



MFS Christie Downs







Preliminary Site Investigation

South Australian Metropolitan Fire Service

31 March 2023

➔ **The Power of Commitment**



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Executive summary

GHD Pty Ltd (GHD) was engaged by the South Australian Metropolitan Fire Service (MFS) to prepare this Preliminary Site Investigation (PSI) for the non-operational Christie Downs MFS fire station, located at Lot 121 Holman Road, Christie Downs South Australia 5164 (the site). This report is subject to, and must be read in conjunction with, the limitations set out in Section 3 and the assumptions and qualifications contained throughout the report.

The objectives of this PSI are in accordance with the appropriate guidance and legislation as outlined in Section 0 and include the following:

- Determine the nature and extent of identified per- and poly-fluoroalkyl substances (PFAS) impacts associated with historical use of firefighting foam at the site.
- Identify and assess any potential risks to human health and/or the environment as a result of the identified PFAS impacts, in the context of the site's continued commercial/industrial use and the relevant land uses associated with any affected off-site properties (where access to those properties is possible).

The scope of works for the PSI is summarised below:

- Desktop assessment of the site history and historical activities which may have contributed to PFAS contamination of the site and surrounds including a review of:
 - Past and current ownership and occupier details, and Certificate of Title.
 - Past and current aerial photography.
 - State and local government records including the South Australian Environment Protection Authority's (SA EPA) Public Register records.
- Review of available information regarding the local geology, hydrogeology and hydrology, including the state groundwater database and geological maps.
- Review of available environmental data (e.g. soil) data from previous environmental investigations undertaken at the site and surrounding the site.
- Identification of sensitive land uses, groundwater bore usage and ecological receptors to determine potential beneficial uses of groundwater/surface water in the vicinity of the site.
- A site inspection and interviews with site personnel to confirm features documented in the desktop review and update the site history with respect to stormwater management, high-risk historical activities such as foam spill events, on-site storage of large quantities of PFAS containing foam and on-site or potential off-site fire-training activities and overspray.
- Development of a Preliminary Conceptual Site Model (PCSM), comprising an assessment of PFAS source areas, pathways, and receptors.
- Preparation of a PSI report.

Based on previous assessment results, PFAS impacts were identified in two soil samples at the site at concentrations exceeding the PFAS National Environmental Management Plan (NEMP) 2.0 (HEPA 2020) indirect ecological exposure criteria. The lateral (or vertical) extent of PFAS in soil has not been delineated. No groundwater investigations have been undertaken at the site to date, therefore it is unknown if there are impacts to groundwater.

The PCSM identified the following potentially complete PFAS exposure pathways:

- Consumption of contaminated groundwater extracted off-site for domestic / drinking purposes.
- Consumption of edible vegetation grown off-site where plants were irrigated with contaminated groundwater or where plant roots accessed shallow contaminated groundwater. It should be noted that no fruits or vegetables are present at the site.
- Incidental ingestion of contaminated groundwater extracted off-site for recreational purposes such as filling of swimming pools. Additionally discharge of groundwater to surface water bodies (Christie Creek) may impact recreational users.
- Exposure of future site users, visitors, maintenance and construction workers to PFAS via direct dermal contact with contaminated soil, incidental ingestion of contaminated soil or inhalation of contaminated soil / dust from disturbed soils.
- Exposure of future site users, visitors, maintenance and construction workers to PFAS via direct dermal contact with PFAS impacted concrete / bitumen surfaces or inhalation of contaminated dust from such surfaces.
- Exposure of terrestrial fauna and flora to PFAS via direct contact with contaminated soil, ingestion of contaminated soil or bioaccumulation through indirect contact.
- Leaching of PFAS from contaminated soils or concrete / bitumen surfaces followed by migration through porous media into groundwater.

It was concluded that contamination of the groundwater beneath the site may exist, which may pose a risk to human health or the environment.

GHD recommends that a sampling and analysis quality plan (SAQP) and further intrusive investigations be undertaken to delineate PFAS impacts in on-site soils and concrete, off-site bitumen surfaces and soils affected by historical training and washdown activities, and on- and off-site groundwater.

Abbreviations

Abbreviation	Full form
AFFF	Aqueous film-forming foams
AHD	Australian Height Datum
CoPC	Chemicals of Potential Concern
CSM	Conceptual Site Model
CT	Certificate of Title
FTS	Fluorotelomers
GHD	GHD Pty Ltd
L	Litre
MCA	Multi-criteria analysis
MFS	South Australian Metropolitan Fire Service
Mg/L	Milligrams per litre
NEMP	National Environmental Management Plan
PCA	Potentially Contaminating Activities
PCSM	Preliminary Conceptual Site Model
PFAS	Per- and Poly-Fluoroalkyl substances
PFCA	Perfluoroalkyl carboxylates
PFHxS	Pefluorohexane sulfonate
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PFSA	Perfluoroalkyl sulfonates
PSI	Preliminary Site Investigation
SA EPA	South Australian Environment Protection Authority
SAILIS	South Australian Integrated Land Information System
SAPPA	South Australia Property and Planning Atlas
SARIG	South Australian Resources Information Gateway
SAQP	Sampling and Analysis Quality Plan
SPR	Source-Pathway-Receptor
SWL	Standing Water Level
TDS	Total Dissolved Solids

Contents

Abbreviations	iii
1. Introduction	1
1.1 Background	1
1.2 Objectives	1
1.3 Person requesting works	2
1.4 Methodology	2
1.5 Previous investigations	2
1.5.1 GHD (2019) MFS State-wide Appliance and Station Sampling	2
1.5.2 GHD (2022) MFS 17 Fire Stations, PFAS Risk Profiling	2
2. Scope of works	4
3. Limitations	5
4. Site information	6
4.1 Site details	6
4.2 Site drainage	6
4.3 Site inspection and description	6
4.4 Historical PFAS use	7
4.5 Historical PFAS storage	8
4.6 Surrounding land uses	8
5. Environmental setting	9
5.1 Topography and hydrology	9
5.2 Surface water	9
5.3 Geology and soils	9
5.4 Hydrogeology	9
5.5 Determination of environmental values	10
6. Site history searches	11
6.1 Historical ownership summary	11
6.2 Historical aerial photographs	11
6.3 SA EPA public register	12
6.4 SA EPA Section 7 search	13
6.5 Review of Council records	13
7. Potentially contaminating activities	14
8. Preliminary conceptual site model (PCSM)	15
8.1 Chemicals of potential concern	15
8.2 Sources of PFAS contamination	15
8.3 Exposure pathways	16
8.4 Receptors	16
8.5 Potentially complete exposure pathways	16
8.6 PCSM data gaps	20
8.7 Areas for investigation	20

9. Conclusions	21
10. References	22

Table index

Table 1	Summary of General Site Identification Information	6
Table 2	Land Uses and Zoning	8
Table 3	Four Step Process for Determining Harm to Groundwater	10
Table 4	Summary of Historical Certificates of Title	11
Table 5	Summary of Historical Aerial Images	11
Table 6	Summary of SA EPA Public Register Search	12
Table 7	Potentially Contaminating Activities	14
Table 8	Preliminary Conceptual Site Model	17

Figure index

Figure 1	Site Location Plan
Figure 2	Site Layout Plan
Figure 3	Historical Sampling Locations
Figure 4	Surrounding Land Use

Appendices

Appendix A	SA EPA letter
Appendix B	LotSearch report
Appendix C	Certificates of title and SAPPA information
Appendix D	Combined MFS staff survey
Appendix E	Photolog
Appendix F	WaterConnect Registered Bore Search
Appendix G	EPA Section 7

1. Introduction

GHD Pty Ltd (GHD) was engaged by the South Australian Metropolitan Fire Service (MFS) to prepare this Preliminary Site Investigation (PSI) for the non-operational Christie Downs MFS fire station, located at Lot 121 Holman Road, Christie Downs South Australia 5164 (the site). The site location and site layout plans are shown in Figure 1 and Figure 2.

This PSI is limited to assessing the potential impacts from the historical use of firefighting foam containing per- and poly-fluoroalkyl substances (PFAS). Other potential contaminating activities and related contaminants of concern are not included in this assessment.

1.1 Background

The site became operational on 17 March 1978 and was staffed by full-time firefighters who provided 24-hour emergency response, every day of the year (MFS 2022). The station closed and became non-operational in December 2022.

Historically, the MFS has used aqueous film-forming foams (AFFF) containing PFAS at the site during training activities. However, it is understood that the MFS commenced phasing out the use of firefighting foams containing perfluorooctane sulfonate (PFOS) in 2007 and perfluorooctanoic acid (PFOA) in 2014 after conducting consultation and liaison with the Australasian Fire and Emergency Service Authorities Council (AFAC) and the South Australian Environment Protection Authority (SA EPA). To ensure that only fluorine-free foam was in use, the MFS replaced all firefighting foam in 2016. During 2017/2018, the MFS removed all fire extinguishers containing PFAS. Currently, all MFS appliances, state-wide, carry firefighting foams that do not contain PFOS or PFOA and are fluorine-free.

In 2022, GHD undertook a site history review of 17 MFS sites (GHD 2022), and inspections of eight metropolitan sites to support environmental risk profiling using a multi-criteria analysis approach. The work was required to address the potential risks associated with former use of AFFF containing PFAS. The sites were prioritised to assist with the implementation of appropriate assessment and management measures to address the potential PFAS risks. The GHD 2022 Report was provided to the SA EPA, who subsequently issued a letter dated 1 February 2023 (EPA GENI 62917) with the requirement of 'a plan of proposed works and associated timelines to address the highest risk sites' (included in Appendix A).

To assist the MFS in meeting the requirements of the SA EPA, GHD proposed the preparation of a PSI for the high risk MFS fire stations to assist in the future development of a Sampling and Analysis Quality Plan (SAQP) and further detailed investigations at the site. The former Christie Downs MFS fire station was identified as one of the eight high priority sites.

1.2 Objectives

The objectives of this PSI are in accordance with the appropriate guidance and legislation as outlined in Section 0 and include the following:

- Determine the potential presence of PFAS impacts associated with historical use of firefighting foam at the site.
- Identify and assess any potential risks to human health and/or the environment as a result of the identified and / or potential PFAS impacts, in the context of the site's continued commercial/industrial use and the relevant land uses associated with any potentially affected off-site.

1.3 Person requesting works

The work was requested by

Mr Jeff Swann, Assistant Chief Fire Officer, Metropolitan Operations- Central and Special Operations, SA MFS, 99 Wakefield St, Adelaide SA 5000.

1.4 Methodology

The PSI methodology was in general accordance with the following industry guidelines:

- Gov SA 1993, South Australian *Environment Protection Act 1993* (Gov SA 1993) and associated regulations.
- NEPC 1999, *National Environmental Protection (Assessment of Site Contamination) Measure 1999* (as amended May 2013) (ASC NEPM).
- SA EPA 2019, *Guidelines for the assessment and remediation of site contamination* (GAR).
- HEPA 2020, *PFAS National Environmental Management Plan, Version 2.0, January 2020, PFAS NEMP*.

1.5 Previous investigations

Previous investigations were carried out by GHD in 2019 and 2022, and are documented in the following reports:

- GHD 2019, *MFS State-wide Appliance and Station Sampling*, Report prepared for the South Australian Metropolitan Fire Service by GHD Pty Ltd, May 2019.
- GHD 2022, *MFS 17 Fire Stations, PFAS Risk Profiling*, Report prepared for the South Australia Metropolitan Fire Service by GHD Pty Ltd, 26 October 2022.

1.5.1 GHD (2019) MFS State-wide Appliance and Station Sampling

GHD (2019) reported that the site was part of the 2019 environmental investigations carried out at 35 MFS fire stations across South Australia to assess PFAS concentrations that may remain in firefighting appliances, accessible soil, and any biota (fruit, vegetables, herbs and poultry), if present.

Firefighters advised that AFFF training had occurred in the car park in front of the site.

During the GHD (2019) investigation, the following samples were collected and tested for PFAS:

- 1 surface soil sample (CHRISTIE_1) was collected from the garden located in southeast corner of the site (next to the letterbox / sign).
- 1 surface soil sample (CHRISTIE_2) was collected from garden located in the north-eastern corner of the site. Neither produced results exceeding any of the 2018 PFAS NEMP adopted guidelines used.
- 2 biota samples (CHRISTIE_LIME and CHRISTIE_APRICOT) were collected and no exceedances of the adopted guidelines were reported. These samples were taken as there were multiple fruit trees located along the southern boundary of site and the fruit had historically been consumed by station staff.

Sampling locations from the 2019 sampling event can be found in Figure 3.

It is noted that the 2018 PFAS NEMP guidelines were used in this report, which were superseded by the 2020 PFAS NEMP 2.0. However, this has no practical impact on the purposes of this report as the guideline values for soil at commercial / industrial properties are the same in both versions of the PFAS NEMP. In the 2020 PFAS NEMP 2.0, environmental guidelines values that refer to the sum of PFOS and perfluorohexane sulfonate (PFHxS) now explicitly apply not only to the sum of the two but also to PFOS only and to PFHxS only, which was only inferred in the 2018 PFAS NEMP 1.0.

1.5.2 GHD (2022) MFS 17 Fire Stations, PFAS Risk Profiling

The former Christie Downs MFS fire station was part of the 2022 desktop assessment and multi-criteria analysis (MCA) carried out at 17 MFS fire stations across South Australia to support appropriate risk management

approaches associated with identified PFAS contamination. The 17 sites required for prioritisation, including Christie Downs, were identified by the SA EPA in the letter GENI 62485 dated 21 October 2021.

The report presented the methodology and findings of the PFAS risk profiling for the 17 MFS fire stations with identified PFAS impacts in soil. The desktop review focused on identifying historical activities that may represent a source of PFAS contamination and potentially sensitive human or ecological receptors in the vicinity of the sites as well as understanding potential source-pathway-receptor linkages that may be present.

The report provided a summary of the sites' prioritisation for further assessment based on their potential to cause harm to the environment and/or human health. The former Christie Downs MFS fire station was classified as high-risk with high priority for further investigation of PFAS contamination associated with the former use of PFAS containing AFFF.

2. Scope of works

The scope of works for the PSI is summarised below:

- Desktop assessment of the site history and historical activities which may have contributed to PFAS contamination of the site and surrounds including a review of:
 - Past and current ownership and occupier details, and Certificate of Title.
 - Past and current aerial photography.
 - State and local government records including SA EPA Public Register records.
- Review of available information regarding the local geology, hydrogeology and hydrology, including the state groundwater database and geological maps.
- Review of available environmental data (e.g. soil and biota) from previous environmental investigations undertaken at and surrounding the site.
- Identification of sensitive land uses, groundwater bore usage and ecological receptors to determine potential beneficial uses of groundwater/surface water in the vicinity of the site.
- A site inspection and interviews with site personnel to confirm features documented in the desktop review and update the site history with respect to stormwater management, high-risk historical activities such as foam spill events, on-site storage of large quantities of PFAS containing foam and on-site or potential off-site fire-training activities and overspray.
- Development of a preliminary Conceptual Site Model (CSM), comprising an assessment of PFAS source areas, pathways, and receptors.
- Preparation of a PSI report.

Some of the background information relating to environmental settings, historical ownership and land use of the site and surrounding properties was obtained via the following Lotsearch report included in Appendix B.

- Lotsearch (2023), Lot 121 Holman Road, Christie Downs South Australia 5164, Adelaide, SA 5164, Reference number LS040118_EP, prepared by Lotsearch Enviro Professional, February 2023.

3. Limitations

This report: has been prepared by GHD for South Australian Metropolitan Fire Service and may only be used and relied on by South Australian Metropolitan Fire Service for the purpose agreed between GHD and South Australian Metropolitan Fire Service as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than South Australian Metropolitan Fire Service arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report. GHD has prepared this report on the basis of information provided by South Australian Metropolitan Fire Service and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

4. Site information

Unless otherwise stated the information within this PSI report was obtained from Lotsearch Report Reference Number LS040118_EP provided in Appendix B.

4.1 Site details

Site details are summarised in Table 1 below (MetroMap, 2023).

Table 1 Summary of General Site Identification Information

Item	Detail
Site Address:	Lot 121 Holman Road, Christie Downs, South Australia, 5164
Certificates of Title:	CT 5534/85 and CT 5534/90
Legal Description:	Allotments 120 and 121 in Deposited Plan 10165 in the area named, Christie Downs, Hundred of Noarlunga
Local Government Authority:	City of Onkaparinga
Current Zoning:	Housing Diversity Neighbourhood
Property Owner:	South Australian Metropolitan Fire Service
Current Site Use:	Non-operational fire station
Area:	2,255 m ²
Site Elevation:	64-70 m Australian Height Datum (AHD)

Copies of the current certificates of title and excerpts from the South Australia Property and Planning Atlas (SAPPA 2023) including zoning information are provided in Appendix C. The site location and layout plan are shown in Figure 1 and Figure 2.

4.2 Site drainage

The site slopes gradually upwards to the northern boundary. The majority of the property is sealed with narrow garden beds running along the northern and southern boundary and a garden bed and grassed area in the north-east corner of the site. Stormwater from the site is captured in drains to the east (i.e. in front of) the engine bay and along the southern site boundary. The drains and surface runoff from Holman Road in front the station discharge south into the public stormwater system on Flaxmill Road. There have been no changes in how stormwater has been managed at the site over time and stormwater has not been harvested.

4.3 Site inspection and description

The site is located on Holman Road between Flaxmill Road to the south and Osmund Crescent to the north (MetroMap, 2023). The site was used as an operational fire station by the MFS until December 2022. A site inspection was carried out by a suitably qualified GHD Environmental Scientist on 22 June 2022. It was observed that there is access to the site from Flaxmill Road with a carpark on Holman Road and a small reserve opposite the eastern site boundary. Infrastructure on site consists of the main office building and attached engine bay in the centre of the site, a driveway along the southern site boundary and a shed at the north-west boundary.

A questionnaire regarding the historical use of AFFF at the site was previously distributed to nominated MFS personnel who have worked at the MFS site when active use of AFFF occurred before it was phased out in 2016. The survey was completed on 22 June 2022 by two Station Officers who have worked at the site since 1998 and 2004, respectively.

A site layout plan can be found in Figure 2 which outlines pertinent features from the site inspection and staff survey. Transcripts and information related to the survey can be found in Appendix D and a photolog from the inspection is provided in Appendix E.

At the time of the site inspection, citrus trees were growing along the southern site boundary. However, the MFS has advised that all stations were directed to remove edible vegetation by 31 October 2022.

4.4 Historical PFAS use

The site interview conducted by GHD in 2022 noted the following key points with relation to historical PFAS use at the site:

- PFAS containing AFFF was assumed to have been first used on site from at least the mid-80s. Product and product manufacturer names of AFFF used on site were '3M' and 'Triple M'.
- Historically, regular training exercises using AFFF were conducted every one to three months for each of the four shifts, often in joint training with external refinery fire fighters. It was not known when the last training event involving PFAS containing AFFF occurred.
- Foam training occurred mostly in front of the station on the front apron along the eastern site boundary, which was a bitumen and concrete pad surface.
- The volume of PFAS containing AFFF historically used per training exercise was estimated to be 1-20 litres (L) with an estimated average of 5-10 L.
- During the training exercises the AFFF was dispersed aurally on-site, mostly over the sealed area of the front apron and some over the garden area to the north, and off-site with an estimated maximum extent of 20-30 metres (m) over Holman Road, the adjacent carpark and reserve.

Wastewater from the training events was captured by the onsite stormwater system, and was either:

- Washed into the internal stormwater drains at the front of MFS fire station and along the southern site boundary for discharge into the public stormwater drain on Flaxmill Road.
- Washed down Holman Road into the public stormwater drain at the bottom of the road.
- Washed onto Flaxmill Road and into the public stormwater system.

No changes to the onsite stormwater system were noted. The total amount of PFAS containing AFFF concentrate used for training activities at the site was conservatively estimated at 9,120 L, which corresponds to six training events per shift per year using 10 L AFFF concentrate per training event over 38 years, i.e. from the opening of the station in 1978 to the phase out of PFAS containing AFFF in 2016.

Post-incident appliance wash down to remove residual foam occurred on the front apron to the east of the engine bay. Foam from the wash down formed a blanket over the front apron which was then pushed with water into the drain. Some foamy water would not get pushed into the drain and would instead flow down Holman Road either into the stormwater drain at the bottom of the road or onto Flaxmill Road. The total estimated water use from washdown activities was approximately 1,000 L to flush out an estimated 1 L of residual AFFF per incident. The number of incidents requiring wash-down of residual PFAS containing AFFF was estimated at four incidents per year per shift over a period of 38 years.

A markup building plan indicating where wastewater flowed into drains (marked in orange) that directed the wastewater off-site can be seen at the end of the MFS staff survey in Appendix D.

Locations related to historical use of PFAS can be found in Figure 2.

4.5 Historical PFAS storage

The site interview conducted by GHD in 2022 noted the following key points with relation to historical PFAS storage at the site:

- There is no inventory of AFFF storage and use for the site.
- There was no bulk storage of PFAS containing AFFF concentrate on-site. AFFF concentrate was only stored in the two appliances stationed at the site. The appliance AFFF tanks with an estimated volume of 120-150 L had to be refilled at Adelaide Station and no transfer of AFFF concentrate occurred on-site.
- Chemical storage on-site included jerry cans with fuel stored in the back engine room, four degreaser containers each with a capacity of 5 L and bleach. Central reporting contains an incident log for the site.
- No AFFF or other chemical releases outside of typical application scenarios are remembered to have occurred.
- Locations related to historical storage of PFAS can be found in Figure 2.

4.6 Surrounding land uses

Land use surrounding the site is summarised in Table 2. Planning and Design Codes and Generalised Land uses are shown in the Lotsearch Report (2023) in Appendix B and in Figure 4.

Table 2 Land Uses and Zoning

Orientation	Description of Land Use	Description of Land Use Zoning (Municipal Council)
North	Osmund Crescent with residential properties beyond.	Housing Diversity Neighbourhood
East	Holman Road with an adjacent car park, a small reserve and Flaxmill shopping centre beyond. The shopping centre includes a pharmacy, supermarket and takeaway shops. Residential properties are located beyond the shopping centre.	Suburban Activity Centre Housing Diversity Neighbourhood
South	Lonsdale Telstra Depot followed by Flaxmill Road and Niipu-niipu Wama (Morton Park) skate park and Christie Downs Community House beyond.	Housing Diversity Neighbourhood
South-west	Christie Downs train station and Southern Districts Baseball Club / Peregrine Park.	Housing Diversity Neighbourhood
West	Adjacent the site are residential properties with the Seaford Line of the Adelaide Metropolitan Passenger Rail Network and more residential properties beyond.	Housing Diversity Neighbourhood

5. Environmental setting

5.1 Topography and hydrology

The general topography of the area is relatively flat and forms part of the Adelaide Plains, between the Gulf of St Vincent to the west, and the Mount Lofty Ranges to the east. The site slopes gradually upwards to the northern boundary. Most of the property is sealed with narrow garden beds running along the northern and southern boundary and a garden bed and grassed area in the north-east corner of the site..

Stormwater from the site is captured in drains to the east (i.e. in front of) the engine bay and along the southern site boundary. The drains and surface runoff from Holman Road in front the station discharge south into the public stormwater system on Flaxmill Road. There have been no changes in how stormwater has been managed at the site over time and stormwater has not been harvested.

5.2 Surface water

The nearest natural surface water body from the site is the Christie Creek, located approximately 530 m north-west and uphill of the site, which flows in a westerly direction and discharges into the Gulf of St Vincent at Christies Beach approximately 2.5 km west of the site. The Onkaparinga River is also approximately 3 km to the south of the site.

Most of the site is comprised of sealed surfaces (buildings, concrete hardstand, bitumen, etc.) with the stormwater discharging to off-site underground stormwater drains via stormwater drainage pipes and wash-bay drains along the southern site boundary and to the east of the engine bay.

5.3 Geology and soils

The Lotsearch (2023) report indicated that the site is located in an area containing Hindmarsh Clay, Carisbrooke Sand, Ochre Cove Formation and Seaford Formation. The soil type on-site is calcareous loam on clay. Historical soil samples collected during the GHD 2019 MFS state-wide investigation reported shallow soil profiles comprising dark brown, stiff sandy clay. Soil within a 100 m radius of the site is classified as Chromosol by the Atlas of Australian Soils (CSIRO 2013 referenced in Lotsearch 2023). Chromosol soils are generally associated with cracking clays and sandy alkaline yellow mottled soils.

Severity of water table induced soil salinity is negligible and the severity of non-water table induced soil salinity is moderately low. The proportion of land affected by magnesia patches is negligible. The site lies within a region of extremely low probability of potential acid sulfate soil occurrence.

5.4 Hydrogeology

A search of the South Australian Resources Information Gateway (SARIG) database reported the site is within an area of shallow groundwater with standing water levels (SWL) of 10-20 m AHD, producing yields in the range 0.5-2.5 L per second. Groundwater salinity is expected to range from 3,000-7,000 mg/L as total dissolved solids (TDS, SARIG 2023).

The expected groundwater aquifer underlain the site comprises sedimentary rocks inclusive of limestone (cavernous), sandstone, sand shale and clay material. A second aquifer unit was identified 484 m north-west from the site and was described as fractured rocks – Cambrian and Precambrian rocks – quartzite, sandstone, limestone, dolomite, slate, marble, siltstone, phyllite, schist and gneiss.

The Lotsearch report indicated that there are no SA EPA groundwater prohibition areas within a 1 km radius of the site.

The Lotsearch report and Water Connect report (Appendix F, DEW 2022) reported 122 drillholes / groundwater wells within a 2 km radius of the site. Their purposes were either monitoring, investigation, irrigation, environmental or not listed. TDS data was available for 19 drillholes and ranged between 80 mg/L and 10,939 mg/L. Of these locations, two wells had recorded TDS values below 1,200 mg/L. The lowest TDS value of 80 mg/L was reported in 1967 for well number 6627-4824, located approximately 1,877m east of the site. SWL data was available for 25 drillholes and ranged between 0 m bgl (6627-8413) and 43 m bgl (6627-7720).

5.5 Determination of environmental values

To assess the contamination status of groundwater at a site, the SA EPA provides a four-step process to determine the environmental values of groundwater and to determine if actual or potential harm to groundwater that is not trivial has occurred. The four-step process described in the *Guidelines on the assessment and remediation of site contamination* (SA EPA 2019) is described in Table 3.

Table 3 Four Step Process for Determining Harm to Groundwater

Process	Assessment
Step 1: Apply Table 3 of Schedule 1 of the South Australian <i>Environmental Protection (Water Quality) Policy 2015</i> (WQEPP, Gov SA 2015) based on TDS ranges	The Lotsearch and WaterConnect reports listed 122 drillholes within a 2 km radius of the site. A total of 19 drillholes within the survey area documented TDS data ranging from 80 mg/L to 10,939 mg/L.
Step 2: Assess and identify surface water bodies within a 2 km buffer of the site	The nearest natural surface water body from the site is Christie Creek, located approximately 530 m north-west of the site, which flows in a westerly direction.
Step 3: Review registered groundwater users in the WaterConnect database	A review of the Department of Environment, Water and Natural Resources database provided in the Lotsearch report identified a total of 122 drillholes within a 2 km radius of the site. The identified uses of the bores were environmental (3), Investigation (82), irrigation (2) and monitoring (24).
Step 4: Application of the SA EPA recognised criteria for the most sensitive environmental value	The most sensitive environmental values to be applied to the site are PFAS NEMP 2020 Drinking Water.

The environmental values for the site were identified to include:

- Potable use of groundwater
- Irrigation use of groundwater
- Recreational use of groundwater (discharge to surface water bodies or filling of swimming pools)

6. Site history searches

6.1 Historical ownership summary

Information regarding the historical ownership of the site was obtained from historical certificates of title (CTs) through the South Australian Integrated Land Information System (SAILIS). Copies of the current CTs and historical CTs are provided in Appendix C. Relevant details are listed in Table 4 below.

Table 4 Summary of Historical Certificates of Title

CT	Date	Details
4062/316	Issued 02/04/1976	Title issued to South Australian Metropolitan Fire Service, Allotment 120 Deposited Plan 10165.
	12/05/1998	Title cancelled, becomes CT 5534/85
4062/317	Issued 02/04/1976	Title issued to South Australian Metropolitan Fire Service, Allotment 121 Deposited Plan 10165.
	12/05/1998	Title cancelled, becomes CT 5534/90

6.2 Historical aerial photographs

Historical aerial photos are presented in the Lotsearch report (Appendix B). A review of the aerial images is provided in Table 5.

Table 5 Summary of Historical Aerial Images

Year	Description
1936	The site and immediate surrounding appeared undeveloped with no visible vegetation. Holman Road, Flaxmill Road and Morton Road were visible and appeared undeveloped with all roads appearing single laned. Two buildings, one likely residential property and the other, an associated shed are present approximately 100 m to the west.
1949	The land to the east and south of the site appeared to be used for pasture or farming land. One building to the west of the site has been demolished. The site remains undeveloped.
1959	Small bushes or trees were planted around the boundary of the property to the west of the site. A new building has been constructed within the same footprint as the previously demolished building. Vegetation is visible along Holman Road.
1969	A building is being constructed on the land immediately adjacent to the south of the site. The property to the west of the site remains largely unchanged from previous historical aerial imagery. There is evidence of the site and the land surrounding the site being graded or worked – this is likely associated with housing developments.
1979	<p>Significant developments at and around the site. In 1978 the Christie Downs MFS fire station was built, and the main building and carpark is visible in the aerial photograph. The previously described property to the west of the site was demolished and the railway line is seen running north to south. A building has been constructed on the western property adjacent to the site.</p> <p>Many roads to the west and north of the site were constructed including Coe Court, Osmund Crescent, Radcliffe Grove, Midhurst Avenue and Woodstock Road. Holman Road has been extended to the north. All roads are now sealed aside from a small access road to the site.</p> <p>Low density residential housing developments have been constructed on the land adjacent to the site to the north. Additionally residential properties are observed approximately 150 m to the west, southeast and east of the site. Flaxmill shopping centre can be seen to the east of the site. Flaxmill Road and Morton Road have become double laned. To the south-east of the site Amadeus Crescent, Basil Street and Humphrey Street houses have been built along the length.</p>

Year	Description
1989	Within the site an area of vegetation north of the buildings is visible. More vegetation and trees are present lining the railway and filling the vacant land south of the site.
1999	A shed has been built in the north-west corner of the site and concrete was added to the east of this new structure. A building has been built south of the site off Morton Road. Some vegetation clearance has been undertaken along the rail corridor to the west of the site.
2007	The building constructed on the western property adjacent the site has been demolished. The land is observed to be vacant. The general surrounding area is largely unchanged with some tree growth.
2012	Seven houses have been built on the property adjacent to the western site boundary. Remainder of the site and surrounding area appears largely unchanged.
2017	No significant changes since 2012.
2022	No significant changes since 2017.

6.3 SA EPA public register

The SA EPA maintains a public register under the South Australian *Environment Protection Act* 1993 to make information available for the public to inspect. Information available on the register includes environmental authorisations and applications, environmental protection and clean up orders and the site contamination index which includes Section 83A Notifications, Audit Notification, Audit Termination and Audit Report since 1 July 2009.

Results from the SA EPA Public Register and Site Contamination index search provided by Lotsearch (Appendix B) are summarised in Table 6.

Table 6 Summary of SA EPA Public Register Search

Notification No	Type	Address	Activity	Status	Distance	Direction
62629	109 Notification	121 Holman Road CHRISTIE DOWNS SA 5164	Fire stations; Fire training areas	Current EPA List	0m	Onsite
61337	Audit Notification	Lots 442 & 467 Beach Road CHRISTIE DOWNS SA 5164	Agricultural activities; Fill or soil importation	Current EPA List	784 m	South
61337	Audit Termination	Lots 442 & 467 Beach Road CHRISTIE DOWNS SA 5164	Not recorded	Current EPA List	784 m	South
61362	Audit Notification	Portion Lots 442 & 467 Beach Road CHRISTIE DOWNS SA 5164	Agricultural activities; Fill or soil importation	Current EPA List	784 m	South
61362 - 001 A	Audit Report	Portion Lots 442 & 467 Beach Road CHRISTIE DOWNS SA 5164	Agricultural activities; Fill or soil importation	Current EPA List	784 m	South

6.4 SA EPA Section 7 search

GHD contacted the SA EPA in order to obtain two separate EPA Statements to Form 1 – Contracts for Sale of Land or Business, one for CT Volume 5534 Folio 85 and one for CT Volume 5534 Folio 90.

For CT Volume 5534 Folio 85 the EPA provided the following details:

- Particulars of mortgages, charges and prescribed encumbrances affecting the land:
 - *Environment Protection Act 1993*: no details.
- Particulars relating to environment protection:
 - Licences and exemptions recorded by EPA in public register: no details.
 - Pollution and site contamination on the land - details recorded by the EPA in public register:
 - Details of serious or material environmental harm caused or threatened in the course of an activity (whether or not notified under section 83 of the *Environment Protection Act 1993*).
 - A copy of a report of an environmental assessment (whether prepared by the EPA or some other person or body and whether or not required under legislation) that forms part of the information required to be recorded in the public register.
 - Pollution and site contamination on the land - other details held by EPA: no details.

For CT Volume 5534 Folio 90 the EPA provided the following details:

- Particulars of mortgages, charges and prescribed encumbrances affecting the land:
 - *Environment Protection Act 1993*: no details.
- Particulars relating to environment protection:
 - Licences and exemptions recorded by EPA in public register: no details.
 - Pollution and site contamination on the land - details recorded by the EPA in public register: no details.
 - Pollution and site contamination on the land - other details held by EPA: no details.

The EPA Statement to Form 1 – Contracts for Sale of Land or Business for each CT are presented in Appendix G.

6.5 Review of Council records

City of Onkaparinga (Council) records were not available for review at the time of preparation of this report. However, a review of the available site history, including aerial photographs has not identified any significant unknown land uses in the vicinity of the site. The availability of Council records is not considered likely to change the outcome of the PSI.

7. Potentially contaminating activities

The following potentially contaminating activities (PCAs) with respect to PFAS have been identified as potentially occurring at or in the vicinity of the site. Refer to Table 7 below.

Table 7 Potentially Contaminating Activities

Activity	On-site or Off-site	Rationale / Details	Likely Significance
Historical storage and use of PFAS-containing firefighting foams	On-site	PFAS-containing firefighting foams were historically stored and used on-site in training exercises. This PCA at the site may have impacted concrete slabs, bitumen, soil and groundwater.	High significance Contamination associated with this PCA may have a significant impact on concrete, bitumen and soil at the site which could potentially impact soil and groundwater on- and off-site.
Historical use of PFAS containing AFFF in training exercises	On-site	PFAS containing AFFF was used during training exercises at the site. Each of the four shifts conducted training every one to three months in front of the station on the front apron. An average of 5-10 L of AFFF was used in each training with some AFFF being dispersed aerially (GHD 2022).	High significance Contamination associated with this PCA may have a significant impact on concrete, bitumen and soil at the site which could potentially impact soil and groundwater on- and off-site.
Washdown of equipment, trucks and appliances and drainage to stormwater	On-site	Residual AFFF on equipment and within appliances was washed directly onto Holman Road or on-site stormwater drains which were connected to the public stormwater system.	High significance Contamination associated with this PCA may have a significant impact on off-site surface water receptors and has contributed to off-site migration of PFAS compounds.
Residual PFAS in concrete or bitumen	On-site	If PFAS has impacted concrete or bitumen at the site, there is the potential for leaching of PFAS from concrete or bitumen surfaces within the fire training area to underlying and surrounding soil and groundwater	High significance Contamination associated with this PCA will likely continue to contribute to contaminant mass flux into the environment over time.

8. Preliminary conceptual site model (PCSM)

A preliminary conceptual site model (PCSM) is a qualitative analysis tool which identifies the contamination sources, transport mechanisms, exposure pathways and receptors considered in a site-specific risk assessment.

For an identifiable risk to exist, an exposure pathway must be present which requires each of the following to be identified:

- Presence of substances that may cause harm (SOURCE).
- Presence of a receptor which may be harmed (RECEPTOR).
- Existence of a means of exposing a receptor to the source (EXPOSURE ROUTE / EXPOSURE PATHWAY).

A PCSM has been developed based on GHD's understanding of the site setting, including geology, hydrogeology and surrounding land use in order to identify potentially significant source-pathway-receptor (SPR) linkages in respect to the potential risks that may be encountered during excavation and construction activities.

8.1 Chemicals of potential concern

This PSI is limited to PFAS, which are the primary chemicals of potential concern (CoPC) for this site.

Scientists have identified thousands of individual PFAS compounds, but commercial laboratories only typically analyse a limited selection of these. The standard analytical suite focuses on the 28 individual PFAS that generally account for the majority of the PFAS mass in environmental samples and that are understood to be the most persistent, bioaccumulative and toxic.

The groups of PFAS included in the standard analytical suite include:

- Perfluoroalkyl sulfonates (PFSA), of which PFOS and PFHxS are the most well-studied.
- Perfluoroalkyl carboxylates (PFCA), of which PFOA is the most well-studied.
- Fluorotelomers (FTS), including 8:2 FTS and 6:2 FTS.
- Perfluoroalkyl sulfonamides.

8.2 Sources of PFAS contamination

Based on the site history investigation, the primary source of PFAS contamination at the site is the historical use of PFAS containing firefighting foams for firefighting training activities.

The following known and potential sources of PFAS were identified on site:

- Historical use of PFAS containing foams on the area in front of the station to the east, both on-site on the concrete front apron and off-site on Holman Road, the adjacent car park and the small reserve beyond. It is estimated that 9,700 L of PFAS containing AFFF concentrate was historically used on-site for training purposes and during post-incident washdown of appliances (GHD 2022).
- Ongoing leaching of PFAS from impacted on-site and off-site surfaces (concrete slabs, drains and bitumen) associated with historical training and post-incident washdown activities.
- Ongoing leaching of PFAS from impacted soils on-site, including garden areas, and off-site, including the reserve to the east, associated with historical training activities and post-incident washdown of appliances.
- The historical AFFF concentrate storage within dedicated tanks (approximately 120-150 L each) on two appliances stationed at the site.
- Potential infiltration of PFAS into groundwater from use of AFFF. This is identified as low risk as greater than 75% of the site surface is sealed as it was for the duration of PFAS containing AFFF use on-site (GHD 2022).

8.3 Exposure pathways

For an exposure to occur, a complete pathway must exist between a source of contamination and a receptor. Where the exposure pathway is incomplete, there is no exposure, and hence no risk. The following exposure pathways need to be considered:

- Consumption of potentially contaminated groundwater.
- Consumption of potentially PFAS impacted fruit and / or vegetables as applicable.
- Direct dermal contact or incidental ingestion of potentially contaminated soil, groundwater or surface runoff from impacted surfaces (concrete slabs or bitumen).
- Inhalation or ingestion of potentially contaminated soil or dust.
- Surface runoff and groundwater transporting the potential contaminants off-site to the downstream and down-gradient neighbouring area.

8.4 Receptors

The potential receptors relevant to potential site activities are:

- Future on-site staff and visitors.
- Subsurface construction workers and maintenance workers (on-site and down-gradient off-site) who come into contact with contaminated soil and/or groundwater.
- People using groundwater for domestic and drinking purposes down-gradient off-site.
- People using groundwater for irrigation of vegetable gardens and / or fruit trees with which they grow produce for consumption.
- People growing fruit and / or vegetables in open soil which may interact with groundwater.
- People using groundwater for recreational purposes such as filling of swimming pools downgradient off-site.
- Consumption of fruit from fruit-trees grown off-site.
- Surface water bodies where stormwater systems discharge.

8.5 Potentially complete exposure pathways

Potential SPR linkages based on the PCSM are summarised in Table 8.

Table 8 Preliminary Conceptual Site Model

Potential source	Receptor	Pathway	Pathway present?
On-site PFAS impacted soils	Future site users, visitors, maintenance and construction workers	Direct dermal contact with contaminated soil	<p>Possible</p> <p>With the majority of the site being sealed, aside from small garden beds, it is unlikely that direct contact with PFAS impacted soils will occur. There is anecdotal evidence of PFAS containing AFFF discharge over the garden to the north and east of the site, which is accessible by future site users, indicating that there is a possible pathway. Additionally, the two soil samples collected in 2019 (along the eastern boundary of the site, near the training area) exceeded the NEPM indirect exposure concentration threshold for PFOS, indicating that PFAS compounds are likely present in unsealed garden beds.</p>
		Incidental ingestion of contaminated soil	
		Inhalation of contaminated soil or dust from disturbed soils	
	Ecosystem at, and immediately surrounding, the site	<p>Direct contact with contaminated soil</p> <p>Ingestion of contaminated soil</p> <p>Bioaccumulation through indirect contact</p>	<p>Possible</p> <p>The two soil samples collected in 2019 exceeded the NEPM indirect exposure concentration threshold for PFOS, indicating that PFAS compounds are likely present in unsealed garden beds. However, the extent of PFAS impacts in soils across the site has not been determined yet.</p>
	Groundwater beneath the site	Rainwater / surface runoff leaching impacted soil followed by migration through porous media into groundwater	<p>Possible</p> <p>The potential of PFAS leaching from contaminated soil into the groundwater has not been tested yet.</p>
On-site PFAS impacted concrete and bitumen surfaces	Future site users, visitors, maintenance and construction workers	Direct dermal contact with contaminated concrete or bitumen	<p>Unlikely</p> <p>Concrete and bitumen surfaces on-site that have historically been exposed to PFAS containing AFFF during training activities have not been tested for PFAS yet. It is considered unlikely that site users, visitors, maintenance or construction workers would be exposed to PFAS quantities detrimental to their health.</p>
		Inhalation of contaminated dust	
	Groundwater beneath the site	Rainwater / surface runoff leaching impacted soil followed by migration through porous media into groundwater	<p>Possible</p> <p>Concrete and bitumen surfaces on-site that have historically been exposed to PFAS containing AFFF during training activities have not been tested for PFAS yet. The potential of PFAS leaching from contaminated concrete or bitumen on-site into the groundwater has not been tested yet, although it may leach PFAS into the soil where groundwater can interact with it.</p>

Potential source	Receptor	Pathway	Pathway present?
PFAS-impacted groundwater on-site	People using groundwater for: domestic and drinking purposes	Consumption of contaminated groundwater	<p>Unlikely</p> <p>The presence of PFAS in groundwater beneath and down hydraulic gradient of the site has not been determined.</p> <p>Within a 2 km radius of the site 19 drillholes had TDS data, two of which were below 1,200 mg/L, which is considered suitable for domestic and primary irrigation purposes (Gov SA 2015). However, no drillholes were listed as domestic purpose.</p>
	People using groundwater for irrigation of vegetable gardens and / or fruit trees with which they grow produce for consumption	Consumption of fruit and vegetables irrigated by contaminated groundwater	<p>Possible</p> <p>The median TDS value of drillholes within 2 km of the site was 4,470 mg/L and mean was 4,535 mg/L, which exceeds the limit of 3,000 mg/L for primary irrigation purposes (Gov SA 2015). Two drillholes within a 1 km radius of the site had irrigation purposes.</p> <p>The presence of PFAS in groundwater beneath and down hydraulic gradient of the site has not been determined and residential properties with gardens where fruit and / or vegetables could be grown are present within 2 km of the site.</p>
	People growing fruit and / or vegetables in open soil which may interact with groundwater	Consumption of PFAS impacted fruit and / or vegetables	<p>On-site: No pathway</p> <p>Limited testing to date of fruit biota grown on-site reported PFAS concentrations below the adopted guidelines (GHD 2022). The MFS has advised that all stations were directed to remove edible vegetation by 31 October 2022, therefore the pathway can be eliminated.</p> <p>Off-site: possible</p> <p>The presence of PFAS in groundwater down hydraulic gradient of the site has not been determined and residential properties with gardens where fruit and / or vegetables could be grown are present within 2 km of the site.</p>
Off-site impacted groundwater	People using groundwater for recreational purposes such as filling of swimming pools	Incidental ingestion of contaminated groundwater	<p>Unlikely</p> <p>The presence of PFAS in groundwater down hydraulic gradient of the site has not been determined. The closest water body to the site is the ephemeral Christie Creek (530 m north-west) which may allow for swimming in water holes.</p>
	Discharge of groundwater to surface water bodies which are used for recreational purposes	Incidental ingestion and dermal contact with contaminated groundwater	
	Down gradient off-site maintenance and sub-surface construction workers that contact PFAS contaminated groundwater	Direct dermal contact or incidental ingestion of contaminated groundwater	<p>Unlikely</p> <p>Whilst it is possible that off-site maintenance or sub-surface construction workers could incidentally ingest contaminated groundwater, it is unlikely that they will ingest quantities detrimental to their health.</p>

Potential source	Receptor	Pathway	Pathway present?
Impacted surface water runoff and stormwater discharge	Surface water bodies (Christies Beach) used for recreational purposes	Surface water flow at surface level through gutters and drains which may enter surface water bodies	<p>Possible</p> <p>No off-site surface water or stormwater sampling has been undertaken, however there is evidence of PFAS containing AFFF being washed onto off-site roads and into public stormwater drains.</p> <p>No off-site soil sampling has been undertaken, however given the exceedances of the 2020 PFAS NEMP 2.0 indirect ecological exposure criteria with the two on-site soil samples it is possible that there are impacts to nearby soil receptors.</p>
		Stormwater discharge from site drains which is connected to public stormwater systems	
	Off-site gardens and soils	Surface water which flows into / through garden beds in nearby off-site properties	
	Off-site vegetation and biota which may interact with surface water runoff or stormwater		

8.6 PCSM data gaps

Based upon the results of this PSI and the PCSM the following data gaps have been identified:

- The presence of PFAS contamination in groundwater has not been determined.
- The lateral and vertical extent of PFAS contamination in soils both on-site and off-site has not been delineated.
- The extent of PFAS contamination in on-site concrete surfaces and drains, off-site bitumen surfaces and drains and the associated PFAS flux from these materials has not been assessed.
- The extent of groundwater use for domestic (i.e. potable), irrigation or recreational purposes down-gradient of the site remains unknown.
- The potential for PFAS to leach from contaminated on-site and off-site soils into the groundwater has not been tested yet.

8.7 Areas for investigation

Given the PCSM data gaps outlined above, the following areas for investigation are recommended:

- Targeted on-site soil and concrete sampling of the front apron and the north-eastern portion of the site where historical training was undertaken.
- Soil sampling of the unsealed area of the site along the southern site boundary.
- Targeted sampling of stormwater and sediment in stormwater drains, where accessible, and at stormwater discharge points directly downstream of the historical training area.
- Targeted off-site bitumen and soil sampling of Holman Road and the adjacent reserve, which were affected by aerial dispersion and surface runoff during historical training.
- Groundwater investigations, through the installation of three monitoring wells, on-site and directly down-gradient of the site.

9. Conclusions

GHD was engaged by the MFS to undertake a PSI for the site.

The objective of the PSI was to assess the historical activities at the site and surrounding properties that may have involved the use of PFAS containing foam, thus contributing to PFAS contamination that may pose a risk to human health or the environment.

The results of this desktop investigation provided information for the development of a PCSM and to inform the preparation of an SAQP for further assessments.

Documented information confirmed the historical use and storage (within appliance tanks) of PFAS containing firefighting foam on-site after the MFS station was established in 1978. Prior to this, no on-site land uses were identified that would have contributed to PFAS contamination. Off-site sources of PFAS contamination have not been identified.

Determination of site contamination and risk to human health and environment

Based on previous assessment results, PFAS impacts were identified in two soil samples at the site at concentrations exceeding the 2020 PFAS NEMP 2.0 indirect ecological exposure criteria. The lateral (or vertical) extent of PFAS in soil has not been delineated. No groundwater investigations have been undertaken at the site to date; therefore it is unknown if there are impacts to groundwater.

The PCSM identified the following potentially complete PFAS exposure pathways:

- Consumption of contaminated groundwater extracted off-site for domestic / drinking purposes.
- Consumption of fruit and vegetables grown off-site where plants were irrigated with contaminated groundwater or where plant roots accessed shallow contaminated groundwater.
- Incidental ingestion of contaminated groundwater extracted off-site for recreational purposes such as filling of swimming pools. Additionally discharge of groundwater to surface water bodies (Christie Creek) may impact recreational users.
- Exposure of future site users, visitors, maintenance and construction workers to PFAS via direct dermal contact with contaminated soil, incidental ingestion of contaminated soil or inhalation of contaminated soil or dust from disturbed soils.
- Exposure of future site users, visitors, maintenance and construction workers to PFAS via direct dermal contact with PFAS impacted concrete / bitumen surfaces or inhalation of contaminated dust from such surfaces.
- Exposure of terrestrial fauna and flora to PFAS via direct contact with contaminated soil, ingestion of contaminated soil or bioaccumulation through indirect contact.
- Leaching of PFAS from contaminated soils or concrete or bitumen surfaces followed by migration through porous media into groundwater.

It was concluded that groundwater PFAS contamination beneath the site may exist that may potentially pose a risk to human health or the environment.

Recommendations

GHD recommends that a SAQP be prepared using information from this PSI for further intrusive investigations to be undertaken to delineate PFAS impacts in on-site soils and concrete, off-site bitumen surfaces and soils affected by historical training and washdown activities, and on- and off-site groundwater.

The objectives of further investigations are to determine the nature and extent of on- and off-site PFAS contamination associated with historical activities at the site and to identify and assess any potential risks to human health and the environment from PFAS site contamination in the context of relevant land uses for any affected off-site properties.

It is recommended that the areas of investigation outlined in Section 8.7 are addressed to assist in closing the data gaps.

10. References

- CSIRO 2013; Australian Soil Resource Information System, Australian Atlas of Soils, Commonwealth Scientific and Industrial Research Organisation, accessed February 2023 via https://www.asris.csiro.au/index_ie.html.
- DEW 2022, WaterConnect online data base for groundwater and surface water, Department for Environment and Water, South Australia, accessed May 2022 via www.waterconnect.sa.gov.au.
- GHD 2022, MFS 17 Fire Stations, PFAS Risk Profiling, Report prepared for the South Australia Metropolitan Fire Service by GHD Pty Ltd, 26 October 2022.
- Google Maps 2023, Google, accessed February 2023 via <https://www.google.com/maps>.
- Gov SA 1993, *Environment Protection Act 1993*, Version 11.02.2023, Government of South Australia, updated 2023.
- Gov SA 2009, *Environment Protection Regulations 2009*, Version 1.7.2022, Government of South Australia, updated 2022.
- Gov SA 2015, South Australian *Environment Protection (Water Quality) Policy 2015* (WQEPP), Version 1.7.2020, Government of South Australia, updated 2020.
- HEPA 2020, *PFAS National Environmental Management Plan* (PFAS NEMP), Version 2.0, Heads of Environment Protection Authorities Australia and New Zealand, January 2020.
- Lotsearch (2023), Lot 121 Holman Road, Christie Downs South Australia 5164, Adelaide, SA 5164, Reference number LS040118_EP, prepared by Lotsearch Enviro Professional, February 2023
- MetroMaps 2023, Aerometrex, accessed February 2023 via <https://metromap.com.au/>.
- MFS 2022, Christie Downs Station, South Australian Metropolitan Fire Service, accessed February 2023 via <https://www.mfs.sa.gov.au/about-us/areas-we-serve/metropolitan-fire-stations/christie-downs-station>.
- NEPC 1999, *National Environmental Protection (Assessment of Site Contamination) Measure 1999* (ASC NEPM), as amended May 2013, National Environment Protection Council.
- SA EPA 2019, *Guidelines for the assessment and remediation of site contamination* (GAR) Environment Protection Authority, South Australia, November 2019. SAPPA 2023, South Australia Property and Planning Atlas, Plan SA, Government of South Australia, accessed February 2023 via <https://sappa.plan.sa.gov.au>.
- SARIG 2023, South Australian Resources Information Gateway, Government of South Australia, accessed February 2023, via <https://map.sarig.sa.gov.au/>.

Figures

- Figure 1* *Site Location Plan*
- Figure 2* *Site Layout Plan*
- Figure 3* *Historical Sampling Locations*
- Figure 4* *Surrounding Land Use*



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54



South Australian Metropolitan Fire Service
Risk Profiling MFS 17 sites

Site Location and Layout
Christie Downs

Project No. 12584546
Revision No. 0
Date 25/10/2022

FIGURE 1

Data source: GHD; Well Locations (2022); VICMAP; Cadastre, Roads, Land Use; MetroMap; Imagery (Date Extracted: 20 June 2022); . Created by: dibanan



Legend

- ▬ Buildings
- ▬ AFFF Use Area
- ▬ Site Boundary
- Cadastre
- ▶ Surface Direction
- Roads

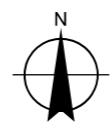
Data Disclaimer

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Paper Size ISO A3

0 100 200 300 400
Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54



South Australian Metropolitan Fire Service
MFS Christie Downs PSI/SAQP

Project No. 1260401
Revision No. A
Date 07/03/2023

Christie Downs Site Layout Plan

FIGURE 2

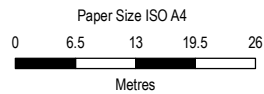
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Print date: 07 Mar 2023 - 16:50

Data source: GHD: Site Boundary (2022); DPTI: Cadastre, Roads (2016); MetroMap: Imagery (Imagery Date: 18/12/2022; Date Extracted: 28/02/2023) Created by: ejan



Legend

- Site Boundary
- Cadastre
- Biota
- Soil



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54

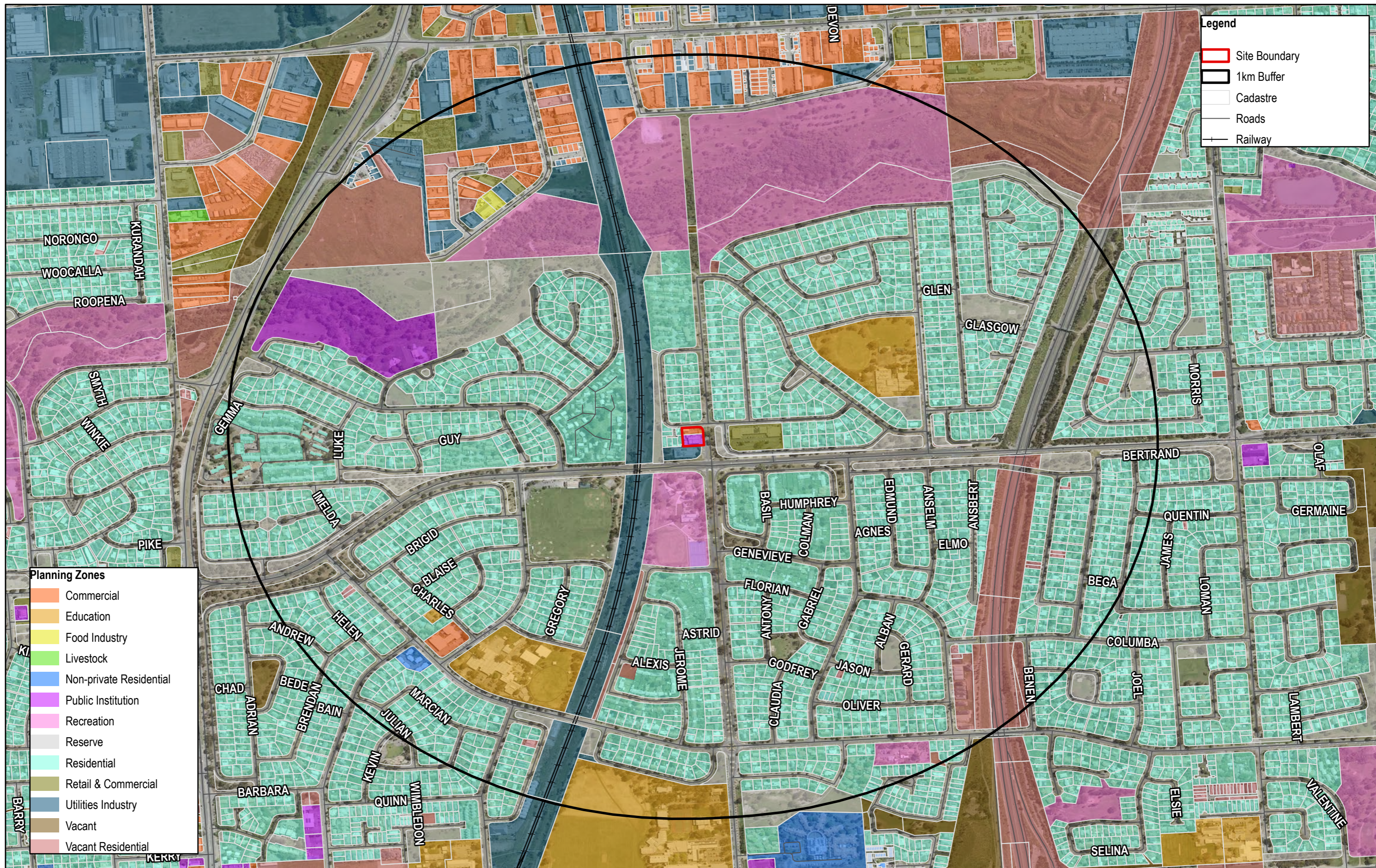


South Australian Metropolitan Fire Service
Risk Profiling MFS 17 Sites

**Historical Sampling Locations
Christie Downs 2019**

Project No. 12584546
Revision No. A
Date 17/08/2022

FIGURE 3



Legend

- Site Boundary
- 1km Buffer
- Cadastre
- Roads
- Railway

Planning Zones

- Commercial
- Education
- Food Industry
- Livestock
- Non-private Residential
- Public Institution
- Recreation
- Reserve
- Residential
- Retail & Commercial
- Utilities Industry
- Vacant
- Vacant Residential

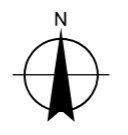
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Paper Size ISO A3

0 100 200 300 400
Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 54



South Australian Metropolitan Fire Service
MFS Christie Downs PSI/SAQP

Project No. 1260401
Revision No. A
Date 07/03/2023

Christie Downs Surrounding Land Use

FIGURE 4

\\ghdnet\ghd\AU\Melbourne\Projects\3312604041\GIS\Maps\Deliverables\12604041_001_ChristieDownsSiteLocationPlan_revA.aprx
Print date: 07 Mar 2023 - 18:47
Data source: GHD: Site Boundary (2022); DPTI: Cadastre, Roads (2016); Planning Zones (2022); MetroMap: Imagery (Imagery Date: 18/12/2022; Date Extracted: 28/02/2023) Created by: ejan

Appendices

Appendix A

SA EPA letter

OFFICIAL



Environment Protection Authority

GPO Box 2607 Adelaide SA 5001

T (08) 8204 2004

Country areas 1800 623 445

EPA GENI 62917

Krystle Mitchell
Senior Scientific and Environmental Officer
South Australian Metropolitan Fire Service
By Email: Krystle.Mitchell@eso.sa.gov.au

Dear Ms Mitchell,

RE: REVIEW OF SITE CONTAMINATION REPORT – ACTION REQUIRED

Site: Various Metropolitan Fire Service (MFS) Fire Stations, South Australia

Thank you for providing the Environment Protection Authority (EPA) with a copy of the following report:

- *MFS 17 Fire Stations PFAS Risk Profiling*, prepared by GHD and dated 26 October 2022.

The above report documents a desktop risk profiling and prioritisation assessment completed for 17 MFS stations previously identified as containing PFAS contamination, based on limited site sampling completed in 2019 (GHD 2019)¹.

The EPA requests that you submit a plan of proposed works and associated timelines to address the highest risk sites by **30 June 2023**.

If you agree to undertake the above listed works it is requested that you submit written acknowledgement to the EPA stating as such. If you wish to discuss potential alterations to the recommended works or delivery date please contact the EPA as soon as possible.

It is not clear in the above report whether stations where no soil sampling was completed, or where the limited sampling showed no site contamination, were considered as part of the risk screening assessment. The EPA notes that the sampling documented in GHD (2019) was highly limited and may not capture all potential PFAS source areas at a station. The EPA recommends that these stations be risk profiled if not undertaken previously.

Please provide a copy of this letter to your engaged consultant to assist them in developing a scope of works for the relevant sites. Fact sheets relating to your obligations under the *Environment Protection Act 1993* and how to engage a site contamination consultant be found at www.epa.sa.gov.au. If you would like further assistance on this matter please contact Brooke Ryan on (08) 8204 8525 or at brooke.ryan2@sa.gov.au.

Yours sincerely

A handwritten signature in cursive script that reads 'H Custance'.

Hannah Custance

PRINCIPAL ADVISER, SITE CONTAMINATION

ENVIRONMENT PROTECTION AUTHORITY

Date: 1 February 2023

Cc: Ben Petticrew, Technical/Project Director – Contamination Assessment and Remediation, GHD (ben.petticrew@ghd.com)

¹ *MFS State Wide Appliance and Station Sampling*, prepared by GHD and dated May 2019.

Appendix B

LotSearch report



LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 06 Feb 2023 09:22:28

Reference: LS040118 EP

Address: Lot 121 Holman Road, Christie Downs, SA 5164

Disclaimer:

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

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

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

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	PSMA Australia Limited	01/11/2021	01/11/2021	Quarterly	-	-	-	-
EPA Site Contamination Index	EPA South Australia	06/01/2023	06/01/2023	Monthly	1000m	1	1	5
EPA Environmental Protection Orders	EPA South Australia	25/01/2023	25/01/2023	Monthly	1000m	0	0	1
EPA Environmental Authorisations	EPA South Australia	25/01/2023	25/01/2023	Monthly	1000m	0	2	6
EPA Assessment Areas	EPA South Australia	25/01/2023	25/01/2023	Quarterly	1000m	0	0	0
EPA Groundwater Prohibition Areas	EPA South Australia	23/01/2023	20/08/2022	Monthly	1000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	06/01/2023	06/01/2023	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	06/01/2023	06/01/2023	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	13/12/2022	13/12/2022	Monthly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	02/09/2022	02/09/2022	Quarterly	2000m	0	0	0
National Waste Management Facilities Database	Geoscience Australia	26/05/2022	07/03/2017	Annually	1000m	0	0	1
EPA Collection Depots	EPA South Australia	20/12/2022	20/08/2022	Quarterly	1000m	0	0	1
National Liquid Fuel Facilities	Geoscience Australia	23/08/2022	15/03/2012	Annually	1000m	0	0	0
Historical Business Directories (Premise & Intersection Matches)	Hardie Grant, Sands & McDougall			Not required	150m	0	0	0
Historical Business Directories (Road & Area Matches)	Hardie Grant, Sands & McDougall			Not required	150m	-	4	4
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant, Sands & McDougall			Not required	500m	0	0	0
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant, Sands & McDougall			Not required	500m	-	0	0
Mines and Mineral Deposits	Department for Energy and Mining	18/10/2022	18/10/2022	Quarterly	1000m	0	0	1
Groundwater Aquifers	Department for Environment and Water	29/03/2021	01/01/2008	Annually	1000m	1	1	2
Drillholes	Department for Environment and Water	19/10/2022	07/10/2022	Quarterly	2000m	0	2	123
Surface Geology 1:100,000	Department for Energy and Mining	12/07/2018	01/07/2018	As required	1000m	1	1	4
Geological Linear Structures 1:100,000	Department for Energy and Mining	12/07/2018	01/07/2018	As required	1000m	0	0	0
Atlas of Australian Soils	ABARES	19/05/2017	17/02/2011	As required	1000m	1	1	1
Soil Types	Department for Environment and Water	12/07/2018	01/07/2009	As required	1000m	1	1	5
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000m	1	1	1
Acid Sulfate Soil Potential	Department for Environment and Water	06/04/2022	18/02/2020	Annually	1000m	1	1	1
Soil Salinity - Watertable Induced	Department for Environment and Water	23/06/2022	09/06/2016	Annually	1000m	1	1	2
Soil Salinity - Non-watertable	Department for Environment and Water	19/04/2022	18/02/2020	Annually	1000m	1	1	2
Soil Salinity - Non-watertable (magnesia patches)	Department for Environment and Water	19/04/2022	18/02/2020	Annually	1000m	1	1	1

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Planning and Design Code - Zones	Attorney-General's Department	13/12/2022	23/06/2022	Monthly	1000m	1	2	8
Planning and Design Code - Subzones	Attorney-General's Department	13/12/2022	20/01/2022	Monthly	1000m	0	0	0
Land Use Generalised 2020	Department of Planning, Transport and Infrastructure	18/10/2022	07/03/2022	Annually	1000m	1	6	12
Commonwealth Heritage List	Australian Government Department of Agriculture, Water and the Environment	03/06/2022	13/04/2022	Annually	1000m	0	0	0
National Heritage List	Australian Government Department of Agriculture, Water and the Environment	03/06/2022	13/04/2022	Annually	1000m	0	0	0
State Heritage Areas	Department for Environment and Water	06/04/2022	18/02/2020	Annually	1000m	0	0	0
SA Heritage Places	Department for Environment and Water	19/10/2022	23/09/2021	Quarterly	1000m	0	0	0
Aboriginal Land	Department for Energy and Mining	06/04/2022	08/04/2018	Annually	1000m	0	0	0
Planning and Design Code - Overlays - Bushfire	Attorney-General's Department	13/12/2022	13/12/2022	Monthly	1000m	0	0	1
Bushfires and Prescribed Burns History	Department for Environment and Water	06/04/2022	24/02/2020	Annually	1000m	0	0	1
Planning and Design Code - Overlays - Flooding	Attorney-General's Department	13/12/2022	13/12/2022	Monthly	1000m	1	1	1
Groundwater Dependent Ecosystems Atlas	Bureau of Meteorology	28/10/2022	26/10/2022	Annually	1000m	0	0	0
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	28/10/2022	26/10/2022	Annually	1000m	0	0	0
Ramsar Wetland Areas	Department for Environment and Water	28/03/2022	18/02/2020	Annually	1000m	0	0	0

Site Diagram

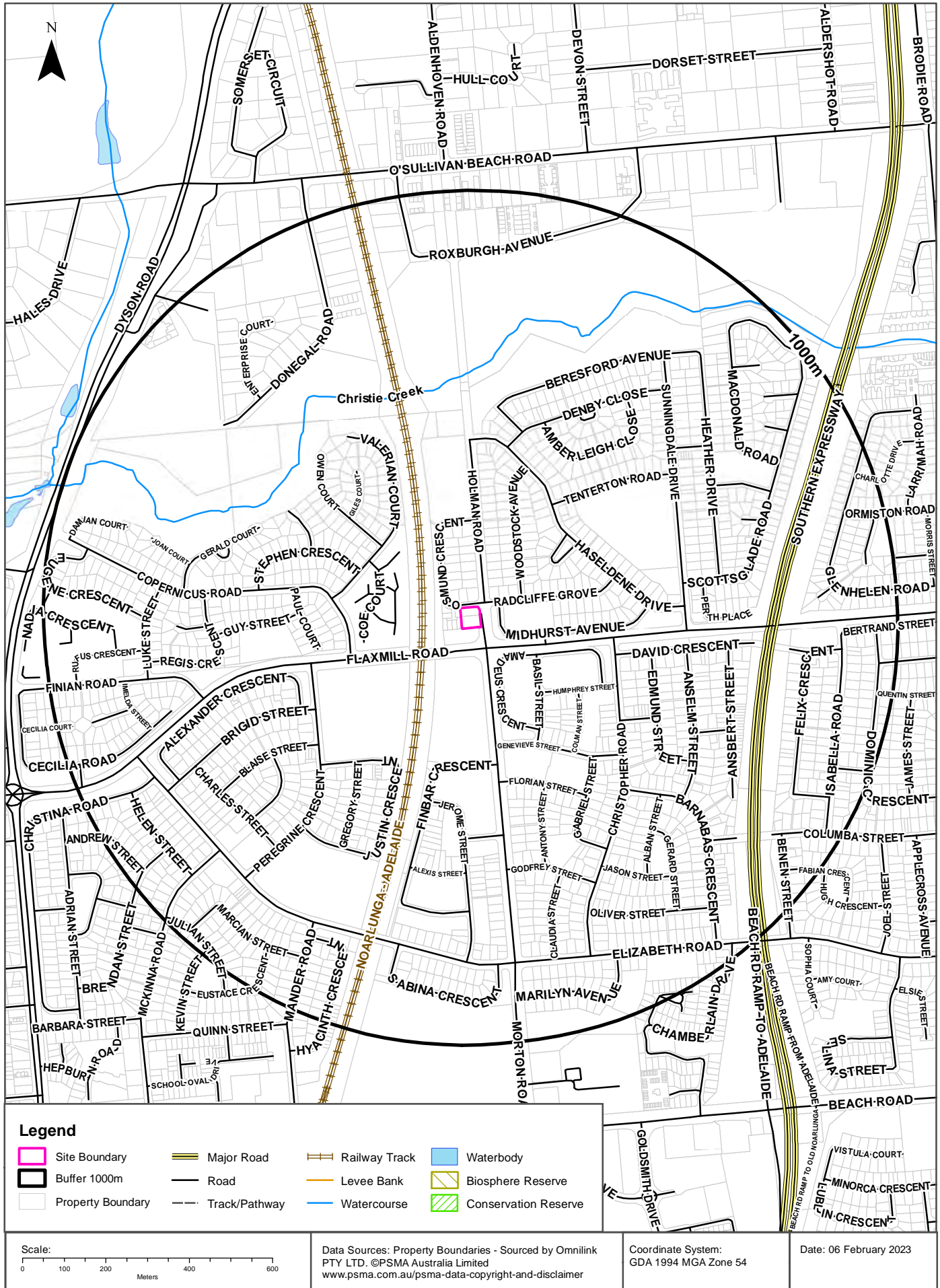
Lot 121 Holman Road, Christie Downs, SA 5164



Legend Site Boundary Internal Parcel Boundaries	Total Area: 2255m ² Total Perimeter: 187m	Scale: 	
	Disclaimers: Measurements are approximate only and may have been simplified or smaller lengths removed for readability. Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.	Data Source Aerial Imagery: © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 54

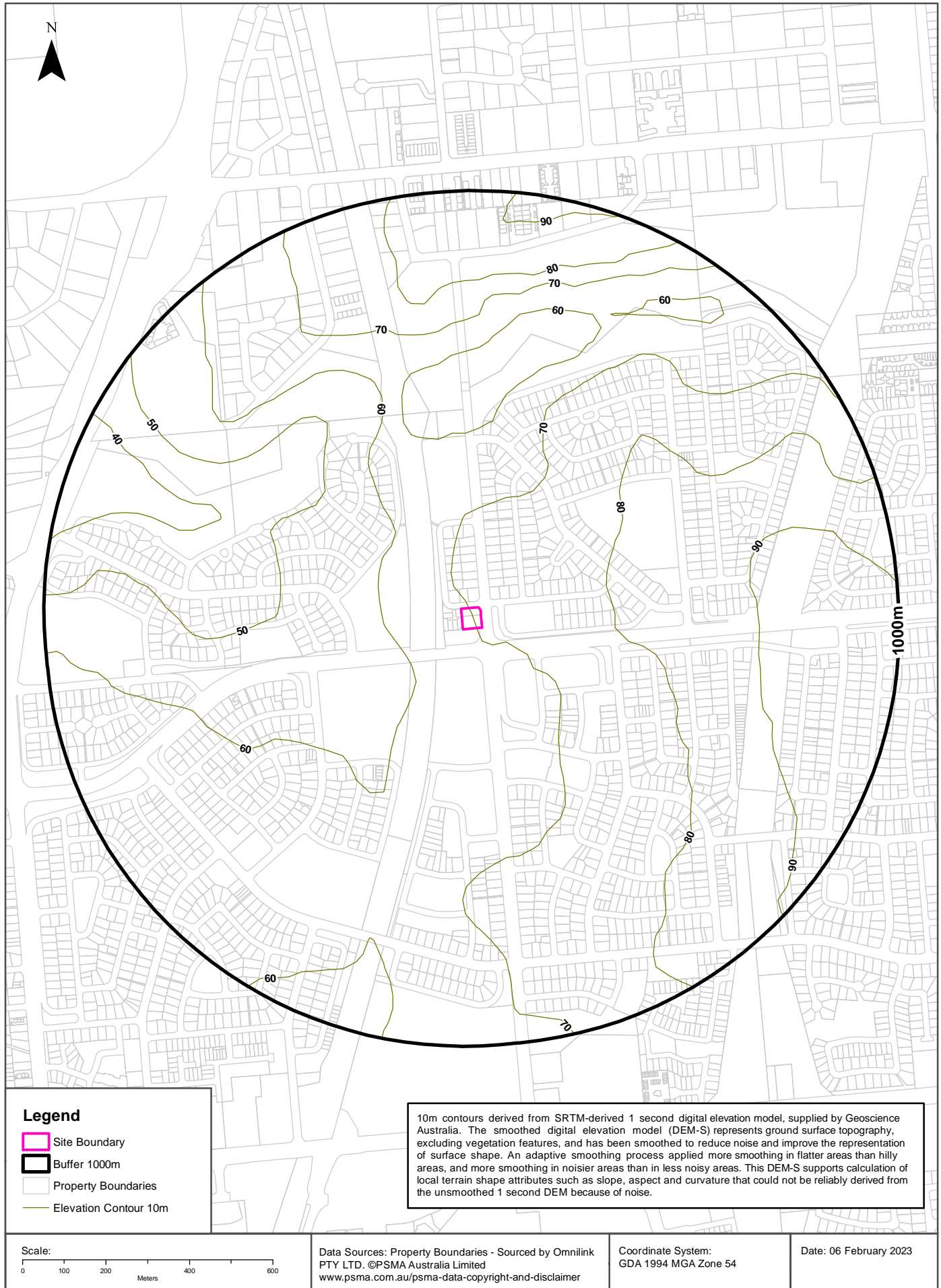
Topographic Features

Lot 121 Holman Road, Christie Downs, SA 5164



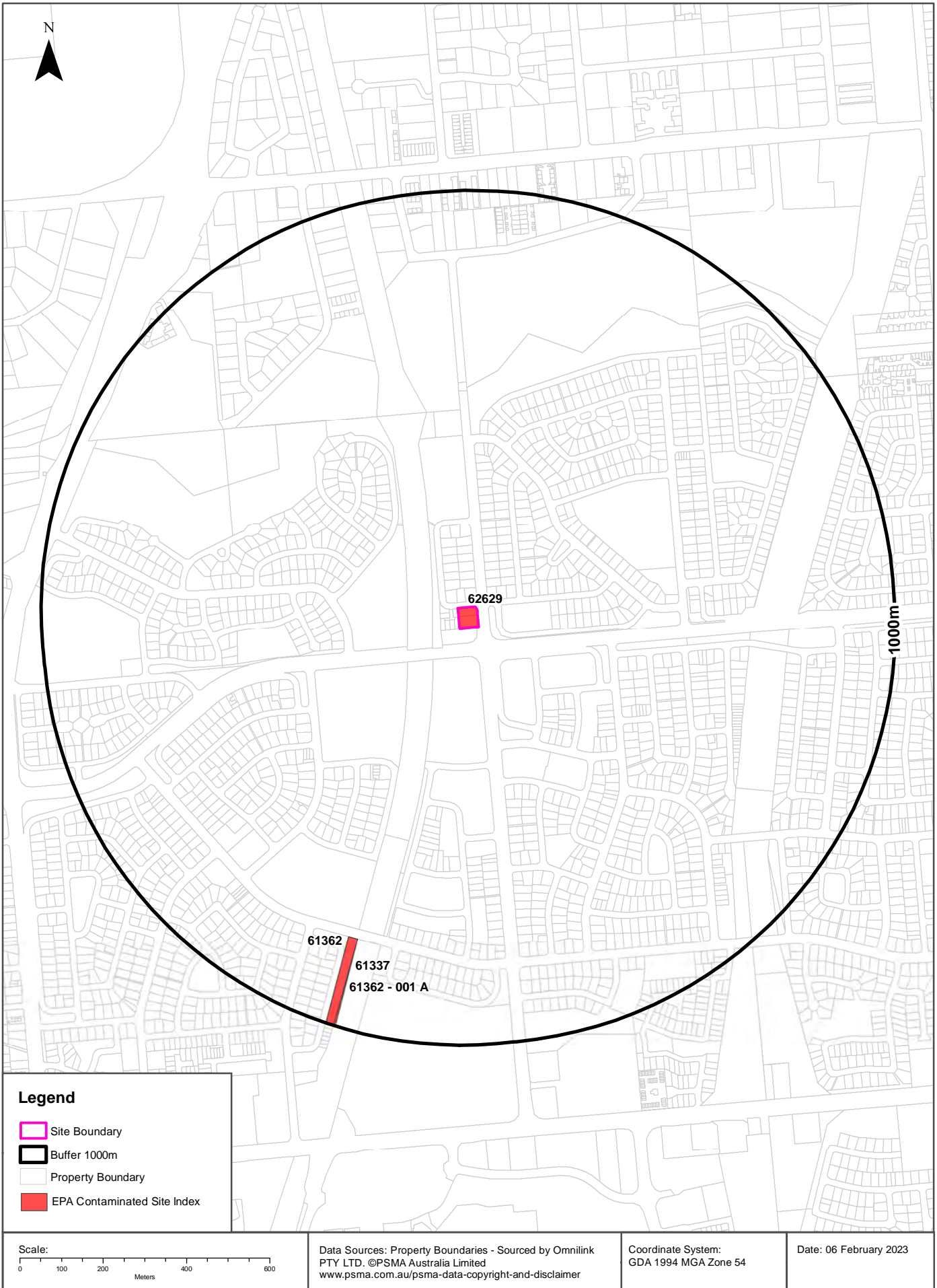
Elevation Contours

Lot 121 Holman Road, Christie Downs, SA 5164



EPA Site Contamination Index

Lot 121 Holman Road, Christie Downs, SA 5164



EPA Contaminated Land

Lot 121 Holman Road, Christie Downs, SA 5164

EPA Site Contamination Index

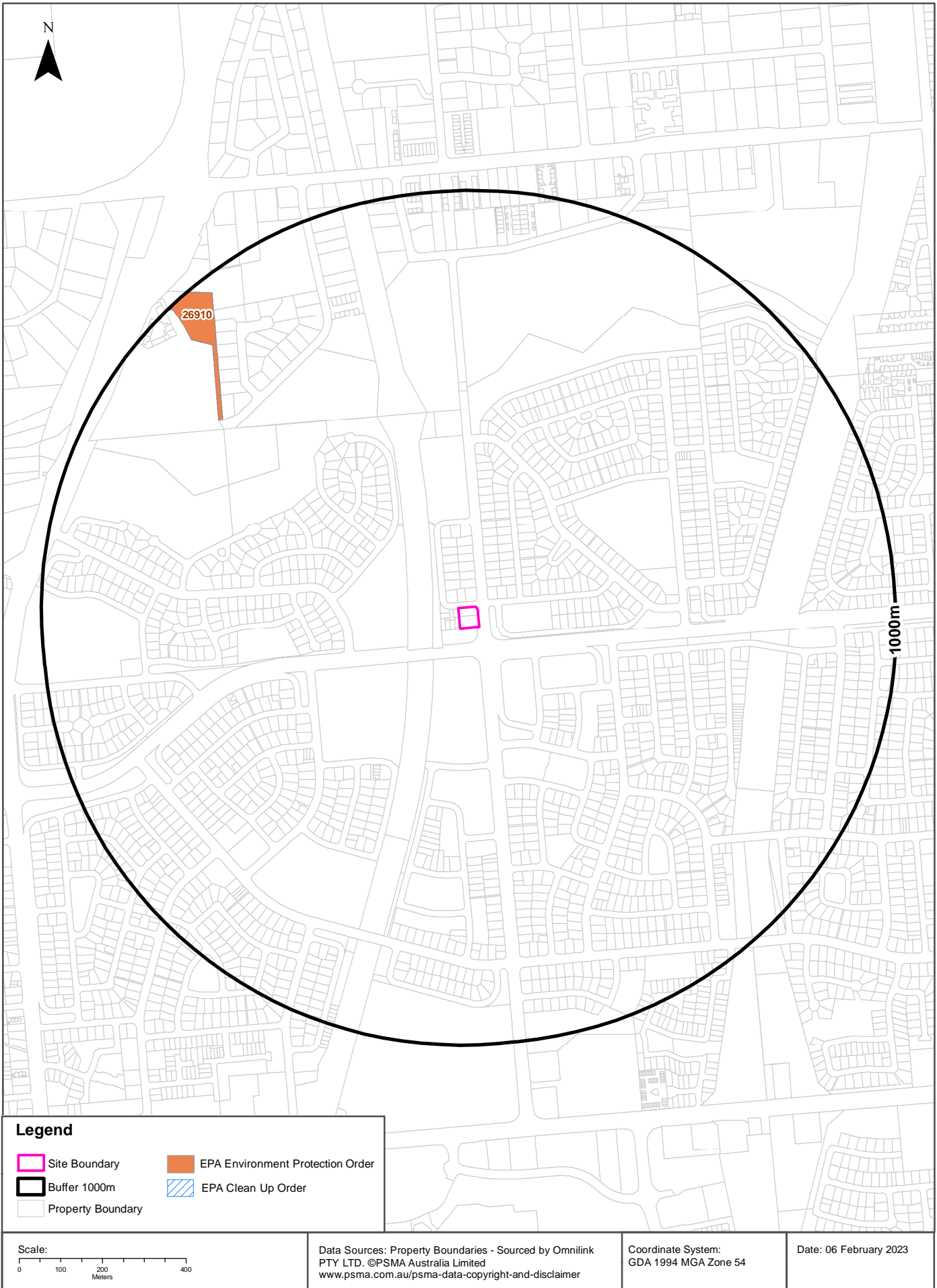
Sites on the EPA Contamination Index within the dataset buffer:

Notification No	Type	Address	Activity	Status	LocConf	Dist	Dir
62629	109 Notification	Lot 121 Holman Road CHRISTIE DOWNS SA 5164	Fire stations; Fire training areas	Current EPA List	Premise Match	0m	On-site
61337	Audit Notification	Lots 442 & 467 Beach Road CHRISTIE DOWNS SA 5164	Agricultural activities; Fill or soil importation	Current EPA List	Premise Match	784m	South
61337	Audit Termination	Lots 442 & 467 Beach Road CHRISTIE DOWNS SA 5164	Not recorded	Current EPA List	Premise Match	784m	South
61362	Audit Notification	Portion Lots 442 & 467 Beach Road CHRISTIE DOWNS SA 5164	Agricultural activities; Fill or soil importation	Current EPA List	Premise Match	784m	South
61362 - 001 A	Audit Report	Portion Lots 442 & 467 Beach Road CHRISTIE DOWNS SA 5164	Agricultural activities; Fill or soil importation	Current EPA List	Premise Match	784m	South

Site Contamination Index Data Source: EPA South Australia

EPA Environment Protection and Clean Up Orders

Lot 121 Holman Road, Christie Downs, SA 5164



EPA Public Register

Lot 121 Holman Road, Christie Downs, SA 5164

EPA Environment Protection and Clean Up Orders

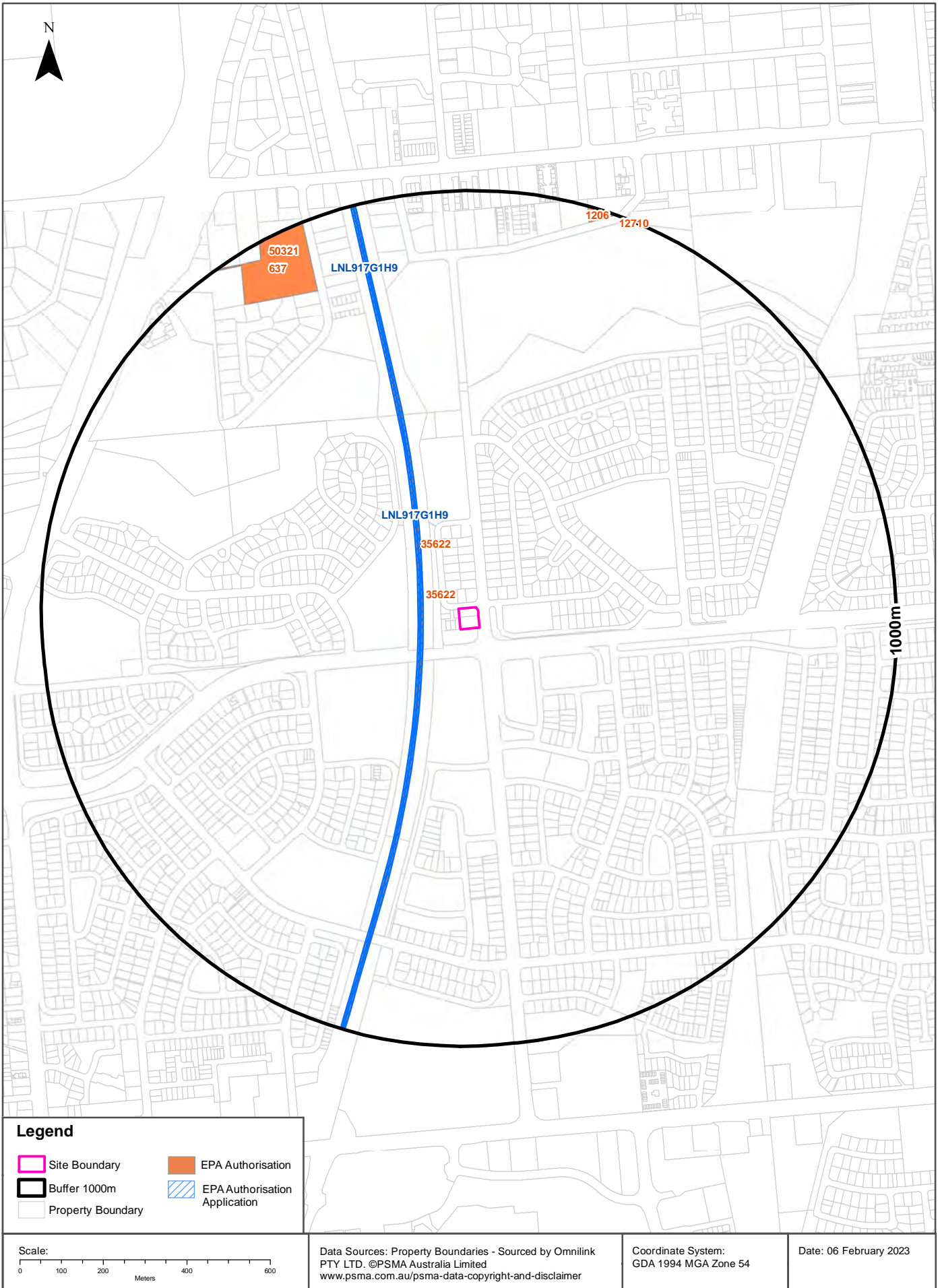
EPA Environment Protection and Clean Up Orders, within the dataset buffer:

Record No.	Record Type	Record Status	Entity	Site Address	Activity	EPA Register Status	LocConf	Dist	Dir
26910	ENVIRONMENT PROTECTION ORDER	ISSUED		Dyson Road, Lonsdale SA 5160	Caused or permitted the receipt, storage and disposal of waste at the site, without an environmental authorisation (licence).	Current EPA Register	Premise Match	724m	North West

Authorisations Data Source: EPA South Australia

EPA Authorisations and Applications

Lot 121 Holman Road, Christie Downs, SA 5164



EPA Public Register

Lot 121 Holman Road, Christie Downs, SA 5164

EPA Authorisations and Applications

EPA Authorisations and Authorisation Applications within the dataset buffer:

Record No.	Record Type	Record Status	Entity	Site Address	Activity	EPA Register Status	LocConf	Dist	Dir
35622	LICENCE	Surrendered	LAING O'ROURKE AUSTRALIA CONSTRUCTION PTY LTD	Various Locations Along The Adelaide Metropolitan Rail Network, SA	Railway operations	Current EPA Register	Network of Features	85m	West
LNL917 G1H9	LICENCE APPLICATION	Authorisation Updated	BOWMANS RAIL PTY LTD	Various Locations across Inner and Outer Harbour of the Port of Adelaide	Railway operations	Current EPA Register	Network of Features	85m	West
50321	LICENCE	Issued	CLEANAWAY PTY LTD	Allotment 50, Donegal Road, LONSDALE SA 5160	Waste recycling depot (waste for resource recovery or transfer)	Current EPA Register	Premise Match	835m	North West
637	LICENCE	Issued	SA WASTE MANAGEMENT PTY LTD	Allotment 50, Donegal Road, LONSDALE SA 5160	Waste recycling depot (waste for resource recovery or transfer)	Current EPA Register	Premise Match	835m	North West
1206	LICENCE	Issued	DIRECT-MIX CONCRETE PROPRIETARY LIMITED	37 Roxburgh Avenue, LONSDALE SA 5160	Concrete batching works	Current EPA Register	Premise Match	961m	North
12710	LICENCE	Issued	HANSON CONSTRUCTION MATERIALS PTY LTD	40 Roxburgh Avenue, LONSDALE SA	Concrete batching works	Current EPA Register	Premise Match	986m	North

Authorisations Data Source: EPA South Australia

EPA Assessment and Groundwater Prohibition Areas

Lot 121 Holman Road, Christie Downs, SA 5164

EPA Assessment Areas

EPA Assessment Areas within the dataset buffer:

Map Id	Supplied Ref	Area Name	Map Link	Status	Location Confidence	Distance	Direction
N/A	No records in buffer						

Assessment Areas Data Source: EPA South Australia

EPA Assessment and Groundwater Prohibition Areas

Lot 121 Holman Road, Christie Downs, SA 5164

EPA Groundwater Prohibition Areas

EPA Groundwater Prohibition Areas within the dataset buffer:

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

Groundwater ProhibitionAreas Data Source: EPA South Australia

PFAS Investigation & Management Programs

Lot 121 Holman Road, Christie Downs, SA 5164

Defence PFAS Investigation & Management Program Investigation Sites

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

Map ID	Base Name	Address	Location Confidence	Distance	Direction
N/A	No records in buffer				

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

Defence PFAS Investigation & Management Program Management Sites

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

Map ID	Base Name	Address	Location Confidence	Distance	Direction
N/A	No records in buffer				

Defence PFAS Investigation & 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	Location Confidence	Distance	Direction
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

Lot 121 Holman Road, Christie Downs, SA 5164

Defence 3 Year Regional Contamination Investigation Program

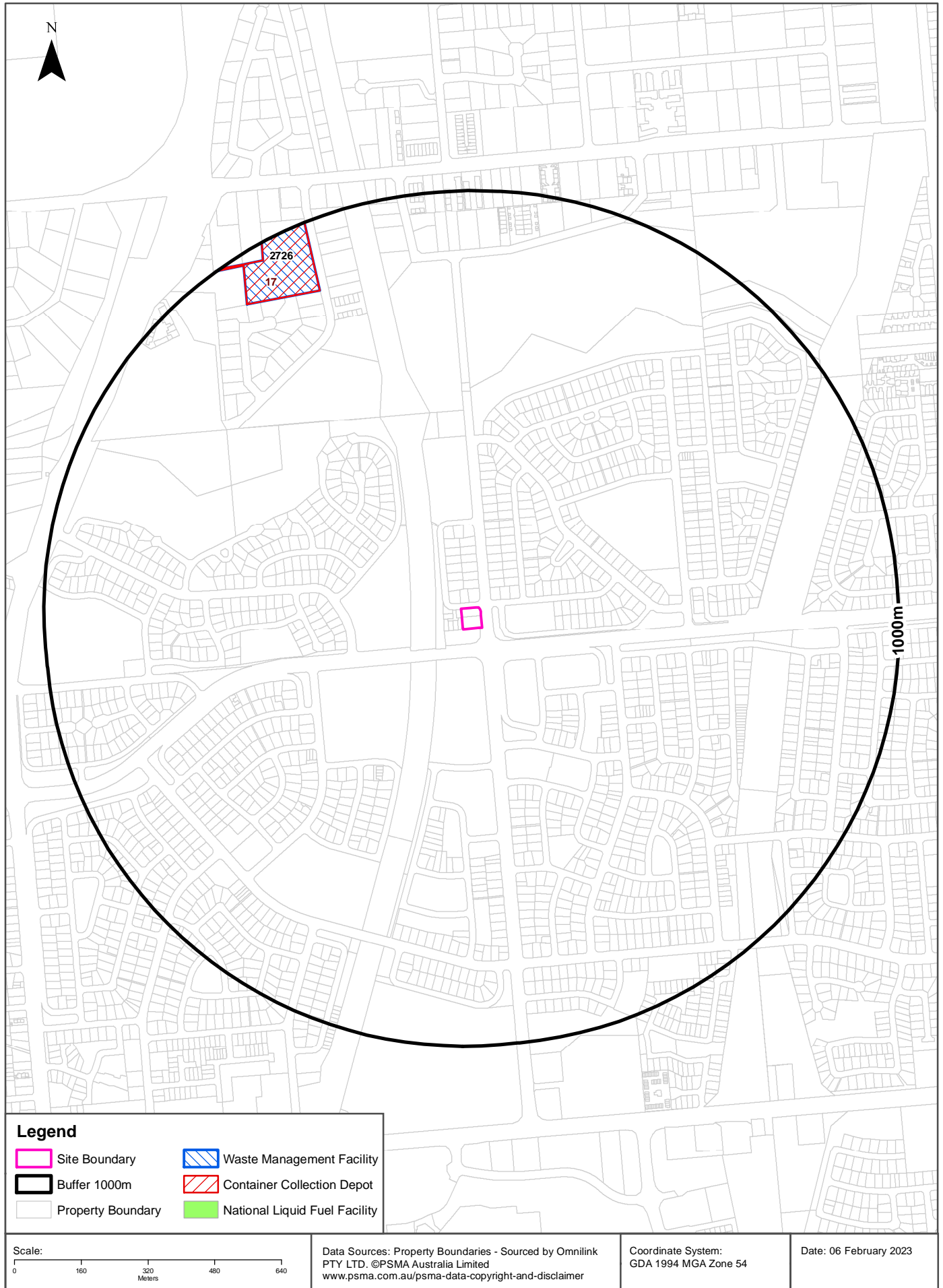
Sites which have been assessed as part of the Defence 3 Year Regional Contamination Investigation Program within the dataset buffer:

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

Waste Management & Liquid Fuel Facilities

Lot 121 Holman Road, Christie Downs, SA 5164



Waste Management and Liquid Fuel Facilities

Lot 121 Holman Road, Christie Downs, SA 5164

National Waste Management Site Database

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

Site Id	Owner	Name	Address	Suburb	Class	Revised Date	Location Confidence	Distance	Direction
2726	City Of Onkaparinka	Lonsdale Waste and Recycling Depot	10 Donegal Road	Lonsdale	Transfer Station	8/06/2012	Premise Match	835m	North West

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

EPA Approved Container Collection Depots

EPA approved container collection depots within the dataset buffer:

MapId	Name	Address	Suburb	Loc Conf	Distance	Direction
17	Lonsdale Transfer Station	10 Donegal Road	LONSDALE	Premise Match	835m	North West

Collection Depot Data Source: EPA South Australia

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	Dir
N/A	No records in buffer										

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

Historical Business Directories

Lot 121 Holman Road, Christie Downs, SA 5164



Legend <ul style="list-style-type: none"> Site Boundary Buffer 150m Property Boundary ● Business directory records mapped to a specific premise ■ Business directory records mapped to a road intersection ▲ Business directory records mapped to a road corridor Business directory records mapped to a general area 		Scale: 	Coordinate System: GDA 1994 MGA Zone 54 <hr/> Date: 06 February 2023
Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018 Sands & McDougall's Directory - Digitised by State Library Victoria Property Boundaries - Sourced by Omnalink PTY LTD. ©PSMA Australia Limited 2023 www.pdma.com.au/psma-data-copyright-and-disclaimer			

Historical Business Directories

Lot 121 Holman Road, Christie Downs, SA 5164

Business Directory Records 1910-1991 Premise or Road Intersection Matches

Universal Business Directory and Sands & McDougall Directory records, from years 1991, 1984, 1973, 1965, 1955, 1950, 1940, 1930, 1920 & 1910, mapped to a premise or road intersection within the dataset buffer:

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

Business Directory Content reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018 and Sands & McDougall's Directory of South Australia

Business Directory Records 1910-1991 Road or Area Matches

Universal Business Directory and Sands & McDougall Directory records, from years 1991, 1984, 1973, 1965, 1955, 1950, 1940, 1930, 1920 & 1910, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
1	Doctors	Klaveniek T G 303 Midhurst Rd, Christie Downs 5164	8614	1984	Road Match	45m
	Clothing - Retail - Ladies &/or Girls Wear	Mylady Boutique 303 Mindhurst Rd, Christie Downs 5164	5447	1984	Road Match	45m
2	Delicatessens &/Or Mixed Businesses	Dah Dah, P Flaxmill Rd, Christie Downs 5164	6667	1984	Road Match	50m
	Chemists - Pharmaceutical	Dixon's, Rod Pharmacy. Flaxmill Rd., Christie Downs. 5164,	4756	1984	Road Match	50m

Business Directory Content reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018 and Sands & McDougall's Directory of South Australia

Historical Business Directories

Lot 121 Holman Road, Christie Downs, SA 5164

Dry Cleaners, Motor Garages & Service Stations 1930-1991 Premise or Road Intersection Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories and Sands & McDougall's Directories, from years 1991, 1984, 1973, 1965, 1955, 1950, 1940 & 1930, mapped to a premise or road intersection, within the dataset buffer.

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

Business Directory Content reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018 and Sands & McDougall's Directory of South Australia

Dry Cleaners, Motor Garages & Service Stations 1930-1991 Road or Area Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories and Sands & McDougall's Directories, from years 1991, 1984, 1973, 1965, 1955, 1950, 1940 & 1930, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

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

Business Directory Content reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018 and Sands & McDougall's Directory of South Australia



Aerial Imagery 2022

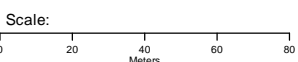
Lot 121 Holman Road, Christie Downs, SA 5164



150m

Legend

-  Site Boundary
-  Buffer 150m



Data Source Aerial Imagery:
© Aerometrex Pty Ltd

Coordinate System:
GDA 1994 MGA Zone 54



Date: 06 February 2023

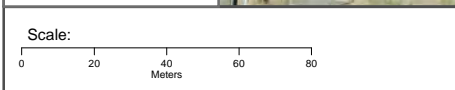
Aerial Imagery 2017

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

-  Site Boundary
-  Buffer 150m



Data Source Aerial Imagery:
© Aerometrex Pty Ltd

Coordinate System:
GDA 1994 MGA Zone 54



Date: 06 February 2023

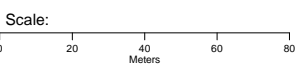
Aerial Imagery 2012

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

-  Site Boundary
-  Buffer 150m



Data Source Aerial Imagery:
© Aerometrex Pty Ltd

Coordinate System:
GDA 1994 MGA Zone 54



Date: 06 February 2023

Aerial Imagery 2007

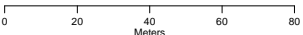
Lot 121 Holman Road, Christie Downs, SA 5164



Legend

-  Site Boundary
-  Buffer 150m

Scale:



0 20 40 60 80
Meters

Data Source Aerial Imagery:
© Aerometrex Pty Ltd

Coordinate System:
GDA 1994 MGA Zone 54



Date: 06 February 2023

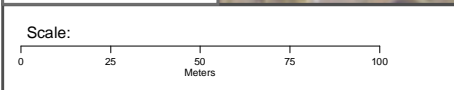
Aerial Imagery 1999

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

-  Site Boundary
-  Buffer 150m



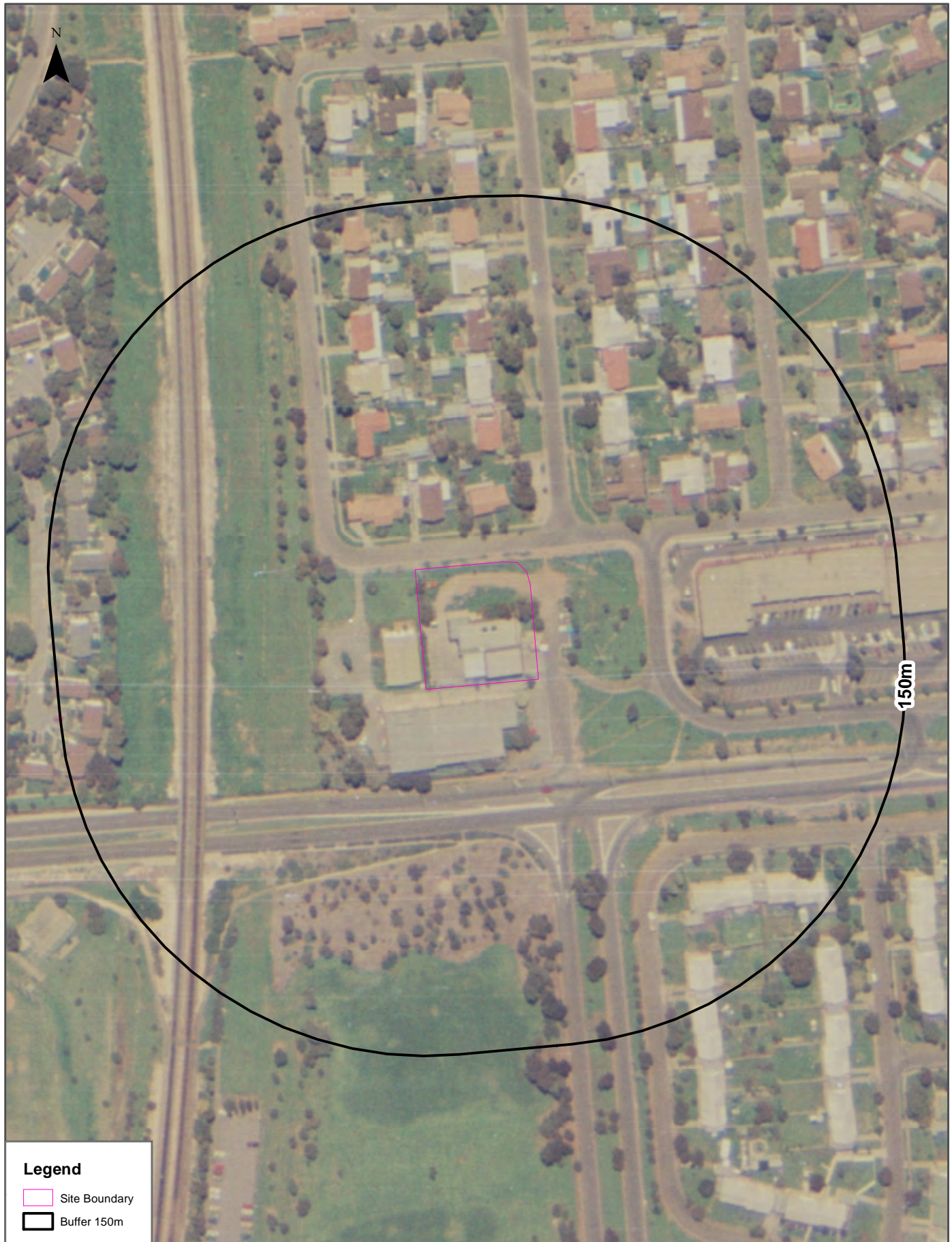
Data Sources Aerial Imagery: © South Australia
Department for Environment & Water

Coordinate System:
GDA 1994 MGA Zone 54



Date: 03 February 2023

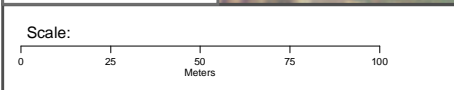
Aerial Imagery 1989

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

-  Site Boundary
-  Buffer 150m



Data Sources Aerial Imagery: © South Australia
Department for Environment & Water

Coordinate System:
GDA 1994 MGA Zone 54



Date: 03 February 2023

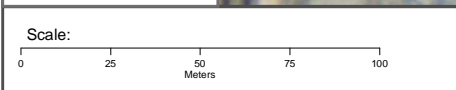
Aerial Imagery 1979

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

-  Site Boundary
-  Buffer 150m



Data Sources Aerial Imagery: © South Australia
Department for Environment & Water

Coordinate System:
GDA 1994 MGA Zone 54



Date: 03 February 2023

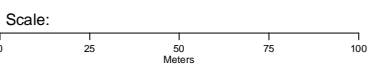
Aerial Imagery 1969

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

-  Site Boundary
-  Buffer 150m



Data Sources Aerial Imagery: © South Australia
Department for Environment & Water

Coordinate System:
GDA 1994 MGA Zone 54



Date: 03 February 2023

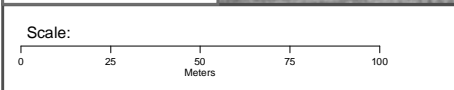
Aerial Imagery 1959

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

-  Site Boundary
-  Buffer 150m



Data Sources Aerial Imagery: © South Australia
Department for Environment & Water

Coordinate System:
GDA 1994 MGA Zone 54

Date: 03 February 2023

Aerial Imagery 1949

Lot 121 Holman Road, Christie Downs, SA 5164





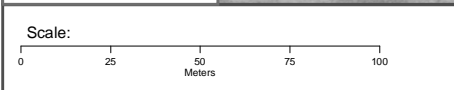
Aerial Imagery 1936

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

-  Site Boundary
-  Buffer 150m



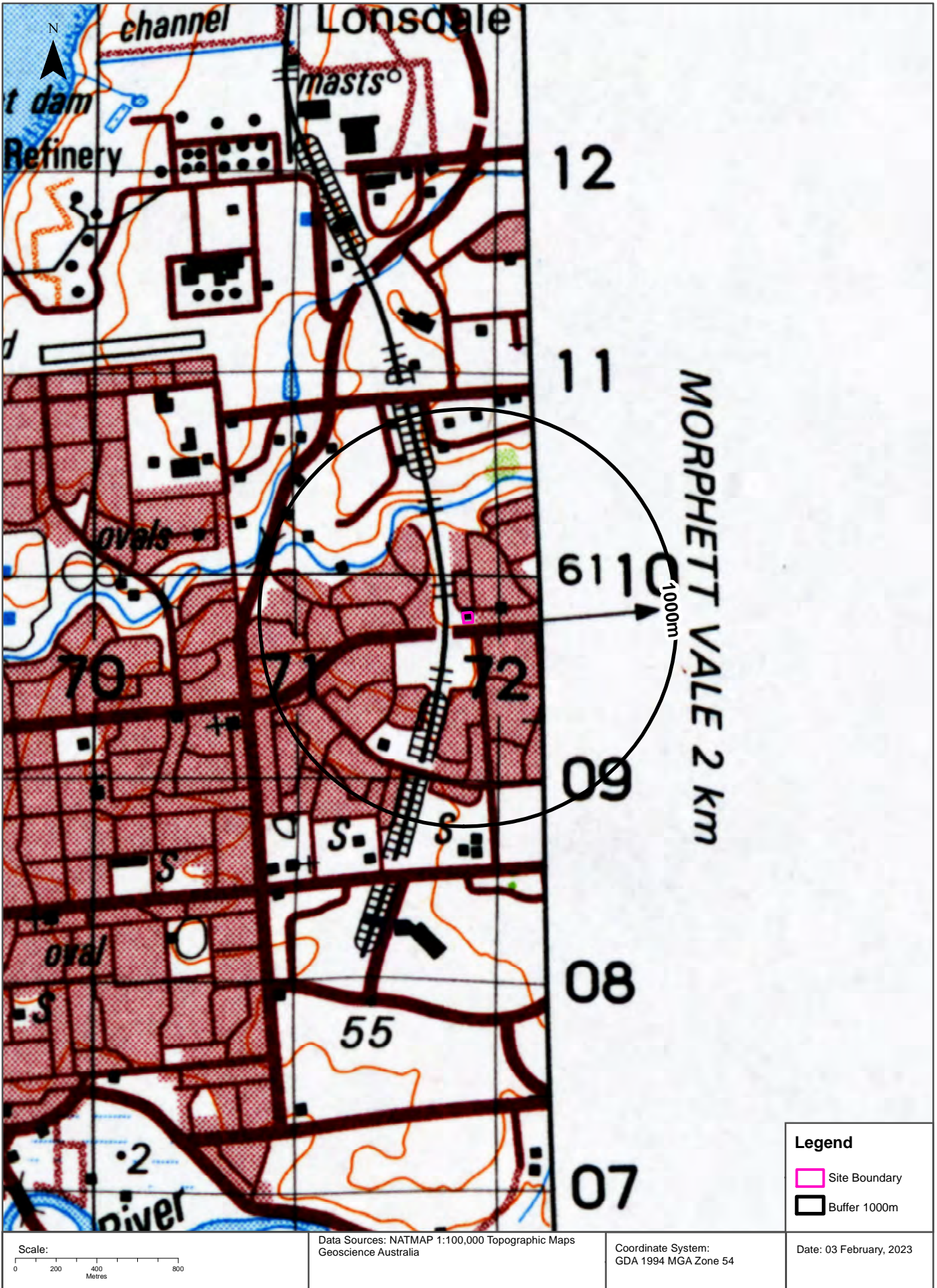
Data Source Aerial Imagery: ©2021 Geoscience Australia

Coordinate System:
GDA 1994 MGA Zone 54

Date: 03 February 2023

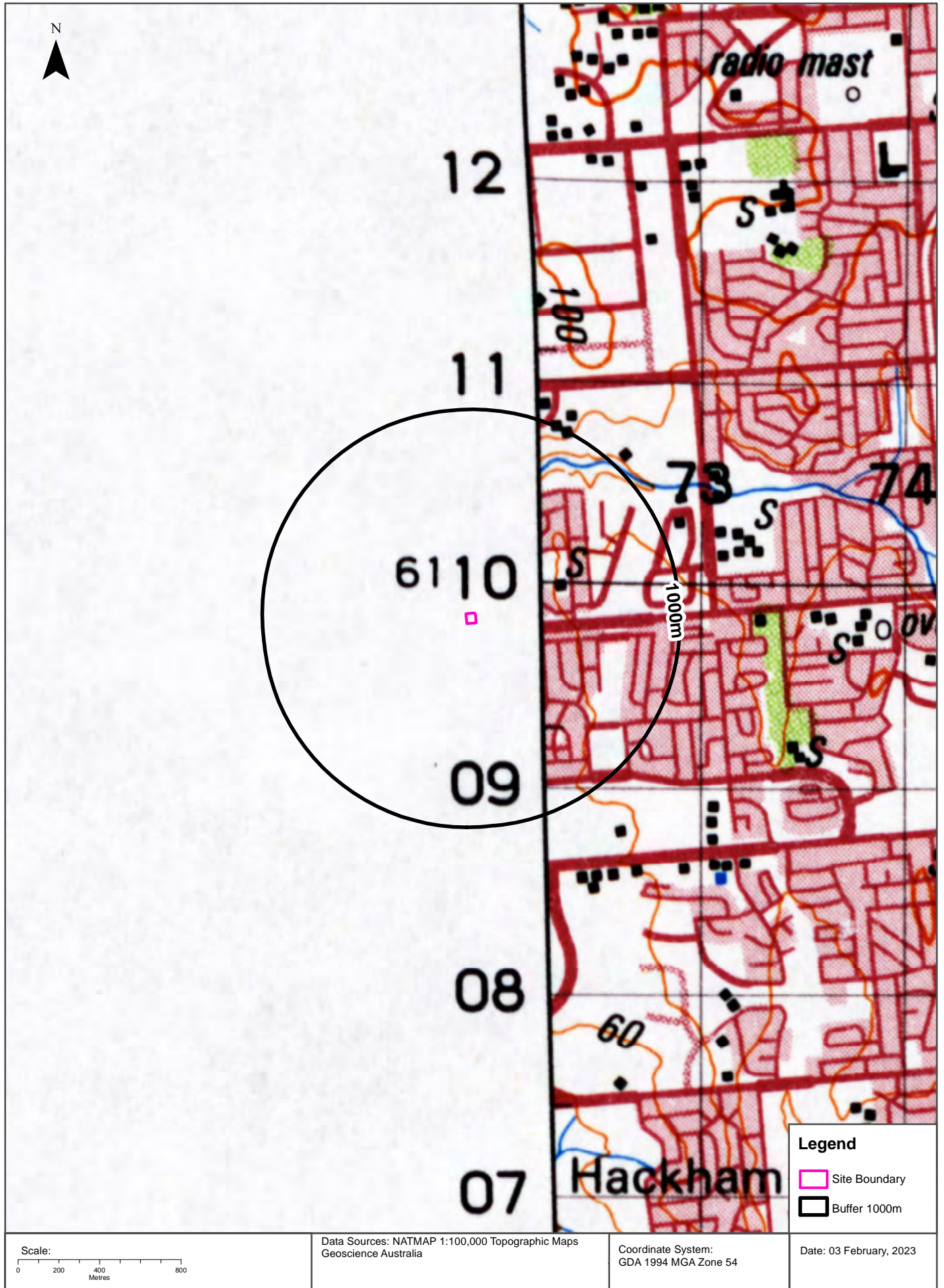
Historical Map 1982

Lot 121 Holman Road, Christie Downs, SA 5164



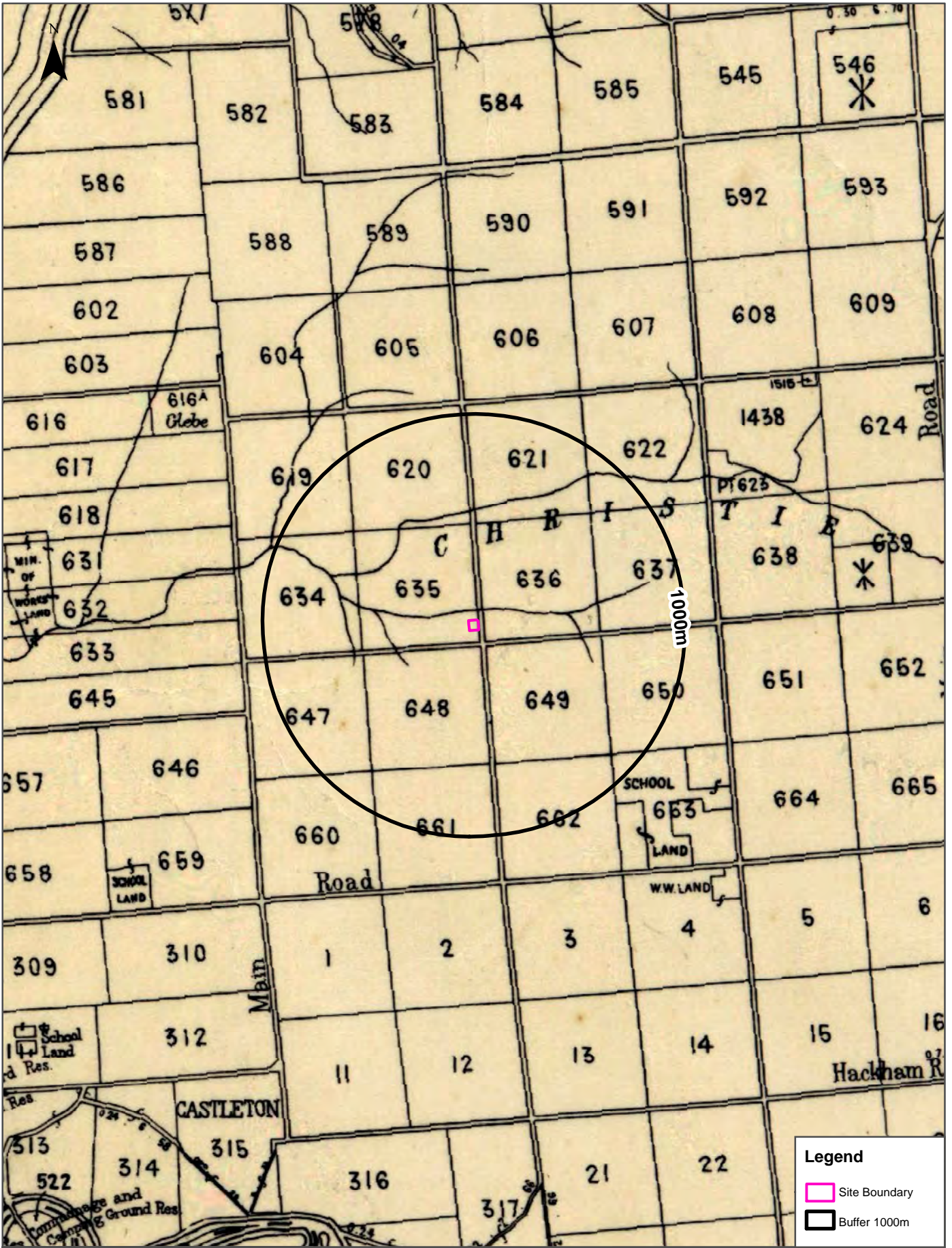
Historical Map 1982

Lot 121 Holman Road, Christie Downs, SA 5164





Historical Map 1962

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

-  Site Boundary
-  Buffer 1000m

Scale:
0 200 400 800
Metres

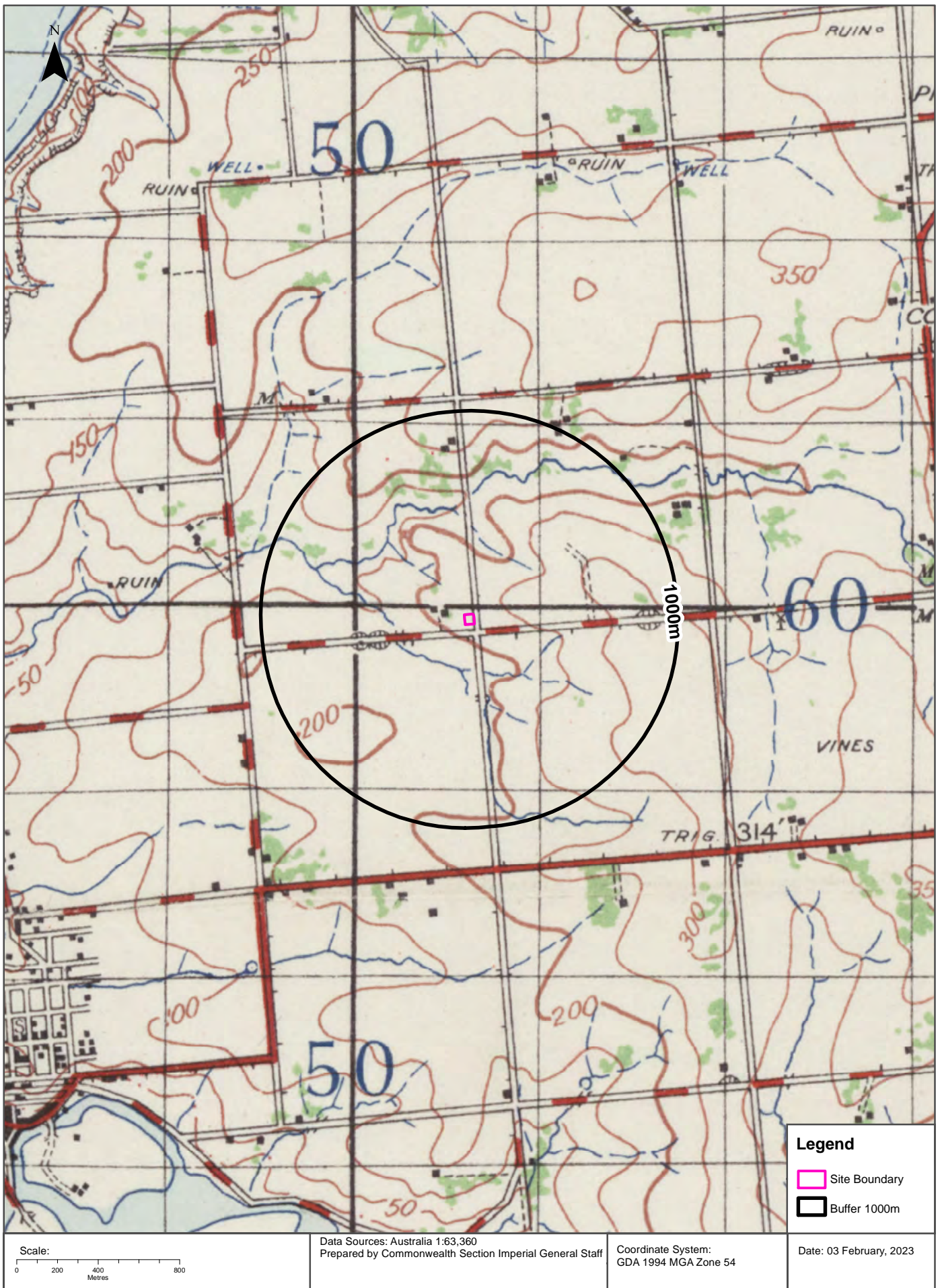
Data Sources: Hundred Map - Noarlunga
Surveyor General's Office, Adelaide

Coordinate System:
GDA 1994 MGA Zone 54

Date: 03 February, 2023

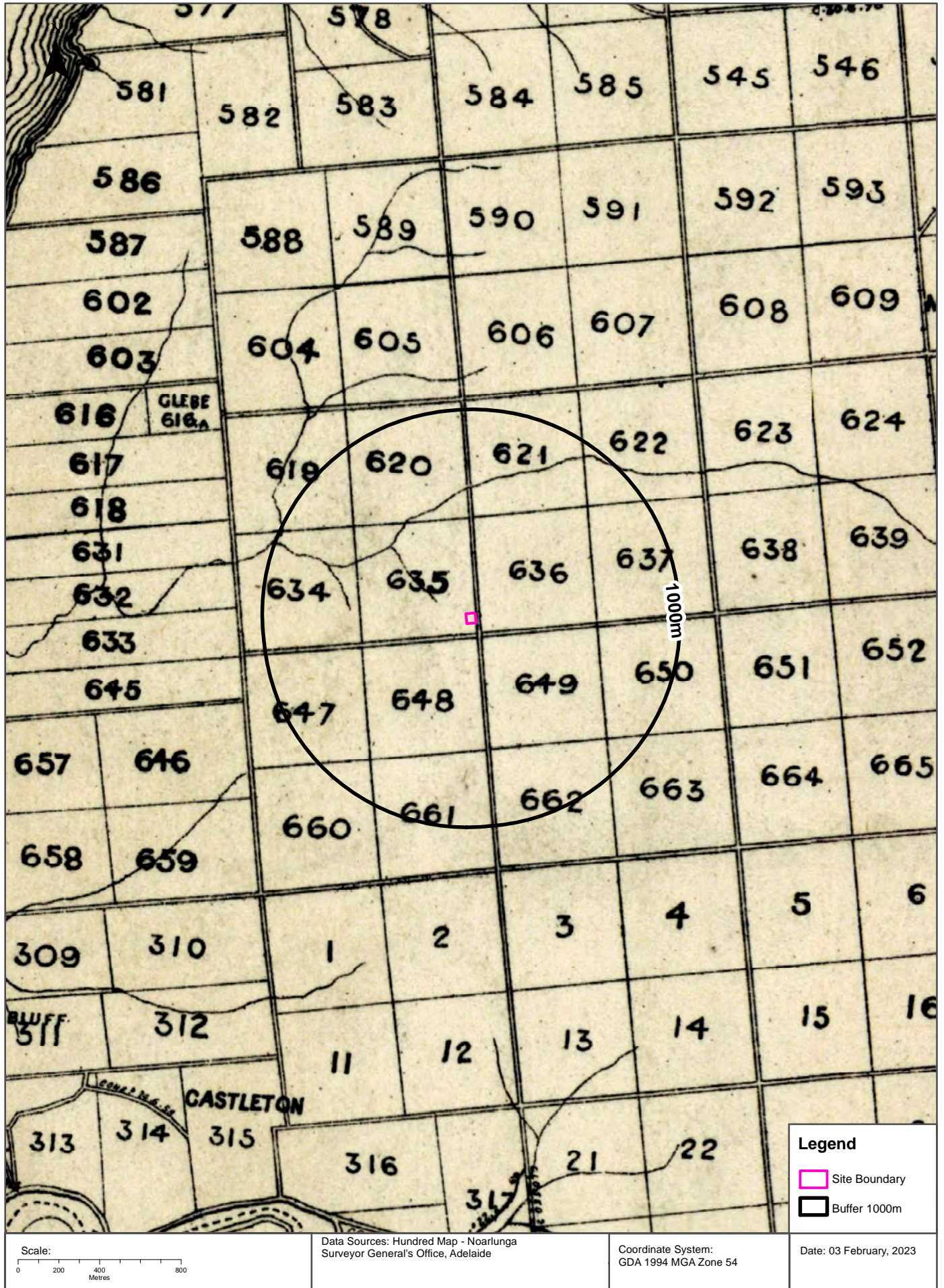
Historical Map c.1937

Lot 121 Holman Road, Christie Downs, SA 5164



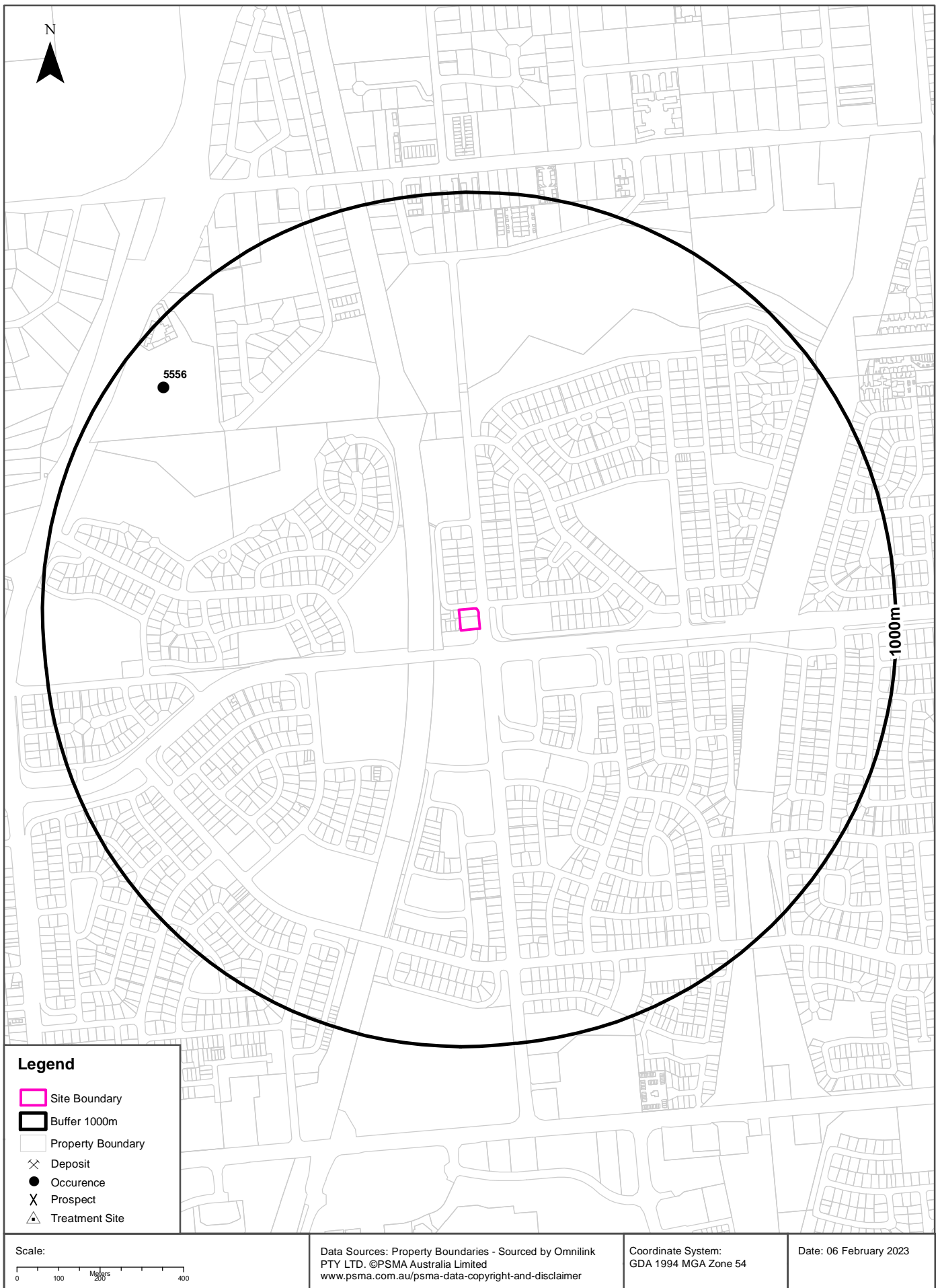
Historical Map 1884

Lot 121 Holman Road, Christie Downs, SA 5164



Mines and Mineral Deposits

Lot 121 Holman Road, Christie Downs, SA 5164



Mining

Lot 121 Holman Road, Christie Downs, SA 5164

Mines and Mineral Deposits

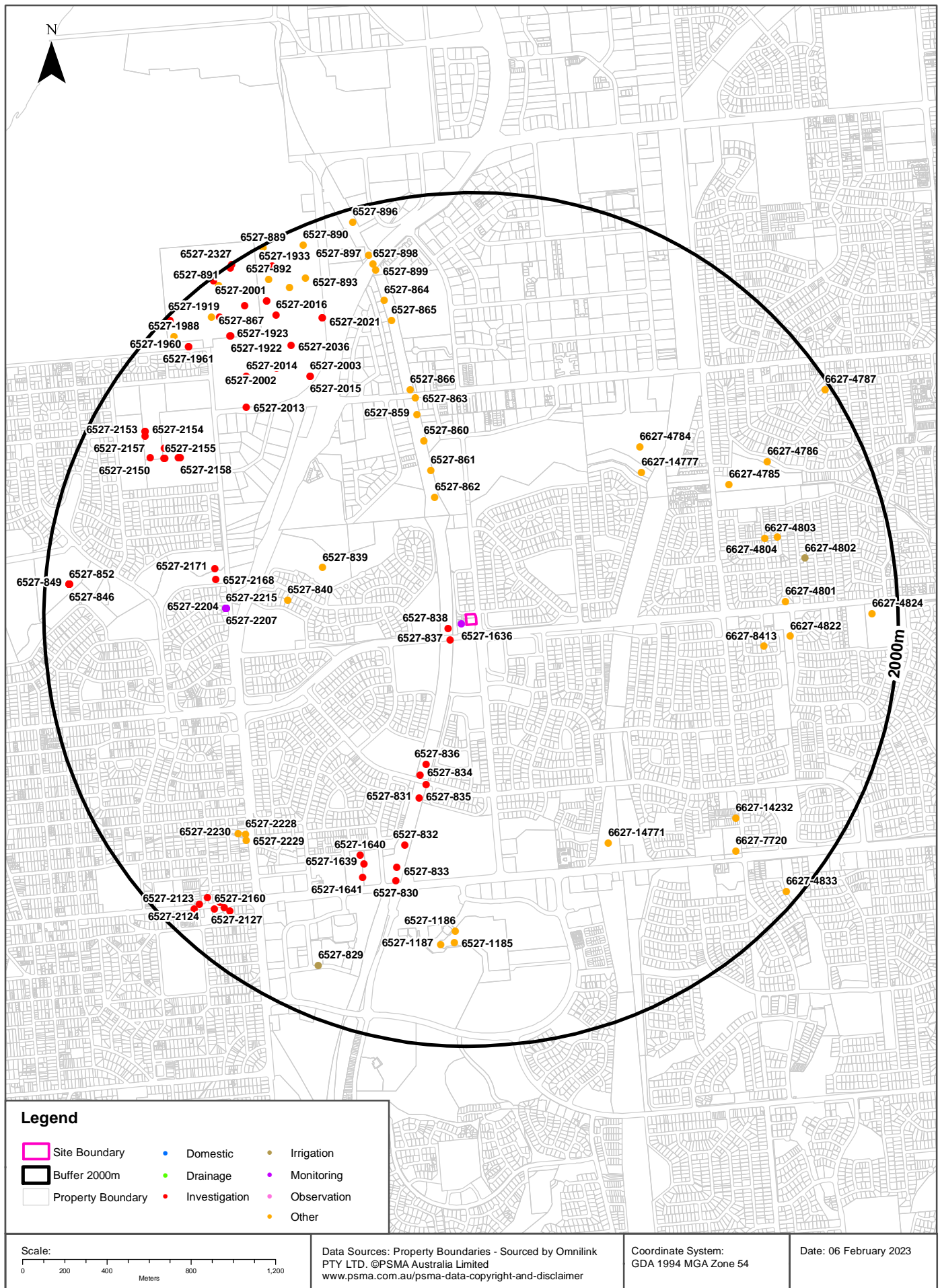
Mines and mineral deposits within the dataset buffer:

Deposit No.	Name	Class	Status	Commodity	Year	Description	Dist	Dir
5556	CHRISTIE CREEK	OCCURRENCE	Rehabilitated	Quartzite	1950	quartzite of the Wilmington Formation quarried in the 1950's and 60's, now rehabilitated.	889m	North West

All Mines and Mineral Deposits Data Source: Dept. of State Development, Resources and Energy - South Australia
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Drillholes

Lot 121 Holman Road, Christie Downs, SA 5164



Groundwater and Drillholes

Lot 121 Holman Road, Christie Downs, SA 5164

Groundwater Aquifers

Groundwater aquifers within the dataset buffer:

Aquifer Code	Description	Distance	Direction
20	Sedimentary Rocks - basins include limestone, often cavernous, sandstone, sand shale and clay	0m	On-site
30	Fractured Rocks - Cambrian and Precambrian rocks - quartzite, sandstone, limestone, dolomite, slate, marble, siltstone, phyllite, schist and gneiss	484m	North West

Groundwater Aquifers Data Source: Dept. of Environment, Water and Natural Resources - South Australia
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Drillholes

Drillholes within the dataset buffer:

Unit No	Drillhole No	Name	Status	Purpose	Drill Date	Max Depth	Ref Elev	Ground Elev	PH	TDS	EC	Yield	DTW	SWL	RSWL	Dist	Dir
6527-1636	206387		Backfilled	Monitoring	2005-07-22	11.50		61.99								25m	South West
6527-838	26834	SAR CB 5	Unknown	Investigation	1972-11-28	14.10		58.81								91m	West
6527-837	26833	SAR CB 6	Unknown	Investigation	1972-11-30	15.60		55.67								107m	South West
6527-862	26858	SAR DH 9	Unknown		1972-03-15	4.00		60.23								573m	North
6527-836	26832	SAR DH 10	Unknown	Investigation	1972-03-17	9.00		54.90								689m	South
6527-861	26857	SAR DH 8	Unknown		1972-03-14	12.00		71.40								703m	North
6527-839	26835		Unknown		1936-07-10	18.90		30.16		6138	10752	1.2600	7.62	7.62	22.54	715m	West
6527-834	26830	SAR CB 7	Unknown	Investigation	1972-12-01	7.70		56.32								748m	South
6527-835	26831	SAR CB 8	Unknown	Investigation	1972-12-05	14.00		56.42								781m	South
6527-840	26836	CREEK	Unknown					48.24		3546	6312					847m	West
6527-860	26856	SAR DH 7	Unknown		1972-03-13	11.50		75.21								848m	North
6527-831	26827	SAR DH 11	Unknown	Investigation	1972-03-16	6.00		54.98								854m	South
6527-859	26855	SAR DH 6	Unknown		1972-03-13	8.50		73.22								975m	North
6627-14777	275358	CHRISTIE CREEK			2012-04-12	60.00				3046	5440	0.2000	8.00	8.00		1037m	North East
6527-863	26859	SAR CB 4	Unknown		1972-11-23	10.00		71.61								1055m	North
6527-832	26828	SAR DH	Unknown	Investigation	1972-03-16	5.50		50.33								1086m	South
6527-866	26862	SAR CB 3	Unknown		1972-11-23	15.25		69.99								1098m	North
6627-4784	43204							60.60		9896	16952					1114m	North East
6527-2204	353865	INJ15		Monitoring	2019-11-25	7.00										1137m	West
6527-2205	353866	INJ16		Monitoring	2019-11-26	6.50										1137m	West

Unit No	Drillhole No	Name	Status	Purpose	Drill Date	Max Depth	Ref Elev	Ground Elev	PH	TDS	EC	Yield	DTW	SWL	RSWL	Dist	Dir
6527-2206	353867	INJ17		Monitoring	2019-12-26	7.00										1137 m	West
6527-2207	353868	INJ18		Monitoring	2019-11-26	7.00										1137 m	West
6527-2208	353869	INJ19		Monitoring	2019-11-27	7.00										1137 m	West
6527-2209	353870	INJ21		Monitoring	2019-11-27	7.00										1137 m	West
6527-2210	353926	INJ28		Monitoring	2019-11-28	7.00										1137 m	West
6527-2211	353927	INJ16		Monitoring	2019-11-29	7.00										1137 m	West
6527-2212	353928	INJ25		Monitoring	2019-11-28	6.00										1137 m	West
6527-2213	353929	INJ24		Monitoring	2019-11-28	7.00										1137 m	West
6527-2214	353930	INJ22		Monitoring	2019-11-28	7.00										1137 m	West
6527-2215	353931	INJ20		Monitoring	2019-11-27	6.80										1137 m	West
6527-2216	353932	INJ14		Monitoring	2019-11-25	7.00										1137 m	West
6527-2217	353933	INJ13		Monitoring	2019-11-25	7.50										1137 m	West
6527-2219	354047	INJ23		Monitoring	2019-11-28	7.00										1137 m	West
6527-2220	354048	INJ27		Monitoring	2019-11-29	7.00										1137 m	West
6527-2168	335287			Investigation	2020-02-26	25.00										1197 m	West
6527-833	26829	SAR DH 13	Unknown	Investigation	1972-03-16	6.00		49.99								1198 m	South
6527-1640	212229	BH 2		Investigation		22.00		50.00		6407	11180		15.50	15.50	34.50	1204 m	South West
6527-2171	335290			Investigation	2020-01-25	21.30										1209 m	West
6627-14771	275348		Backfilled		2012-04-19	35.00										1215 m	South East
6527-1639	212228	BH 1		Investigation	2006-02-06	22.00		50.02		6344	11070		16.50	16.50	33.52	1235 m	South West
6527-830	26826	SAR CB 9	Unknown	Investigation	1972-12-07	20.70		52.51								1261 m	South
6527-1641	212230	BH 3		Investigation	2006-02-07	22.00		50.13		10939	18570		16.50	16.50	33.63	1296 m	South West
6527-2003	272040	GW 35		Investigation	2012-09-26	5.60										1347 m	North West
6527-2015	272053	GW 34		Investigation	2012-10-04	30.00										1347 m	North West
6627-4785	43205							60.03		5069	8933					1352 m	North East
6627-8413	46833				1991-07-07	7.00		74.50					0.00	0.00	74.50	1366 m	East
6627-4803	43223		Not In Use					65.93		5455	9591					1419 m	East
6527-2013	272051	GW 37		Investigation	2012-09-27	1.40										1432 m	North West
6527-865	26861	SAR DH 5	Unknown		1972-03-10	8.30		70.73								1437 m	North
6527-2228	355338		Dry	Environmental	2021-06-01	14.00										1445 m	South West
6527-1186	148217	NOARLU NGA CC 3	Unknown		1978-11-22	5.00	53.80									1455 m	South
6527-2229	355339		Dry	Environmental	2021-06-02	14.00										1463 m	South West
6627-4801	43221					60.35		69.47		1371	2478	2.5300	9.14	9.14	60.33	1469 m	East
6527-2230	355340		Dry	Environmental	2021-05-31	15.50										1470 m	South West

Unit No	Drillhole No	Name	Status	Purpose	Drill Date	Max Depth	Ref Elev	Ground Elev	PH	TDS	EC	Yield	DTW	SWL	RSWL	Dist	Dir
6527-2002	272039	GW 33		Investigation	2012-09-27	11.30										1471 m	North West
6627-4804	43224		Not In Use					65.07		6240	10931					1478 m	East
6627-4822	43242		Backfilled			12.19		72.18		2870	5132					1488 m	East
6527-1185	148216	NOARLU NGA CC 1	Unknown		1978-11-21	7.70	59.70									1510 m	South
6527-2036	274286	GW 32		Investigation	2012-09-26	10.70										1520 m	North West
6527-1187	148218	NOARLU NGA CC 8	Unknown		1978-11-24	8.00	53.80									1524 m	South
6527-2014	272052	GW 36		Investigation	2012-10-08	33.00										1534 m	North West
6627-14232	255916		Backfilled			10.00										1539 m	South East
6527-864	26860	SAR DH 4	Unknown		1972-03-09	5.50		70.26								1542 m	North
6527-2158	313184			Investigation	2018-09-15	6.00										1543 m	North West
6527-2152	313167			Investigation	2018-09-22	35.00										1551 m	North West
6527-2012	272050	GW 39		Investigation	2012-09-28	1.00										1563 m	North West
6527-2021	272263	GW 38		Investigation	2012-11-09	30.00										1563 m	North West
6627-4786	43206					6.40		64.55		4470	7909		2.13	2.13	62.42	1564 m	North East
6627-4802	43222		Operational	Irrigation		67.06		69.83		1642	2961	3.7900	12.19	12.19	57.64	1584 m	East
6527-2155	313171			Investigation	2018-09-11	6.00										1606 m	North West
6527-2151	313166			Investigation	2018-09-20	35.00										1611 m	North West
6527-2156	313172			Investigation	2018-09-11	6.00										1632 m	North West
6627-7720	46140				1987-03-18	112.00		95.14	8.00	3001	5360	2.7500	43.00	43.00	52.14	1637 m	South East
6527-2150	313164			Investigation	2018-09-10	6.00										1670 m	North West
6527-2016	272054	GW 31		Investigation	2012-09-25	10.70										1681 m	North West
6527-899	26895	SAR CB 2	Unknown		1972-11-22	4.60		69.96								1687 m	North
6527-898	26894	SAR CB 1A	Unknown		1972-12-08	5.95		69.46					0.90	0.90	68.56	1722 m	North
6527-1922	264252	GW 25	Dry	Investigation	2010-10-28	6.80										1728 m	North West
6527-1923	264253	GW 24		Investigation	2010-11-25	43.80				3303	5890		36.50	36.50		1732 m	North West
6527-2157	313173			Investigation	2018-09-10	6.00										1740 m	North West
6527-2153	313168			Investigation	2018-09-18	33.00										1749 m	North West
6527-2154	313170			Investigation	2018-09-17	31.20										1749 m	North West
6527-2001	272038	GW 28		Investigation	2012-10-11	38.00										1761 m	North West
6527-2010	272048	GW 29		Investigation	2012-10-02	5.60										1761 m	North West
6527-2011	272049	GW 30			2012-09-28	8.60										1761 m	North West
6527-2125	291398	MW 11		Investigation	2016-10-20	4.00							2.00	2.00		1762 m	South West
6527-2163	316003			Investigation	2018-11-05	4.00										1762 m	South West

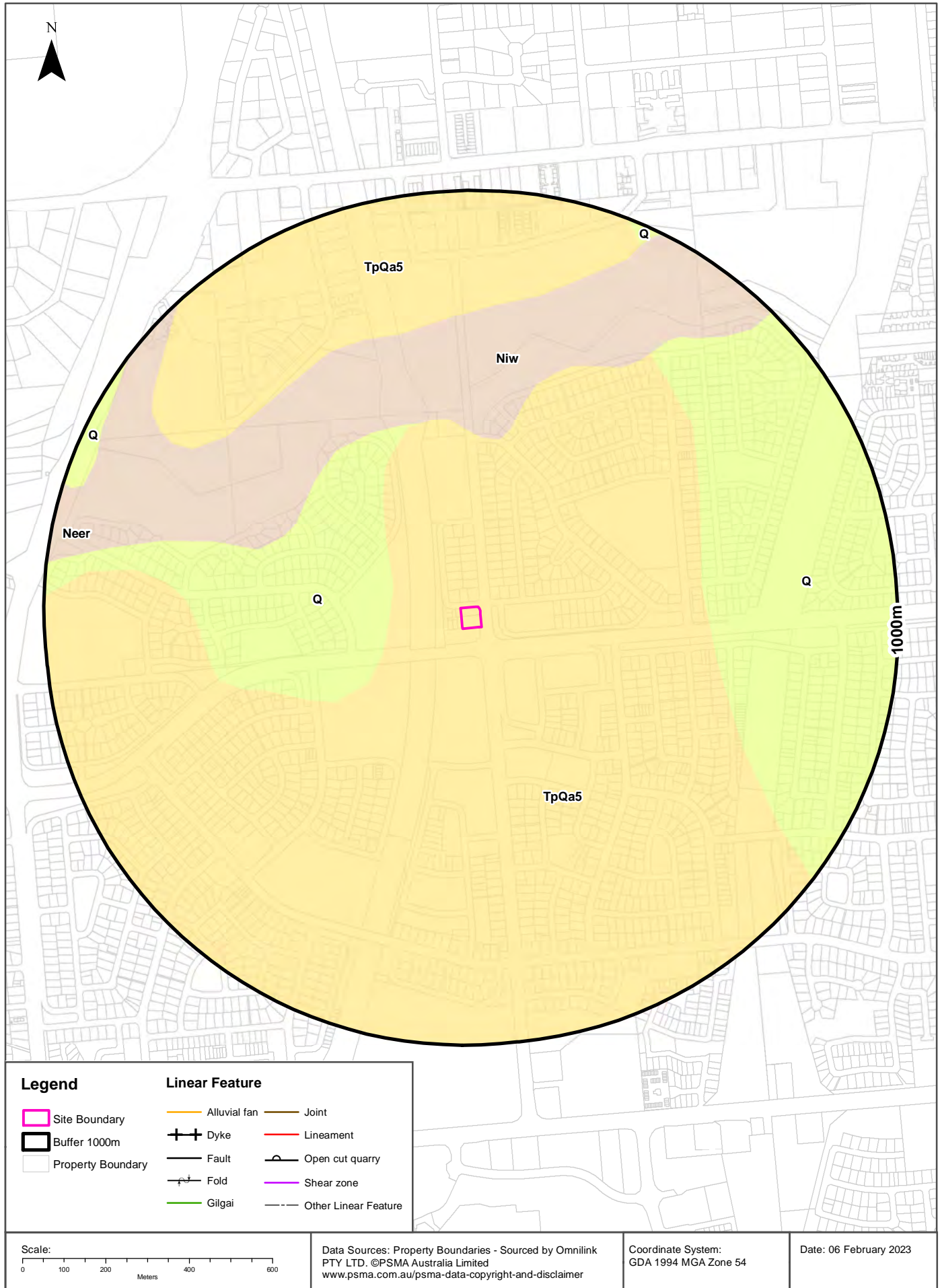
Unit No	Drillhole No	Name	Status	Purpose	Drill Date	Max Depth	Ref Elev	Ground Elev	PH	TDS	EC	Yield	DTW	SWL	RSWL	Dist	Dir
6527-829	26825		Unknown	Irrigation	1944-09-22	12.95		41.17		951	1724		10.97	10.97	30.20	1763 m	South West
6527-897	26893	SAR CB 1	Unknown		1972-11-21	8.80		70.66								1764 m	North
6527-893	26889	VACUUM OIL CO.	Abandoned		1960-06-17	3.05		62.55								1768 m	North West
6527-2127	291400	MW 13		Investigation	2016-10-21	4.00							2.00	2.00		1769 m	South West
6527-2126	291399	MW 12		Investigation	2016-10-20	4.00							2.00	2.00		1784 m	South West
6527-1921	264251	GW 27		Investigation	2010-10-22	3.80										1802 m	North West
6527-2160	314647			Investigation	2018-09-28	4.00										1804 m	South West
6527-1960	270413	GW 95	Dry	Investigation	2012-04-04	5.50										1830 m	North West
6527-1961	270414	GW 96		Investigation	2012-04-20	40.50							40.50	40.50		1830 m	North West
6527-1919	264085	GW 66		Investigation	2011-03-09	4.60							2.00	2.00		1832 m	North West
6527-2124	291397			Investigation	2016-10-20	4.00							2.00	2.00		1834 m	South West
6527-892	26888	VACUUM OIL CO.	Abandoned		1960-06-16	15.24		64.81								1842 m	North West
6527-867	26863	VACUUM OIL CO.	Abandoned		1960-07-20	7.62		70.83								1858 m	North West
6527-2123	291396	MW 9		Investigation	2016-10-20	4.10										1868 m	South West
6627-4824	43244	FLAXMILL PRIMARY			1967-12-21	64.00		87.65	7.70	80	146	1.5200	17.00	17.00	70.65	1877 m	East
6527-845	26841	E & W S DEPT	Unknown	Investigation	1966-09-19	12.65		20.24								1885 m	West
6527-846	26842	E. + W.S. DEPT.	Unknown	Investigation	1966-09-20	10.82		20.24								1885 m	West
6527-847	26843	E. + W.S. DEPT.	Unknown	Investigation	1966-09-21	4.88		20.24								1885 m	West
6527-848	26844	E. + W.S. DEPT.	Unknown	Investigation	1966-09-23	10.67		20.24					8.84	8.84	11.40	1885 m	West
6527-849	26845	E. + W.S. DEPT.	Unknown	Investigation	1966-09-27	7.92		20.24								1885 m	West
6527-850	26846	E. + W.S. DEPT.	Unknown	Investigation	1966-09-28	13.41		20.24								1885 m	West
6527-851	26847	E. + W.S. DEPT.	Unknown	Investigation	1966-10-04	14.02		20.24								1885 m	West
6527-852	26848	E. + W.S. DEPT.	Unknown	Investigation	1966-10-06	10.82		20.24								1885 m	West
6527-853	26849	E. & W.S. DEPT	Unknown	Investigation	1966-10-11	18.29		20.24								1885 m	West
6527-1933	264263	GW 23		Investigation	2010-10-27	7.60										1890 m	North West
6527-1988	270760	MW 126	Backfilled													1912 m	North West
6527-890	26886	VACUUM OIL CO.	Abandoned		1960-06-15	2.59		74.65								1913 m	North West
6527-896	26892	SAR DH 3	Unknown		1972-03-08	7.50		78.65								1937 m	North
6627-4833	43253							82.15								1943 m	South East
6527-891	26887	VACUUM OIL CO.	Abandoned		1960-06-16	9.75		71.30								1950 m	North West
6627-4787	43207					121.92		101.16		5398	9495	1.2600	30.48	30.48	70.68	1972 m	North East
6527-1918	264084	GW 65		Investigation	2011-03-09	5.80							3.00	3.00		1979 m	North West
6527-2092	285039	GW 153		Investigation	2015-03-24	42.00							38.00	38.00		1984 m	North West
6527-1916	264082	GW63	Backfilled	Investigation	2011-03-03	4.50										1987 m	North West

Unit No	Drillhole No	Name	Status	Purpose	Drill Date	Max Depth	Ref Elev	Ground Elev	PH	TDS	EC	Yield	DTW	SWL	RSWL	Dist	Dir
6527-889	26885	VACUUM OIL CO.	Abandoned		1960-06-16	12.19		73.69								1987 m	North West
6527-2327	365918	GW173	Backfilled	Investigation		43.00							37.10	37.10		1997 m	North West

Drillholes Data Source: Dept of Environment, Water and Natural Resources - South Australia
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Geology 1:100,000

Lot 121 Holman Road, Christie Downs, SA 5164

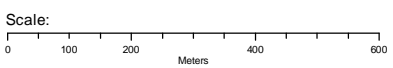


Legend

- Site Boundary
- Buffer 1000m
- Property Boundary

Linear Feature

- Alluvial fan
- Joint
- Dyke
- Lineament
- Fault
- Open cut quarry
- Fold
- Shear zone
- Gilgai
- Other Linear Feature



Data Sources: Property Boundaries - Sourced by Omnilink PTY LTD. ©PSMA Australia Limited
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Coordinate System:
 GDA 1994 MGA Zone 54

Date: 06 February 2023

Geology

Lot 121 Holman Road, Christie Downs, SA 5164

Surface Geology 1:100,000

Surface Geology Units within the dataset buffer:

Map Unit Code	Name	Description	Parent Name	Province	Age	Min Age	Max Age	Dist	Dir
TpQa5	Unnamed GIS Unit - see description	Hindmarsh Clay, Carisbrooke Sand, Ochre Cove Fmn, Seaford Fmn: ADELAIDE/BARKER digital database.	Unnamed GIS Unit - see description	UNKNOWN	PLIOCENE- PLEISTOCENE	Pleistocene	Pliocene	0m	On-site
Q	Unnamed GIS Unit - see description	Undifferentiated Quaternary rocks.		UNKNOWN	PLEISTOCENE- HOLOCENE	Quaternary	Quaternary	167m	West
Niw	Wilmington Formation	Sandstone, red, grey, with grit bands and gritty limestone; siltstone, red, gritty.	Upalinna Subgroup	ADELAIDE GEOSYNCLINE	NEOPROTERO ZOIC	Marinoan	Marinoan	405m	North
Neer	Reynella Siltstone Member	Siltstone, red, gritty, glacialigenic?.	Elatina Formation	ADELAIDE GEOSYNCLINE	NEOPROTERO ZOIC	Marinoan	Marinoan	859m	West

Geology Data Source: Dept of Environment, Water and Natural Resources - South Australia

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Linear Structures 1:100,000

Linear geological structures within the dataset buffer:

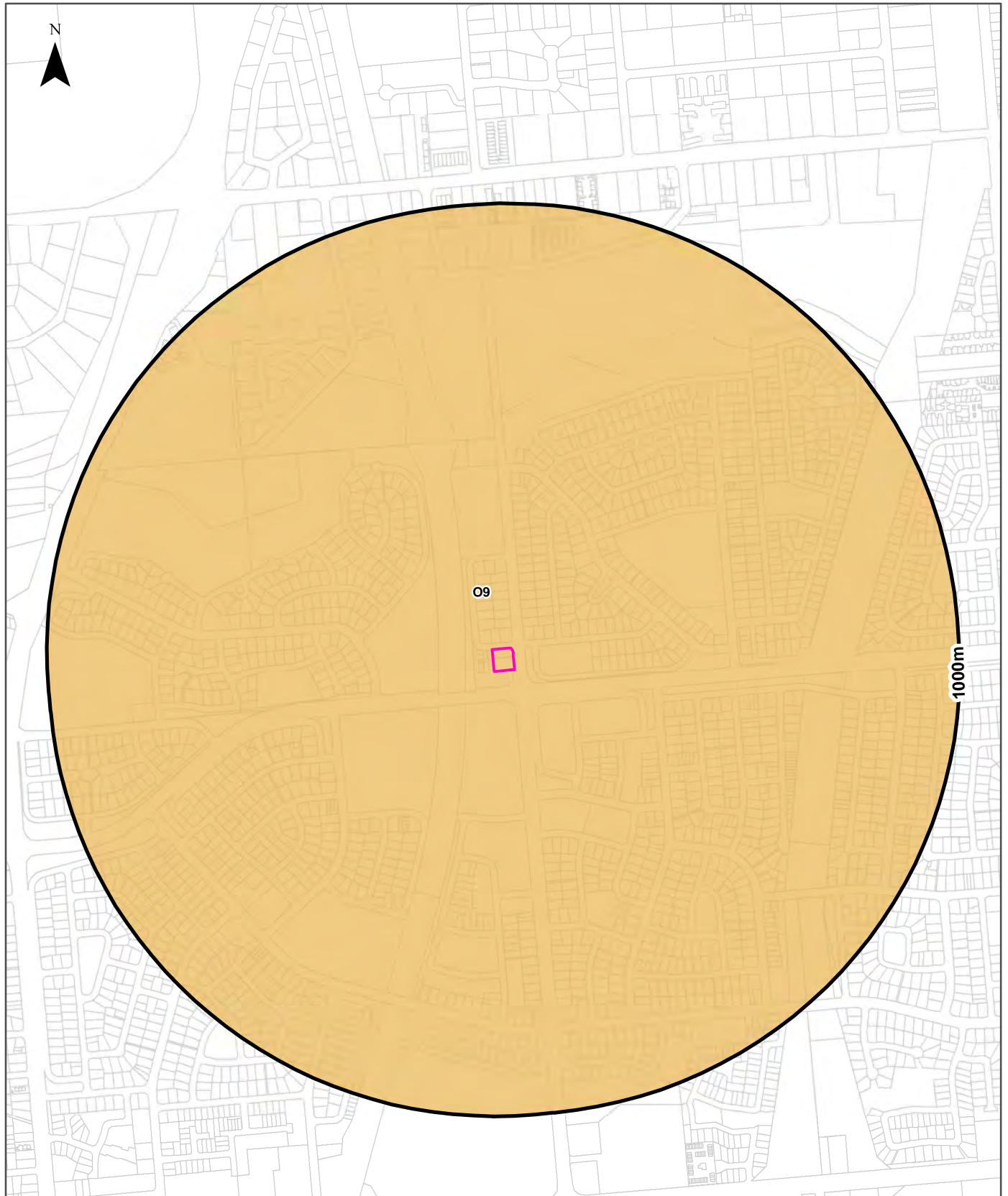
Map Code	Description	Distance	Direction
N/A	No records in buffer		

Geology Data Source: Dept of Environment, Water and Natural Resources - South Australia

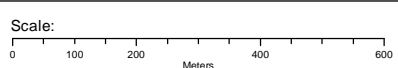
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Atlas of Australian Soils

Lot 121 Holman Road, Christie Downs, SA 5164



Legend		Australian Soil Classification Orders					
Site Boundary	Anthrosol	Dermosol	Kandosol	Podosol	Tenosol	No Data	
Buffer 1000m	Calcarosol	Ferrosol	Kurosol	Rudosol	Vertosol		
Property Boundary	Chromosol	Hydrosol	Organosol	Sodosol	Lake		



Data Sources: Property Boundaries - Sourced by Omnilink PTY LTD. ©PSMA Australia Limited
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Coordinate System:
GDA 1994 MGA Zone 54

Date: 06 February 2023

Soils

Lot 121 Holman Road, Christie Downs, SA 5164

Atlas of Australian Soils

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

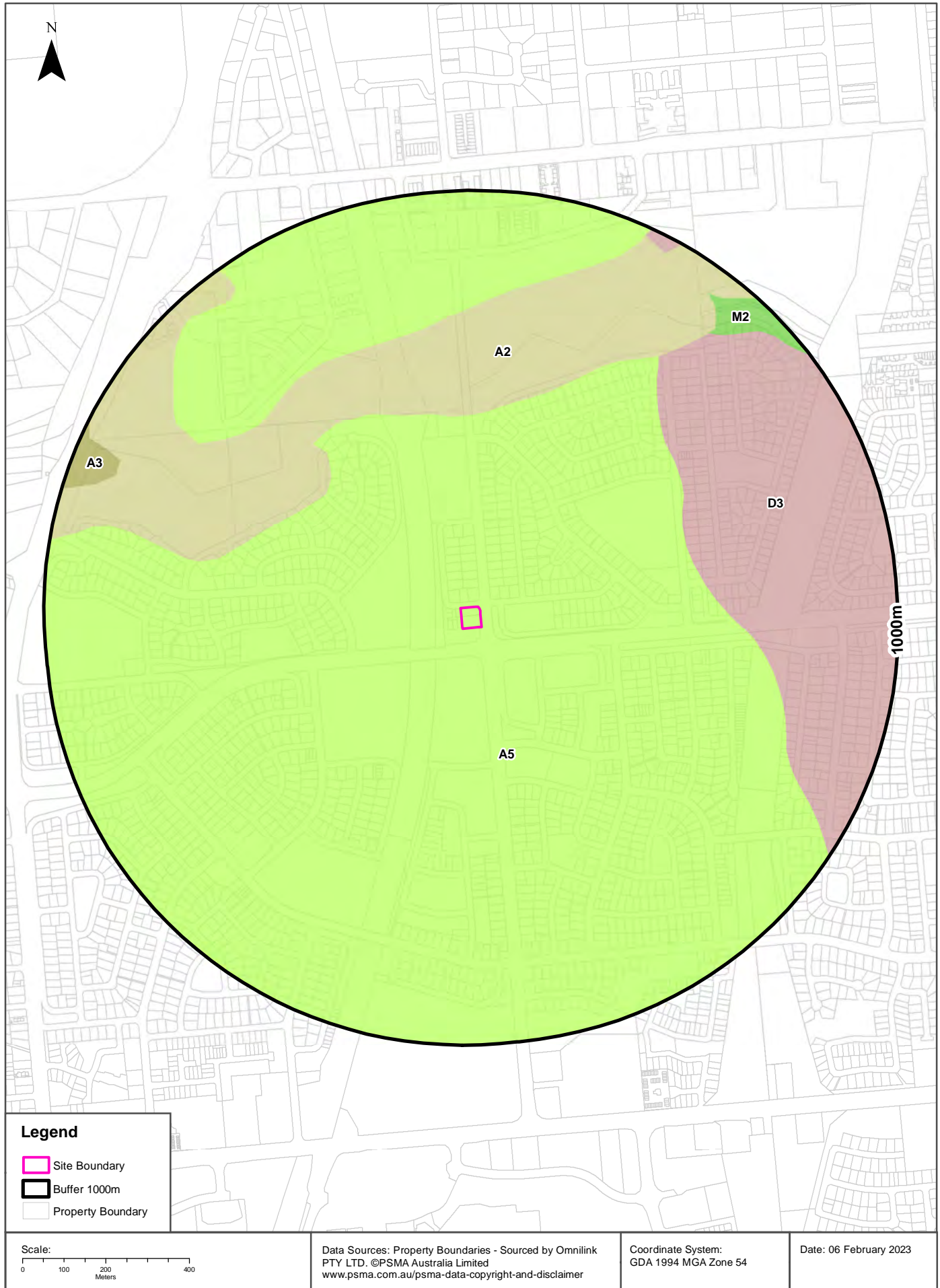
Map Unit Code	Soil Order	Map Unit Description	Distance	Direction
O9	Chromosol	Undulating: soils as for O8 but the proportion of cracking clays (Ug5) and sandy alkaline yellow mottled soils (Dy5) is larger; hard alkaline yellow mottled soils (Dy3.43) and leached sands (Uc2.2) occur in small areas also.	0m	On-site

Atlas of Australian Soils Data Source: CSIRO

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Soil Types

Lot 121 Holman Road, Christie Downs, SA 5164



Soils

Lot 121 Holman Road, Christie Downs, SA 5164

Soil Types

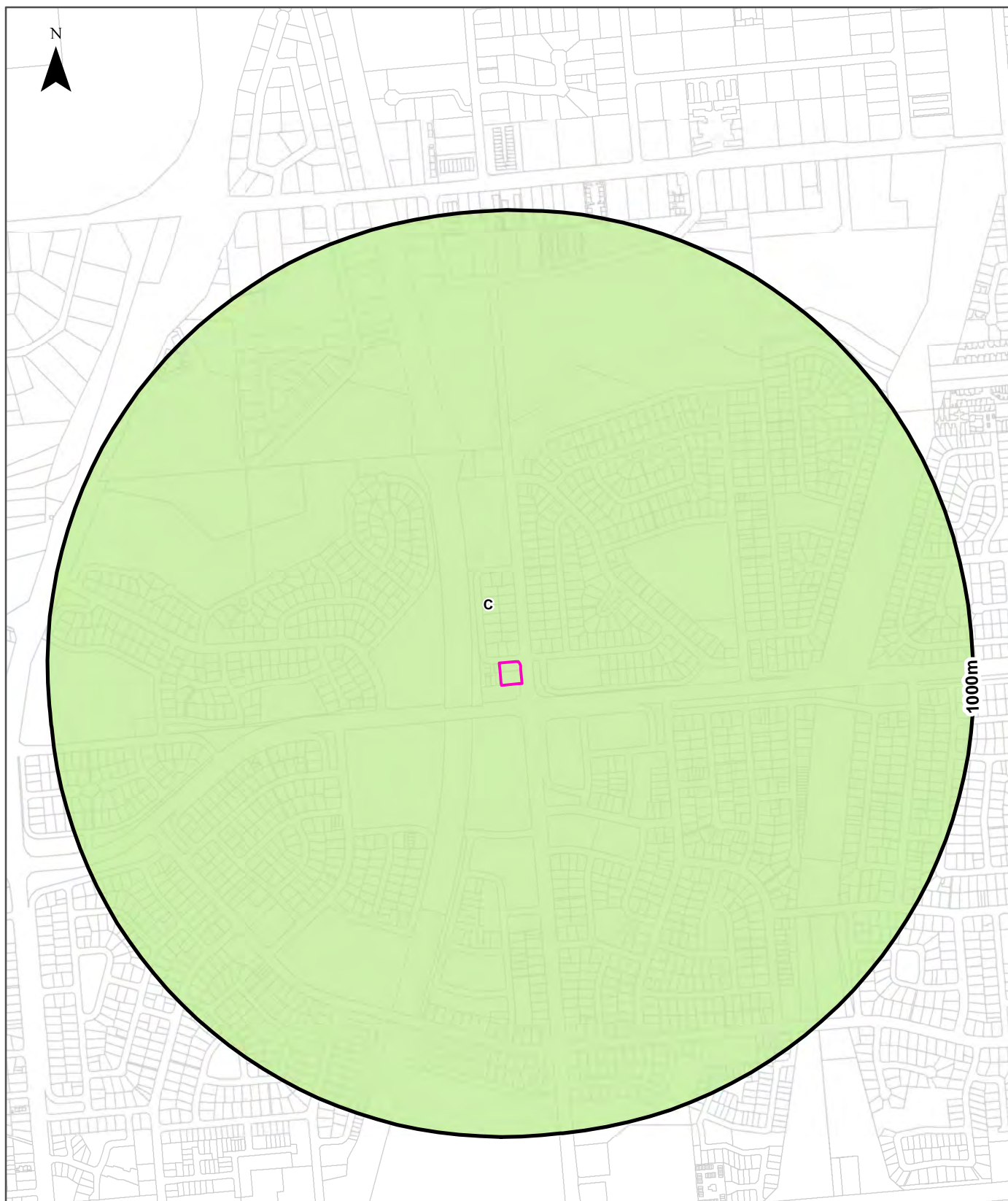
Soil types within the dataset buffer:

Map category code	Soil type description	Distance	Direction
A5	Calcareous loam on clay	0m	On-site
A2	Calcareous loam on rock	425m	North West
D3	Loam over poorly structured red clay	517m	East
M2	Deep friable gradational clay loam	857m	North East
A3	Moderately calcareous loam	888m	West

Soil Types Data Source: Dept of Environment, Water and Natural Resources - South Australia
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Atlas of Australian Acid Sulfate Soils

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

Site Boundary

Buffer 1000m

Property Boundary

Probability of occurrence of Acid Sulfate Soils

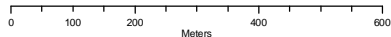
A. High (>70%)

B. Low (6-70%)

C. Extremely Low (1-5%)

D. No Chance (0%)

Scale:



Data Sources: Property Boundaries - Sourced by Omnilink
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Coordinate System:
GDA 1994 MGA Zone 54

Date: 06 February 2023

Acid Sulfate Soils

Lot 121 Holman Road, Christie Downs, SA 5164

Atlas of Australian Acid Sulfate Soils

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

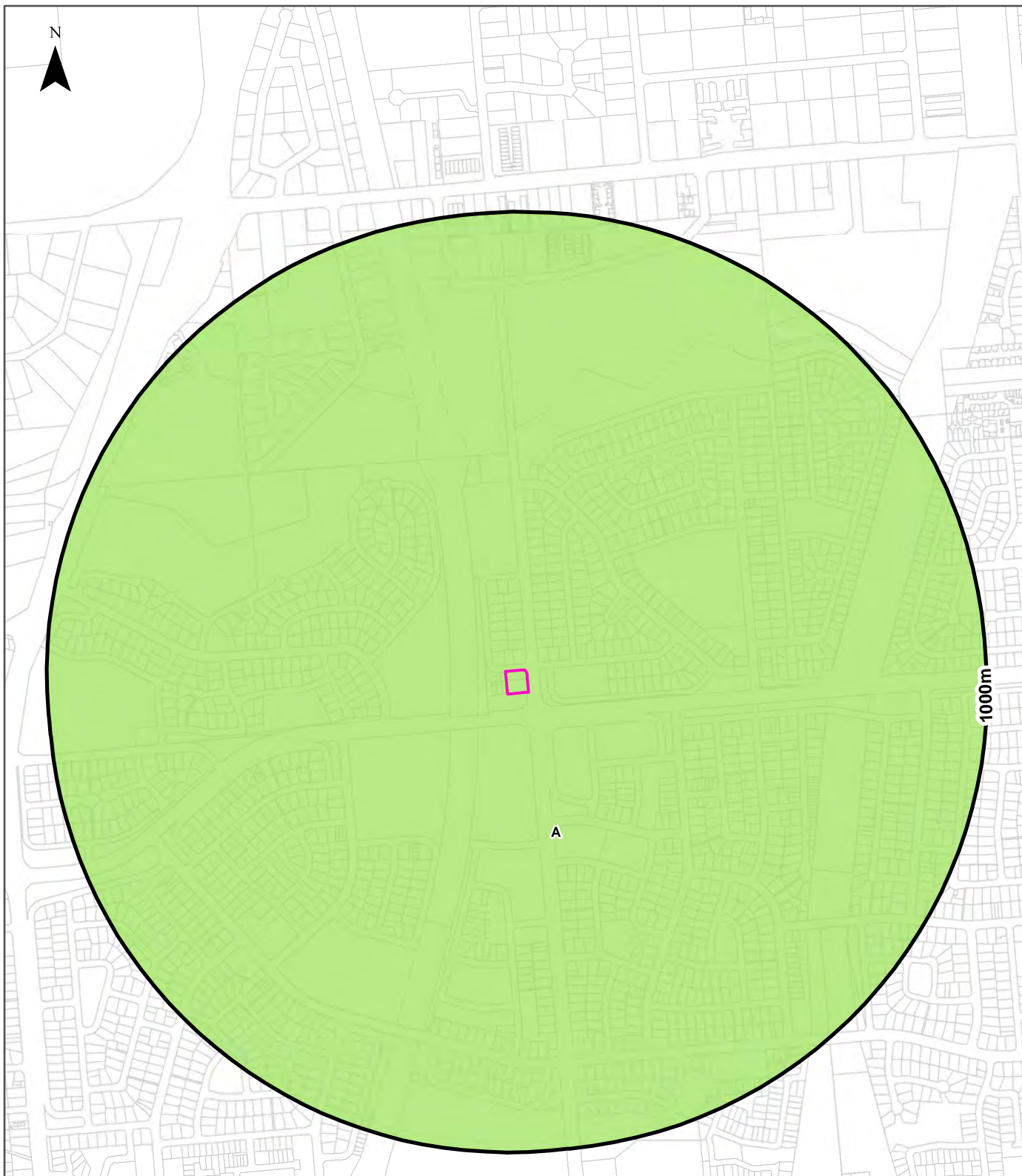
Class	Description	Distance	Direction
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m	On-site

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

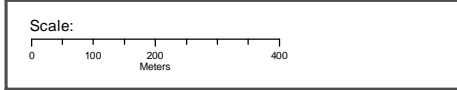
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Acid Sulfate Soils Potential

Lot 121 Holman Road, Christie Downs, SA 5164



Legend		Proportion of land susceptible to the development of Acid Sulfate Soils	
	Site Boundary		Negligible
	Buffer 1000m		1-10%
	Property Boundary		10-30%
			30-60%
			More than 60%
			Incomplete data (usually wet inland areas)
			Not applicable - No assessment/analysis



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GDA 1994 MGA Zone 54

Date: 06 February 2023

Acid Sulfate Soils

Lot 121 Holman Road, Christie Downs, SA 5164

Acid Sulfate Soil Potential

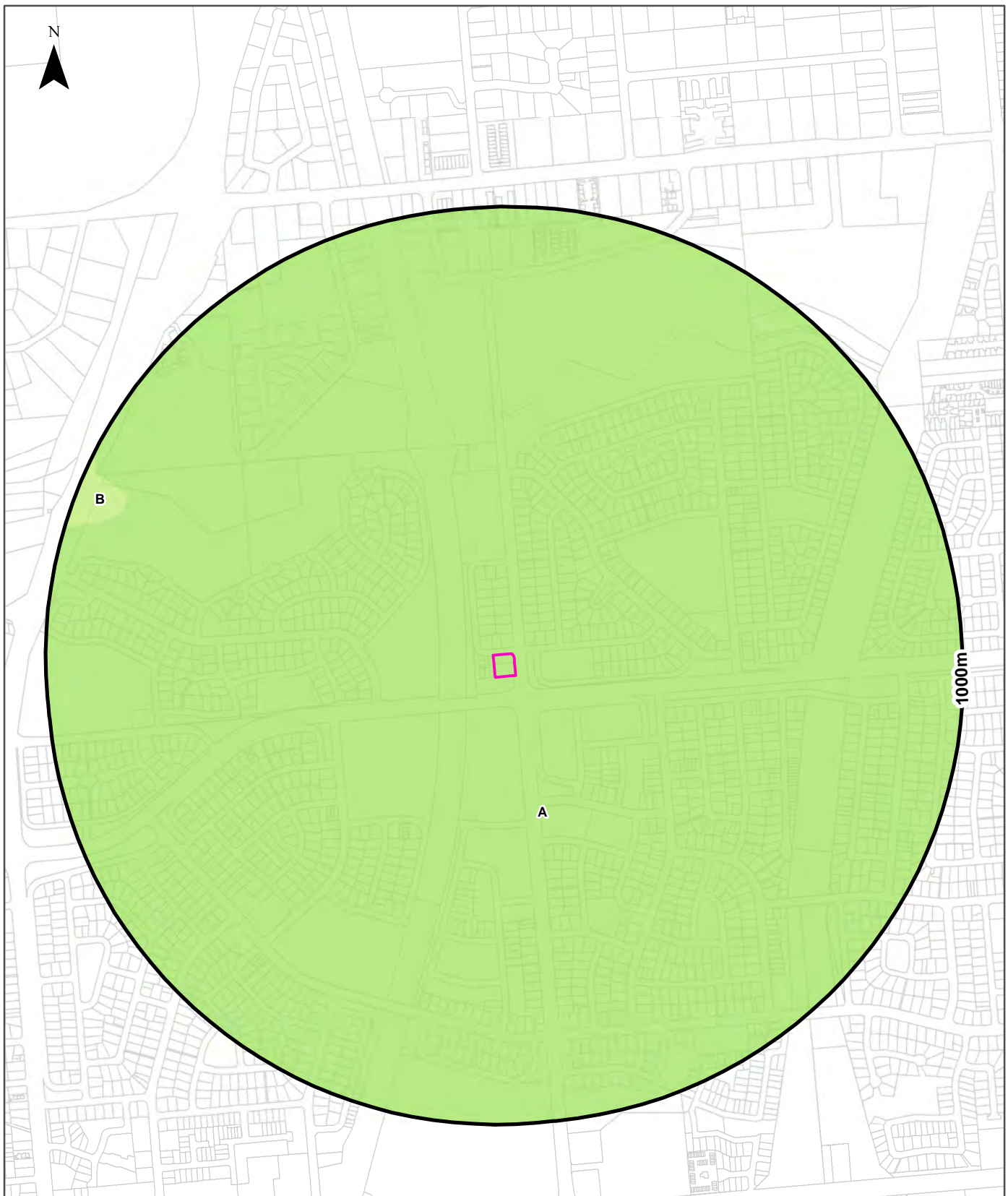
Acid sulfate soil potential within the dataset buffer:

Map category code	Proportion of land susceptible to the development of acid sulfate soils	Distance	Direction
A	Negligible	0m	On-site

Acid Sulfate Soils Data Source: Dept of Environment, Water and Natural Resources - South Australia
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Soil Salinity - Watertable Induced

Lot 121 Holman Road, Christie Downs, SA 5164



Legend		Severity of watertable induced soil salinity					
	Site Boundary		A. Negligible		D. Moderately high		G. Very high to extreme
	Buffer 1000m		B. Moderately low		E. Moderately high to high		X. Not applicable
	Property Boundary		C. Moderate		F. High		



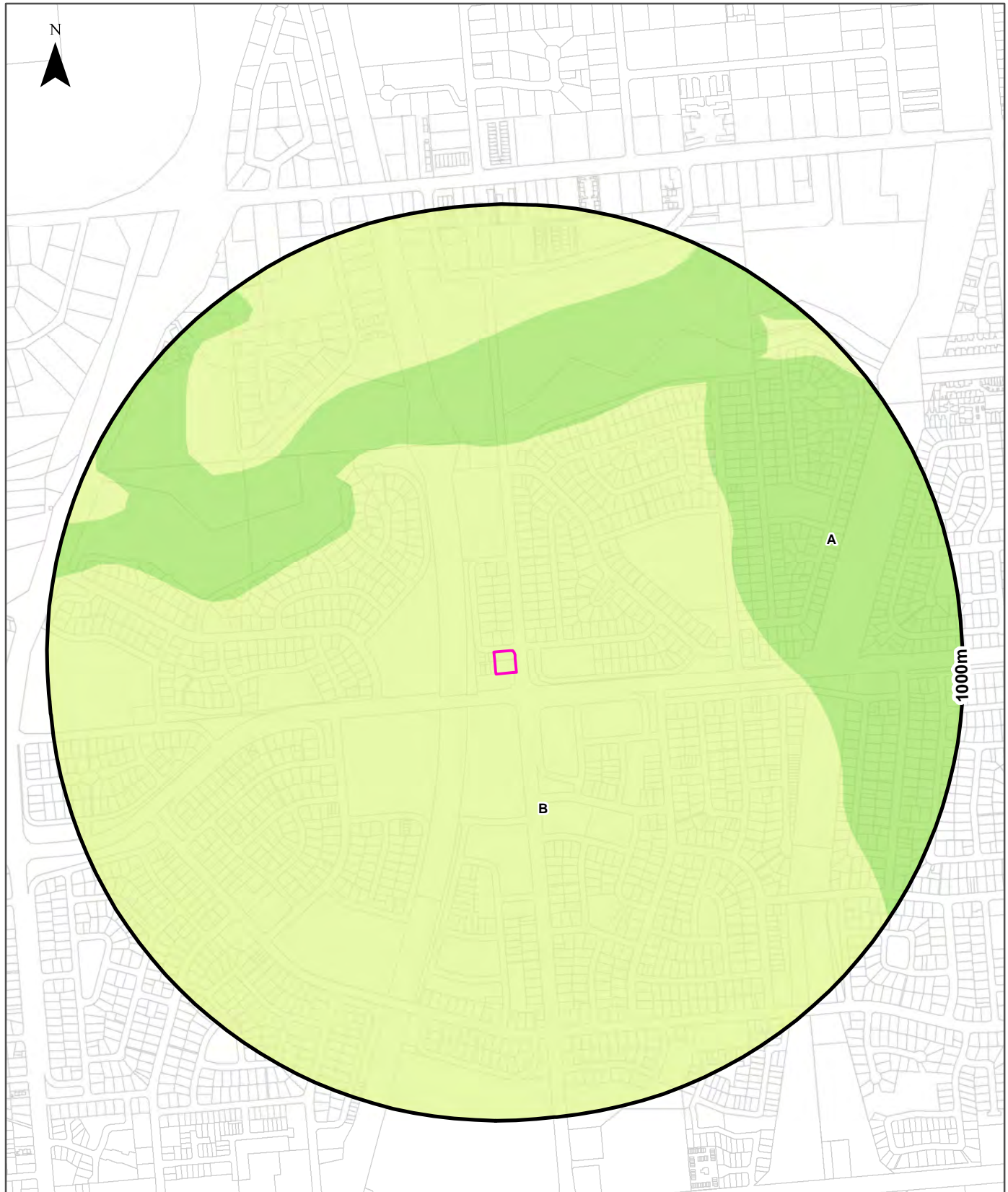
Data Sources: Property Boundaries - Sourced by Omnilink PTY LTD. ©PSMA Australia Limited
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Coordinate System:
 GDA 1994 MGA Zone 54

Date: 06 February 2023

Soil Salinity - Non-watertable

Lot 121 Holman Road, Christie Downs, SA 5164



Legend		
Site Boundary	A. Low	D. Moderately high to high
Buffer 1000m	B. Moderately low	X. Not applicable
Property Boundary	C. Moderate	



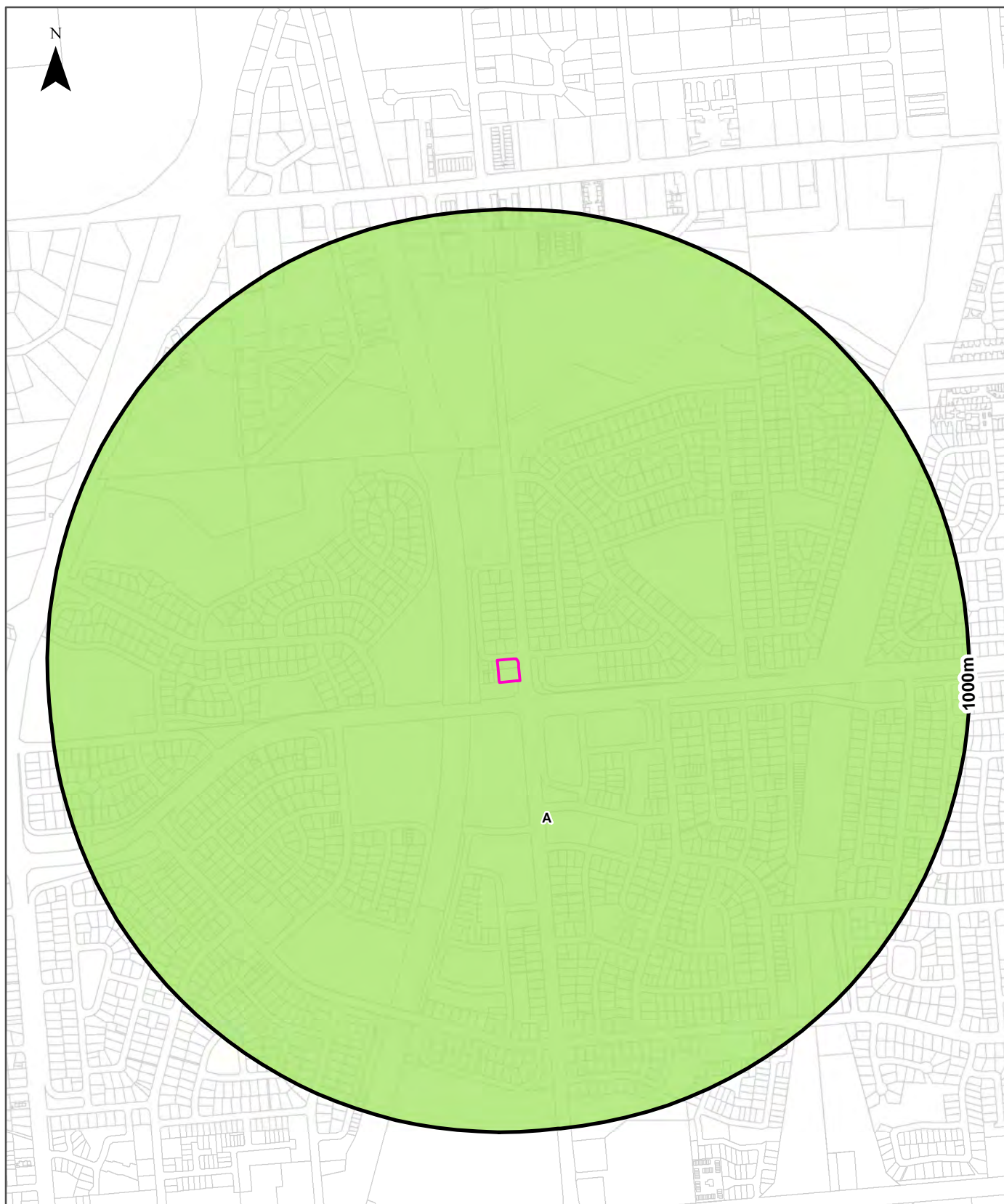
Data Sources: Property Boundaries - Sourced by Omnilink PTY LTD. ©PSMA Australia Limited
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Coordinate System:
GDA 1994 MGA Zone 54

Date: 06 February 2023

Soil Salinity - Non-watertable (Magnesia Patches)

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

Site Boundary	Proportion of land affected by magnesia patches		
Buffer 1000m	A. Negligible	C. 2-10%	E. More than 50%
Property Boundary	B. Up to 2%	D. 10-50%	X. Not applicable



Data Sources: Property Boundaries - Sourced by Omnilink PTY LTD. ©PSMA Australia Limited
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Coordinate System:
 GDA 1994 MGA Zone 54

Date: 06 February 2023

Soil Salinity

Lot 121 Holman Road, Christie Downs, SA 5164

Soil Salinity - Watertable Induced

Watertable induced soil salinity within the dataset buffer:

Map category code	Severity description	Distance	Direction
A	Negligible	0m	On-site
B	Moderately low salinity, or less than 2% of land affected by highly saline seepage	888m	West

Salinity Watertable Induced Data Source: Dept of Environment, Water and Natural Resources - South Australia
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Soil Salinity - Non-Watertable

Non-watertable soil salinity within the dataset buffer:

Map category code	Severity description	Surface ECe (dS/m)	Subsoil ECe (dS/m)	Distance	Direction
B	Moderately low	2-4	4-8	0m	On-site
A	Low	<2	<4	425m	North West

Salinity Non-Watertable Data Source: Dept of Environment, Water and Natural Resources - South Australia
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Soil Salinity - Non-Watertable (Magnesia Patches)

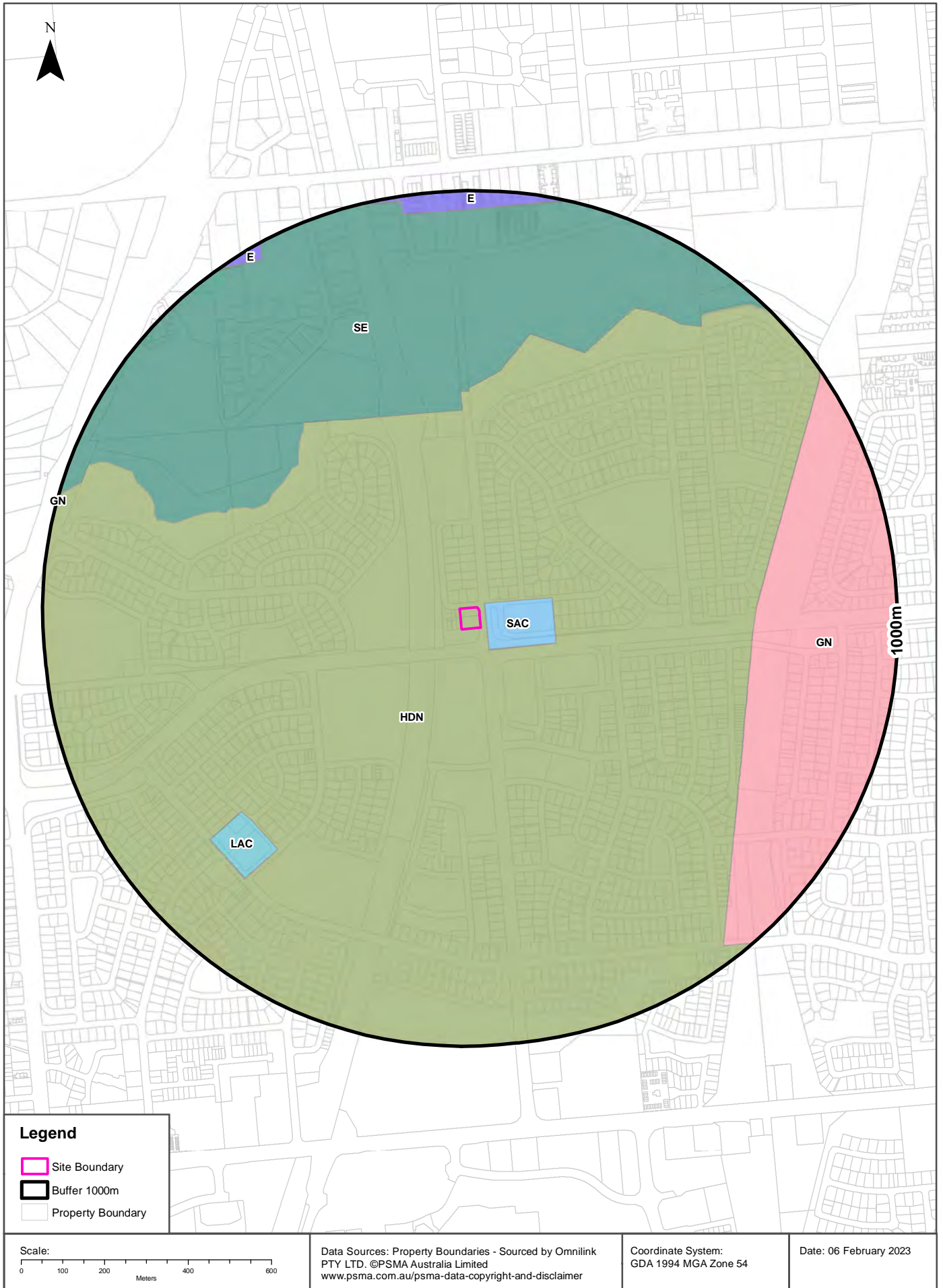
Magnesia patches within the dataset buffer:

Map category code	Proportion of land affected by magnesia patches	Distance	Direction
A	Negligible	0m	On-site

Salinity Non-Watertable (Magnesia Patches) Data Source: Dept of Environment, Water and Natural Resources - South Australia
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Planning and Design Code Zones

Lot 121 Holan Road, Christie Downs, SA 5164



Planning

Lot 121 Holman Road, Christie Downs, SA 5164

Planning and Design Code - Zones

Planning and Design Code zones within the dataset buffer:

Map Id	Zone Code	Zone Name	Legal Start Date	Status	Distance	Direction
HDN	Z2404	Housing Diversity Neighbourhood	19/03/2021		0 0m	On-site
SAC	Z5705	Suburban Activity Centre	19/03/2021		0 13m	East
SE	Z5720	Strategic Employment	19/03/2021		0 476m	North
GN	Z2102	General Neighbourhood	19/03/2021		0 649m	East
LAC	Z3603	Local Activity Centre	19/03/2021		0 681m	South West
E	Z1501	Employment	19/03/2021		0 954m	North
E	Z1501	Employment	19/03/2021		0 962m	North West
GN	Z2102	General Neighbourhood	19/03/2021		0 995m	West

Planning and Design Code Zones Data Source: Attorney-General's Department - South Australia
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Planning and Design Code - Subzones

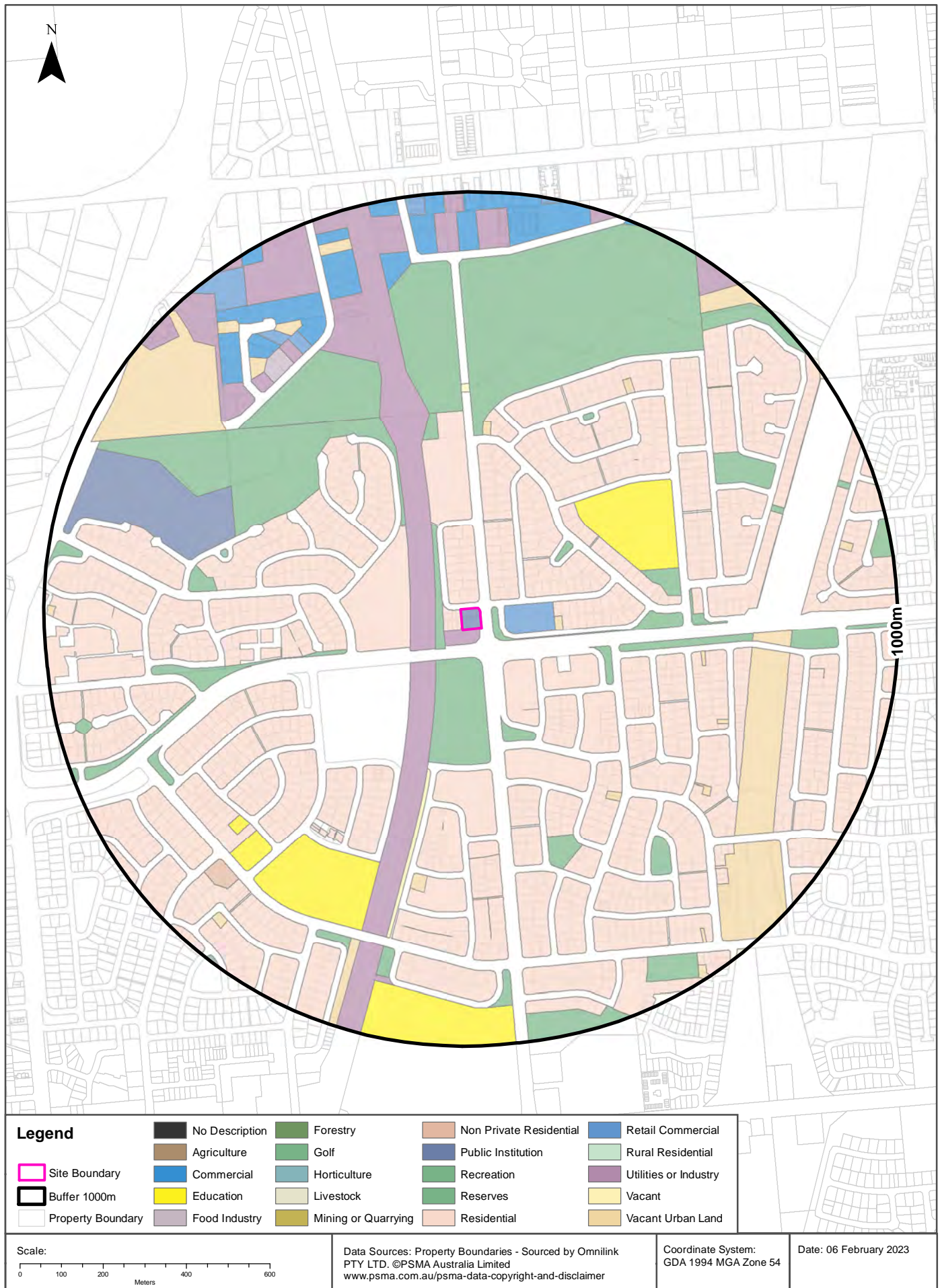
Planning and Design Code subzones within the dataset buffer:

Map Id	Subzone Code	Subzone Name	Legal Start Date	Status	Distance	Direction
N/A	No records in buffer					

Planning and Design Code Subzones Data Source: Attorney-General's Department - South Australia
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Land Use Generalised

Lot 121 Holman Road, Christie Downs, SA 5164



Planning

Lot 121 Holman Road, Christie Downs, SA 5164

Land Use Generalised

Land use classes within the dataset buffer:

Description	Distance	Direction
Public Institution	0m	On-site
Residential	0m	West
Utilities or Industry	0m	South West
Reserves	26m	East
Retail Commercial	56m	East
Recreation	68m	South
Vacant Urban Land	175m	East
Education	324m	North East
Vacant	344m	South
Food Industry	706m	North West
Commercial	727m	North West
Non Private Residential	800m	South West

Land Use Generalised Data Source: Dept of Planning, Transport and Infrastructure - South Australia
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Heritage

Lot 121 Holman Road, Christie Downs, SA 5164

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 Areas

State Heritage Areas within the dataset buffer:

Heritage Id	Name	Distance	Direction
N/A	No records in buffer		

Heritage Areas Data Source: Dept of Environment, Water and Natural Resources - South Australia
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SA Heritage Places

SA Heritage Places within the dataset buffer:

Heritage No	Location	Heritage Class	Australian Class	Details	Auth Date	Distance	Direction
N/A	No records in buffer						

Heritage Places Data Source: Dept of Environment, Water and Natural Resources - South Australia
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Aboriginal Land

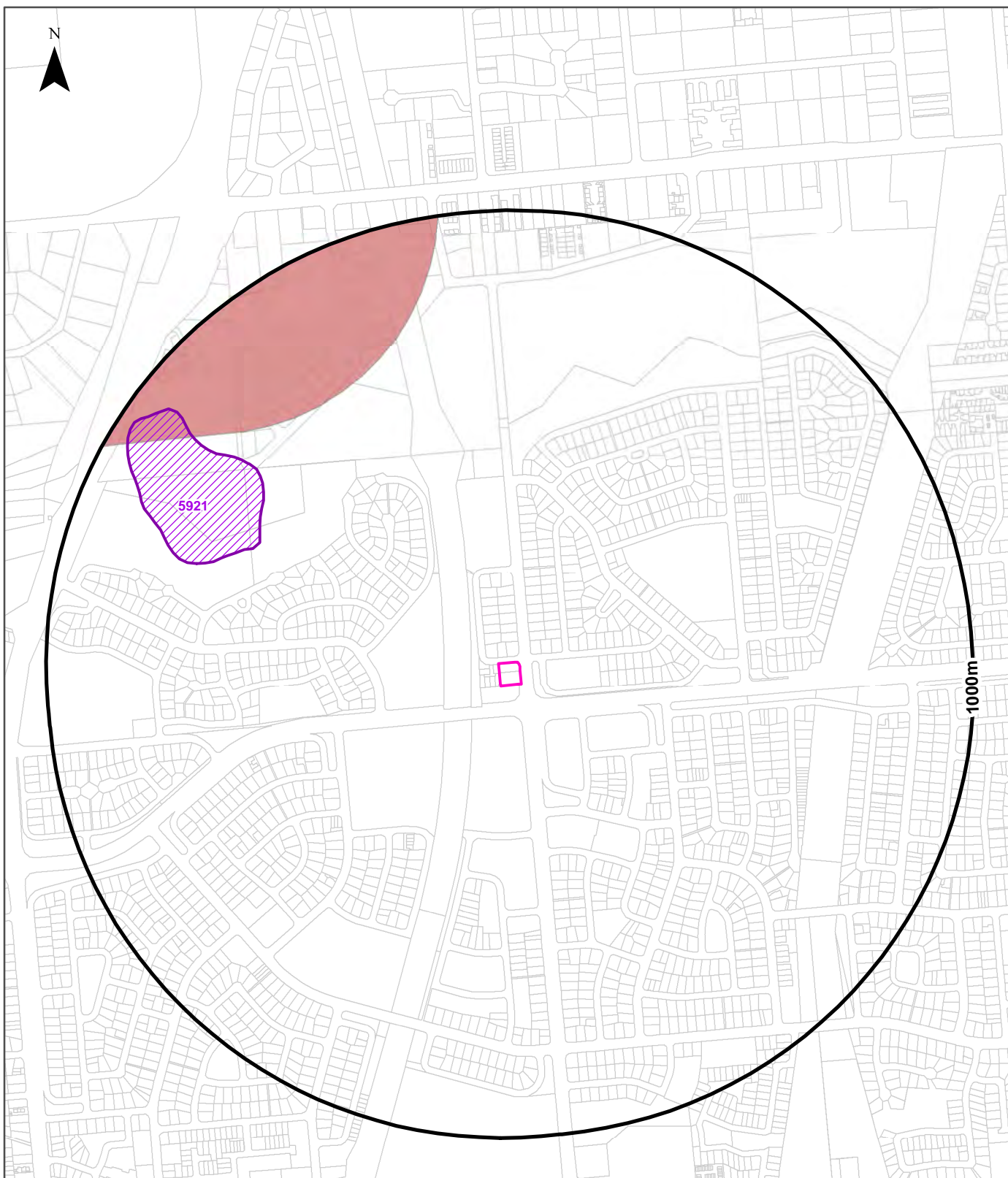
Aboriginal Land within the dataset buffer:

Map Id	Grant Date	Address	Locality	Description	Title	Distance	Direction
N/A	No records in buffer						

Aboriginal Land Data Source: Department of State Development, Resources and Energy - South Australia

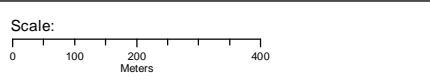
Natural Hazards - Bushfire

Lot 121 Holman Road, Christie Downs, SA 5164



Legend

- | | | |
|-------------------|---|-----------------|
| Site Boundary | Planning and Design Code Bushfire Overlays | |
| Buffer 1000m | High Risk | Urban Interface |
| Property Boundary | Medium Risk | Outback |
| Bushfire History | General | Regional |



Data Sources: Property Boundaries - Sourced by Omnilink PTY LTD. ©PSMA Australia Limited
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Coordinate System:
GDA 1994 MGA Zone 54

Date: 06 February 2023

Natural Hazards

Lot 121 Holman Road, Christie Downs, SA 5164

Bushfire Overlays

Bushfire Overlays from the Planning and Design Code within the dataset buffer:

Overlay Id	Name	Description	Legal Start Date	Legal End Date	Distance	Direction
O2408	Hazards (Bushfire - Urban Interface)	The Hazards (Bushfire - Urban Interface) Overlay seeks to ensure urban neighbourhoods adjoining bushfire risk areas allow access through to bushfire risk areas, are designed to protect life and property from the threat of bushfire and facilitate evacuati	19/03/2021		693m	North West

Bushfire Overlays Data Source: Attorney-General's Department - South Australia

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Bushfires and Prescribed Burns History

Bushfires and prescribed burns within the dataset buffer:

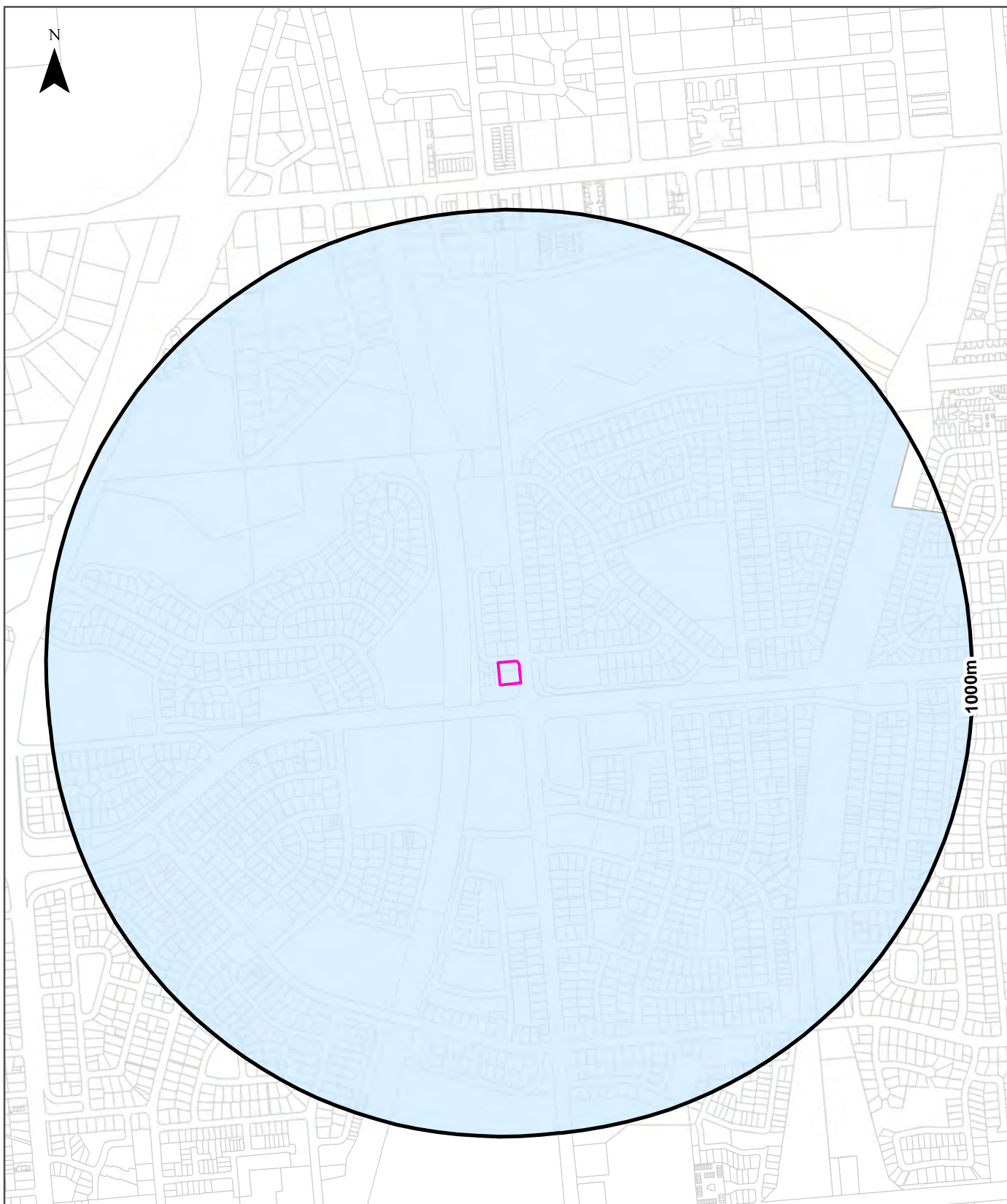
Map Id	Incident No.	Incident Name	Incident Type	Date of Fire	Area of Fire (ha)	Distance	Direction
5921		Lonsdale	Bushfire	14/12/2020	6	592m	North West

Bushfires and Prescribed Burns History Data Source: Dept of Environment, Water and Natural Resources - South Australia

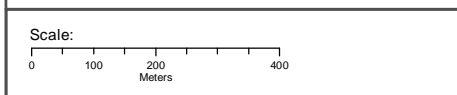
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Natural Hazards - Flood

Lot 121 Holman Road, Christie Downs, SA 5164



Legend		Planning and Design Code - Flooding Overlay	
Site Boundary	Flooding	Coastal Flooding	River Murray Flood Plain Protection
Buffer 1000m	Flooding - General		
Property Boundary	Flooding - Evidence Required		



Data Sources: Property Boundaries - Sourced by Omnilink PTY LTD. ©PSMA Australia Limited
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Coordinate System:
 GDA 1994 MGA Zone 54

Date: 06 February 2023

Natural Hazards

Lot 121 Holman Road, Christie Downs, SA 5164

Flooding Overlays

Flooding Overlays from the Planning and Design Code within the dataset buffer:

Overlay Id	Name	Description	Legal Start	Legal End	Distance	Direction
O2416	Hazards (Flooding - Evidence Required)	The Hazards (Flooding - Evidence Required) Overlay adopts a precautionary approach to mitigate potential impacts of potential flood risk through appropriate siting and design of development.	10/11/2022		0m	On-site

Flooding Overlays Data Source: Attorney-General's Department - South Australia

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Ecological Constraints

Lot 121 Holman Road, Christie Downs, SA 5164

Groundwater Dependent Ecosystems Atlas

Type	Name	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
N/A	No records in buffer						

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

Lot 121 Holman Road, Christie Downs, SA 5164

Inflow Dependent Ecosystems Likelihood

Type	Name	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
N/A	No records in buffer						

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

Lot 121 Holman Road, Christie Downs, SA 5164

Ramsar Wetlands

What Ramsar wetland areas exist within the dataset buffer?

Wetland	Distance	Direction
No records in buffer		

Ramsar Wetlands Data Source: Dept of Environment, Water and Natural Resources - South Australia
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Where Lotsearch has had to georeference features from supplied addresses, a location confidence has been assigned to the data record. This indicates a confidence to the positional accuracy of the feature. Where applicable, a code is given under the field heading "LC" or "LocConf". These codes lookup to the following location confidences:

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

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

Appendix C

Certificates of title and SAPPA information

ORIGINAL
CERTIFICATE OF TITLE

South Australia

Register Book,
Volume 4062 Folio 316



New Certificate for portion of the Land in Vol. 3504 Folio 190

SOUTH AUSTRALIAN HOUSING TRUST is the proprietor of an estate in fee simple subject nevertheless to such encumbrances liens and interests as are notified by memorial underwritten or endorsed hereon in ALLOTMENT 120 of portion of Section 635 HUNDRED OF NOARLUNGA laid out as CHRISTIE DOWNS (L.T.R.O. DEPOSITED PLAN No. 10165) and delineated on the plan hereon SUBJECT to an easement for sewerage purposes provided for by Section 55 (1) of the Planning and Development Act 1966-1967 as amended over that portion marked Easement A on the said plans

15/9/1976
148

In witness whereof I have signed my name and affixed my seal this 2nd. day of April 1976

Signed the 2nd. day of April

1976, in the presence of *y. smith*

Ch. Nairn

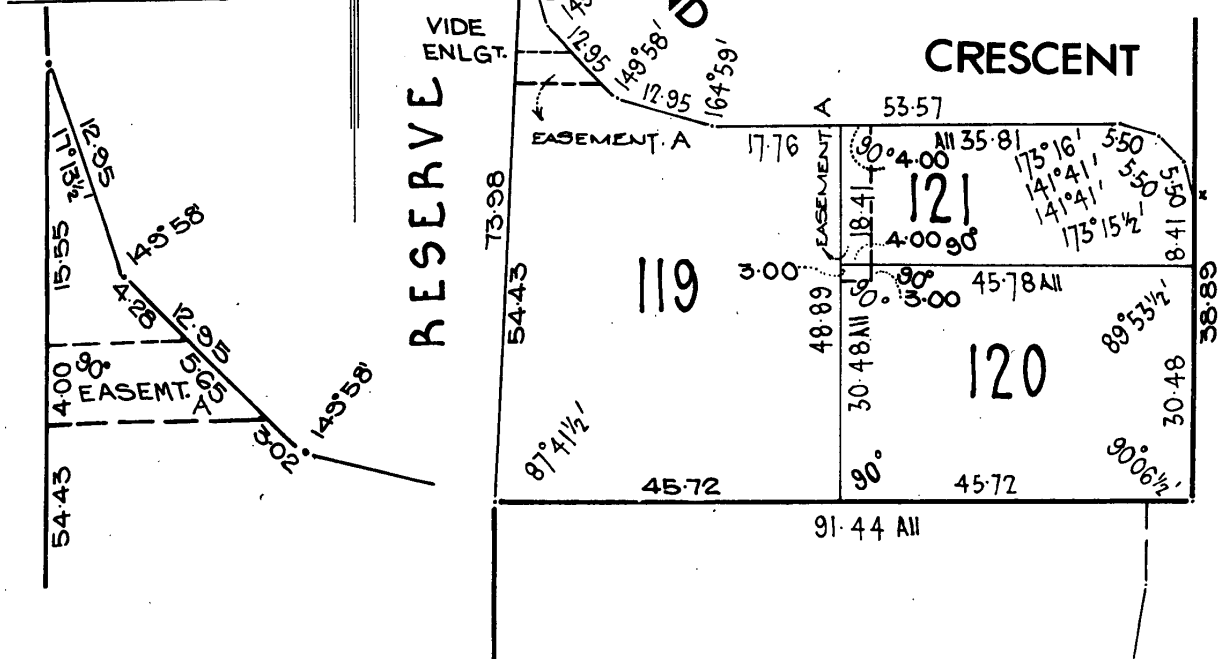
Easement A vide Dkt. 4187/1975.

15/9/1976.

Deputy Registrar-General



ENLARGEMENT.



over

~~T. 3940859~~

TRANSFER 3940859 to THE FIRE BRIGADES BOARD of
87 Wakefield Street Adelaide 5000 of the within
land Produced 7.9.1976 at 2.15 p.m.

See C.D. re
easement



CANCELLED
CONVERTED TO A COMPUTERISED TITLE



ORIGINAL
CERTIFICATE OF TITLE

South Australia

Register Book,
Volume 4062 Folio 317



New Certificate for portion of the Land in Vol.3504 Folio 190

SOUTH AUSTRALIAN HOUSING TRUST is the proprietor of an estate in fee simple subject nevertheless to such encumbrances liens and interests as are notified by memorial underwritten or endorsed hereon in ALLOTMENT 121 of portion of Section 635 HUNDRED OF NOARLUNGA laid out as CHRISTIE DOWNS (L.T.R.O. DEPOSITED PLAN No.10165) and delineated on the plan hereon SUBJECT to an easement for sewerage purposes provided for by Section 55 (1) of the Planning and Development Act 1966-1967 as amended over that portion marked Easement A on the said plans

15/9/1976
15/9/1976

In witness whereof I have signed my name and affixed my seal this 2nd day of April 1976

Signed the 2nd day of April

1976, in the presence of y. Smith

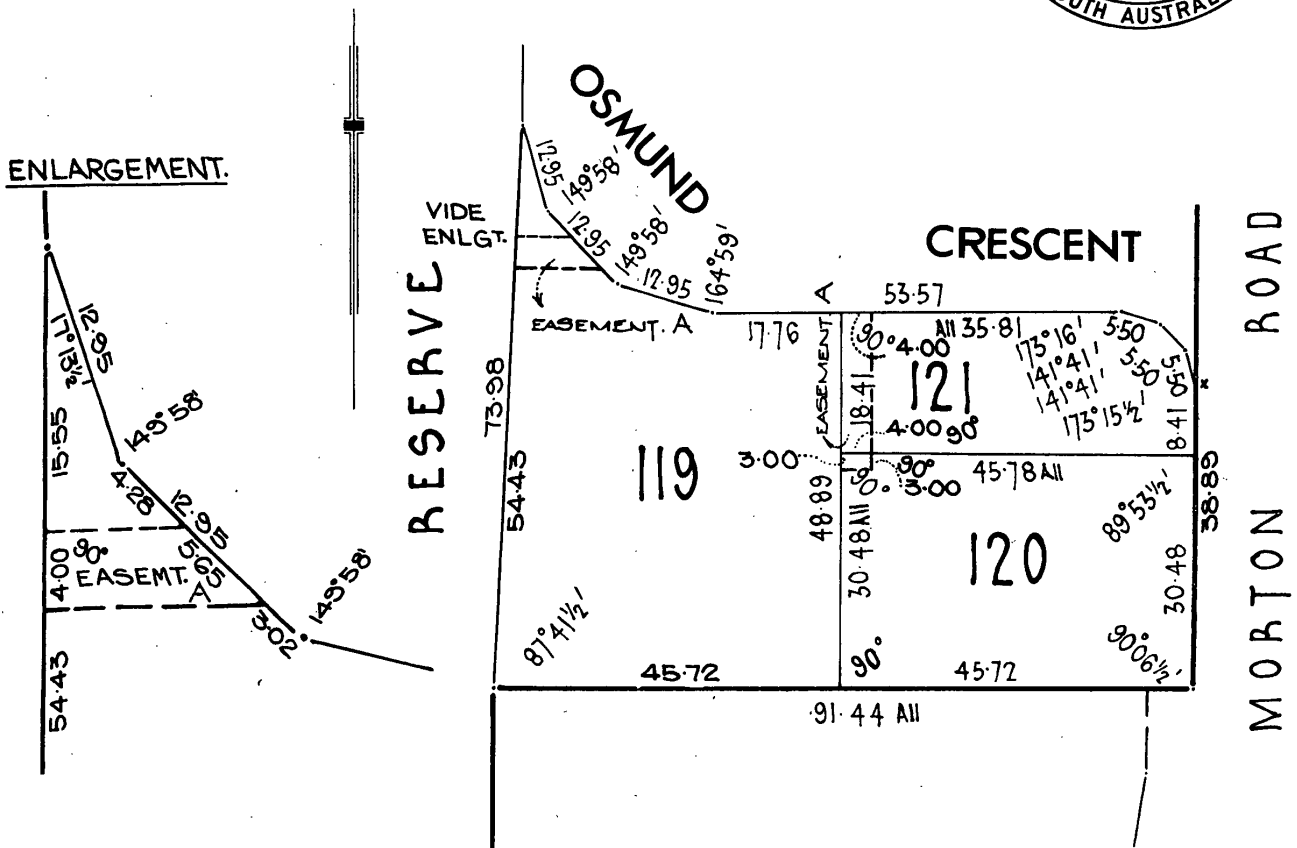
C. H. Nairn

Easement A vide Dkt. 4187/1975.



15/9/1976

Deputy Registrar-General



OVER OVER

TRANSFER 4127441 to THE FIRE BRIGADES BOARD
of 87 Wakefield Street Adelaide 5000 of the
within land Produced 7.12.1977 at 3.15 p.m.



CANCELLED
CONVERTED TO A COMPUTERISED TITLE





The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5534 Folio 85

Parent Title(s)	CT 4062/316		
Creating Dealing(s)	CONVERTED TITLE		
Title Issued	12/05/1998	Edition 1	Edition Issued 12/05/1998

Estate Type

FEE SIMPLE

Registered Proprietor

SOUTH AUSTRALIAN METROPOLITAN FIRE SERVICE
OF 87 WAKEFIELD STREET ADELAIDE SA 5000

Description of Land

ALLOTMENT 120 DEPOSITED PLAN 10165
IN THE AREA NAMED CHRISTIE DOWNS
HUNDRED OF NOARLUNGA

Easements

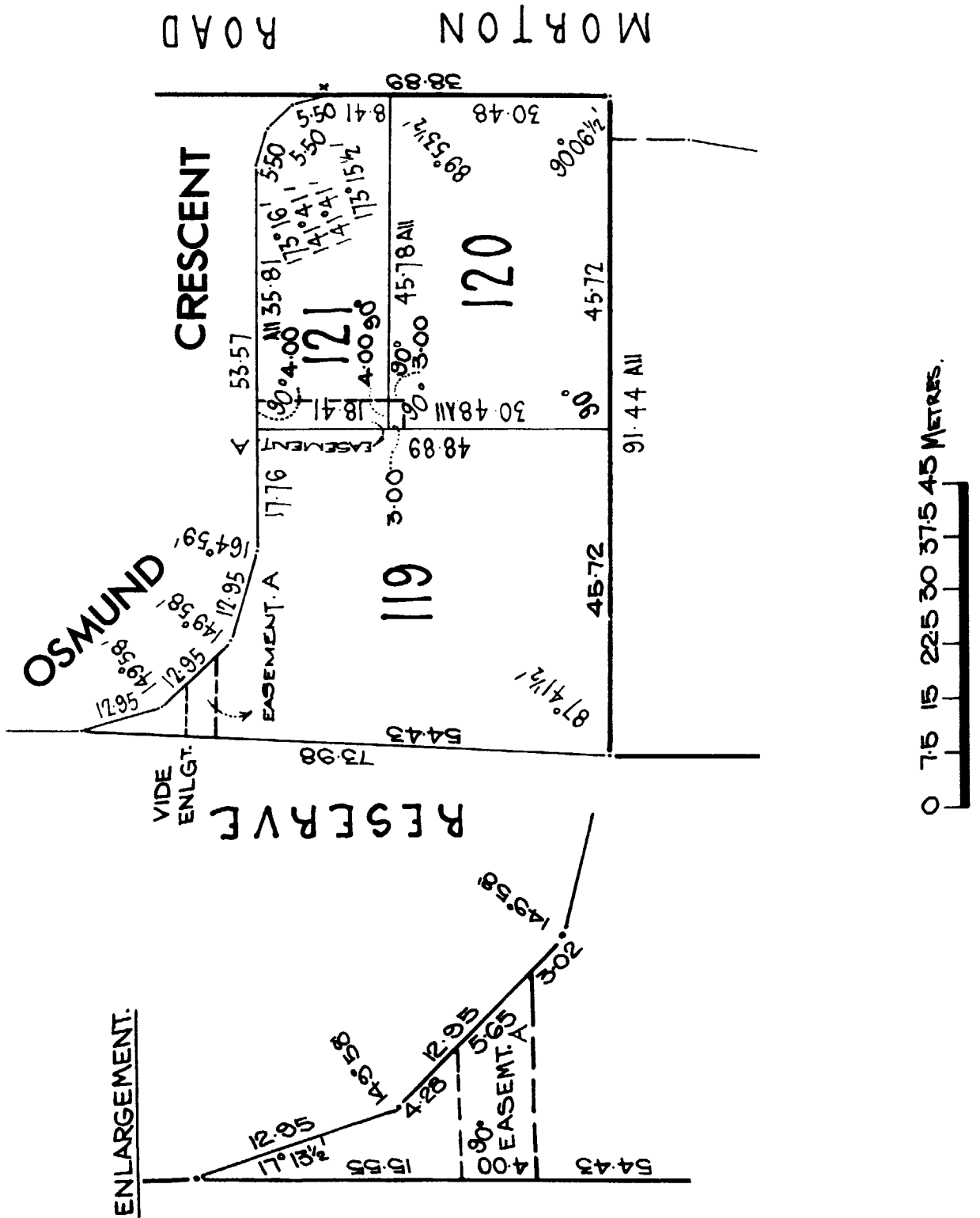
SUBJECT TO SERVICE EASEMENT(S) OVER THE LAND MARKED EASEMENT A FOR SEWERAGE PURPOSES TO SOUTH AUSTRALIAN WATER CORPORATION (223LG RPA)

Schedule of Dealings

NIL

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



Certificate of Title

Title Reference: CT 5534/85
Status: CURRENT
Parent Title(s): CT 4062/316
Dealing(s) Creating Title: CONVERTED TITLE
Title Issued: 12/05/1998
Edition: 1

Dealings

No lodged Dealings found.



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5534 Folio 90

Parent Title(s)	CT 4062/317		
Creating Dealing(s)	CONVERTED TITLE		
Title Issued	12/05/1998	Edition 1	Edition Issued 12/05/1998

Estate Type

FEE SIMPLE

Registered Proprietor

SOUTH AUSTRALIAN METROPOLITAN FIRE SERVICE
OF 87 WAKEFIELD STREET ADELAIDE SA 5000

Description of Land

ALLOTMENT 121 DEPOSITED PLAN 10165
IN THE AREA NAMED CHRISTIE DOWNS
HUNDRED OF NOARLUNGA

Easements

SUBJECT TO SERVICE EASEMENT(S) OVER THE LAND MARKED EASEMENT A FOR SEWERAGE PURPOSES TO SOUTH AUSTRALIAN WATER CORPORATION (223LG RPA)

Schedule of Dealings

NIL

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL

Certificate of Title

Title Reference: CT 5534/90
Status: CURRENT
Parent Title(s): CT 4062/317
Dealing(s) Creating Title: CONVERTED TITLE
Title Issued: 12/05/1998
Edition: 1

Dealings

No lodged Dealings found.

SAPPA Parcel Report

Date Created: February 5, 2023

The South Australian Property and Planning Atlas is available at the Plan SA website <https://sappa.plan.sa.gov.au/>



Address Details

Scale \approx 1:564 (on A4 page)

Unit Number:

25 metres \approx

Street Number: 3

Street Name: HOLMAN

Street Type: RD

Suburb: CHRISTIE DOWNS

Postcode: 5164

Property Details:

Council: CITY OF ONKAPARINGA

State Electorate: REYNELL (2014), REYNELL (2018), REYNELL (2022)

Federal Electorate: KINGSTON (2013), KINGSTON (2016), KINGSTON (2019)

Hundred: NOARLUNGA

Valuation Number: 8635673053

The information provided, is not represented to be accurate, current or complete at the time of printing this report.

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Title Reference: CT5534/85

Plan No. Parcel No.: D10165A120

Zoning details next page



Government of South Australia
Attorney-General's Department

Zone Details

Zones

Housing Diversity Neighbourhood (Z2404) - HDN

Overlays

Affordable Housing (O0306)

The Affordable Housing Overlay seeks to ensure the integration of a range of affordable dwelling types into residential and mixed use development.

Hazards (Flooding - Evidence Required) (O2416)

The Hazards (Flooding - Evidence Required) Overlay adopts a precautionary approach to mitigate potential impacts of potential flood risk through appropriate siting and design of development.

Native Vegetation (O4202)

The Native Vegetation Overlay seeks to protect, retain and restore areas of native vegetation.

Prescribed Wells Area (O4804)

The Prescribed Wells Area Overlay seeks to ensure sustainable water use in prescribed wells areas.

Regulated and Significant Tree (O5404)

The Regulated and Significant Tree Overlay seeks to mitigate the loss of regulated trees through appropriate development and redevelopment.

Stormwater Management (O5710)

The Stormwater Management Overlay seeks to ensure new development incorporates water sensitive urban design techniques to capture and re-use stormwater.

Urban Tree Canopy (O6302)

The Urban Tree Canopy Overlay seeks to preserve and enhance urban tree canopy through the planting of new trees and retention of existing mature trees where practicable.

Variations

Minimum Frontage (V0004) - _8_8_6_18_18

Minimum frontage for a detached dwelling is 8m; semi-detached dwelling is 8m; row dwelling is 6m; group dwelling is 18m; residential flat building is 18m

Minimum Site Area (V0005) - _250_250_150_175_175

Minimum site area for a detached dwelling is 250 sqm; semi-detached dwelling is 250 sqm; row dwelling is 150 sqm; group dwelling is 175 sqm; residential flat building is 175 sqm

Maximum Building Height (Levels) (V0008) - 3

Maximum building height is 3 levels

SAPPA Parcel Report

Date Created: February 5, 2023

The South Australian Property and Planning Atlas is available at the Plan SA website <https://sappa.plan.sa.gov.au/>



Address Details

Scale \approx 1:1128 (on A4 page)

Unit Number:

50 metres \approx

Street Number: 3

Street Name: HOLMAN

Street Type: RD

Suburb: CHRISTIE DOWNS

Postcode: 5164

Property Details:

Council: CITY OF ONKAPARINGA

State Electorate: REYNELL (2014), REYNELL (2018), REYNELL (2022)

Federal Electorate: KINGSTON (2013), KINGSTON (2016), KINGSTON (2019)

Hundred: NOARLUNGA

Valuation Number: 8635673053

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Title Reference: CT5534/90

Plan No. Parcel No.: D10165A121

Zoning details next page



Government of South Australia
Attorney-General's Department

Zone Details

Zones

Housing Diversity Neighbourhood (Z2404) - HDN

Overlays

Affordable Housing (O0306)

The Affordable Housing Overlay seeks to ensure the integration of a range of affordable dwelling types into residential and mixed use development.

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Minimum Site Area (V0005) - _250_250_150_175_175

Minimum site area for a detached dwelling is 250 sqm; semi-detached dwelling is 250 sqm; row dwelling is 150 sqm; group dwelling is 175 sqm; residential flat building is 175 sqm

Maximum Building Height (Levels) (V0008) - 3

Maximum building height is 3 levels

Appendix D

Combined MFS staff survey

MFS Station – AFFF Historical Use Questionnaire

Please distribute the following questionnaire to nominated MFS personnel who have worked at MFS sites when active use of AFFF (*aqueous film-forming foam, firefighting foam*) occurred before it was phased out in 2016. When applicable, please annotate key site features on the site plans attached at the end of this questionnaire.

MFS Station:

Name:

Position when working at the site:

Phone number:

Email:

Date of response:

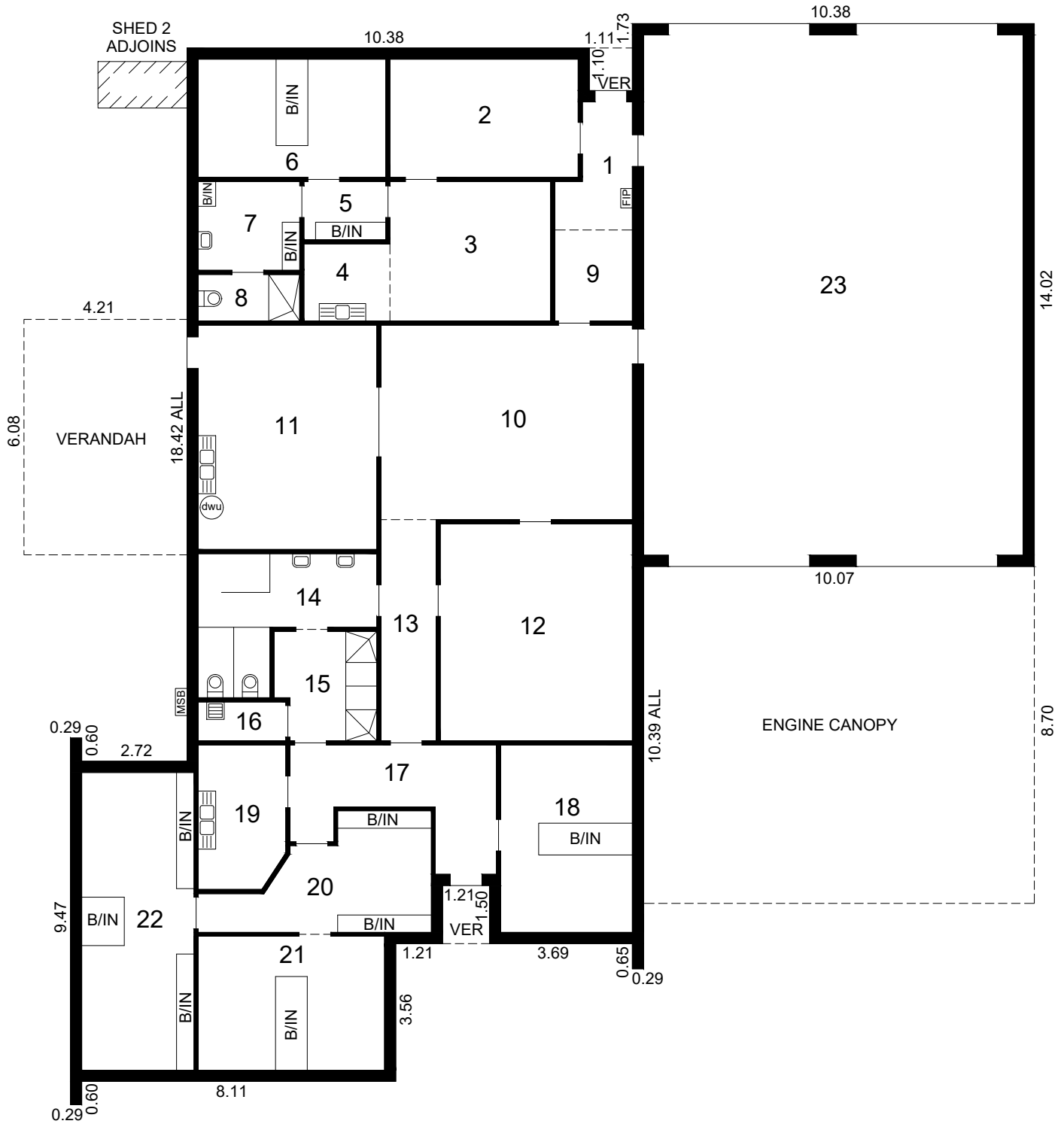
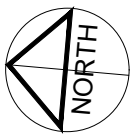
Item	Question	Response
1	<i>When did you start working at this station?</i>	
2	<i>How long have you worked at this station?</i>	
3	<i>Can you describe where stormwater from the site is usually discharged to (e.g. stormwater pit, nearby creek / pond, street gutter)?</i>	
4	<i>Can you describe any changes in how stormwater has been managed at the site over time?</i>	
5	<i>Is stormwater harvested within the site?</i>	
5.1	<i>If yes, please describe where and how stormwater is harvested.</i>	
5.2	<i>For what purposes is stormwater harvested?</i>	
6	<i>Are there groundwater wells / bores at the site?</i>	
6.1	<i>If yes, for what purpose is groundwater used at the site?</i>	


Item	Question	Response
6.2	<i>Where are the groundwater well / bores located on site? Please mark the location on the attached site plan.</i>	
7	<i>Date when AFFF was first used on site?</i>	
8	<i>Can you provide the product names of any AFFF used on the site? (e.g. Ansulite, 3M Light Water)</i>	
9	<i>Was AFFF used in regular training exercises? If so:</i>	
9.1	<i>How often was the training? (e.g. weekly, monthly, quarterly)</i>	
9.2	<i>Can you describe the location of the training areas and annotate them on the site plan?</i>	
9.3	<i>Can provide an estimate of how much AFFF was used in each training?</i>	
9.4	<i>Was the training ground sealed / open?</i>	
9.5	<i>Was AFFF dispersed aerially? If so, please indicate the maximum extent on the site plan?</i>	
9.6	<i>When was the date of the last training event that included the use of AFFF?</i>	
10	<i>Please describe how the waste water was managed following training events? Specifically, was there a recycling system, storage pond, storage tanks or drains? Please annotate waste water discharge point / pathways on the site plan.</i>	
11	<i>Did any waste water flow into drains that directed the waste water off-site? Please annotate the waste water discharge points / pathways on the site plan.</i>	
12	<i>Were there any changes how the waste water was managed over time? If so, please describe the changes.</i>	
13	<i>Is there any inventory of AFFF use for the site?</i>	

Item	Question	Response
14	<i>Can you estimate the total volume of AFFF used on site before it was phased out in 2016?</i>	
15	<i>Where was AFFF stored on site? Please annotate the storage location on the site plan.</i>	
15.1	<i>What type and size of storage containers were used to store AFFF on site?</i>	
15.2	<i>What is the number of storage containers or the total volume of AFFF that was typically stored on site at any given time prior to 2016?</i>	
16	<i>Please describe where and how AFFF was transferred from storage containers to the fire trucks / fire-fighting appliances. What equipment was used to transfer the AFFF?</i>	
17	<i>How were spent drums of AFFF disposed of?</i>	
18	<i>Were there any wash down areas for fire trucks, equipment or AFFF containers? If so:</i>	
18.1	<i>How was the waste water from such areas managed? (e.g. recycling, treatment, storage pond or discharge to drains)</i>	
18.2	<i>Were there any changes how the waste water was managed over? If so, please describe the changes.</i>	
19	<i>Please describe / annotate the specific location(s) of any other chemical storage facilities (including fuel and oil) and describe the type and typical use of those chemicals.</i>	
20	<i>Is there an incident log / register for the site?</i>	

Item	Question	Response
21	<i>Are you aware of any AFFF (or other chemical) releases that may have occurred outside of typical application scenarios? If so:</i>	
21.1	<i>When did such release(s) happen?</i>	
21.2	<i>What substance(s) was/were released?</i>	
21.3	<i>Where did such release(s) happen? Please annotate the release point(s) on the site plan.</i>	
21.4	<i>Where was the released AFFF or chemical discharged to? Please annotate the discharge point(s) on the site plan.</i>	
22	<i>Are there areas of the site where training activities and / or AFFF release(s) have historically occurred that are now unused or have been built on?</i>	
23	<i>Have there been any significant bulk earthworks on the Station site that resulted in soil being relocated from one area to another?</i>	
24	<i>Please describe any changes to the Station that you are aware of with respect to the storage and use of AFFF.</i>	

Any other comments or notes.



 - Hot Water Service
Solar on roof

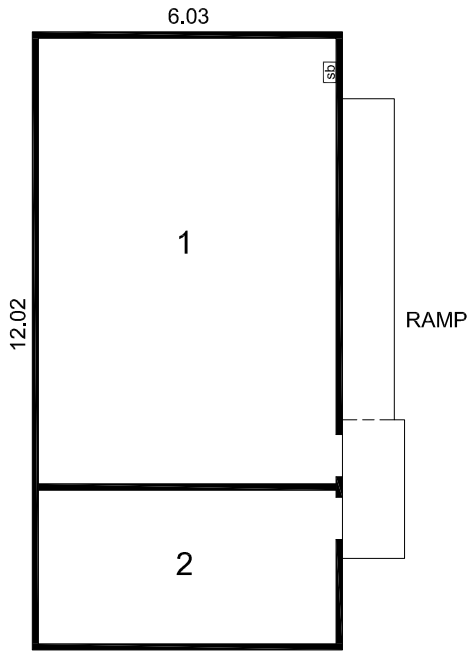
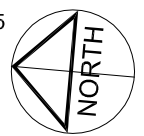
Asset Name	CHRISTIE DOWNS SAMFS FIRE STATION		
Building Use	FIRE STATION		
Created by.	DTEI	Drawn G.Neubauer	Date Feb 2010
Modified by.	Archink	Drawn A Bentley	Date Mar 2020
Bldg area m ²	456	Ver area m ²	116
Plan ref.	-		



Government of South Australia
Department for Transport,
Energy and Infrastructure

Strategic Asset Management Information System Plan

SAMIS 09161-01-1



Asset Name	CHRISTIE DOWNS SAMFS FIRE STATION			
Building Use	GYMNASIUM & STORE			
Created by.	<i>SurvCAD</i>	Drawn	<i>R.L.Chapman</i>	Date <i>Apr 2010</i>
Modified by.	<i>SurvCAD</i>	Drawn	<i>R.L.Chapman</i>	Date <i>Apr 2010</i>
Bldg area m ²	72	Ver area m ²	-	Plan ref. -



Government of South Australia
 Department for Transport,
 Energy and Infrastructure

Strategic Asset Management Information System Plan

SAMIS 09161-02-1

Appendix E

Photolog

Christie Downs Photolog



Photo 1 View of station from the north-east corner of the site



Photo 2 View of driveway along the southern site boundary, facing west



Photo 3 View of engine bay and wash down area with drain, facing south-south-west



Photo 4 View of driveway with drains and fruit trees along southern site boundary, facing east



Photo 5 Fruit trees in SW corner of site, facing south-west



Photo 6 Southern drain near fruit trees, facing south



Photo 7 View of stormwater drain, facing south-east towards Flaxmill Rd



Photo 8 View of stormwater drain, facing south towards Flaxmill Rd



Photo 9 Close up of stormwater drain



Photo 10 Close up of stormwater drain



Photo 11 Wash down area in front of the station with the carpark on Holman Rd beyond, facing east



Photo 12 Wash down area in front of the station facing south-east towards the Holman Rd / Flaxmill Rd



Photo 13 Garden bed with tap to the north of the wash down area along the eastern site boundary, facing north-east



Photo 14 Osmund Crescent to the north of the site, facing north-west from the Holman Rd / Osmund Crescent intersection

Appendix F

WaterConnect Registered Bore Search

Circle Centre -35.126899,138.497816, Radius 2km

Unit No	Date	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	TDS (mg/L)	TDS Date	Purpose	Status	Yield (L/sec)	Yield Date	Aquifer	Cased To (m)	Permit No
6527-829	22/09/1944	12.95	12.95	10.97	22/09/1944	951	22/09/1944	IRR	UKN					
6527-830	07/12/1972	20.7	20.7					INV	UKN					
6527-831	16/03/1972	6	6					INV	UKN					
6527-832	16/03/1972	5.5	5.5					INV	UKN					
6527-833	16/03/1972	6	6					INV	UKN					
6527-834	01/12/1972	7.7	7.7					INV	UKN					
6527-835	05/12/1972	14	14					INV	UKN					
6527-836	17/03/1972	9	9					INV	UKN					
6527-837	30/11/1972	15.6	15.6					INV	UKN					
6527-838	28/11/1972	14.1	14.1					INV	UKN					
6527-839	10/07/1936	18.9	18.9	7.62	01/06/1950	6138	12/07/1961		UKN	1.26	10/07/1936	Niw		
6527-840						3546	12/07/1961		UKN					
6527-845	19/09/1966	12.65	12.65					INV	UKN					
6527-846	20/09/1966	10.82	10.82					INV	UKN					
6527-847	21/09/1966	4.88	4.88					INV	UKN					
6527-848	23/09/1966	10.67	10.67	8.84	23/09/1966			INV	UKN				0.91	
6527-849	27/09/1966	7.92	7.92					INV	UKN				1.07	
6527-850	28/09/1966	13.41	13.41					INV	UKN					
6527-851	04/10/1966	14.02	14.02					INV	UKN				1.22	
6527-852	06/10/1966	10.82	10.82					INV	UKN					
6527-853	11/10/1966	18.29	18.29					INV	UKN					
6527-859	13/03/1972	8.5	8.5						UKN					
6527-860	13/03/1972	11.5	11.5						UKN					
6527-861	14/03/1972	12	12						UKN					
6527-862	15/03/1972	4	4						UKN					
6527-863	23/11/1972	10	10						UKN					
6527-864	09/03/1972	5.5	5.5						UKN					
6527-865	10/03/1972	8.3	8.3						UKN					
6527-866	23/11/1972	15.25	15.25						UKN					
6527-867	20/07/1960	7.62	7.62						ABD					
6527-890	15/06/1960	2.59	2.59						ABD					
6527-891	16/06/1960	9.75	9.75						ABD					
6527-892	16/06/1960	15.24	15.24						ABD					
6527-893	17/06/1960	3.05	3.05						ABD					
6527-896	08/03/1972	7.5	7.5						UKN					
6527-897	21/11/1972	8.8	8.8						UKN					
6527-898	08/12/1972	5.95	5.95	0.9	08/12/1972				UKN					

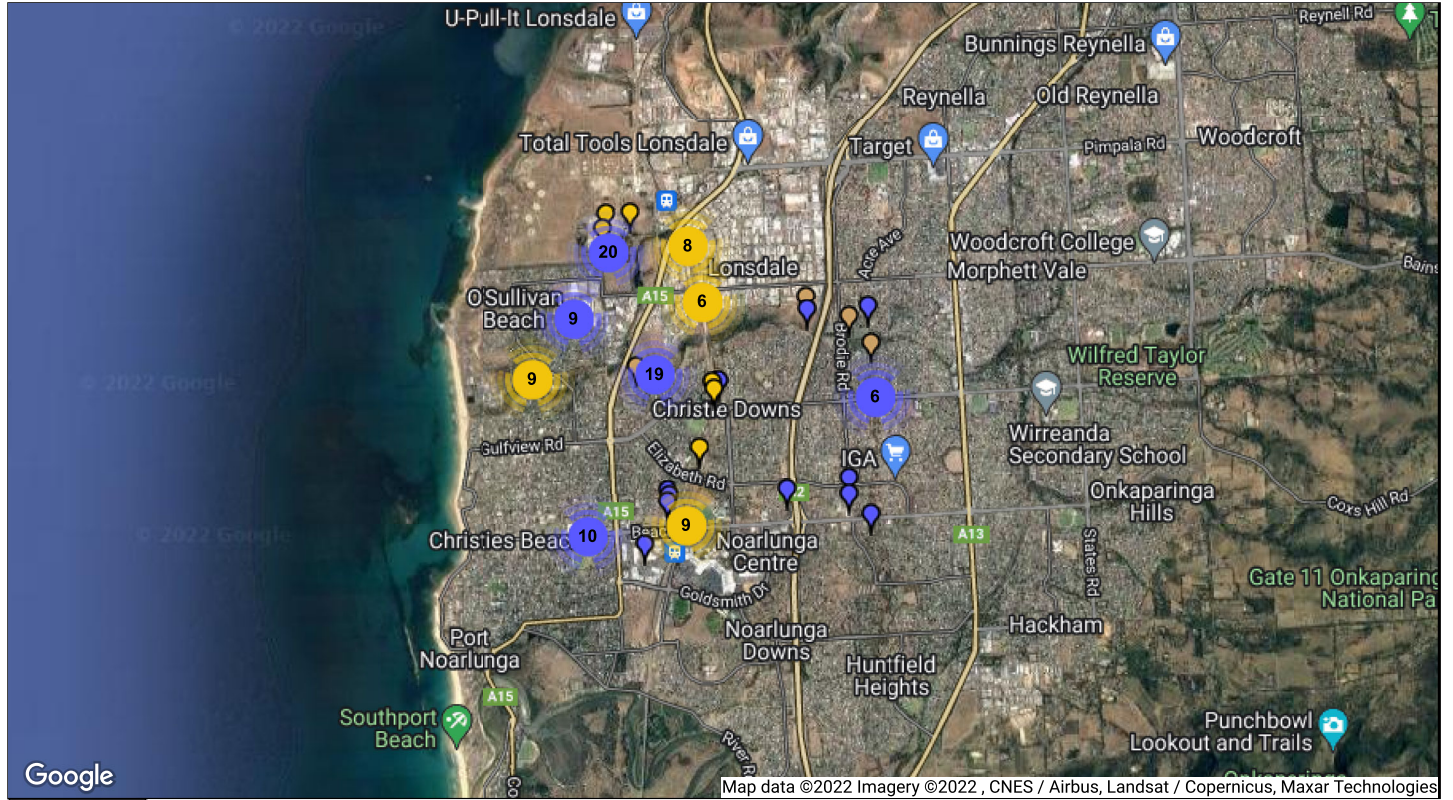
Unit No	Date	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	TDS (mg/L)	TDS Date	Purpose	Status	Yield (L/sec)	Yield Date	Aquifer	Cased To (m)	Permit No
6527-899	22/11/1972	4.6	4.6						UKN					
6527-1185	21/11/1978	7.7	7.7						UKN					
6527-1186	22/11/1978	5	5						UKN					
6527-1187	24/11/1978	8	8						UKN					
6527-1636	22/07/2005	11.5	0		22/07/2005			MON	BKF					108044
6527-1639	06/02/2006	22	21	16.5	06/02/2006	6344	07/02/2006	INV					15	113947
6527-1640		22	21	15.5	07/02/2006	6407	07/02/2006	INV					15	113948
6527-1641	07/02/2006	22	22	16.5	07/02/2006	10939	07/02/2006	INV					16	113949
6527-1919	09/03/2011	4.6	4.6	2	09/03/2011			INV					1.6	199678
6527-1921	22/10/2010	3.8	3.8					INV					1.5	194319
6527-1922	28/10/2010	6.8	6.8		28/10/2010			INV	DRY				3.6	194320
6527-1923	25/11/2010	43.8	43.8	36.5	25/11/2010	3303	24/05/2011	INV						194321
6527-1933	27/10/2010	7.6	7.6					INV					2	191593
6527-1960	04/04/2012	5.5	5.5		04/04/2012			INV	DRY				1.7	207395
6527-1961	20/04/2012	40.5	40.5	40.5	20/04/2012			INV					35.5	207392
6527-1988			0						BKF					202565
6527-2001	11/10/2012	38	38					INV					25	214959
6527-2002	27/09/2012	11.3	9.9					INV					8.9	
6527-2003	26/09/2012	5.6	5.6					INV					4.1	214961
6527-2010	02/10/2012	5.6	5.6					INV					4.1	214966
6527-2011	28/09/2012	8.6	8.6										8.1	212198
6527-2012	28/09/2012	1	1					INV				Niw	0.5	214962
6527-2013	27/09/2012	1.4	1.4					INV					0.9	214963
6527-2014	08/10/2012	33	33					INV					27	212197
6527-2015	04/10/2012	30	30					INV					27	214964
6527-2016	25/09/2012	10.7	10.7					INV					7.7	212205
6527-2021	09/11/2012	30	30					INV				Niw	22.5	217851
6527-2036	26/09/2012	10.7	10.7					INV					7.7	214965
6527-2123	20/10/2016	4.1	4.1					INV					1.1	273810
6527-2124	20/10/2016	4	4	2	20/10/2016			INV					1	273811
6527-2125	20/10/2016	4	4	2	20/10/2016			INV					1	273812
6527-2126	20/10/2016	4	4	2	20/10/2016			INV					1	273813
6527-2127	21/10/2016	4	4	2	21/10/2016			INV					1	273814
6527-2150	10/09/2018	6	6					INV						330826
6527-2151	20/09/2018	35	35					INV						330836
6527-2152	22/09/2018	35	35					INV						330838
6527-2153	18/09/2018	33	33					INV						330827
6527-2154	17/09/2018	31.2	31.2					INV						330829
6527-2155	11/09/2018	6	6					INV						330835
6527-2156	11/09/2018	6	6					INV						330830
6527-2157	10/09/2018	6	6					INV						330828
6527-2158	15/09/2018	6	6					INV						330837

Unit No	Date	Max Depth (m)	Latest Depth (m)	SWL (m)	SWL Date	TDS (mg/L)	TDS Date	Purpose	Status	Yield (L/sec)	Yield Date	Aquifer	Cased To (m)	Permit No
6527-2160	28/09/2018	4	4					INV						331612
6527-2163	05/11/2018	4	4					INV						331612
6527-2168	26/02/2020	25	25					INV				Neer		360620
6527-2171	25/01/2020	21.3	21.3					INV				Neer		360619
6527-2204	25/11/2019	7	7					MON						350832
6527-2205	26/11/2019	6.5	6.5					MON						350834
6527-2206	26/12/2019	7	7					MON						350835
6527-2207	26/11/2019	7	7					MON						350836
6527-2208	27/11/2019	7	7					MON						350837
6527-2209	27/11/2019	7	7					MON						350839
6527-2210	28/11/2019	7	7					MON						350833
6527-2211	29/11/2019	7	7					MON						350844
6527-2212	28/11/2019	6	6					MON						350843
6527-2213	28/11/2019	7	7					MON						350842
6527-2214	28/11/2019	7	7					MON						350840
6527-2215	27/11/2019	6.8	6.8					MON						350838
6527-2216	25/11/2019	7	7					MON						350831
6527-2217	25/11/2019	7.5	7.5					MON						350830
6527-2219	28/11/2019	7	7					MON						350841
6527-2220	29/11/2019	7	7					MON						350845
6527-2228	01/06/2021	14	14		01/06/2021			ENV	DRY					395156
6527-2229	02/06/2021	14	14		02/06/2021			ENV	DRY					395157
6527-2230	31/05/2021	15.5	15.5		31/05/2021			ENV	DRY					395155
6627-4784						9896	12/10/1952							
6627-4785						5069	12/10/1951							
6627-4786		6.4	6.4	2.13	14/12/1940	4470	14/12/1940							
6627-4801		60.35	60.35	9.14	03/09/1957	1371	03/09/1957			2.53	03/09/1957		46.94	
6627-4802		67.06	67.06	12.19	21/08/1959	1642	21/08/1959	IRR	OPR	3.79	21/08/1959			
6627-4803						5455	22/06/1943		NIU					
6627-4804						6240	22/06/1943		NIU					
6627-4822		12.19	0			2870	12/10/1951		BKF					
6627-4824	21/12/1967	64		17	21/03/1983	80	21/03/1983			1.52	01/01/1970			
6627-4833														
6627-7720	18/03/1987	112	112	43	19/03/1987	3001	19/03/1987			2.75	19/03/1987		81	18895
6627-8413	07/07/1991	7	7	0									7	24944
6627-14232		10	0						BKF					185190
6627-14771	19/04/2012	35	0		19/04/2012				BKF					211067
6627-14777	12/04/2012	60	60	8	12/04/2012	3046	24/02/2012			0.2	13/04/2013		3	211064

117 records



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Appendix G

EPA Section 7



Environment Protection Authority
GPO Box 2607 Adelaide SA 5001
211 Victoria Square Adelaide SA 5000
T (08) 8204 2004
Country areas 1800 623 445

Receipt No :
Admin No : 112576 (76840)

GHD
Level 4
211 Victoria Square
ADELAIDE SA 5000

Contact: Section 7
Telephone: (08) 8204 2026
Email: epasection7@sa.gov.au

Contact: Public Register
Telephone: (08) 8204 9128
Email: epa.publicregister@sa.gov.au

15 February, 2023

EPA STATEMENT TO FORM 1 - CONTRACTS FOR SALE OF LAND OR BUSINESS

The EPA provides this statement to assist the vendor meet its obligations under section 7(1)(b) of the *Land and Business (Sale and Conveyancing) Act 1994*. A response to the questions prescribed in Schedule 1-Contracts for sale of land or business-forms (Divisions 1 and 2) of the *Land and Business (Sale and Conveyancing) Act 1994* is provided in relation to the land.

I refer to your enquiry concerning the parcel of land comprised in

Title Reference CT Volume 5534 Folio 85
Address Allotment 120, 3 Holman Road, CHRISTIE DOWNS SA 5164

Schedule – Division 1 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS OF MORTGAGES, CHARGES AND PRESCRIBED ENCUMBRANCES AFFECTING THE LAND

8. *Environment Protection Act 1993*

Does the EPA hold any of the following details relating to the *Environment Protection Act 1993*:

8.1	Section 59 - Environment performance agreement that is registered in relation to the land.	NO
8.2	Section 93 - Environment protection order that is registered in relation to the land.	NO
8.3	Section 93A - Environment protection order relating to cessation of activity that is registered in relation to the land.	NO
8.4	Section 99 - Clean-up order that is registered in relation to the land.	NO
8.5	Section 100 - Clean-up authorisation that is registered in relation to the land.	NO
8.6	Section 103H - Site contamination assessment order that is registered in relation to the land.	NO
8.7	Section 103J - Site remediation order that is registered in relation to the land.	NO

8.8	Section 103N - Notice of declaration of special management area in relation to the land (due to possible existence of site contamination).	NO
8.9	Section 103P - Notation of site contamination audit report in relation to the land.	NO
8.10	Section 103S - Notice of prohibition or restriction on taking water affected by site contamination in relation to the land.	NO

Schedule – Division 2 – Land and Business (Sale and Conveyancing) Regulations 2010

PARTICULARS RELATING TO ENVIRONMENT PROTECTION

3-Licences and exemptions recorded by EPA in public register

Does the EPA hold any of the following details in the public register:

a)	details of a current licence issued under Part 6 of the <i>Environment Protection Act 1993</i> to conduct any prescribed activity of environmental significance under Schedule 1 of that Act at the land?	NO
b)	details of a licence no longer in force issued under Part 6 of the <i>Environment Protection Act 1993</i> to conduct any prescribed activity of environmental significance under Schedule 1 of that Act at the land?	NO
c)	details of a current exemption issued under Part 6 of the <i>Environment Protection Act 1993</i> from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
d)	details of an exemption no longer in force issued under Part 6 of the <i>Environment Protection Act 1993</i> from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
e)	details of a licence issued under the repealed <i>South Australian Waste Management Commission Act 1979</i> to operate a waste depot at the land?	NO
f)	details of a licence issued under the repealed <i>Waste Management Act 1987</i> to operate a waste depot at the land?	NO
g)	details of a licence issued under the repealed <i>South Australian Waste Management Commission Act 1979</i> to produce waste of a prescribed kind (within the meaning of that Act) at the land?	NO
h)	details of a licence issued under the repealed <i>Waste Management Act 1987</i> to produce prescribed waste (within the meaning of that Act) at the land?	NO

4-Pollution and site contamination on the land - details recorded by the EPA in public register

Does the EPA hold any of the following details in the public register in relation to the land or part of the land:

a)	details of serious or material environmental harm caused or threatened in the course of an activity (whether or not notified under section 83 of the <i>Environment Protection Act 1993</i>)?	YES
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- | | | |
|----|--|-----|
| b) | details of site contamination notified to the EPA under section 83A of the <i>Environment Protection Act 1993</i> ? | NO |
| c) | a copy of a report of an environmental assessment (whether prepared by the EPA or some other person or body and whether or not required under legislation) that forms part of the information required to be recorded in the public register? | YES |
| d) | a copy of a site contamination audit report? | NO |
| e) | details of an agreement for the exclusion or limitation of liability for site contamination to which section 103E of the <i>Environment Protection Act 1993</i> applies? | NO |
| f) | details of an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the <i>Environment Protection Act 1993</i> ? | NO |
| g) | details of an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the <i>Environment Protection Act 1993</i> ? | NO |
| h) | details of a notification under section 103Z(1) of the <i>Environment Protection Act 1993</i> relating to the commencement of a site contamination audit? | NO |
| i) | details of a notification under section 103Z(2) of the <i>Environment Protection Act 1993</i> relating to the termination before completion of a site contamination audit? | NO |
| j) | details of records, held by the former <i>South Australian Waste Management Commission</i> under the repealed <i>Waste Management Act 1987</i> , of waste (within the meaning of that Act) having been deposited on the land between 1 January 1983 and 30 April 1995? | NO |

5-Pollution and site contamination on the land - other details held by EPA

Does the EPA hold any of the following details in relation to the land or part of the land:

- | | | |
|----|--|----|
| a) | a copy of a report known as a "Health Commission Report" prepared by or on behalf of the <i>South Australian Health Commission</i> (under the repealed <i>South Australian Health Commission Act 1976</i>)? | NO |
| b) | details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the <i>Environment Protection Act 1993</i> ? | NO |
| c) | details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the <i>Environment Protection Act 1993</i> ? | NO |
| d) | a copy of a pre-1 July 2009 site audit report? | NO |
| e) | details relating to the termination before completion of a pre-1 July 2009 site audit? | NO |

Records identified in this EPA Statement to Form 1: **SC62629**

The above records have been identified with a YES response in this EPA Statement to Form 1 and can be obtained by contacting the Public Register on (08) 8204 9128 or email epa.publicregister@sa.gov.au

All care and diligence has been taken to access the above information from available records. Historical records provided to the EPA concerning matters arising prior to 1 May 1995 are limited and may not be accurate or complete.



Environment Protection Authority

GPO Box 2607 Adelaide SA 5001
211 Victoria Square Adelaide SA 5000
T (08) 8204 2004
Country areas 1800 623 445

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Level 4
211 Victoria Square
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Contact: Section 7
Telephone: (08) 8204 2026
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15 February, 2023

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I refer to your enquiry concerning the parcel of land comprised in

Title Reference CT Volume 5534 Folio 90
Address Allotment 121, 3 Holman Road, CHRISTIE DOWNS SA 5164

Schedule – Division 1 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS OF MORTGAGES, CHARGES AND PRESCRIBED ENCUMBRANCES AFFECTING THE LAND

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8.7	Section 103J - Site remediation order that is registered in relation to the land.	NO

8.8	Section 103N - Notice of declaration of special management area in relation to the land (due to possible existence of site contamination).	NO
8.9	Section 103P - Notation of site contamination audit report in relation to the land.	NO
8.10	Section 103S - Notice of prohibition or restriction on taking water affected by site contamination in relation to the land.	NO

Schedule – Division 2 – Land and Business (Sale and Conveyancing) Regulations 2010

PARTICULARS RELATING TO ENVIRONMENT PROTECTION

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Does the EPA hold any of the following details in the public register:

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b)	details of a licence no longer in force issued under Part 6 of the <i>Environment Protection Act 1993</i> to conduct any prescribed activity of environmental significance under Schedule 1 of that Act at the land?	NO
c)	details of a current exemption issued under Part 6 of the <i>Environment Protection Act 1993</i> from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
d)	details of an exemption no longer in force issued under Part 6 of the <i>Environment Protection Act 1993</i> from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
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f)	details of a licence issued under the repealed <i>Waste Management Act 1987</i> to operate a waste depot at the land?	NO
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a)	details of serious or material environmental harm caused or threatened in the course of an activity (whether or not notified under section 83 of the <i>Environment Protection Act 1993</i>)?	NO
----	--	----

- b) details of site contamination notified to the EPA under section 83A of the *Environment Protection Act 1993*? NO
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- e) details of an agreement for the exclusion or limitation of liability for site contamination to which section 103E of the *Environment Protection Act 1993* applies? NO
- f) details of an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993*? NO
- g) details of an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993*? NO
- h) details of a notification under section 103Z(1) of the *Environment Protection Act 1993* relating to the commencement of a site contamination audit? NO
- i) details of a notification under section 103Z(2) of the *Environment Protection Act 1993* relating to the termination before completion of a site contamination audit? NO
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- b) details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the *Environment Protection Act 1993*? NO
- c) details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the *Environment Protection Act 1993*? NO
- d) a copy of a pre-1 July 2009 site audit report? NO
- e) details relating to the termination before completion of a pre-1 July 2009 site audit? NO

All care and diligence has been taken to access the above information from available records. Historical records provided to the EPA concerning matters arising prior to 1 May 1995 are limited and may not be accurate or complete.



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