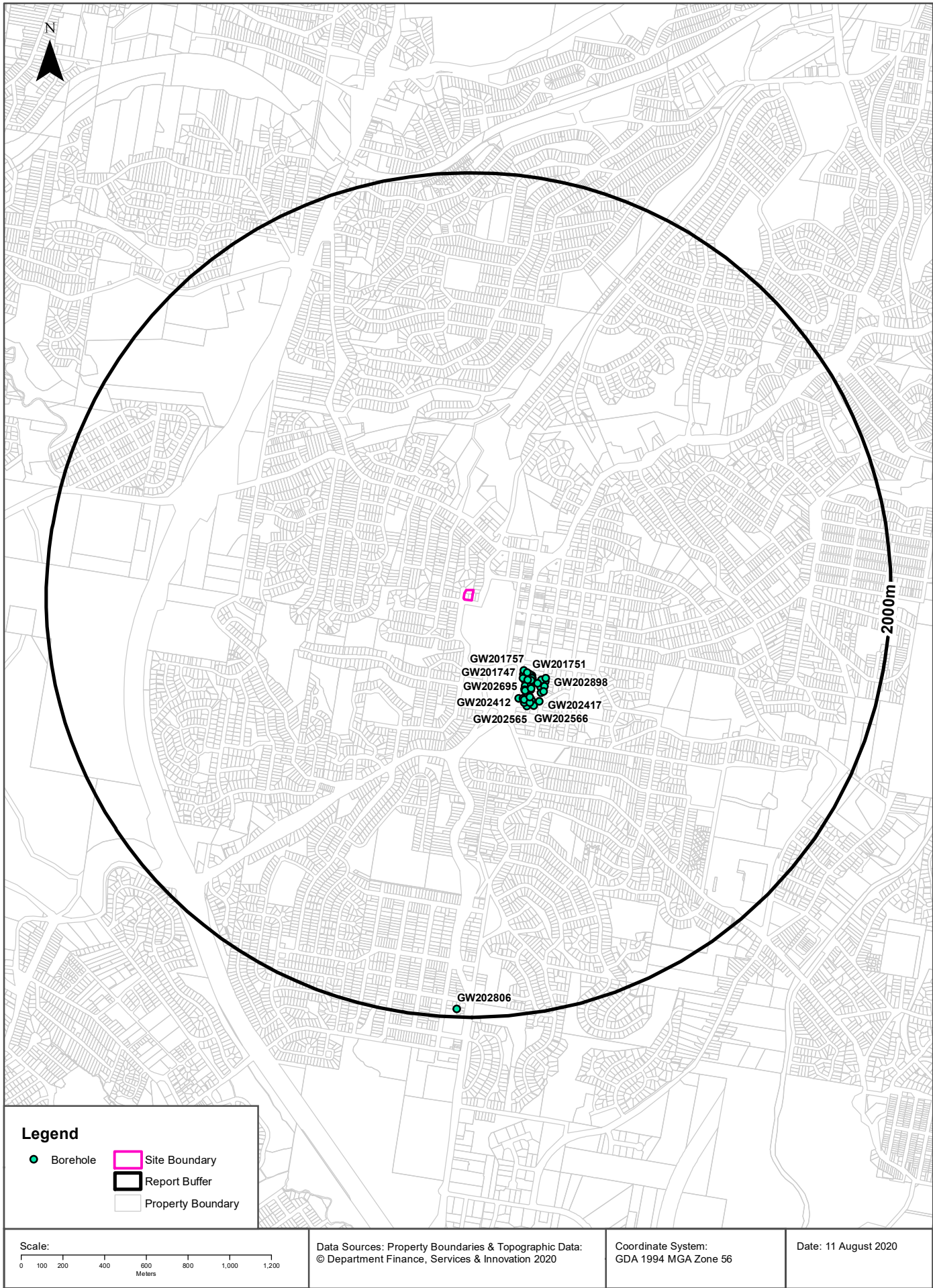
### Botany Groundwater Management Zones

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





# Hydrogeology & Groundwater

29 Chapman Street, Charlestown, NSW 2290

## 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
GW201 757	20BL173 012	Bore	Private	Monitoring Bore	Monitoring Bore		07/12/2009	6.40	6.40		4.90		104.57	421m	South East
GW201 747	20BL173 010	Bore	Private	Monitoring Bore	Monitoring Bore		07/01/2009	7.00	7.00		5.00		104.59	435m	South East
GW201 758	20BL173 012	Bore	Private	Monitoring Bore	Monitoring Bore		07/12/2009	5.70	5.70		4.80		103.76	439m	South East
GW201 748	20BL173 010	Bore	Private	Monitoring Bore	Monitoring Bore		07/12/2009	5.90	5.90		4.70		103.48	446m	South East
GW201 752	20BL173 011	Bore	Private	Monitoring Bore	Monitoring Bore		07/12/2009	6.50	6.50		4.80		104.35	449m	South East
GW201 749	20BL173 010	Bore	Private	Monitoring Bore	Monitoring Bore		08/12/2009	5.50	5.50		3.30		103.53	452m	South East
GW201 750	20BL173 010	Bore	Private	Monitoring Bore	Monitoring Bore		08/12/2009	5.40	5.40		3.50		102.16	455m	South East
GW201 751	20BL173 010	Bore	Private	Monitoring Bore	Monitoring Bore		08/12/2009	6.00	6.00		3.30		102.15	465m	South East
GW201 753	20BL173 011	Bore	Private	Monitoring Bore	Monitoring Bore		07/12/2009	7.40	7.40		4.50		103.34	465m	South East
GW201 754	20BL173 011	Bore	Private	Monitoring Bore	Monitoring Bore		08/12/2009	6.80	6.80		3.30		102.51	468m	South East
GW201 755	20BL173 011	Bore	Private	Monitoring Bore	Monitoring Bore		08/12/2009	7.40	7.40		3.30		102.19	472m	South East
GW202 894	20BL173 544	Bore	Private	Monitoring Bore	Monitoring Bore	BP Charlestown - MW21	27/08/2007	5.00	5.00					474m	South East
GW202 888	20BL173 544	Bore	Private	Monitoring Bore	Monitoring Bore	BP - Charlestown - MW9	22/07/2003	6.00	6.00		1.59		94.96	476m	South East
GW202 895	20BL173 544	Bore	Private	Monitoring Bore	Monitoring Bore	BP Charlestown - MW22	27/08/2007	4.50	4.50					479m	South East
GW201 756	20BL173 011	Bore	Private	Monitoring Bore	Monitoring Bore		08/12/2009	7.30	7.30		3.20		102.23	481m	South East
GW202 890	20BL173 544	Bore	Private	Monitoring Bore	Monitoring Bore	BP - Charlestown - MW15	09/09/2003	6.00	6.00		1.69		95.11	483m	South East
GW202 564	20BL173 049	Bore	Private	Monitoring Bore	Monitoring Bore		22/05/2012	5.30	5.30		1.90			486m	South East
GW202 695	20BL173 049	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex - Charlestown - GW17	08/11/2011	5.40	5.40		2.60			497m	South East
GW202 889	20BL173 544	Bore	Private	Monitoring Bore	Monitoring Bore	BP - Charlestown - MW10	22/07/2003	6.00	6.00		1.65		94.89	499m	South East
GW203 146	20BL173 699	Bore	Private	Environment Rehabilitation	Environment Rehabilitation	Caltex	15/03/2014	4.70	4.70					502m	South East
GW202 696	20BL172 966, 20BL173 497	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex - Charlestown - GW8A	21/05/2012	6.00	6.00		3.20			502m	South East
GW203 147	20BL173 699	Bore	Private	Environment Rehabilitation	Environment Rehabilitation	Caltex	15/03/2014	5.90	5.90		3.75			505m	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
GW202 563	20BL172 965, 20BL173 497	Bore	Private	Monitoring Bore	Monitoring Bore		21/05/2012	6.50	6.50		3.10			507m	South East
GW202 892	20BL173 544	Bore	Private	Monitoring Bore	Monitoring Bore	BP - Charlestown - MW17	09/09/2003	6.00	6.00		0.96		92.78	509m	South East
GW203 148	20BL173 699	Bore	Private	Environment Rehabilitation	Environment Rehabilitation	Caltex	15/03/2014	6.00	6.00		3.81			510m	South East
GW203 145	20BL173 698	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex	15/03/2014	4.70	4.70		3.93			510m	South East
GW202 891	20BL173 544	Bore	Private	Monitoring Bore	Monitoring Bore	BP - Charlestown - MW16	09/09/2003	6.00	6.00		1.56		93.96	511m	South East
GW202 414	20BL172 968	Bore	Private	Monitoring Bore	Monitoring Bore		23/08/2011	5.50	5.50		3.30			512m	South East
GW203 143	20BL173 698	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex	15/03/2014	4.30	4.30		1.84			515m	South East
GW203 144	20BL173 698	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex	15/03/2014	6.10	6.10		1.69			516m	South East
GW202 897	20BL173 546	Bore	Private	Monitoring Bore	Monitoring Bore	BP Charlestown - MW11	14/07/2003	6.00	6.00		2.07		94.76	517m	South East
GW202 412	20BL172 967	Bore	Private	Monitoring Bore	Monitoring Bore		11/11/2011	7.50	7.50		5.00			523m	South East
GW202 898	20BL173 547	Bore	Private	Monitoring Bore	Monitoring Bore	BP Charlestown - MW12	14/07/2003	5.40	5.40		1.27		93.13	527m	South East
GW202 413	20BL172 967	Bore	Private	Monitoring Bore	Monitoring Bore		10/11/2011	8.30	8.30					532m	South East
GW202 893	20BL173 544	Bore	Private	Monitoring Bore	Monitoring Bore	BP - Charlestown - MW18	09/09/2003	6.00	6.00		0.56		62.41	534m	South East
GW202 560	20BL172 966, 20BL173 497	Bore	Private	Monitoring Bore	Monitoring Bore		27/08/2012	7.00	7.00					541m	South East
GW202 561	20BL172 966, 20BL173 497	Bore	Private	Monitoring Bore	Monitoring Bore		11/11/2011	5.90	5.90					541m	South East
GW202 896	20BL173 545	Bore	Private	Monitoring Bore	Monitoring Bore	BP Charlestown - MW13	14/07/2003	6.00	6.00		0.34			542m	South East
GW202 419	20BL172 972	Bore	Private	Monitoring Bore	Monitoring Bore		22/08/2011	5.80	5.80		0.70			543m	South East
GW202 415	20BL172 969	Bore	Private	Monitoring Bore	Monitoring Bore		23/08/2011	6.50	6.50		2.00			554m	South East
GW202 418	20BL172 971	Bore	Private	Monitoring Bore	Monitoring Bore		24/08/2011	6.00	6.00		0.30			556m	South East
GW202 899	20BL173 548	Bore	Private	Monitoring Bore	Monitoring Bore	BP Charlestown - MW14	14/07/2003	5.80	6.00		0.35		91.78	559m	South East
GW202 562	20BL172 965, 20BL173 497	Bore	Private	Monitoring Bore	Monitoring Bore		11/11/2011	6.00	6.00		3.20			560m	South East
GW202 416	20BL172 970	Bore	Private	Monitoring Bore	Monitoring Bore		23/08/2011	6.00	6.00		3.50			565m	South East
GW202 565	20BL173 182	Bore	Private	Monitoring Bore	Monitoring Bore		21/05/2012	6.20	6.20		4.30			573m	South East
GW202 417	20BL172 970	Bore	Private	Monitoring Bore	Monitoring Bore		23/08/2011	7.00	7.00		4.70			585m	South East
GW202 566	20BL173 181	Bore	Private	Monitoring Bore	Monitoring Bore		23/05/2012	6.00	6.00		4.15			589m	South East
GW202 806	20BL173 404	Bore	Private	Monitoring Bore	Monitoring Bore	Ramsay Health	10/01/2013	7.00	15.00					1961m	South

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



# Hydrogeology & Groundwater

29 Chapman Street, Charlestown, NSW 2290

## Driller's Logs

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

Groundwater No	Drillers Log	Distance	Direction
GW201757	0.00m-5.40m Fill; Silty Clay, weathered seam, medium to high plasticity, brown, moist 5.40m-6.10m Conglomerate, cemented, moist 6.10m-6.20m Silty Clay; medium plasticity, pale grey, moist 6.20m-6.40m Conglomerate, cemented, moist	421m	South East
GW201747	0.00m-4.50m Fill; Silty Clay, medium to high plasticity, red/brown, moist 4.50m-5.70m Fill; Silty Clay, as above, wet 5.70m-7.00m Conglomerate, cemented, wet	435m	South East
GW201758	0.00m-3.50m Fill; Silty Clay, medium to high plasticity, red/brown, moist 3.50m-5.40m Fill; Silty Clay, as above, wet 5.40m-5.70m Bedrock, wet (Conglomerate?)	439m	South East
GW201748	0.00m-4.00m Fill; Silty Clay, medium to high plasticity, red/brown, moist 4.00m-5.90m Fill; Silty Clay, as above, wet	446m	South East
GW201752	0.00m-4.60m Fill; Silty Clay, medium to high plasticity, red brown, moist 4.60m-4.80m Silty Gravelly Clay; low plasticity, red brown, moist-wet 4.80m-6.20m Silty Gravelly Clay; low plasticity pale grey, wet 6.20m-6.50m Conglomerate, cemented, wet	449m	South East
GW201749	0.00m-4.20m Fill; Gravelly Silt, low plasticity, dark grey, moist 4.20m-4.80m Silty Clay; medium plasticity, red orange, trace gravel, wet 4.80m-5.50m Conglomerate, cemented, wet	452m	South East
GW201750	0.00m-2.60m Fill; Gravelly Silt, low plasticity, dark grey, moist 2.60m-3.50m Fill; Silty Gravelly Clay, medium plasticity, red orange, moist 3.50m-4.90m Fill; Silty Gravelly Clay, as above, wet 4.90m-5.40m Conglomerate, cemented, wet	455m	South East
GW201751	0.00m-0.50m Fill; Clayey Sand, fine to medium grained, brown/black, trace cobbles/boulders, moist 0.50m-2.90m Silty Gravelly Clay; medium plasticity, brown/black, moist 2.90m-3.20m Silt, Gravelly Clayey; low plasticity, pale grey, moist 3.20m-5.10m Silt, Gravelly Clayey; as above, wet 5.10m-6.00m Conglomerate, cemented, wet	465m	South East
GW201753	0.00m-0.90m Fill; Silty Clay, medium plasticity, brown/black, trace gravel, moist 0.90m-4.30m Silty Clay; medium to high plasticity, pale grey & orange, moist 4.30m-6.90m Silty Clay; as above, wet 6.90m-7.40m Conglomerate, cemented, wet	465m	South East
GW201754	0.00m-0.80m Fill; Silty Gravelly Clay; medium plasticity, red brown, trace cobbles, building debris 0.80m-3.00m Silty Clay; medium plasticity, pale grey, trace gravel 3.00m-4.60m Silty Clay; as above, red orange 4.60m-6.00m Silty Gravelly Clay; low plasticity, orange, red/brown 6.00m-6.80m Conglomerate; cemented	468m	South East
GW201755	0.00m-0.60m Fill; Sand, fine to medium grained, yellow, sub-angular, trace cobbles/boulders, moist 0.60m-1.90m Clay; medium to high plasticity, grey/brown, moist 1.90m-2.25m Clay; as above, red/brown, moist 2.25m-3.20m Clay; as above, grey/white, moist 3.20m-6.00m Clay; as above, wet 6.00m-6.10m Conglomerate, cemented, wet 6.10m-6.20m Silty Clay; medium plasticity, grey, wet 6.20m-7.40m Conglomerate; cemented, wet	472m	South East
GW202894	0.00m-0.20m Clay, Sandy; (topsoil), dark brown, no odour, roots & grass cover present 0.20m-0.80m Clay, Sandy; dark brown, minor gravels, roots present, fine-medium sands, no odour 0.80m-1.50m Clay; Sandy; as above, grading to orange/brown, grading to red/grey @ 1.3m 1.50m-4.30m Clay, Sandy; as above, grading to orange, with ironstone. Minor gravels, some grey @ 2.5m. Gravel to 20mm @ 2.8m 4.30m-5.00m Sandstone, grading to; extremely weathered, minor gravels & rocks to 20mm, no odour	474m	South East

Groundwater No	Drillers Log	Distance	Direction
GW202888	0.00m-0.30m Fill; Sandy Gravel, brown, fine gravel to coarse sand, dense, poorly graded, moist, high permeability, no HC odour 0.30m-1.60m Clay; grey/olive brown, very firm to stiff, intact, low plasticity, low permeability, no HC odour 1.60m-4.30m Clay, Silty; red/brown with grey streaking, firm, intact, low plasticity, low permeability, no HC odour, increasing sand 4.30m-5.20m Clay, Silty Sandy; light grey, soft to firm, medium plasticity, low permeability, slight HC odour 5.20m-6.00m Conglomerate; yellow brown, rounded pebbles sized (to 10mm) clasts of shale & sandstone in a fine matrix, weak rock, ext	476m	South East
GW202895	0.00m-0.50m Fill; Asphalt & concrete 0.50m-0.60m Fill; coarse sand, brown, with gravel to 30mm, no odour, moist/wet 0.60m-1.50m Clay; grey with mottled pale brown, medium plasticity, organic odour, moist/wet 1.50m-3.00m Clay; as above, grading to grey with mottled red, damp/moist @ 2.7m 3.00m-3.50m Clay, Sandy; pale brown, with minor gravels, no odour, moist 3.50m-4.50m Clay, Sandy; as above, grading to dark red with mottled brown/grey, moist. Wet @ base	479m	South East
GW201756	0.00m-1.55m Fill; Clayey Sand, fine to medium grained, sub-angular, yellow brown, moist 1.55m-2.70m Silty Clay; medium plasticity, brown, moist 2.70m-2.80m Ironstone/Gravel band 2.80m-4.40m Silty Gravelly Clay; low plasticity, pale grey, wet from 3m 4.40m-5.70m Gravel, Silty Clayey; sub-angular, grey, wet 5.70m-6.20m Conglomerate, wet 6.20m-6.60m Silty Clay, pale grey, wet 6.60m-7.30m Conglomerate, wet	481m	South East
GW202890	0.00m-0.30m Fill; Sandy Gravel, brown, fine gravel to coarse sand, dense, poorly graded, moist, no HC odour, high permeability 0.30m-1.60m Clay; grey/olive brown, very fine to stiff, intact, low plasticity, low permeability, no HC odour 1.60m-3.80m Clay, Silty; red/brown with grey streaking, firm, intact, low plasticity, low permeability, no HC odour 3.80m-4.80m Clay, Silty Sandy; light gye, soft to firm, meidum plasticity, low permeability, no HC odour 4.80m-6.00m Conglomerate; yellow brown, rounded pebble sized (to10mm) clasts of shale & sandstone in a fine matrix, weak, extremely	483m	South East
GW202564	0.00m-0.16m Fill; Concrete 0.16m-0.18m Fill; Gravel, medium grained 0.18m-0.85m Clay; dark grey with grey mottling, trace sand 0.85m-1.00m Clay; grading to pale gye/brown in colour with trace orange 1.00m-1.40m Clay; grading to orange/brown with grey 1.40m-2.60m Clay, with Sand; grey & red lenses approx 10cm 2.60m-3.20m Clay, with Sand; grading to red/grey 3.20m-3.40m Clay, with Sand; grading to red 3.40m-4.40m Clay, with Sand; grading to grey/white 4.40m-4.60m Clay; stiff, dry, grey/brown 4.60m-5.30m Clay; grading to orange/red with trace gravel	486m	South East
GW202695	0.00m-0.15m Fill; Concrete 0.15m-0.90m Clay; med-dark grey/orange brown 0.90m-1.90m Clay; grey, becoming paler with depth 1.90m-3.80m Clay; some orange/brown & red/brown lenses throughout <1cm thick 3.80m-4.00m Clay; with weathered rock, dark orange with slight red 4.00m-4.44m Clay; pale grey-brown 4.44m-4.54m Clay; red/brown lense 4.54m-4.72m Clay; grey lense 4.72m-4.86m Clay; red lense 4.86m-4.96m Clay; pale grey lense 4.96m-5.00m Clay; grey lense 5.00m-5.30m Clay; red lense 5.30m-5.40m Clay; grey lense	497m	South East
GW202889	0.00m-0.30m Fill; Sandy Gravel; brown, fine gravel to coarse sand, dense, poorly graded, moist, high permeability, no HC odour 0.30m-1.50m Clay; grey/olive brown, very firm to stiff, intact, low plasticity, low permeability, no HC odour 1.50m-4.60m Clay, Silty; red/brown with grey streaking, firm, intact, low plasticity, low permeability, no HC odour 4.60m-6.00m Clay, Silty Sandy; light grey, soft, to firm, medium plasticity, low permeability, no HC odour	499m	South East
GW202696	0.00m-0.50m Fill; wood chips & topsoil, brown, dark brown 0.50m-1.00m Sandy Clay; grey 1.00m-4.00m Sandy Clay; grading to orange/brown/grey 4.00m-6.00m Sandy Clay; grading to red/brown & grey	502m	South East
GW203146	0.00m-0.10m Fill; concrete 0.10m-1.20m Fill; clay, gravel & rocks, dark brown & orange/brown 1.20m-3.00m Clay, with some Sand, mottled very pale grey & pale orange, fine grained sand 3.00m-4.70m Sandstone, grading to weathered, orange increasing with depth	502m	South East
GW203147	0.00m-0.20m Fill; Concrete 0.20m-1.40m Fill; yellow Sand with some gravel 1.40m-3.80m Clay; pale grey/white, red/brown clay inclusions, occasional bands of ironstone throughout 3.80m-4.60m Sandstone, weathered; orange/red/brown, drilling as sandy clay 4.60m-5.90m Sandstone, weathered; pale grey with orange/brown mottling	505m	South East

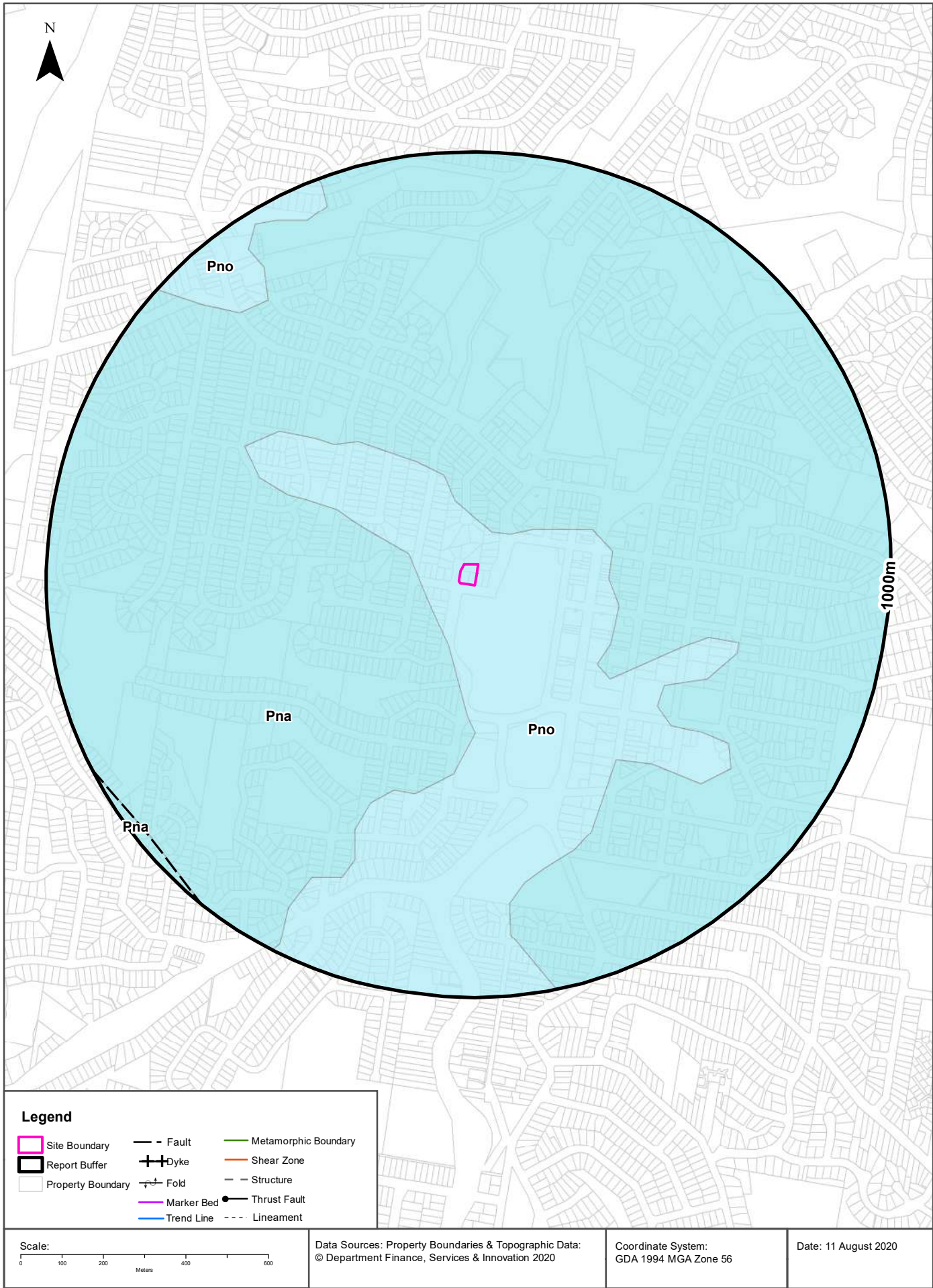
Groundwater No	Drillers Log	Distance	Direction
GW202563	0.00m-0.10m Fill - woodchips, topsoil (garden bed) 0.10m-0.25m Fill - white sand, foam at 0.10m 0.25m-0.27m Fill, cement overspill (orange/brown) 0.27m-0.70m Fill - gravelly, sandy CLAY, grey/green 0.70m-2.00m Sandy Clay, orange/grey 2.00m-3.00m Sandy Clay, grading to grey 3.00m-4.00m Sandy Clay, grading to grey/brown 4.00m-6.50m Sandy Clay, grading to orange/brown	507m	South East
GW202892	0.00m-0.50m Fill; Sandy Gravel, brown, fine gravel to coarse sand, dense, poorly graded, moist, high permeability, no HC odour 0.50m-1.40m Clay; grey/olive brown, very firm to stiff, intact, low plasticity, low permeability, no HC odour 1.40m-4.60m Clay, Silty; red/brown with grey streaking, firm, intact, low plasticity & permeability, no HC odour 4.60m-5.50m Clay, Silty Sandy; light grey, soft to firm, medium plasticity, low permeability, no HC odour 5.50m-6.00m Conglomerate; yellow brown, rounded pebble (to 10mm) clasts of shale & sandstone in fine matrix, weak, extremely weather	509m	South East
GW203145	0.00m-0.20m Fill; Concrete 0.20m-1.40m Fill; gravel with some sand & clay, rocks & bricks, concrete places present 1.40m-2.20m Clay with trace Sand; mottled pale grey, orange & brown 2.20m-4.70m Sandstone, weathered; sandy clay, mottled pale grey & pale orange	510m	South East
GW203148	0.00m-0.20m Fill; concrete 0.20m-2.30m Fill; sand, gravel & clay mix, orange/brown 2.30m-2.80m Clay; pale grey & pale brown mottling 2.80m-4.00m Clay, sandy/clayey Sand; pale brown with minor pale grey veins, fine to medium grained sand 4.00m-4.40m Clay; pale brown with minor pale grey veins, trace sand (fine to medium grained) 4.40m-6.00m Clay, sandy; fine grained sand, pale brown with minor pale grey veins	510m	South East
GW202891	0.00m-0.50m Fill; Sandy Gravel, brown, fine gravel to coarse sand, dense, poorly graded, moist, high permeability, no HC odour 0.50m-1.00m Clay; grey/olive brown, very firm to stiff, intact, low plasticity, low permeability, no HC odour 1.00m-3.30m Clay, Silty; red/brown with grey streaking, firm, intact, low plasticity, low permeability, no HC odour 3.30m-4.60m Clay, Silty Sandy; light grey, soft to firm, medium plasticity, low permeability, no HC odour 4.60m-6.00m Conglomerate; yellow brown, rounded pebbles sized (to 10mm) clasts of shale & sandstone in a fine matrix, weak, extremely	511m	South East
GW202414	0.00m-0.20m Clay, moist, brown 0.20m-0.30m Clay, moist, yellow brown 0.30m-0.50m Rock, residual textures 0.50m-1.00m Clay, becoming white with weathered red zones 1.00m-2.00m Silty Clay 2.00m-3.00m Silty Clay, white, soft, moist 3.00m-4.00m Rock 4.00m-5.50m Rock, weathered, becoming harder with depth	512m	South East
GW203143	0.00m-0.20m Topsoil; clayey Sand, wood, charcoal, woodchips, fine to medium grained sand, dark brown 0.20m-0.40m Clay; dull brown/orange mottling, roots 0.40m-1.50m Clay; pale brown/grey/orange mottling, roots, becoming paler with depth 1.50m-3.30m Clay, Sandy; pale grey with pale brown mottling, fine grained sand 3.30m-4.30m Clay, Sandy; pale grey with orange mottling, increasing sand content & grain size with depth	515m	South East
GW203144	0.00m-0.10m Topsoil; Clayey Sand, wood, charcoal, woodchips, fine to medium grained sand, dark brown 0.10m-0.20m Clay, Sandy; fine grained, dark brown 0.20m-0.90m Clay; mottled pale orange/brown & pale grey, friable/fractures 0.90m-1.40m Clay; mottled orange/pale grey with dark brown inclusions 1.40m-1.70m Clay; mottled pale grey/orange 1.70m-2.00m Clay; predominantly orange/brown 2.00m-3.60m Clay; pale grey with minor pale orange mottling 3.60m-3.80m Clay; red, trace sand 3.80m-4.40m Sandstone, weathered; clayey Sand, fine to medium grained, mottled pale grey & pale orange 4.40m-6.10m Sandstone, weathered; sandy Clay with gravel, mottled pale grey & orange	516m	South East
GW202897	0.00m-0.20m Fill; Bitumen 0.20m-0.80m Fill; Sandy Gravel, brown, moist, poorly graded, fine gravel-coarse sand, high permeability, no HC odour 0.80m-5.20m Clay, Silty; with some fine gravel, red/white/yellow streaking, low plasticity, low permeability, no HC odour 5.20m-6.00m Clay, Silty; with minor gravel below 4.5m, light grey, soft becoming wet below 4.5m, no HC odour, medium permeability	517m	South East
GW202412	0.00m-0.50m Gravel, with Silt, soft mottled 0.50m-1.00m Fill; decreased gravel 1.00m-1.40m Clay; yellow brown, firm 1.40m-2.00m Silty Clay; natural, mottled red/white/yellow-grey 2.00m-3.00m Silty Clay; red, weathered zone 3.00m-3.30m Silty Clay; red, weathered zone, increasing silt 3.30m-4.40m Silt; grey, Clay-firm, moist 4.40m-6.00m Clay/Gravel, weathered rock 6.00m-7.50m Silty Clay; pink/grey	523m	South East



Groundwater No	Drillers Log	Distance	Direction
GW202898	0.00m-0.20m Fill; bitumen 0.20m-0.80m Fill; Sandy Gravel, brown, moist, poorly graded, fine gravel-coarse sand, high permeability, no HC odour 0.80m-2.60m Clay, Silty; with fine gravels, red/brown, medium stiff, low plasticity & permeability, no HC odour 2.60m-4.70m Clay, Silty; with fine gravels, light grey, intact, low plasticity, medium permeability, no HC odour 4.70m-5.40m Clay, silty; as above, red/brown, wet, high plasticity, refusal in shale bedrock	527m	South East
GW202413	0.00m-0.80m Fill; mixed 0.80m-1.20m Clay; highly plastic, pale grey, moist 1.20m-1.60m Gravel, silty; natural, weathered sandstone, becoming silty gravel 1.60m-5.10m Silty Clay; white/mottled yellow/red, increasing red weathered bands, very soft 3.3-3.4m, wet 5.10m-8.30m Rock, very hard, cuttings silty clay	532m	South East
GW202893	0.00m-0.30m Fill; Sandy Gravel, brown, fine gravel to coarse sand, dense, poorly graded, moist, high permeability, no HC odour 0.30m-1.70m Clay; grey/olive brown, very firm to stiff, intact, low plasticity, low permeability, no HC odour 1.70m-3.00m Clay, Silty; red/brown with grey streaking, firm, intact, low plasticity, low permeability, no HC odour 3.00m-4.70m Clay, Silty Sandy; light grey, soft, to firm, medium plasticity, low permeability, no HC odour 4.70m-6.00m Conglomerate; yellow brown, rounded pebble (to 10mm) clasts of shale & sandstone in fine matrix, weak rock, no HC odour,	534m	South East
GW202560	0.00m-1.50m Fill; mixed sand/silt/clay/gravel 1.50m-3.00m Clay, dark grey, highly plastic, with minor silt, becoming lighter grey with depth 3.00m-3.10m Silty Clay, white, moderately plastic, moist 3.10m-3.70m Clay, yellow brown, with rock textures increased silt 3.70m-5.00m Clay, white red mottled, grading to pale grey with infrequent pink/red 5.00m-5.60m Silty Clay, very soft, wet, white/pale grey, (5.3-5.6 - heavy white clay) 5.60m-7.00m Sandstone, weathered, pink/red, crumbly sandstone, pink silty/sandy clay (very sloppy) gravelly weathered sandstone, ora	541m	South East
GW202561	0.00m-0.80m Fill; mixed 0.80m-3.20m Clay, gravelly, yellow-brown, decreasing gravel with depth, becoming white/yellow mottled 3.20m-4.00m Rock, weathered, silt clay - rock texture, mottled white/red becoming harder 4.00m-4.70m Clayey silt, weathered mudstone, pink/white, hard/crumbly 4.70m-5.90m Clay, increased (silty gravelly clay), red/white/yellow mottled, hit gravelly layer in siltstone, pink band @ 5.5-5.8m	541m	South East
GW202896	0.00m-0.30m Fill, Sandy Gravel; brown, moist, poorly graded, fine gravel-coarse sand, high permeability, no HC odour 0.30m-1.30m Silt, Clayey; with some medium-coarse sand & fine gravel, moist, high plasticity, medium permeability, no HC odour 1.30m-3.60m Clay, Silty; olive brown, soft becoming wet below 2.8m, high plasticity, low permeability, no HC odour 3.60m-5.40m Clay, Silty; with fine gravel, <10mm, light grey, low plasticity, medium permeability, no HC odour 5.40m-6.00m Clay, Silty; as above, light grey/brown with red streaking, medium plasticity	542m	South East
GW202419	0.00m-0.15m Fill; Concrete 0.15m-0.50m Clay; grey/brown, white mottling 0.50m-1.10m Clay; gravelly, off-white/pale grey 1.10m-2.70m Clay; grey, orange & red with mottling 2.70m-4.50m Clay; grey/brown & pale grey/brown 4.50m-5.50m Clay; becoming more grey with depth 5.50m-5.80m Clay; grey orange & red with mottling	543m	South East
GW202415	0.00m-0.10m Fill; Topsoil, clay-like sandy silt, roots 0.10m-3.20m Clay, pale grey with orange/brown mottling, medium plasticity 3.20m-4.08m Clay, with Gravel, orange grey 4.08m-5.10m Clay, gravelly 5.10m-5.20m Clay, dark grey/brown, very stiff 5.20m-6.10m Sand, gravelly, with trace clay 6.10m-6.50m Clay, grey/brown	554m	South East
GW202418	0.00m-0.10m Fill; Topsoil, clay/sandy silt, grass roots 0.10m-0.90m Fill; Clay, dark grey, medium plasticity 0.90m-1.90m Clay; pale grey/brown, low plasticity 1.90m-2.65m Clay; with red lenses, medium plasticity 2.65m-2.80m Clay; soft, high plasticity 2.80m-3.00m Clay; red, claystone lense, low plasticity 3.00m-3.50m Clay; with gravel, red/orange, low plasticity 3.50m-4.00m Clay; grey, high plasticity 4.00m-4.50m Clay; gravelly, red, low plasticity 4.50m-6.00m Clay; grey with orange mottling, high plasticity	556m	South East

Groundwater No	Drillers Log	Distance	Direction
GW202899	0.00m-0.50m Fill; Sandy Gravel, brown, moist, poorly graded, fine gravel-coarse sand, high permeability, no HC odour 0.50m-1.50m Silt, Clayey; with some medium-coarse sand & fine gravel, moist, high plasticity, medium permeability, no HC odour 1.50m-2.70m Clay, Silty; light grey/light brown with red streaks, stiff, intact, low permeability, no HC odour 2.70m-6.00m Clay, Silty; with minor gravels below 4.5m, light grey, soft-becoming wet below 4.5m, low plasticity, medium permeability	559m	South East
GW202562	0.00m-1.50m Fill - Gravel 1.50m-2.30m Fill - Natural 2.30m-3.20m Silty Clay; white/yellow mottled, high plasticity, moist 3.20m-3.50m Clay; gravelly, soft, grey, wet 3.50m-4.70m Gravel, clayey; hard, mottled yellow/white 4.70m-6.00m Silty Clay; mottled yellow/red/white, moist	560m	South East
GW202416	0.00m-0.20m Fill; Topsoil, clay sandy silt, roots 0.20m-2.90m Clay; pale brown/grey, becoming paler with depth, medium plasticity 2.90m-3.90m Clay; red/brown, gravelly lense 3.90m-5.00m Clay; pale grey, high plasticity 5.00m-5.20m Clay; red/grey/brown, high plasticity 5.20m-6.00m Clay	565m	South East
GW202565	0.00m-0.20m Fill; Topsoil, dark grey/brown 0.20m-0.70m Fill; Topsoil mixed with orange/yellow & grey/brown stiff Clay 0.70m-1.50m Fill; orange/yellow & grey/brown stiff clay 1.50m-2.40m Clay; stiff, orange/yellow & grey/brown, with grey & red bands 2.40m-2.60m Clay; no more red colouration 2.60m-3.60m Clay; grading to pale grey, grey/brown 3.60m-4.60m Clay; becoming less grey with depth 4.60m-4.80m Clay; grey colour returning to strata 4.80m-6.20m Clay; grading to dark grey with grey stiff clay	573m	South East
GW202417	0.00m-2.90m Clay; orange/brown & grey mottling, medium plasticity 2.90m-6.00m Clay; brown/grey, very stiff, medium plasticity 6.00m-7.00m Clay; pale brown/orange & grey, medium plasticity	585m	South East
GW202566	0.00m-0.20m Fill; Topsoil, dark brown/grey 0.20m-1.50m Clay; orange/brown & grey, becoming paler 1.50m-2.80m Clay; becoming less orange to no orange colouration (grey, pale grey/brown) 2.80m-3.30m Clay; grading to trace grey/brown, majority grey 3.30m-4.30m Clay; grading to soft pale grey/white clay layer 4.30m-5.80m Clay, with Gravelly Sand; red 5.80m-6.00m Clay, with Gravelly Sand; grading to orange/grey brown	589m	South East
GW202806	0.00m-0.50m Topsoil 0.50m-1.00m Fill 1.00m-1.30m Clay; silty 1.30m-6.60m Coal 6.60m-6.75m Claystone 6.75m-7.10m Coal 7.10m-7.40m Sandstone/Coal 7.40m-8.80m Sandstone 8.80m-8.92m Coal 8.92m-9.00m Siltstone, Carbonaceous 9.00m-9.89m Sandstone 9.89m-9.96m Coal 9.96m-15.00m Sandstone	1961m	South

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

29 Chapman Street, Charlestown, NSW 2290

### Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Pno	Sandstone, conglomerate, siltstone, coal, tuff	Boolaroo Subgroup	Newcastle Coal Measures	Boolaroo Subgroup	Palaeozoic			1:250,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Pna	Conglomerate, sandstone, siltstone, coal, tuff		Newcastle Coal Measures		Palaeozoic			1:250,000
Pno	Sandstone, conglomerate, siltstone, coal, tuff	Boolaroo Subgroup	Newcastle Coal Measures	Boolaroo Subgroup	Palaeozoic			1:250,000

### Geological Structures

What are the Geological Structures onsite?

Feature	Name	Description	Map Sheet	Dataset
No features				1:250,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Dataset
Fault		Fault, Accurate	Bohena	1:250,000

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

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# Naturally Occurring Asbestos Potential

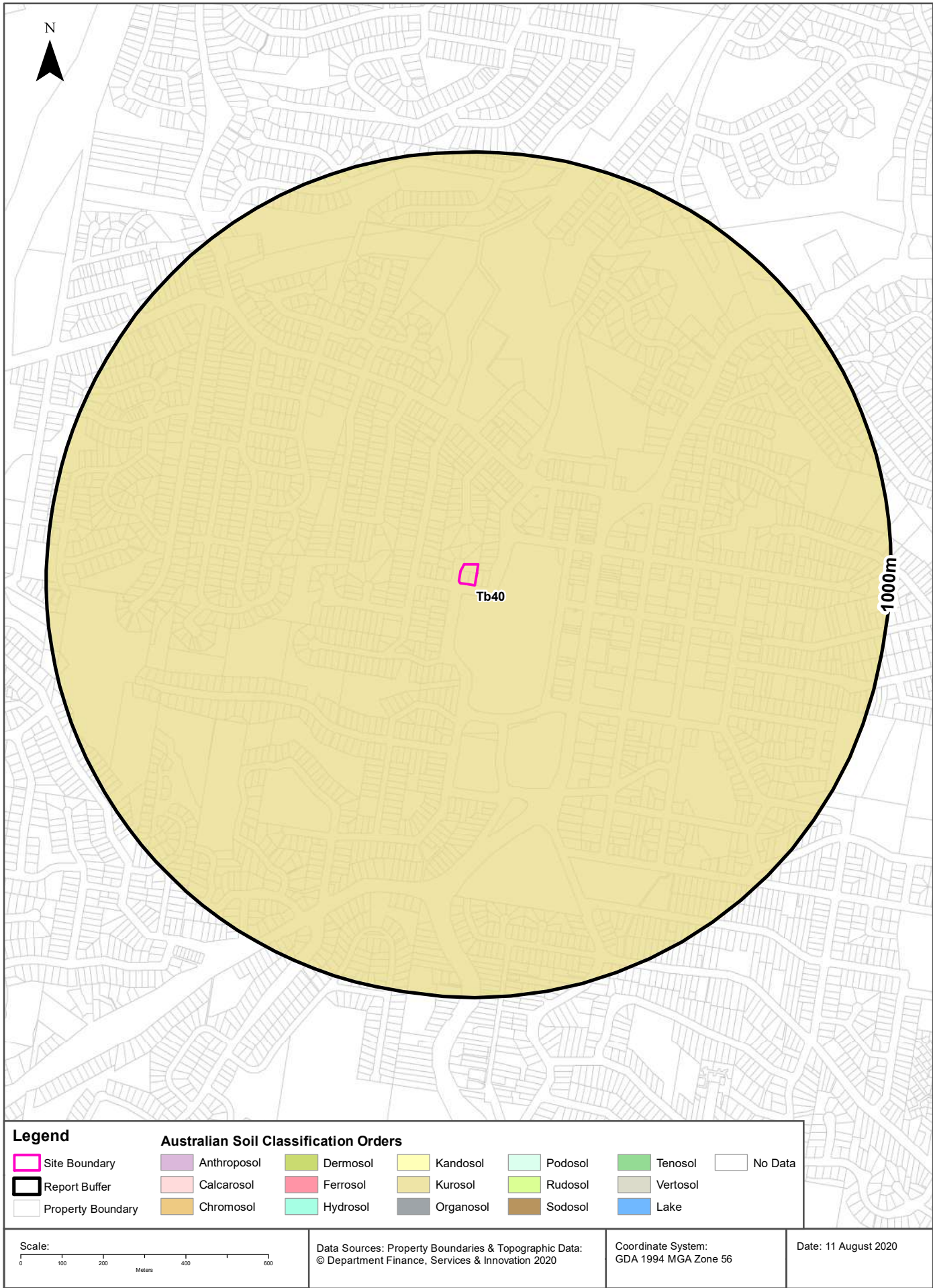
29 Chapman Street, Charlestown, NSW 2290

## 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





## Soils

29 Chapman Street, Charlestown, NSW 2290

### Atlas of Australian Soils

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

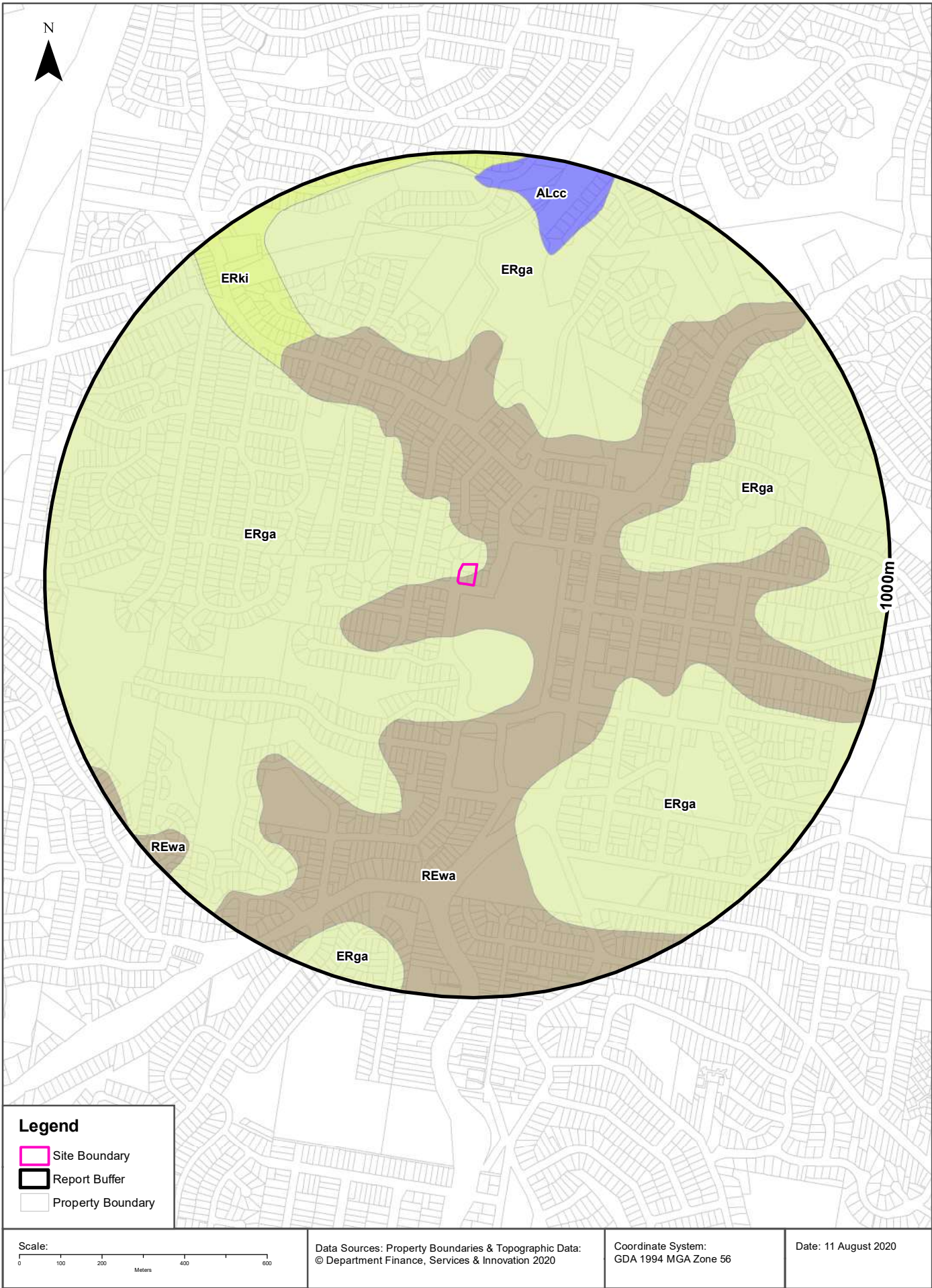
Map Unit Code	Soil Order	Map Unit Description	Distance
Tb40	Kurosol	Undulating to hilly areas with some steep slopes and cliffs, rock outcrops, and narrow terraced valleys: chief soils are hard acidic yellow mottled soils (Dy3.41) with some shallow soils such as (Um4.1) and (Uc4.1) on the steeper slopes. Associated are: (Gn2.2) soils and (Dd1) soils, both of which occur on slopes; undescribed soils in the valleys; and some (Dy5) and (Uc1 .2) soils along the coast. As mapped, small areas of units Gb10 and Cb28 are included.	0m

Atlas of Australian Soils Data Source: CSIRO

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# Soil Landscapes

29 Chapman Street, Charlestown, NSW 2290



## Soils

29 Chapman Street, Charlestown, NSW 2290

## Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
ERga	GATESHEAD		EROSIONAL	Newcastle	1:100,000
REwa	WARNERS BAY		RESIDUAL	Newcastle	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALcc	COCKLE CREEK		ALLUVIAL	Newcastle	1:100,000
ERga	GATESHEAD		EROSIONAL	Newcastle	1:100,000
ERki	KILLINGWORTH		EROSIONAL	Newcastle	1:100,000
REwa	WARNERS BAY		RESIDUAL	Newcastle	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage

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## Acid Sulfate Soils

29 Chapman Street, Charlestown, NSW 2290

### Environmental Planning Instrument - Acid Sulfate Soils

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

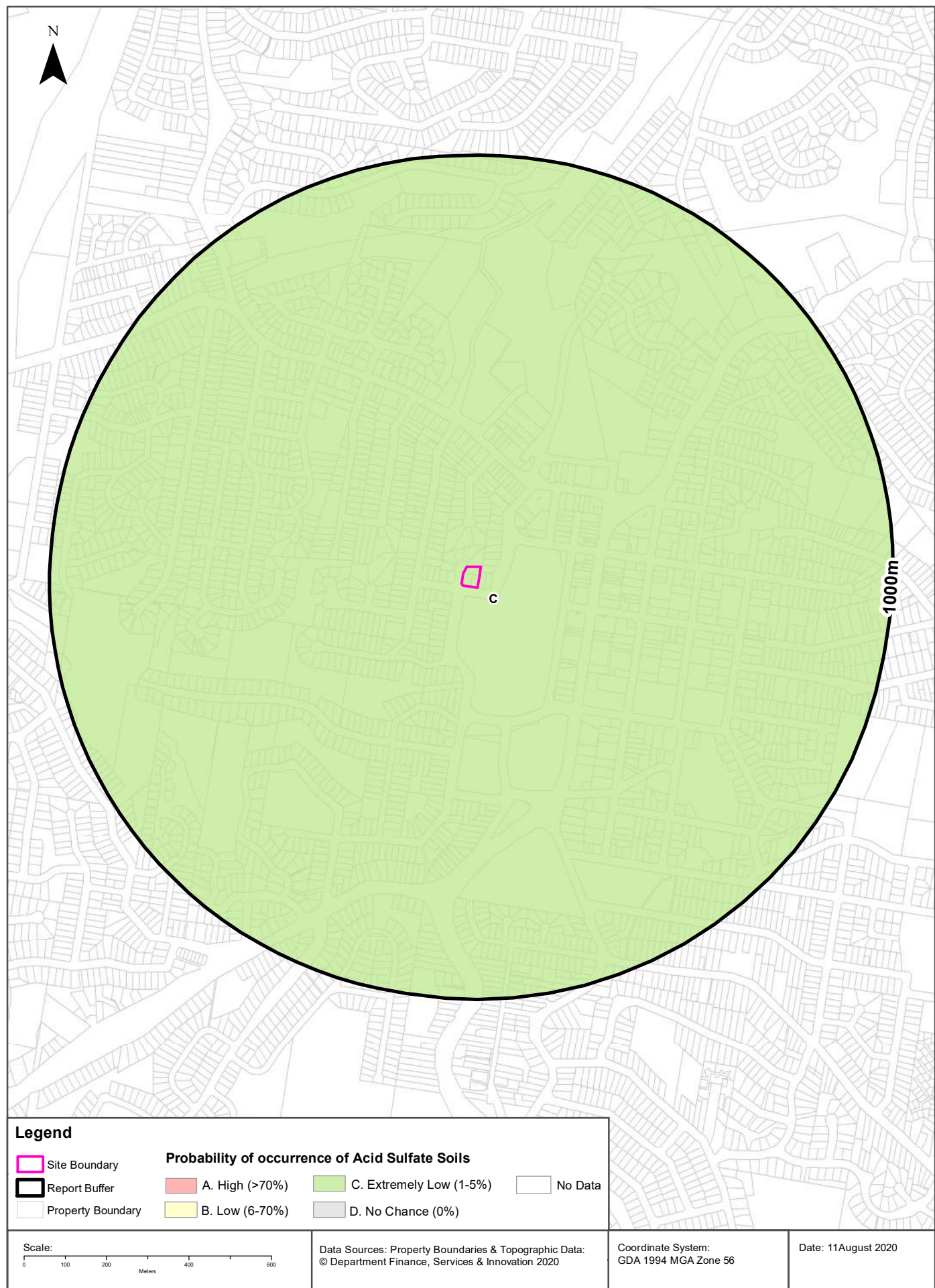
Soil Class	Description	EPI Name
N/A		

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

Soil Class	Description	EPI Name	Distance	Direction
N/A				

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## Acid Sulfate Soils

29 Chapman Street, Charlestown, NSW 2290

### 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

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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## Dryland Salinity

29 Chapman Street, Charlestown, NSW 2290

### Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

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

No

What Dryland Salinity assessments are given?

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

Dryland Salinity Data Source : National Land and Water Resources Audit

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

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

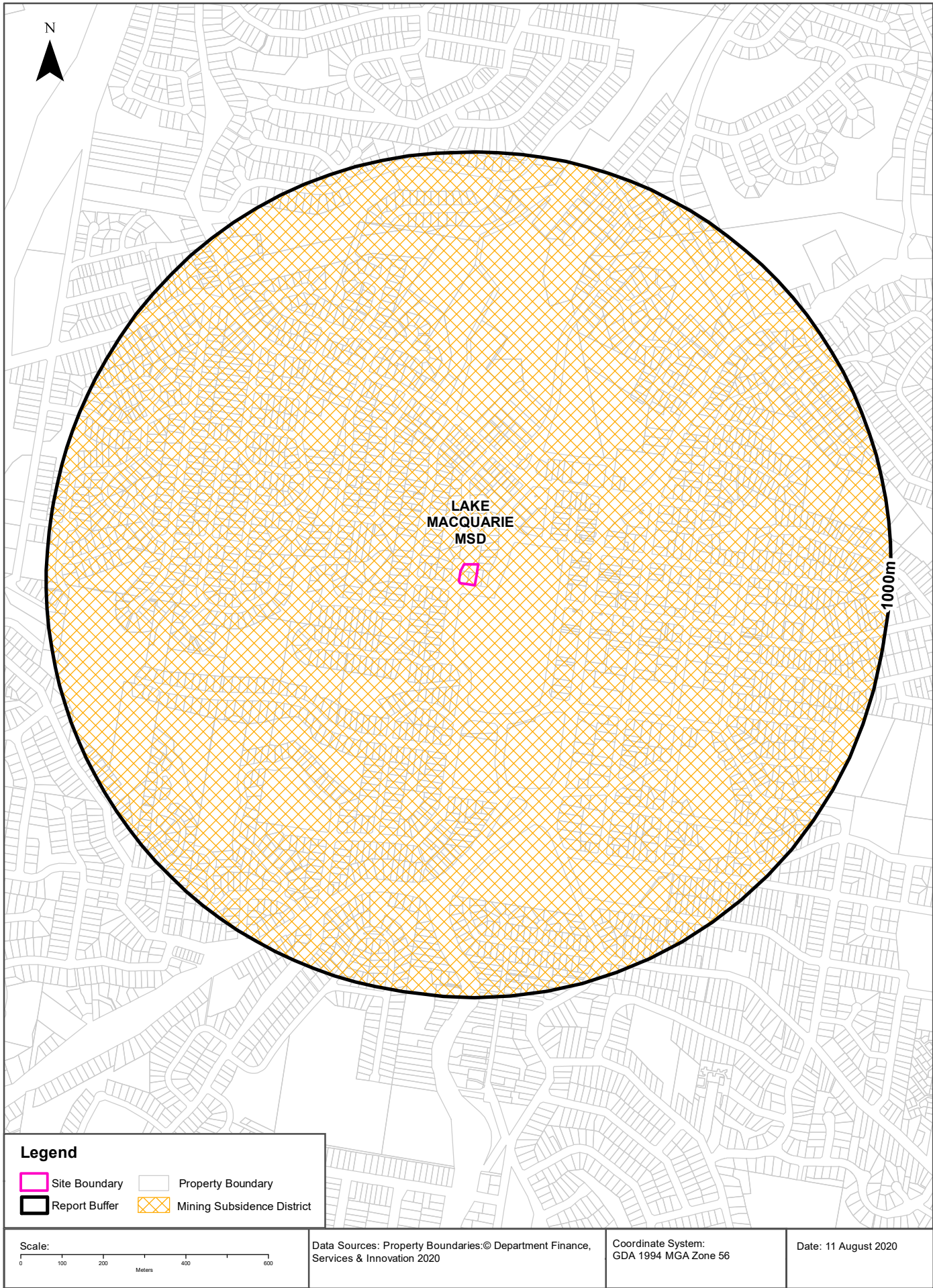
### Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

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

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

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## Mining

29 Chapman Street, Charlestown, NSW 2290

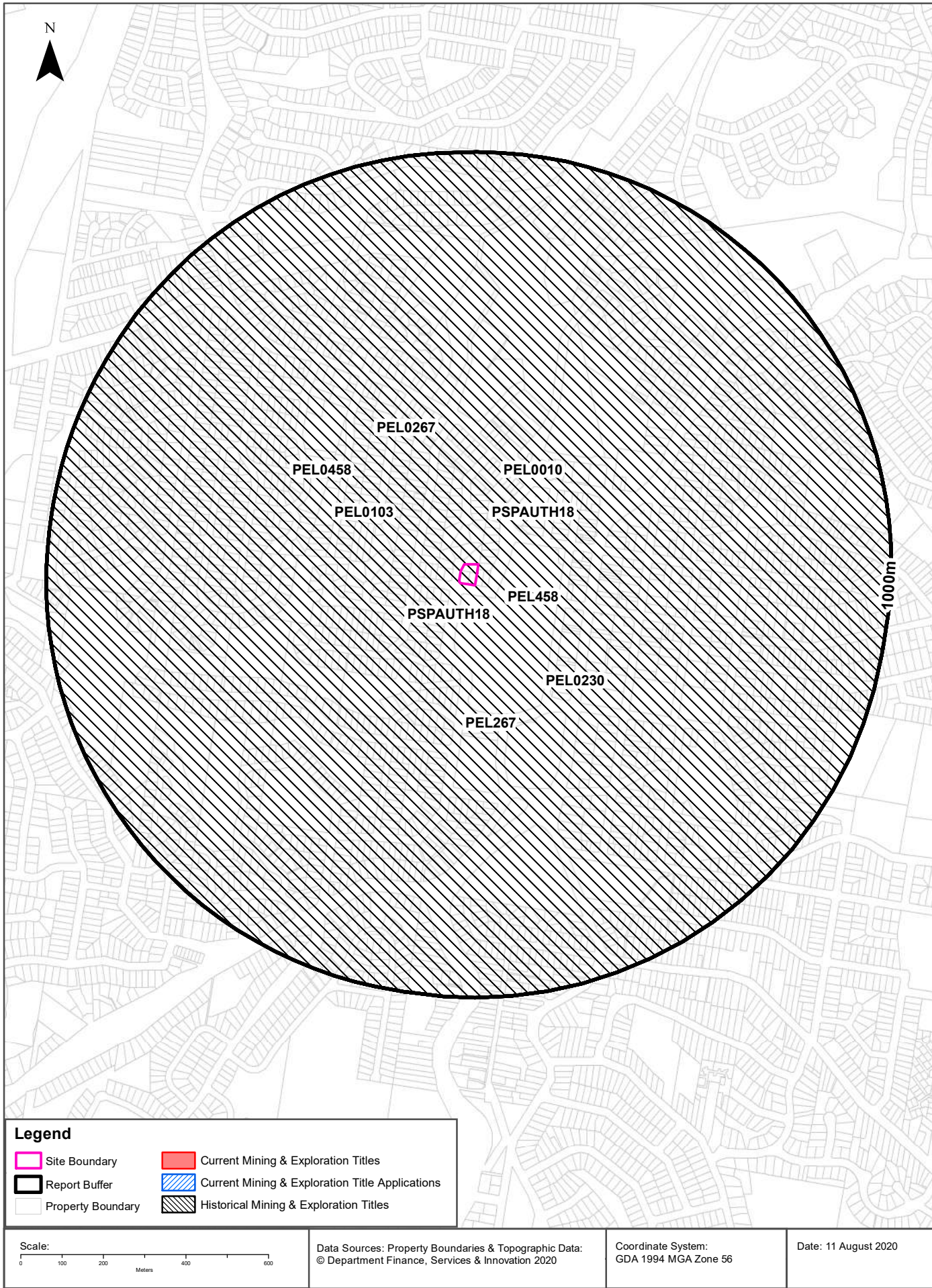
### Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

District	Distance	Direction
LAKE MACQUARIE	0m	Onsite

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

29 Chapman Street, Charlestown, NSW 2290

### 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

29 Chapman Street, Charlestown, NSW 2290

### Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist (m)	Dir'
PEL0010	AUSTRALIAN OIL AND GAS CORPORATION LTD, UNION OIL DEVELOPMENT CORP., KERN COUNTY LAND CO.			PETROLEUM	Petroleum	0m	Onsite
PEL0103	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	Onsite
PEL0230	GIRVAN OIL AND GAS PTY LTD (PHOENIX OIL AND GAS NL)			PETROLEUM	Petroleum	0m	Onsite
PEL0267	SYDNEY OIL CO (NSW) PTY LTD, MANVANE PTY LTD AUSTRALIA NL, BASE RESOURCES LTD, SEAHAWK OIL AUSTRALIA NL, READING & BATES	20/01/1984	6/07/2015	PETROLEUM	Petroleum	0m	Onsite
PEL0458	HUNTER GAS PTY LTD	6/06/2008	6/06/2016	PETROLEUM	Petroleum	0m	Onsite
PEL267	AGL UPSTREAM INVESTMENTS PTY LIMITED			MINERALS		0m	Onsite
PEL458	HUNTER GAS PTY LTD			MINERALS		0m	Onsite
PSPAUTH18	MACQUARIE ENERGY PTY LTD			MINERALS		0m	Onsite
PSPAUTH18	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

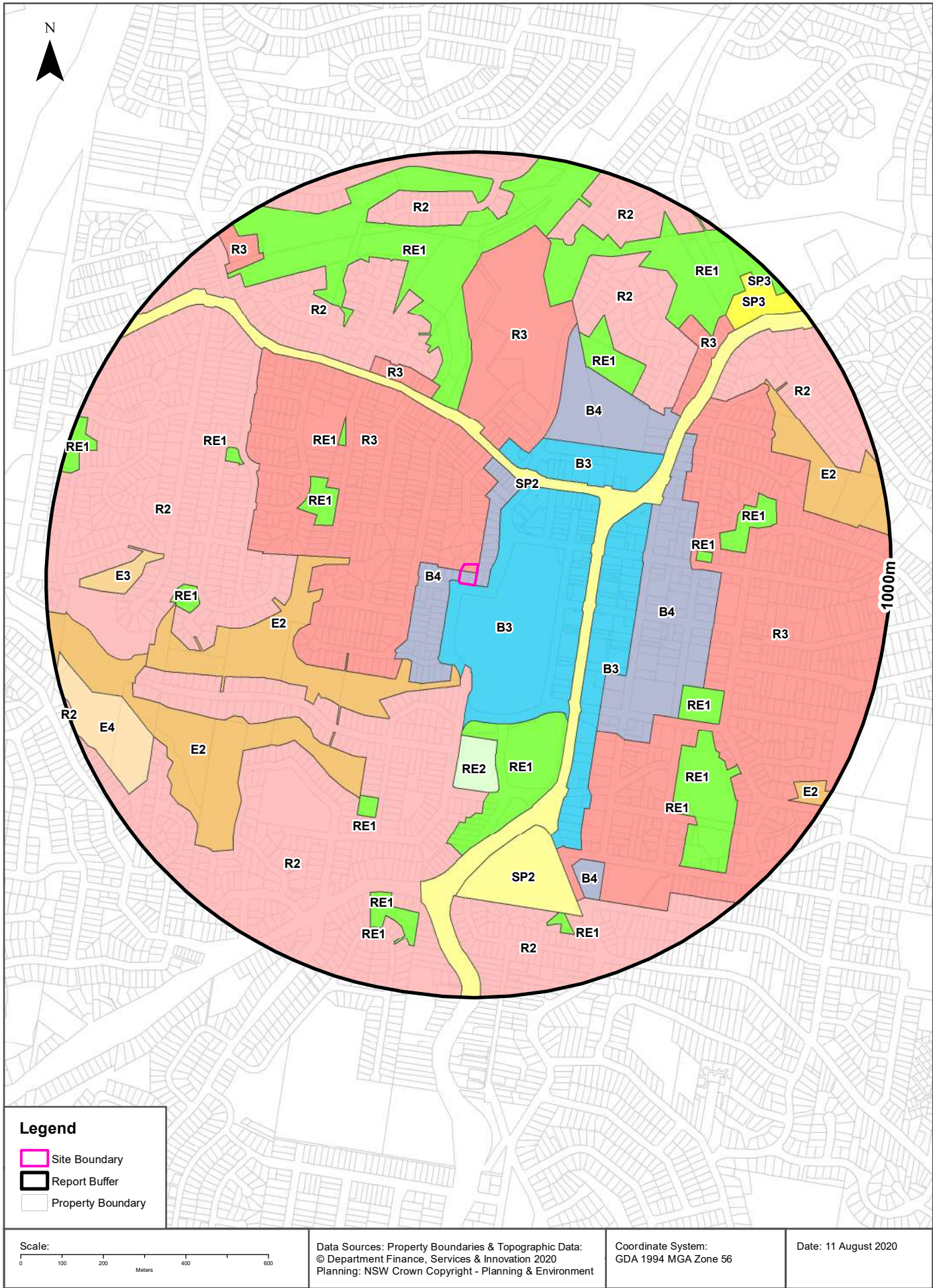
29 Chapman Street, Charlestown, NSW 2290

### State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

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

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

29 Chapman Street, Charlestown, NSW 2290

## 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
B4	Mixed Use		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		0m	Onsite
R3	Medium Density Residential		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		0m	Onsite
B3	Commercial Core		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		0m	South East
R2	Low Density Residential		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		194m	South West
E2	Environmental Conservation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		200m	South West
SP2	Infrastructure	Infrastructure	Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		220m	South West
B3	Commercial Core		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		253m	North East
R3	Medium Density Residential		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		280m	North
B3	Commercial Core		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		293m	South East
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		328m	South
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		329m	North West
B4	Mixed Use		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		342m	North East
RE2	Private Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		365m	South
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		375m	North
B4	Mixed Use		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		381m	East
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		406m	North West
R3	Medium Density Residential		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		412m	North
R2	Low Density Residential		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		453m	North
R3	Medium Density Residential		Lake Macquarie Local Environmental Plan 2014	17/07/2015	17/07/2015	06/12/2019	Amendment No 2	460m	East
E2	Environmental Conservation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		474m	South West
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		526m	East
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		544m	North East
R2	Low Density Residential		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		554m	North East
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		558m	South West
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		559m	South East
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		586m	North West
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		587m	East
R3	Medium Density Residential		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		597m	North East

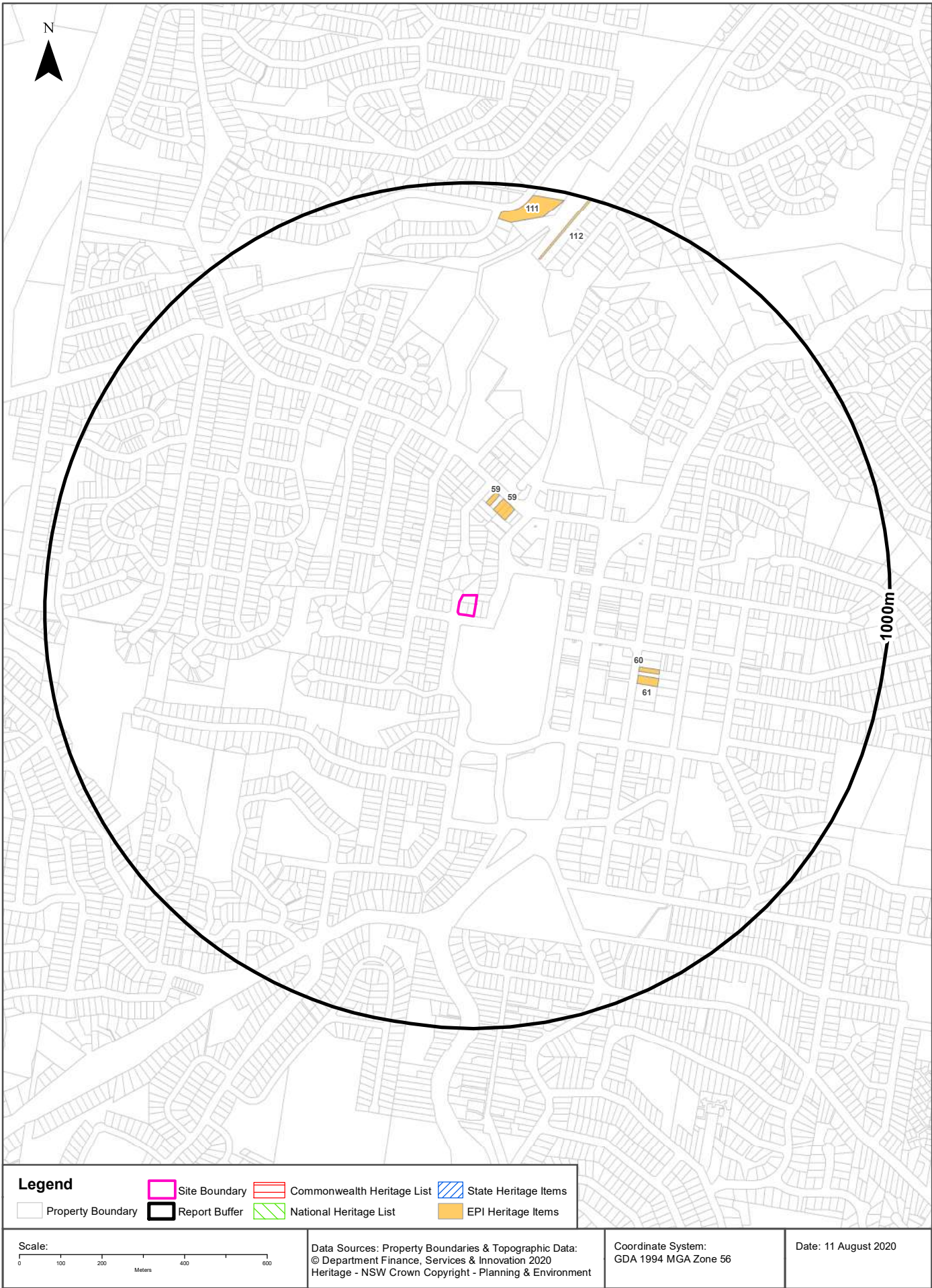


Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Infrastructure	Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		598m	South
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		631m	West
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		633m	South East
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		650m	North East
R2	Low Density Residential		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		693m	East
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	10/07/2015	10/07/2015	06/12/2019	Amendment No 4	710m	South East
B4	Mixed Use		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		712m	South
E3	Environmental Management		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		719m	West
R2	Low Density Residential		Lake Macquarie Local Environmental Plan 2014	04/05/2018	04/05/2018	06/12/2019	Amendment No 25	755m	South
E2	Environmental Conservation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		760m	East
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		770m	South
R2	Low Density Residential		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		803m	North East
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		819m	South
E4	Environmental Living		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		831m	South West
SP3	Tourist		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		840m	North East
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		869m	South
R3	Medium Density Residential		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		888m	North West
E2	Environmental Conservation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		907m	East
RE1	Public Recreation		Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	06/12/2019		929m	West
SP3	Tourist		Lake Macquarie Local Environmental Plan 2014	17/07/2015	17/07/2015	06/12/2019	Amendment No 2	952m	North East

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# Heritage Items

29 Chapman Street, Charlestown, NSW 2290



## Heritage

29 Chapman Street, Charlestown, NSW 2290

### Commonwealth Heritage List

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

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

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

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

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

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

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

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

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

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

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

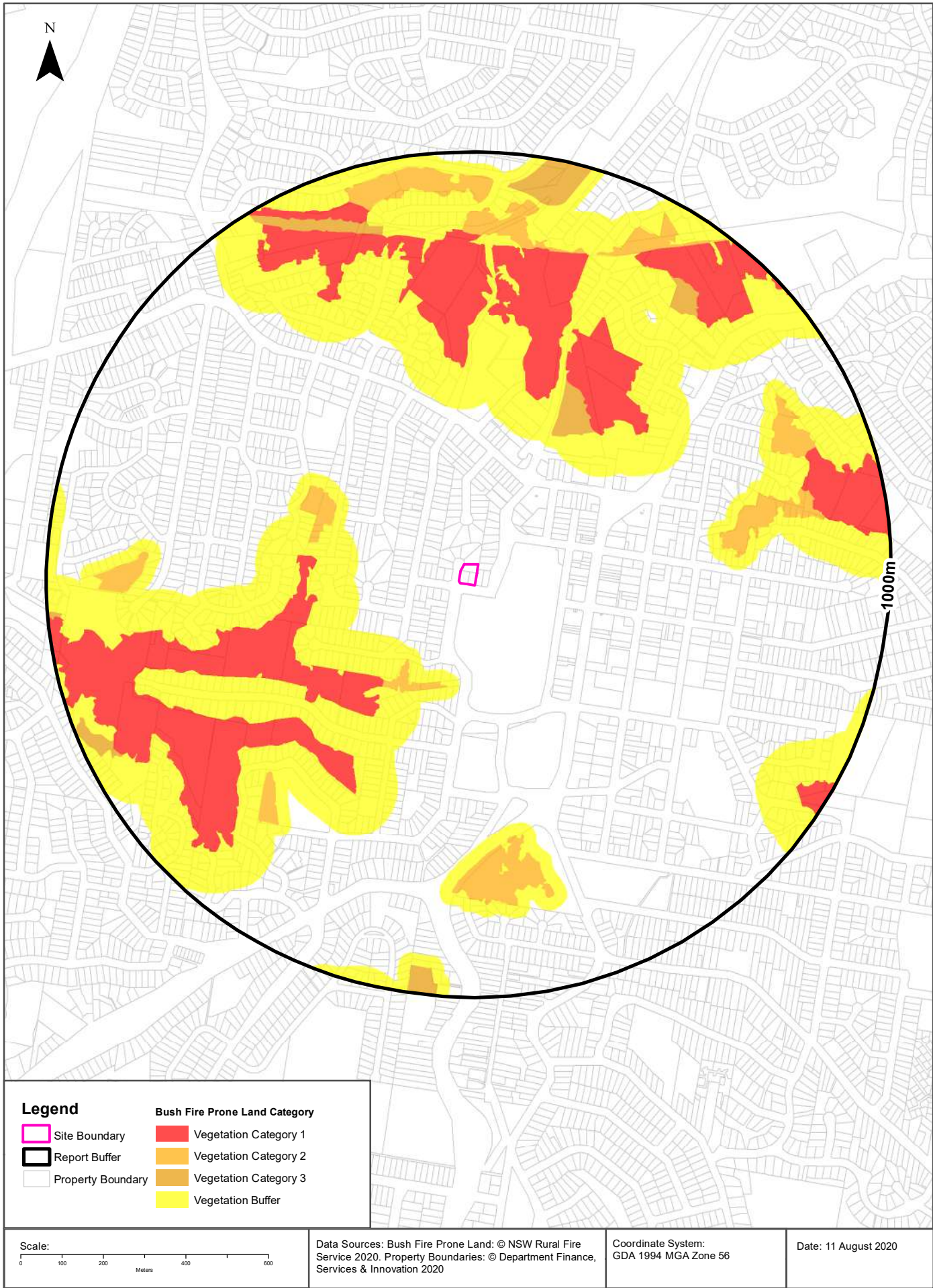
Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
59	Miners' Cottages	Item - General	Local	Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	24/11/2017	194m	North
59	Miners' Cottages	Item - General	Local	Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	24/11/2017	219m	North
60	Cottage	Item - General	Local	Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	24/11/2017	419m	East



Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
61	Brick Cottage	Item - General	Local	Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	24/11/2017	422m	South East
112	Raspberry Gully Line Railway	Item - General	Local	Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	24/11/2017	828m	North
111	South Waratah Colliery	Item - General	Local	Lake Macquarie Local Environmental Plan 2014	12/09/2014	10/10/2014	24/11/2017	907m	North

Heritage Data Source: NSW Crown Copyright - Planning & Environment

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## Natural Hazards

29 Chapman Street, Charlestown, NSW 2290

### 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	194m	South West
Vegetation Category 2	224m	South West
Vegetation Category 1	299m	South West
Vegetation Category 3	357m	North East

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



# Ecological Constraints - Vegetation & Ramsar Wetlands

29 Chapman Street, Charlestown, NSW 2290



## Ecological Constraints

29 Chapman Street, Charlestown, NSW 2290

### Lower Hunter and Central Coast Regional Vegetation Survey

What vegetation from the Lower Hunter and Central Coast Regional Survey exists within the dataset buffer?

Map Id	Unit Desc	Canopy Code	Canopy Cover	Species	Distance	Direction
30	Coastal Plains Smooth-barked Apple Woodland	OF	Mid Dense (Open Forest) 50- <100% cover	A. costata / C. gummifera / E. capitellata / E. umbra	0m	Onsite
15	Coastal Foothills Spotted Gum - Ironbark Forest	OF	Mid Dense (Open Forest) 50- <100% cover	C. maculata / E. umbra / E. siderophloia	528m	North
30	Coastal Plains Smooth-barked Apple Woodland	WO	Sparse (Woodland) 20- <50% cover	A. costata / C. gummifera / E. capitellata / E. umbra	769m	South
15	Coastal Foothills Spotted Gum - Ironbark Forest	WO	Sparse (Woodland) 20- <50% cover	C. maculata / E. umbra / E. siderophloia	814m	South
30	Coastal Plains Smooth-barked Apple Woodland	S	Scrub	A. costata / C. gummifera / E. capitellata / E. umbra	903m	East
5	Alluvial Tall Moist Forest	OF	Mid Dense (Open Forest) 50- <100% cover	E. saligna / S. glomulifera / Glochidion ferdinandi	935m	North

Lower Hunter and Central Coast Regional Vegetation Survey: NSW Office of Environment and Heritage

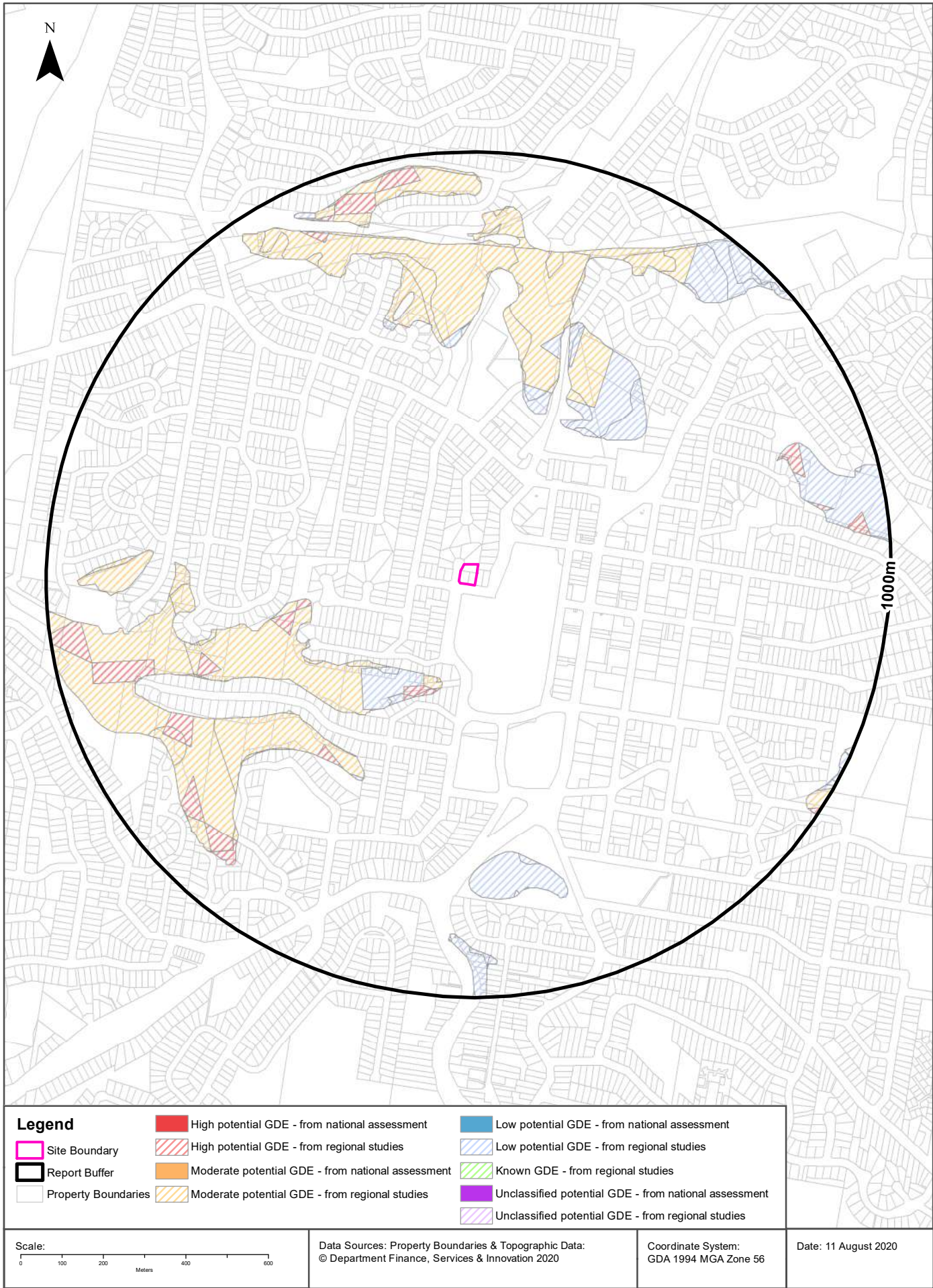
### Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

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

Ramsar Wetlands Data Source: © Commonwealth of Australia - Department of Environment







## Ecological Constraints

29 Chapman Street, Charlestown, NSW 2290

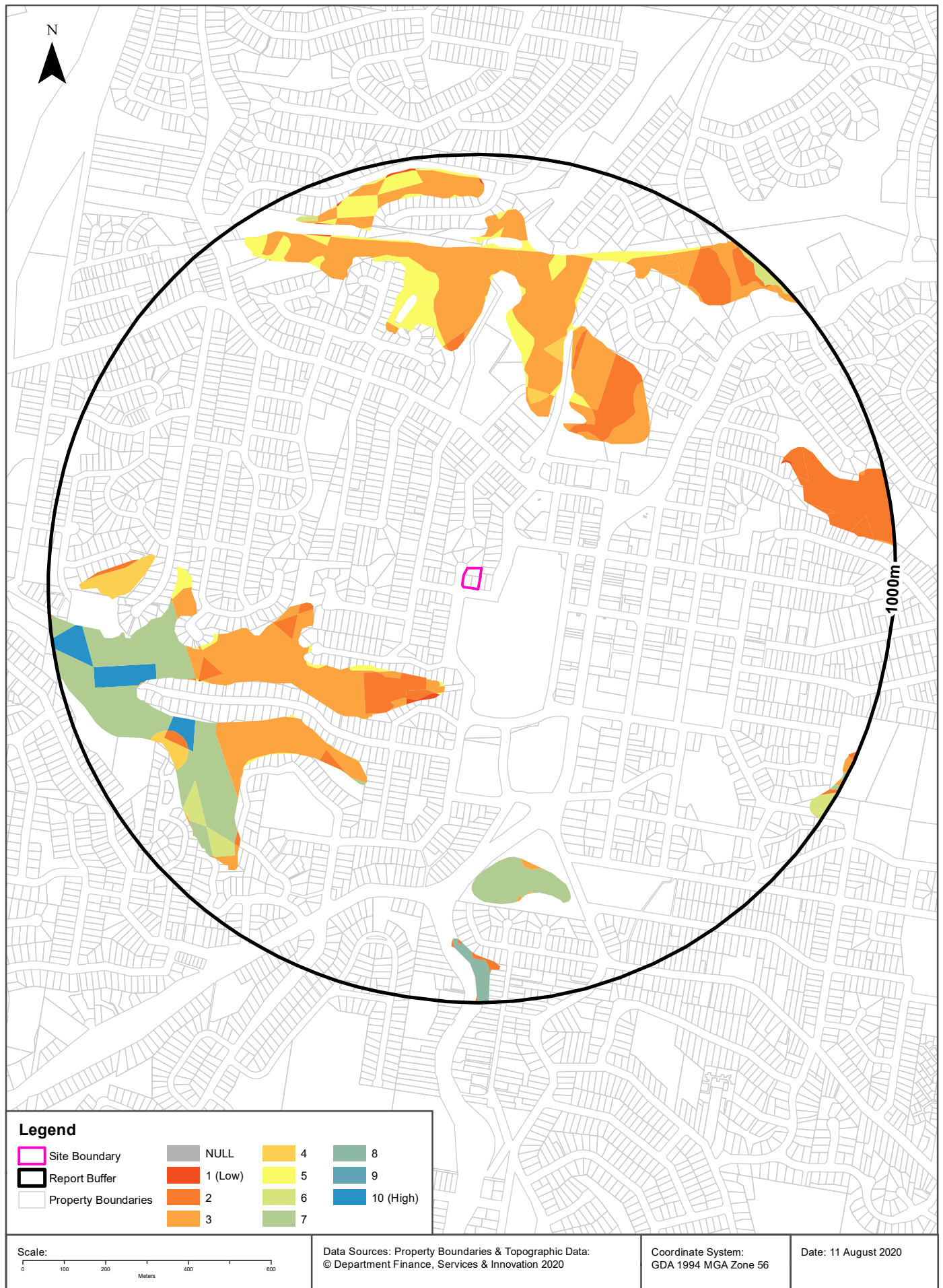
### Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	Moderate potential GDE - from regional studies	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		235m
Terrestrial	Low potential GDE - from regional studies	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		236m
Terrestrial	High potential GDE - from regional studies	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		263m

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology  
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# Ecological Constraints - Inflow Dependent Ecosystems Likelihood

29 Chapman Street, Charlestown, NSW 2290



## Ecological Constraints

29 Chapman Street, Charlestown, NSW 2290

### Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	3	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		235m
Terrestrial	5	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		235m
Terrestrial	2	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		236m
Terrestrial	1	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		264m
Terrestrial	4	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		414m
Terrestrial	7	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		527m
Terrestrial	10	Deeply dissected sandstone plateaus.	Vegetation		722m
Terrestrial	6	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		798m
Terrestrial	8	Undulating to low hilly country on weak rocks, with alluvial and sandy littoral plains.	Vegetation		845m

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology  
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# Ecological Constraints

29 Chapman Street, Charlestown, NSW 2290

## 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	Crinia tinnula	Wallum Froglet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Amphibia	Litoria olongburensis	Olongburra Frog	Vulnerable	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	Amurornis moluccana	Pale-vented Bush-hen	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anas querquedula	Garganey	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	Anseranas semipalmata	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
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	Calidris acuminata	Sharp-tailed Sandpiper	Not Listed	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 melanotos	Pectoral Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;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	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptrorhynchus lathamii	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Charadrius leschenaultii	Greater Sand-plover	Vulnerable	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Charadrius mongolus	Lesser Sand-plover	Vulnerable	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Circus assimilis	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	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	Ephippiorhynchus asiaticus	Black-necked Stork	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Epthianura albifrons	White-fronted Chat	Vulnerable	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	Gelochelidon nilotica	Gull-billed Tern	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	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	Hirundo rustica	Barn Swallow	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hydroprogne caspia	Caspian Tern	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Irediparra gallinacea	Comb-crested Jacana	Vulnerable	Not Sensitive	Not Listed	
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	Limosa limosa	Black-tailed Godwit	Vulnerable	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	Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Motacilla flava	Yellow Wagtail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
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	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	Oxyura australis	Blue-billed Duck	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	Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
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	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Stercorarius parasiticus	Arctic 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 albigula	Little Tern	Endangered	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Sula dactylatra	Masked Booby	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Thalassarche cauta	Shy Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalassarche melanophrys	Black-browed Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalasseus bergii	Crested Tern	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Thinornis rubricollis	Hooded Plover	Critically Endangered	Not Sensitive	Vulnerable	
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 glareola	Wood Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Tringa nebularia	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Tringa stagnatilis	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Tyto longimembris	Eastern Grass Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	



Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Xenus cinereus	Terek Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Insecta	Petalura gigantea	Giant Dragonfly	Endangered	Not Sensitive	Not Listed	
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 dorsalis	Black-striped Wallaby	Endangered	Not Sensitive	Not Listed	
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	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
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	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Potorous tridactylus	Long-nosed Potoroo	Vulnerable	Not Sensitive	Vulnerable	
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 Sheath-tail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Vespadelus troungtoni	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	Caretta caretta	Loggerhead Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Diplodactylus platyurus	Eastern Fat-tailed Gecko	Endangered	Not Sensitive	Not Listed	
Animalia	Reptilia	Eretmochelys imbricata	Hawksbill Turtle	Not Listed	Not Sensitive	Vulnerable	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Reptilia	Uvidicolus sphyrurus	Border Thick-tailed Gecko	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Angophora inopina	Charmhaven Apple	Vulnerable	Not Sensitive	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	Cynanchum elegans	White-flowered Wax Plant	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Davidsonia jerseyana	Davidson's Plum	Endangered	Category 2	Endangered	
Plantae	Flora	Diuris praecox	Rough Doubletail	Vulnerable	Category 2	Vulnerable	
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 parramattensis subsp. parramattensis		Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Grevillea parviflora subsp. parviflora	Small-flower Grevillea	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Grevillea shiressii		Vulnerable	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	Muehlenbeckia costata	Scrambling Lignum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Pultenaea maritima	Coast Headland Pea	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Rhodamnia rubescens	Scrub Turpentine	Critically Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Rutidosia heterogama	Heath Wrinklewort	Vulnerable	Not Sensitive	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	
Plantae	Flora	Zannichellia palustris		Endangered	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

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## Location Confidences

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

LC Code	Location Confidence
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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Sample Identification	Depth (m)	Date Sampled	Filling (F) / Natural (N)	Material type/Geotechnical Unit <sup>A</sup>	Metals	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn
BH1a	0-0.1	11.08.20	F	Silty SAND		4.2	< 0.4	< 5	17	33	< 0.1	< 5	88
BH1b	0.2-0.3	11.08.20	N	SAND		5.3	< 0.4	5.4	< 5	9	< 0.1	< 5	22
BH2a	0.1-0.2	11.08.20	F	Silty SAND		< 2	< 0.4	< 5	< 5	40	< 0.1	< 5	40
BH2b	0.4-0.5	11.08.20	N	Silty CLAY		10	< 0.4	15	9.3	16	< 0.1	< 5	15
BH3a	0.1-0.2	11.08.20	F	Gravelly CLAY		12	< 0.4	19	< 5	24	< 0.1	< 5	17
BH3b	0.3-0.4	11.08.20	F	SAND		3.5	< 0.4	< 5	5.5	21	< 0.1	< 5	28
BH4a	0-0.1	11.08.20	F	Silty SAND		5.8	< 0.4	22	11	66	< 0.1	< 5	110
BH4b	0.5-0.6	11.08.20	F	Gravelly CLAY		18	< 0.4	14	13	13	< 0.1	< 5	31
BH5a	0-0.1	11.08.20	F	Gravelly SAND		7.8	< 0.4	8.6	16	40	< 0.1	< 5	110
BH5b	0.3-0.4	11.08.20	N	Gravelly CLAY		21	< 0.4	17	9.8	12	< 0.1	< 5	37
BH6a	0.3-0.4	11.08.20	N	Gravelly CLAY		10	< 0.4	9.1	10	12	< 0.1	< 5	16
BH6b	0.5-0.6	11.08.20	N	Silty CLAY		22	< 0.4	26	11	11	< 0.1	6.1	18
BH7a	0-0.1	11.08.20	F	SAND		2.6	< 0.4	5.7	9.9	14	< 0.1	< 5	30
BH7b	0.3-0.4	11.08.20	N	Silty CLAY		12	< 0.4	13	8.1	9	< 0.1	< 5	12
Guideline Values				PQL		2	0.4	5	5	5	0.1	5	5
*NEPM (2013) HILs for Residential Land Use with garden/accessible soil (HIL A)						100	20	100	6000	300	40	400	7400
**NEPM (2013) EIL for Urban Residential/Public Open Space					100	NC	190	60	1100	NC	30	70	

All units are in mg/kg

PQL = Practical Quantitation Limit

NC = No criterion exists

\*National Environmental Protection Measure (NEPM) 1999 (Amended April 2013) Health Investigation Level (HIL) A - Residential Land Use with garden/accessible soil

\*\*National Environmental Protection Measure (NEPM) 1999 (Amended April 2013) Environmental Investigation Levels (EIL) for Urban Residential/Public Open Space

HIL guideline for chromium is based on chromium (VI)

EIL for arsenic, chromium (III), copper, lead and zinc is derived for aged contamination (>2years)

Adopted EIL for chromium (III), copper, nickel and zinc are most conservative guideline value.

Presented ecological value for benzo(a)pyrene is a low reliability ESL for fine or coarse grained soils

<sup>A</sup> Geotechnical unit descriptions are shown in Table 2 in the main body of the report

**Bold** - Indicates exceedance of NEPM (2013) HIL A criteria values

*Italics* - Indicates exceedance of NEPM (2013) EIL criteria values for Urban Residential/Public Open Space

Shaded - Indicates exceedance by 250% of NEPM (2013) HIL A criteria values



Sample Identification	Depth (m)	Date Sampled	Filling (F) / Natural (N)	Material type/Geotechnical Unit <sup>A</sup>	PAH	Benzo(a)pyrene	Napthalene	Carcenogenic PAH (BaP TEQ)	Total PAH
BH1a	0-0.1	11.08.20	F	Silty SAND		< 0.5	< 0.5	0.6	< 0.5
BH1b	0.2-0.3	11.08.20	N	SAND		< 0.5	< 0.5	0.6	< 0.5
BH2a	0.1-0.2	11.08.20	F	Silty SAND		< 0.5	< 0.5	0.6	< 0.5
BH2b	0.4-0.5	11.08.20	N	Silty CLAY		< 0.5	< 0.5	0.6	< 0.5
BH3a	0.1-0.2	11.08.20	F	Gravelly CLAY		< 0.5	< 0.5	0.6	< 0.5
BH3b	0.3-0.4	11.08.20	F	SAND		< 0.5	< 0.5	0.6	< 0.5
BH4a	0-0.1	11.08.20	F	Silty SAND		< 0.5	< 0.5	0.6	< 0.5
BH4b	0.5-0.6	11.08.20	F	Gravelly CLAY		< 0.5	< 0.5	0.6	< 0.5
BH5a	0-0.1	11.08.20	F	Gravelly SAND		< 0.5	< 0.5	0.6	< 0.5
BH5b	0.3-0.4	11.08.20	N	Gravelly CLAY		< 0.5	< 0.5	0.6	< 0.5
BH6a	0.3-0.4	11.08.20	N	Gravelly CLAY		< 0.5	< 0.5	0.6	< 0.5
BH6b	0.5-0.6	11.08.20	N	Silty CLAY		< 0.5	< 0.5	0.6	< 0.5
BH7a	0-0.1	11.08.20	F	SAND		< 0.5	< 0.5	0.6	< 0.5
BH7b	0.3-0.4	11.08.20	N	Silty CLAY		< 0.5	< 0.5	0.6	< 0.5
Guideline Values				PQL		0.5	0.5	0.6	0.5
*NEPM (2013) HILs for Residential Land Use with garden/accessible soil (HIL A)						NC	NC	3	300
**NEPM (2013) EIL for Urban Residential/Public Open Space					0.7	170	NC	NC	

All units are in mg/kg

PQL = Practical Quantitation Limit

NC = No criterion exists

\*National Environmental Protection Measure (NEPM) 1999 (Amended April 2013) Health Investigation

\*\*National Environmental Protection Measure (NEPM) 1999 (Amended April 2013) Environmental Investigation  
HIL guideline for chromium is based on chromium (VI)

EIL for arsenic, chromium (III), copper, lead and zinc is derived for aged contamination (>2years)

Adopted EIL for chromium (III), copper, nickel and zinc are most conservative guideline value.

Presented ecological value for benzo(a)pyrene is a low reliability ESL for fine or coarse grained soils

<sup>A</sup> Geotechnical unit descriptions are shown in Table 2 in the main body of the report

**Bold** - Indicates exceedance of NEPM (2013) HIL A criteria values

*Italics* - Indicates exceedance of NEPM (2013) EIL criteria values for Urban Residential/Public Open Space

Shaded - Indicates exceedance by 250% of NEPM (2013) HIL A criteria values

Project: 29 Chapman Street, Charlestown

Client: Alesco Senior College

Date: 20.08.20

Job number: 2020456

Sample Identification	Depth (m)	Date Sampled	Material Description	Total Recoverable Hydrocarbons (TRH)	TRH C <sub>6</sub> - C <sub>10</sub>	TRH>C <sub>10</sub> - C <sub>16</sub>	F1 C <sub>6</sub> - C <sub>10</sub>	F2 >C <sub>10</sub> - C <sub>16</sub>	F3 >C <sub>16</sub> - C <sub>34</sub>	F4 >C <sub>34</sub> - C <sub>40</sub>	Benzene, toluene, ethylbenzene, xylenes (BTEX) + Napthalene	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Naphthalene	
BH1a	0-0.1	11.08.20	Silty SAND		< 20	< 50	< 20	< 50	210	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH1b	0.2-0.3	11.08.20	SAND		< 20	< 50	< 20	< 50	< 100	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH2a	0.1-0.2	11.08.20	Silty SAND		< 20	< 50	< 20	< 50	< 100	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH2b	0.4-0.5	11.08.20	Silty CLAY		< 20	< 50	< 20	< 50	< 100	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH3a	0.1-0.2	11.08.20	Gravelly CLAY		< 20	< 50	< 20	< 50	< 100	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH3b	0.3-0.4	11.08.20	SAND		< 20	< 50	< 20	< 50	< 100	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH4a	0-0.1	11.08.20	Silty SAND		< 20	< 50	< 20	< 50	260	180		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH4b	0.5-0.6	11.08.20	Gravelly CLAY		< 20	< 50	< 20	< 50	< 100	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH5a	0-0.1	11.08.20	Gravelly SAND		< 20	< 50	< 20	< 50	110	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH5b	0.3-0.4	11.08.20	Gravelly CLAY		< 20	< 50	< 20	< 50	< 100	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH6a	0.3-0.4	11.08.20	Gravelly CLAY		< 20	< 50	< 20	< 50	< 100	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH6b	0.5-0.6	11.08.20	Silty CLAY		< 20	< 50	< 20	< 50	< 100	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH7a	0-0.1	11.08.20	SAND		< 20	< 50	< 20	< 50	120	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
BH7b	0.3-0.4	11.08.20	Silty CLAY		< 20	< 50	< 20	< 50	< 100	< 100		< 0.1	< 0.1	< 0.1	< 0.3	< 0.5	
PQL					20	50	20	50	100	100		0.1	0.1	0.1	0.3	0.5	
SOIL TYPE	Guideline		Depth Range														
SAND	NEPM (2013) HSL A - low density residential livingA		0 to <1m		NC	NC	45	110	NC	NC		0.5	160	55	40	3	
			1m to<2m		NC	NC	70	240	NC	NC		0.5	220	NL	60	NL	
			2m to <4m		NC	NC	110	440	NC	NC		0.5	310	NL	95	NL	
			4m +		NC	NC	200	NL	NC	NC		0.5	540	NL	170	NL	
SILT			0 to <1m		NC	NC	40	230	NC	NC		0.6	390	NL	95	4	
			1m to<2m		NC	NC	65	NL	NC	NC		0.7	NL	NL	210	NL	
			2m to <4m		NC	NC	100	NL	NC	NC		1	NL	NL	NL	NL	
			4m +		NC	NC	190	NL	NC	NC		2	NL	NL	NL	NL	
CLAY			0 to <1m		NC	NC	50	280	NC	NC		0.7	480	NL	110	5	
			1m to<2m		NC	NC	90	NL	NC	NC		1	NL	NL	310	NL	
			2m to <4m		NC	NC	150	NL	NC	NC		2	NL	NL	NL	NL	
			4m +		NC	NC	290	NL	NC	NC		3	NL	NL	NL	NL	
Coarse	NEPM (2013) ESL for Urban Residential/Public Open Space B		--		NC	120	180	NC	300	2800		50	85	70	105	NC	
Fine					NC	120	180	NC	1300	5600		65	105	125	45	NC	
Coarse	NEPM (2013) Management Limits for Residential, Parkland and Open SpaceC		--		700	1000	NC	NC	2500	10000		NC	NC	NC	NC	NC	
Fine					800	1000	NC	NC	3500	10000		NC	NC	NC	NC	NC	
--	DC AD		--		4400	3300	NC	NC	4500	6300		100	14000	4500	12000	1400	

All units are in mg/kg

PQL = Practical Quantitation Limit

<sup>A</sup> National Environmental Protection Measure (NEPM) 1999 (Amended April 2013) Health Screening Level (HSL) C - recreational.

<sup>B</sup> National Environmental Protection Measure (NEPM) 1999 (AmendedApril 2013) Environmental Screening Levels (ESL) for Urban Residential/Public Open Space.

<sup>C</sup> National Environmental Protection Measure (NEPM) 1999 (AmendedApril 2013) Management Limits for Parkland and Open Space.

<sup>D</sup> CRC Care Technical Report 10, September 2011 Direct Contact (DC) Health Screening Levels 'C' (Parks/Open space).

A cell denoted 'NL' is a scenario where the derived soil HSL exceeds the soil saturation concentration (bulk soil concentration at which porewater phase cannot dissolve any more of an individual substance)

NC = No criteria exists

F1 = TRH C<sub>6</sub> -C<sub>9</sub> minus BTEX

F2 = TRH>C<sub>10</sub> - C<sub>16</sub> minus naphthalene

F3 = TRH >C<sub>16</sub> - C<sub>34</sub>

F4 = TRH>C<sub>34</sub> - C<sub>40</sub>

**Bold** - Indicates exceedance of NEPM (2013) HILC criteria values - National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013)

*Italics* - Indicates exceedance of NEPM (2013) EIL criteria values for Urban Residential/Public Open Space - National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013)

Sample Identification	PQL	BH5a	QA1	RPD %	BH5b	QA2	RPD %
Depth (m)		0-0.1			0.3-0.4		
Date Sampled		11.08.20			11.08.20		
Material Description		Gravelly SAND			Gravelly CLAY		
Total Recoverable Hydrocarbons (TRH)							
TRH C6 - C10	20	<20	<20	0.0	<20	<20	0.0
TRH> C10 - C16	50	<50	<50	0	<50	<50	0.0
TRH> C16 - C34	100	110	<100	75.0	<100	<100	0.0
TRH> C34 - C40	100	<100	<100	0	<100	<100	0.0
Benzene, toulene, ethylbenzene, xylenes (BTEX)							
Bezene	0.1	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0
Toulene	0.1	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0
Ethylbenzene	0.1	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0
Total Xylenes	0.3	< 0.3	< 0.3	0.0	< 0.3	< 0.3	0.0
Polycyclic aromatic hydrocarbons (PAH)							
Acenaphthene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Acenaphthylene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Anthracene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Benz(a)anthracene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Benzo(a)pyrene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Benzo(b&j)fluoranthene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Benzo(g,h,i)perylene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Benzo(k)fluoranthene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Chrysene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Dibenz(a,h)anthracene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Fluoranthene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Fluorene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Indeno(1.2.3-cd)pyrene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Naphthalene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Phenanthrene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Pyrene	0.5	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Carcenogenic PAH (BaP TEQ)	0.6	0.6	0.6	0.0	0.6	0.6	0.0
Total PAH	8	<0.5	<0.5	0.0	<0.5	<0.5	0.0
Metals							
As	2	7.8	10	24.7	21	17	21.1
Cd	0.4	< 0.4	< 0.4	0.0	< 0.4	< 0.4	0.0
Cr	5	8.6	8.6	0.0	17	11	42.9
Cu	5	16	13	20.7	9.8	6.5	40
Pb	5	40	39	2.5	12	9.4	24
Hg	0.1	< 0.1	< 0.1	0.0	< 0.1	< 0.1	0.0
Ni	5	< 5	< 5	0.0	< 5	< 5	0.0
Zn	5	110	98	11.5	37	20	59.6

All units are in mg/kg

PQL = Practical Quantitation Limit

Results reported below the PQL have been halved for the purposes of statistical analysis

<b>Bold</b> identifies RPD results which are	
>30%	If results are >20xPQL
>50%	If results are >10xPQL
>100%	If results are <10xPQL



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4/13 Channel Road  
Mayfield West  
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Attention: Matt Clark

Report 737242-S  
Project name CHARLESTOWN  
Project ID 2020456  
Received Date Aug 11, 2020

Client Sample ID			BH1A	BH1B	BH2A	BH2B
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Au16428	S20-Au16429	S20-Au16430	S20-Au16431
Date Sampled			Aug 11, 2020	Aug 11, 2020	Aug 11, 2020	Aug 11, 2020
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	35	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	180	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	77	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	292	< 50	< 50	< 50
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	80	89	93	92
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	210	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	210	< 100	< 100	< 100
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH1A Soil	BH1B Soil	BH2A Soil	BH2B Soil
Sample Matrix			S20-Au16428	S20-Au16429	S20-Au16430	S20-Au16431
Eurofins Sample No.			Aug 11, 2020	Aug 11, 2020	Aug 11, 2020	Aug 11, 2020
Date Sampled						
Test/Reference	LOR	Unit				
<b>Polycyclic Aromatic Hydrocarbons</b>						
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	110	101	101	100
p-Terphenyl-d14 (surr.)	1	%	112	106	113	108
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	4.2	5.3	< 2	10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	5.4	< 5	15
Copper	5	mg/kg	17	< 5	< 5	9.3
Lead	5	mg/kg	33	9.0	40	16
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	88	22	40	15
% Moisture	1	%	21	14	13	19

Client Sample ID			BH3A Soil	BH3B Soil	BH4A Soil	BH4B Soil
Sample Matrix			S20-Au16432	S20-Au16433	S20-Au16434	S20-Au16435
Eurofins Sample No.			Aug 11, 2020	Aug 11, 2020	Aug 11, 2020	Aug 11, 2020
Date Sampled						
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	23	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	180	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	170	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	373	< 50
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	98	102	97	96
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	260	< 100

Client Sample ID			BH3A Soil S20-Au16432 Aug 11, 2020	BH3B Soil S20-Au16433 Aug 11, 2020	BH4A Soil S20-Au16434 Aug 11, 2020	BH4B Soil S20-Au16435 Aug 11, 2020
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
TRH >C34-C40	100	mg/kg	< 100	< 100	180	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	440	< 100
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	102	102	88	90
p-Terphenyl-d14 (surr.)	1	%	109	109	99	91
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	12	3.5	5.8	18
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	19	< 5	22	14
Copper	5	mg/kg	< 5	5.5	11	13
Lead	5	mg/kg	24	21	66	13
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	17	28	110	31
% Moisture	1	%	16	11	18	18

Client Sample ID			BH5A Soil S20-Au16436 Aug 11, 2020	BH5B Soil S20-Au16437 Aug 11, 2020	BH6A Soil S20-Au16438 Aug 11, 2020	BH6B Soil S20-Au16439 Aug 11, 2020
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	30	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	62	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	86	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	178	< 50	< 50	< 50



Client Sample ID			BH5A Soil S20-Au16436 Aug 11, 2020	BH5B Soil S20-Au16437 Aug 11, 2020	BH6A Soil S20-Au16438 Aug 11, 2020	BH6B Soil S20-Au16439 Aug 11, 2020
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	80	106	98	108
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	110	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	110	< 100	< 100	< 100
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	95	76	96	86
p-Terphenyl-d14 (surr.)	1	%	96	113	100	95
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	7.8	21	10	22
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.6	17	9.1	26
Copper	5	mg/kg	16	9.8	10	11
Lead	5	mg/kg	40	12	12	11
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	6.1
Zinc	5	mg/kg	110	37	16	18
% Moisture	1	%	16	19	18	17

Client Sample ID			BH7A Soil S20-Au16440 Aug 11, 2020	BH7B Soil S20-Au16441 Aug 11, 2020	QA1 Soil S20-Au16442 Aug 11, 2020	QA2 Soil S20-Au16443 Aug 11, 2020
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	66	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	83	< 50	56	< 50
TRH C10-C36 (Total)	50	mg/kg	149	< 50	56	< 50
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	86	96	94	91
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	120	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	120	< 100	< 100	< 100
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96	97	86	99
p-Terphenyl-d14 (surr.)	1	%	102	102	94	107

Client Sample ID Sample Matrix Eurofins Sample No. Date Sampled Test/Reference	LOR	Unit	BH7A Soil S20-Au16440 Aug 11, 2020	BH7B Soil S20-Au16441 Aug 11, 2020	QA1 Soil S20-Au16442 Aug 11, 2020	QA2 Soil S20-Au16443 Aug 11, 2020
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	2.6	12	10	17
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	5.7	13	8.6	11
Copper	5	mg/kg	9.9	8.1	13	6.5
Lead	5	mg/kg	14	9.0	39	9.4
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	30	12	98	20
% Moisture	1	%	14	17	19	18



### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Aug 14, 2020	14 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Aug 14, 2020	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Aug 14, 2020	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Aug 14, 2020	
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Aug 14, 2020	14 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Aug 14, 2020	180 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Aug 12, 2020	14 Days

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**Company Name:** Agility Engineering  
**Address:** 4/13 Channel Road  
Mayfield West  
NSW 2304  
**Project Name:** CHARLESTOWN  
**Project ID:** 2020456

**Order No.:**  
**Report #:** 737242  
**Phone:** 02 4961 4980  
**Fax:** 02 4969 1282

**Received:** Aug 11, 2020 2:30 PM  
**Due:** Aug 18, 2020  
**Priority:** 5 Day  
**Contact Name:** Matt Clark

**Eurofins Analytical Services Manager : Andrew Black**

Sample Detail						Moisture Set	Eurofins Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
Newcastle Laboratory							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	BH1A	Aug 11, 2020		Soil	S20-Au16428	X	X
2	BH1B	Aug 11, 2020		Soil	S20-Au16429	X	X
3	BH2A	Aug 11, 2020		Soil	S20-Au16430	X	X
4	BH2B	Aug 11, 2020		Soil	S20-Au16431	X	X
5	BH3A	Aug 11, 2020		Soil	S20-Au16432	X	X
6	BH3B	Aug 11, 2020		Soil	S20-Au16433	X	X
7	BH4A	Aug 11, 2020		Soil	S20-Au16434	X	X
8	BH4B	Aug 11, 2020		Soil	S20-Au16435	X	X
9	BH5A	Aug 11, 2020		Soil	S20-Au16436	X	X

## Australia

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**Company Name:** Agility Engineering  
**Address:** 4/13 Channel Road  
Mayfield West  
NSW 2304

**Project Name:** CHARLESTOWN  
**Project ID:** 2020456

**Order No.:**  
**Report #:** 737242  
**Phone:** 02 4961 4980  
**Fax:** 02 4969 1282

**Received:** Aug 11, 2020 2:30 PM  
**Due:** Aug 18, 2020  
**Priority:** 5 Day  
**Contact Name:** Matt Clark

**Eurofins Analytical Services Manager : Andrew Black**

Sample Detail						Moisture Set	Eurofins Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
10	BH5B	Aug 11, 2020		Soil	S20-Au16437	X	X
11	BH6A	Aug 11, 2020		Soil	S20-Au16438	X	X
12	BH6B	Aug 11, 2020		Soil	S20-Au16439	X	X
13	BH7A	Aug 11, 2020		Soil	S20-Au16440	X	X
14	BH7B	Aug 11, 2020		Soil	S20-Au16441	X	X
15	QA1	Aug 11, 2020		Soil	S20-Au16442	X	X
16	QA2	Aug 11, 2020		Soil	S20-Au16443	X	X
Test Counts						16	16

## Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NC</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
<b>Method Blank</b>							
<b>Polycyclic Aromatic Hydrocarbons</b>							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	%	92			70-130	Pass	
TRH C10-C14	%	81			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery									
BTEX									
Benzene			%	92			70-130	Pass	
Toluene			%	84			70-130	Pass	
Ethylbenzene			%	85			70-130	Pass	
m&p-Xylenes			%	87			70-130	Pass	
o-Xylene			%	87			70-130	Pass	
Xylenes - Total*			%	87			70-130	Pass	
LCS - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions									
Naphthalene			%	76			70-130	Pass	
TRH C6-C10			%	91			70-130	Pass	
TRH >C10-C16			%	81			70-130	Pass	
LCS - % Recovery									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene			%	88			70-130	Pass	
Acenaphthylene			%	94			70-130	Pass	
Anthracene			%	89			70-130	Pass	
Benz(a)anthracene			%	87			70-130	Pass	
Benzo(a)pyrene			%	92			70-130	Pass	
Benzo(b&j)fluoranthene			%	90			70-130	Pass	
Benzo(g.h.i)perylene			%	90			70-130	Pass	
Benzo(k)fluoranthene			%	95			70-130	Pass	
Chrysene			%	91			70-130	Pass	
Dibenz(a.h)anthracene			%	103			70-130	Pass	
Fluoranthene			%	90			70-130	Pass	
Fluorene			%	93			70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	92			70-130	Pass	
Naphthalene			%	94			70-130	Pass	
Phenanthrene			%	89			70-130	Pass	
Pyrene			%	90			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	100			80-120	Pass	
Cadmium			%	101			80-120	Pass	
Chromium			%	111			80-120	Pass	
Copper			%	102			80-120	Pass	
Lead			%	101			80-120	Pass	
Mercury			%	104			80-120	Pass	
Nickel			%	104			80-120	Pass	
Zinc			%	102			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S20-Au14291	NCP	%	76			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Au07179	NCP	%	92			70-130	Pass	
Toluene	S20-Au07179	NCP	%	79			70-130	Pass	
Ethylbenzene	S20-Au07179	NCP	%	78			70-130	Pass	
m&p-Xylenes	S20-Au07179	NCP	%	77			70-130	Pass	
o-Xylene	S20-Au07179	NCP	%	80			70-130	Pass	
Xylenes - Total*	S20-Au07179	NCP	%	78			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1					
Naphthalene	S20-Au07179	NCP	%	72			70-130	Pass	
TRH >C10-C16	S20-Au14291	NCP	%	88			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Polycyclic Aromatic Hydrocarbons</b>				Result 1					
Acenaphthene	S20-Au14431	NCP	%	105			70-130	Pass	
Acenaphthylene	S20-Au14431	NCP	%	108			70-130	Pass	
Anthracene	S20-Au14431	NCP	%	109			70-130	Pass	
Benz(a)anthracene	S20-Au14431	NCP	%	95			70-130	Pass	
Benzo(a)pyrene	S20-Au14431	NCP	%	99			70-130	Pass	
Benzo(b&j)fluoranthene	S20-Au14431	NCP	%	100			70-130	Pass	
Benzo(g,h,i)perylene	S20-Au14431	NCP	%	77			70-130	Pass	
Benzo(k)fluoranthene	S20-Au14431	NCP	%	113			70-130	Pass	
Chrysene	S20-Au14431	NCP	%	99			70-130	Pass	
Dibenz(a,h)anthracene	S20-Au14431	NCP	%	98			70-130	Pass	
Fluoranthene	S20-Au14431	NCP	%	105			70-130	Pass	
Fluorene	S20-Au14431	NCP	%	107			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S20-Au14431	NCP	%	88			70-130	Pass	
Naphthalene	S20-Au14431	NCP	%	101			70-130	Pass	
Phenanthrene	S20-Au14431	NCP	%	102			70-130	Pass	
Pyrene	S20-Au14431	NCP	%	106			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic	S20-Au15370	NCP	%	92			75-125	Pass	
Cadmium	S20-Au15370	NCP	%	100			75-125	Pass	
Chromium	S20-Au15370	NCP	%	98			75-125	Pass	
Copper	S20-Au15370	NCP	%	96			75-125	Pass	
Lead	S20-Au09096	NCP	%	118			75-125	Pass	
Mercury	S20-Au15370	NCP	%	108			75-125	Pass	
Nickel	S20-Au15370	NCP	%	94			75-125	Pass	
Zinc	S20-Au15370	NCP	%	90			75-125	Pass	
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1					
TRH C6-C9	S20-Au07666	NCP	%	87			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1					
TRH C6-C10	S20-Au07666	NCP	%	91			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Arsenic	S20-Au15369	NCP	mg/kg	2.7	4.3	46	30%	Fail	Q15
Cadmium	S20-Au15369	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S20-Au15369	NCP	mg/kg	14	17	20	30%	Pass	
Copper	S20-Au15369	NCP	mg/kg	52	42	21	30%	Pass	
Lead	S20-Au15369	NCP	mg/kg	85	94	10	30%	Pass	
Mercury	S20-Au15369	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S20-Au15369	NCP	mg/kg	47	41	14	30%	Pass	
Zinc	S20-Au15369	NCP	mg/kg	60	61	1.0	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C6-C9	S20-Au16432	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S20-Au16432	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S20-Au16432	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S20-Au16432	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S20-Au16432	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S20-Au16432	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total*	S20-Au16432	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S20-Au16432	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S20-Au16432	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S20-Au16432	CP	%	16	17	9.0	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	S20-Au16433	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S20-Au16433	CP	mg/kg	< 50	50	61	30%	Fail Q15
TRH C29-C36	S20-Au16433	CP	mg/kg	< 50	57	34	30%	Fail Q15
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	S20-Au16433	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S20-Au16433	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S20-Au16433	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S20-Au16433	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S20-Au16442	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S20-Au16442	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S20-Au16442	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S20-Au16442	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S20-Au16442	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S20-Au16442	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total*	S20-Au16442	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass



Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S20-Au16442	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S20-Au16442	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S20-Au16442	CP	%	19	18	8.0	30%	Pass

## Comments

### Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

### Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

### Authorised By

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)



**Glenn Jackson**

**General Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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# Geotechnical General Notes



## Introduction

These notes have been provided in order to explain your geotechnical report. Not all elements are necessarily relevant to all reports.

## Geotechnical Report

This geotechnical report is based on information gained from personal local experience, understanding of local geology, limited site investigation, subsurface sampling and/or laboratory testing. This report is tailored to provide information relevant to the scope of the project. Agility have performed the geotechnical investigation in general accordance with current professional and industry standards.

The extent of testing was limited to discrete test locations and variations that cannot be inferred or predicted may occur in ground conditions between test locations. To the best of our knowledge, information presented in this report represents a reasonable interpretation of the general condition of the site. Under no circumstances, however, do these findings represent the actual state of the site at all points. For this reason, this report must be regarded as interpretive rather than as a factual document as the report is limited by the scope of information on which interpretations are based upon. Site access constraints such as existing dwellings, steep sloping sites, dense vegetation and underground services may limit the understanding of the sub-surface profile across the site.

This geotechnical engineering report is based on conditions which existed at the time of subsurface exploration. Without approval from Agility Engineering, this report should not be used if there are any changes to the scope of the project or changes to the site conditions. Construction operations at or adjacent to the site and natural events such as floods, earthquakes or groundwater fluctuations may also affect subsurface conditions and thus, the reliability of this geotechnical report. Without consultation, Agility Engineering will not accept responsibility for problems that occur due to project modifications and/or site modifications. The programme of field sampling, laboratory testing and interpretations presented within this report are limited in nature and Agility Engineering does not assume liability for site conditions not accessible during the time of the investigation.

Agility Engineering should be contacted immediately should subsurface conditions be found to differ from those described in this report.

## Engineering Logs

The engineering logs (borehole, test pit logs presented in this report are a geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling and the possibility of other than 'straight line' variations between the test locations.

## Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils, groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an inaccurate indication of the true water table;
- Water table levels will vary from time to time with seasons, weather and/or tidal events. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable groundwater observations may be made by installing piezometer standpipes which may be monitored over variable extended timeframes.

## Tree Effects

Due to complex tree root geometry, variable moisture extraction by trees and the difficulty in predicting future tree growth, a precise design for the effects of trees is outside current knowledge. The owner must be aware that although precautions have been taken for the effects of trees in our design, some distortion must be accepted. Engineers are not experts in tree growth and cannot be expected to know the anticipated growth and mature height of trees.

## Site Inspection

Agility Engineering will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

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# Soil & Rock Classification



## Description and Classification Methods

The description and classification of soils and rocks used within this report are based on descriptions and classifications detailed in Australian Standard AS 1726:2017.

### Soil Types

AS 1726:2017 defines soil as particulate materials that occur in the ground and can be disaggregated or remoulded by hand in air or water without prior soaking. The dominant soil component is given capital letters and secondary and minor soil components are given lower case letters. FILL and TOPSOIL are also given block letters and are indicated at the beginning of the soil description.

### Particle Size of Soil Components

Type		Particle size (mm)
	BOULDERS	>200
	COBBLES	63 - 200
Coarse grained soil	GRAVEL Course	19 - 63
	GRAVEL Medium	6.7 - 19
	GRAVEL Fine	2.36 – 6.7
	SAND Course	0.6 – 2.36
	SAND Medium	0.21 – 0.6
	SAND Fine	0.075 – 0.21
	SILT	0.002 - 0.075
Fine grained soil*	CLAY	<0.002

\* Fine grained soils to be described from engineering behaviour by visual tactile techniques

### Fine Grained Soil Plasticity

Soil plasticity is characterised from the liquid limit of silts and clays. When laboratory tests are not available, plasticity is estimated using field visual and tactile methods.

Plasticity	Liquid limit for silt	Liquid limit for clay
Non-plastic	Not applicable	Not applicable
Low plasticity	≤50	≤35
Medium plasticity	Not applicable	>35, ≤50
High plasticity	>50	>50

### Course Grained Soil Particle Characteristics

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - one or more intermediate sizes poorly represented
- Gap graded – one or more intermediate sizes absent
- Uniform - an excess of a particular particle size

Where significant, particle shape can be defined as being rounded, sub-rounded, sub-angular, angular, flaky, platy or elongated.

### Moisture Condition

Soil Type	Moisture Condition	Description
Course grained soil	Dry (D)	Non-cohesive and free running
	Moist (M)	Soil cool, darkened and sticks together
	Wet (W)	Soil cool dark, free water forms when handling
Fine grained soil	w<PL	Soil dryer than plastic limit, hard and friable or powdery
	w ~PL	Soil near plastic limit, can be moulded
	w >PL	Soil wetter than plastic limit, soil usually weakened, free water forms when handling

### Cohesive Soil Consistency

Cohesive soils include fine grained soils and coarse grained soils with sufficient fine grained components to induce cohesive behaviour. Consistency describes the ease with which a soil can be remoulded measured by the indicative undrained shear strength of the soil or assessed by field tests.

Consistency	Abbreviation	Undrained shear strength (kPa)
Very Soft	VS	<12
Soft	S	12 - 25
Firm	F	25 - 50
Stiff	St	50 - 100
Very Stiff	VSt	100 - 200
Hard	H	>200
Friable	Fr	-

### Relative Density of Non-Cohesive, Coarse Grained Soils

Non-cohesive soils are classified on the basis of relative density, generally assessed from penetration test procedures and well-established correlations.

Relative Density	Abbreviation	Density Index %
Very loose	VL	<15
Loose	L	15 - 35
Medium Dense	MD	35 - 65
Dense	D	65 - 85
Very Dense	VD	>85

### Rock Classification

The rock type is given in capital letters followed by the grain size, colour, fabric and texture of the rock. The degree of weathering and the rock material strength classification are provided. Where no point load strength index or laboratory testing was undertaken, rock strength will be estimated using field assessment techniques in accordance with AS 1726:2017 or estimated from drilling resistance.