



Preliminary Site Investigation

61 – 71 Goulburn Street, Liverpool, NSW

14 March 2023

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Preliminary Site Investigation

61 – 71 Goulburn Street, Liverpool, NSW



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Acronyms and Abbreviations

Name	Description
ACM	Asbestos Containing Material
AHD	Australian Height Datum
AMG	Australian Map Grid
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure
ASS	Acid Sulphate Soils
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CLM	Contaminated Land Management Act 1997
CoPC	Contaminant of Potential Concern
CSM	Conceptual Site Model
DP	Deposited Plan
DPI	Department of Primary Industries
DSI	Detailed Site Investigation
EPL	Environment Protection License
ESA	Environmental Site Assessment
m	Metre
m AHD	Metres Above Australian Height Datum
m bgl	Metres Below Ground Level
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NSW EPA	New South Wales Environment Protection Authority
OCP	Organochlorine Pesticides
OPP	Organophosphorus Pesticides
PACM	Potential Asbestos Containing Material
PAH	Polycyclic Aromatic Hydrocarbons
PFAS	Per and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulphonate
POEO Act	Protection of the Environment Operations Act 1997
PSI	Preliminary Site Investigation
RAP	Remedial Action Plan
SAQP	Sampling and Analysis Quality Plan
SVOC	Semi-volatile Organic Compounds
TRH	Total Recoverable Hydrocarbons
VOC	Volatile Organic Compounds

1. INTRODUCTION AND OBJECTIVES

Environmental Resources Management Australia Pty Ltd (ERM) was engaged by Sacco Building Group (Sacco) c/o Team 2 Architects (Team 2) to undertake a Preliminary Site Investigation (PSI) of the property located at 61 – 71 Goulburn Street, Liverpool, NSW (the Site).

- The site location is illustrated on **Figure 1** and the current layout is presented on **Figure 2**.

1.1 Objective

ERM understands that the Site is planned to be redeveloped as a private hospital / medical facility. The objective of these works was to undertake a Preliminary Site Investigation (PSI) that refines the current understanding of the Site and aids Sacco in assessing potential liabilities associated with site contamination.

1.2 Scope of Works

To meet the project objective, ERM completed the following scope of works:

- Review of background information relating to the Site, including:
 - Previous investigations relating to site contamination;
 - Information relating to surface water discharge conditions and sample results;
 - The NSW Environment Protection Authority (EPA) Contaminated Land Register;
 - Historical aerial photographs;
 - Groundwater bore information;
 - Relevant government databases;
 - Published soil, geology and topographic maps;
- An inspection of the Site and surrounding area to review current site land-uses; and
- Preparation of this PSI report.

Investigation work was conducted with reference to relevant parts of the following guidelines:

- National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM (1999)) (as amended May 2013) – herein referred to as the ASC NEPM (2013);
- NSW EPA (2017). *Guidelines for the NSW Site Auditor Scheme* (3rd edition); and
- NSW EPA (2020) Consultants Reporting on Contaminated Land, Contaminated Land Guidelines.

2. SITE IDENTIFICATION

The site identification information is presented within the table below:

Item	Description
Site Address	■ 61 – 71 Goulburn Street, Liverpool, NSW, 2170
Legal Description	■ SP 18729; ■ Lot 1 DP 25642; ■ Lot 1 DP 610334; ■ Lot 2 DP 610334; ■ Lot 9 Section 41 DP 758620; ■ Lot 8 Section 41 DP 758620; and ■ Lot 20 DP 1113807.
Local Government Area	■ Liverpool City Council
Current Zoning	■ B4: Mixed Use
Geographical Co-Ordinates	■ 33°55'11.60" S 150°55'42.31" E (Approximate centre of Site)
Site Location and Site Layouts	■ Figure 1 and Figure 2

3. SITE BACKGROUND REVIEW

3.1 Site Setting

The following sections summarise the information obtained during the site background and history review. Copies of all database search results are provided in **Appendix C**.

Item	Description
Site area	4,685 m ²
Current land use	The site is currently used for medium – high density residential purposes
Proposed Future Land Use	Private Hospital / Medical Facility
Surrounding Land use	<p>The land uses surrounding the Site include:</p> <ul style="list-style-type: none"> ■ North: Commercial office facilities / medical centres and medium / high density residential. ■ South: medium density residential building followed by Bigge Park, TAFE NSW Liverpool, commercial buildings and an operational railway line. ■ East: Directly East is Liverpool Hospital and associated medical facilities ■ West: Medium – High density residential, All Saints Catholic Primary School, and beyond is the Westfield Liverpool Shopping Centre.
Site Elevation	Approximately 10 – 15 m Australian Height Datum (AHD)
Topography	Regional topography is generally flat with a slight slope to the east. The Site was identified to slope gently to east.
Hydrology	<p>No surface water was observed within the Site at the time of ERM's inspection.</p> <ul style="list-style-type: none"> ■ During periods of rainfall it is assumed that surface waters would infiltrate unsealed portions of the Site or flow towards drainage infrastructure located within the site boundary and within adjacent roadways.
Geology, Soils and Acid Sulfate Soils	<p>Geology mapping provided by NSW Planning and Environment – resources and energy indicates the majority of the Site is underlain by Cenozoic sediments comprising of unconsolidated alluvial clay, silt, sand, and gravel deposits.</p> <p>The northern portion of the Site was identified to be underlain by Middle Triassic sediments comprising shale, carbonaceous claystone, laminite, lithic sandstone, and rare coal.</p> <p>Soils within the Site are described as:</p> <ul style="list-style-type: none"> ■ Shallow to moderately deep (>100 cm) hardsetting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines. <p>Mapping indicated that the Site and surrounds are comprised of Class 5 Acid Sulfate Soils (ASS) and Class 1 ASS within the buffer area indicating a low risk of ASS within the site,</p>
Hydrogeology	<p>Information from NSW Department of Primary Industries' and the Bureau of Meteorology indicated the following:</p> <ul style="list-style-type: none"> ■ A search of registered groundwater bores identified 33 groundwater wells within the 2 km search radius. Standing water levels were measured between 1.1 metres below ground level (m bgl) to 8.5 m bgl; ■ The registered bores are reported to be used for a mix of monitoring, exploration and research, water supply, manufacturing and industry, and irrigated agriculture purposes; and ■ Groundwater aquifers on the Site and surrounding buffer area (2 km) were described as porous, extensive aquifers of low to moderate productivity.

3.2 Site History

3.2.1 Historical Aerial Photographs

Historical aerial photographs (**Appendix C**) were reviewed to assess potential historical land use practices undertaken within and surrounding the Site. A summary of information obtained from the review is presented within the table below.

Year	Description
1930 – Black & White	<ul style="list-style-type: none"> ■ Site Area: The site is cleared of vegetation and remains undeveloped. ■ Surrounding Area: The surrounding area is primarily comprised of cleared land with low density residential development. The area immediately to the north, south and west of the Site is comprised of low density residential dwellings. Bigge Park appears to be present to the south of the Site. The road network appears consistent with the current configuration, however remains unsealed.
1943 – Black & White	<ul style="list-style-type: none"> ■ Site Area: Development appears to have commenced within the Site. ■ Surrounding Area: the surrounding area is generally consistent with previous aerial imagery with the exception of the railway alignment that appears to have been completed to the east and south of the Site. Liverpool hospital appears to have commenced construction with several building structures located within the southern portion of the existing hospital site.
1953 – Black & White	<ul style="list-style-type: none"> ■ Site Area: Construction appears to have been commenced within the Site. A low density residential dwelling s located within the northern portion with cleared land visible in the central and southern portion. ■ Surrounding Area: Additional low density residential dwellings have been constructed within the surrounding area. Liverpool boys / girls high school appear to have commenced construction to the north east of the Site.
1961 – Black & White	<ul style="list-style-type: none"> ■ Site Area: An additional two low density residential dwellings have been constructed within the Site boundary. ■ Surrounding Area: The area to the south of the Site appears to have been developed for commercial / industrial development. Liverpool Boys and Liverpool Girls High Schools have continued development with several additional buildings and sports fields. Additional buildings have been constructed associated with Liverpool Hospital within the southern and western portion of the current hospital site.
1965 – Black & White	<ul style="list-style-type: none"> ■ Site Area: No significant change since previous aerial imagery ■ Surrounding Area: No significant change since previous aerial imagery.
1970 – Black & White	<ul style="list-style-type: none"> ■ Site Area: Site appears to have been redeveloped with medium density buildings present within the Site boundary. ■ Surrounding Area: Increased commercial development within the surrounding area. Development of Liverpool Pioneers Memorial Park to the East and Development of shopping centre.
1975 – Black & White	<ul style="list-style-type: none"> ■ Site Area: A building within the south of the Site has been demolished. The reminder of the Site is constant with previous aerial imagery. ■ Surrounding Area: Additional commercial / industrial development has been undertaken to the west of the Site. Further ground works and development at the Liverpool Hospital has occurred within the eastern and northern portion of the hospital site area.
1982 – Black & White	<ul style="list-style-type: none"> ■ Site Area: The site appears with the current layout / alignment. ■ Surrounding Area: No significant change since previous aerial imagery
1986 – Colour	<ul style="list-style-type: none"> ■ Site Area: No significant change since previous aerial imagery ■ Surrounding Area: Completed development to the west of the Site including a large shopping centre.
1991 – Colour	<ul style="list-style-type: none"> ■ Site Area: No significant changes since previous aerial photography.

Year	Description
	<ul style="list-style-type: none"> ■ Surrounding Area: Further development of the shopping centre to the west of the Site. Development has occurred at the Site South-east, across the Georges River.
1994 – Colour	<ul style="list-style-type: none"> ■ Site Area: No significant changes since previous aerial photography. ■ Surrounding Area: Further development at Liverpool hospital.
1998 – Colour	<ul style="list-style-type: none"> ■ Site Area: No significant changes since previous aerial photography. ■ Surrounding Area: Liverpool Hospital appears to be largely consistent with the current layout.
2002 – Colour	<ul style="list-style-type: none"> ■ Site Area: No significant changes since previous aerial photography ■ Surrounding Area: Development at the Liverpool Bus Interchange to the South following Bigge Park has occurred. The remainder of the surrounding area appears largely consistent with the previous aerial imagery.
2005 – Colour	<ul style="list-style-type: none"> ■ Site Area: No significant changes since previous aerial photography. ■ Surrounding Area: No significant changes since previous aerial photography.
2009 – Colour	<ul style="list-style-type: none"> ■ Site Area: No significant changes since previous aerial photography. ■ Surrounding Area: Minor development at Liverpool Hospital to the East.
2012 – Colour	<ul style="list-style-type: none"> ■ Site Area: No significant changes since previous aerial photography. ■ Surrounding Area: No significant changes since previous aerial photography.
2015 – Colour	<ul style="list-style-type: none"> ■ Site Area: No significant changes since previous aerial photography. ■ Surrounding Area: No significant changes since previous aerial photography.
2018 – Colour	<ul style="list-style-type: none"> ■ Site Area: No significant changes since previous aerial photography. ■ Surrounding Area: No significant changes since previous aerial photography.
2021 – Colour	<ul style="list-style-type: none"> ■ Site Area: No significant changes since previous aerial photography. ■ Surrounding Area: No significant changes since previous aerial photography.

3.2.2 Historical Business Records

A search of historical business records for the Site and surrounding area (200 m radius) was undertaken from the 1930s to 2015. The results of the search area summarised below, and a copy of historical business records is provided within **Appendix C**.

Year	Registered Business Types
1930 – 1940	No records
1950	<ul style="list-style-type: none"> ■ Carriers – Light Transportation; ■ Metal – Merchants; ■ Printers – General; ■ Tanneries; and ■ Taxi – Truck Service.
1965	<ul style="list-style-type: none"> ■ Car Replacement Parts; ■ Dry Cleaning Services; ■ Air Conditioning – Domestic; ■ Engineers – Refrigeration; and ■ Grocers / Whole-salers.
1970	<ul style="list-style-type: none"> ■ Carriers – Heavy Industrial Transportation; ■ Printers – General; ■ Pest Control Services; ■ Weed Control; ■ Engineers – Civil;

Year	Registered Business Types
	<ul style="list-style-type: none"> ■ Motor Sports Services; and ■ Tyre Retailers.
1980	<ul style="list-style-type: none"> ■ Builder Handyman Contractor Equipment Sale/Hire; ■ Surgical Equipment & Supplies; and ■ Cars – New.
1990	<ul style="list-style-type: none"> ■ Furniture Storage & Removals; ■ Taxi – Truck Service; and ■ Cars- New.
2005	<ul style="list-style-type: none"> ■ Recyclers; ■ Diagnostic Radiology Services; ■ Fire Brigades; ■ General Practitioners & Medicine; ■ Gastroenterologist; ■ Hearing Aid & Audio Specialists & Services; ■ Engineers – Consultants; ■ Charcoal Supplies; ■ Digital Printers; and ■ Bus & Truck Rental Hire,
2010	<ul style="list-style-type: none"> ■ Engineers – Mechanical; ■ Engineers – Consultants; ■ Car or Mini-Bus Hire; and ■ Cleaning – Industrial/Commercial Contractors.
2015	<ul style="list-style-type: none"> ■ Tilers – Wall & Floor; ■ Glass Processing & Manufacturing; ■ Hearing Aid & Audio Specialists & Services; ■ Cardiologists; ■ Surgical Equipment & Supplies; ■ Employment – Agencies; ■ Bus & Truck Rental Hire; ■ Cleaning – Industrial/Commercial Contractors; and ■ Diagnostic Radiology Services.

3.2.3 NSW EPA Contaminated Land Search

A search of the NSW EPA contaminated land database under the CLM Act 1997 undertaken for the Site and a 1 km buffer area indicated the following have been notified to NSW EPA:

Site Name	Address	Activity that caused Contamination	EPA Site Management Class	Distance (m)	Direction
Caltex Service Station Moorebank	■ 2 Bridges Road Moorebank	■ Service Station	■ Regulation under CLM Act not required	■ 960.0	■ South-east
Joyce Foam Products	■ 5-9 Bridges Road Moorebank	■ Chemical Industry	■ Regulation under CLM Act not required	■ 645.0	■ South-east
Warwick Farm Public School	■ 95 Lawrence Hargrave Road Warwick Farm	■ Landfill	■ Regulation under CLM ACT not required	■ 980.0	■ North

3.2.4 NSW EPA Contaminated Lands Records of Notice

A search of the NSW EPA Contaminated Land Records of Notice database was undertaken for the Site and 1 km buffer and indicates there are no Contaminated Land Records of Notice.

3.2.5 NSW EPA PFAS Investigation Program

A search of the NSW EPA PFAS investigation program database indicated that no PFAS investigations had been or were being undertaken at the Site or within the 2 km report buffer area.

3.2.6 National Pollutant Inventory Industrial Facilities

A search of the National Pollutant Inventory (NPI) register indicated the following sites to be located within the 500 m search buffer area:

Facility Name	Address	Primary ANZSIC Class	Latest Report	Distance from Site (m)	Direction
Prysmian Australia Liverpool	■ 1 Heathcote Road	■ Electric Cable and Wire Manufacturing	■ 2018/2019	■ 341.1	■ South-east
Joyce Foam Products Moorebank	■ 5-9 Bridges Road	■ Polymer Foam Product Manufacturing	■ 2018/2019	■ 341.1	■ South-east
Hannanprint – Warwick Farm	■ 8 Priddle Street	■ Printing	■ 2018/2019	■ 477.0	■ East

3.2.7 Licencing under the POEO Act 1997

A search of the NSW EPA record of licensed activities under the *Protection of the Environment Operations Act 1997* undertaken for the site and 500 m buffer area identified the following sites:

Licence Holder	EPL Number	Location Name	Premise Address	Fee Based Activity	Distance to Site	Direction
Sydney Trains	12208	Sydney Trains	Sydney Trains, Haymarket	Railway infrastructure operations Rolling stock operations	*	*
John Holland Rail Pty Ltd	13421	John Holland Rail Network	John Holland Rail Network, Parramatta	Railway infrastructure operations	*	*
Qube Logistics (Rail) Pty Ltd	21361	Rolling Stock Operated on a Licensed Rail Network, Moorebank, NSW	Rolling Stock Operated on a Licensed Rail Network, Moorebank, NSW	Rolling stock operations	*	*
Prysmian Australia Pty Ltd	818	1 Heathcote Road	1 Heathcote Road, Liverpool	Metal waste generation	340.0	South-east

*This license is part of a rail corridor present in the buffer area.

3.2.8 Delicensed Premises still Regulated by EPA and Licences Surrendered,

A search of the NSW EPA record of licensed activities under the *Protection of the Environment Operations Act 1997* undertaken for the Site and a 1 km buffer area identified the following sites:

Licence No	Licence Holder	Location Name	Premise Address	Fee Based Activity	Status	Distance (m)	Direction
20966	CPB Contractors Pty Limited	Moorebank Precinct East – Rail Access Land Package No.1	3 km Rail Link Between SSFL and the Proposed Import-Export Terminal, North Sydney	Crushing, grinding or separating, Land-based extractive activity	Surrendered	Not mapped	Not mapped
11355	Sydney South West Area Health Service	Liverpool Health Service	Elizabeth Street, Liverpool	Hazardous, Industrial or Group A Waste Generation or Storage	Surrendered	20.0	East
13316	John Holland Pty Ltd	Liverpool Turnback Project	Bigge Street, Liverpool, NSW, 2170	Railway systems activities	Surrendered	270	South-east

3.2.9 NSW EPA Clean Up and Penalty Notices

The following sites have been identified as being issued with a clean-up / penalty notice:

Location ID	Notice Type	Notice ID	Licence Holder	Location Name	Distance (m)	Direction
309	Penalty notice	1565149	Prysmian Australia Pty Ltd.	Prysmian Australia Pty Ltd.	340	South East

3.2.10 Defence, Military and UXO Areas

A search of department of Defence (RCIP investigation program) records identified the following:

Site Name	Type	Details	Distance	Direction
Liverpool	Unexploded Ordnance (UXO)	Potential presence of UXO – the Site is part of the Defence Liverpool Area	onsite	onsite

Based on information provided to ERM following completion of the desktop search, the Site is within a Department of Defence UXO buffer zone. ERM notes that the Site is located approximately 9 km north of Holsworthy Barracks where live firing was historically undertaken and as such is likely recorded within the Defence UXO register.

ERM notes that a review of historical aerial photography (Section 3.2.2) did not indicate physical signs such as depressions / craters etc. that may indicate the use of the Site or surrounding area for live firing. ERM also notes that as the surrounding area (also within the buffer) is utilised for a range of low density residential and commercial development the risk of UXO being present within the Site and immediately surrounding area is likely to be low.

However, ERM recommends that prior to any development works, the potential for UXO should be further assessed by a UXO specialist to assess the potential risk of UXO being present within the Site.

- ERM notes that UXO has not been considered further within this PSI.

3.2.11 Former Gasworks Sites

The following former gasworks have been identified within the surrounding area:

Site Name	Details	Distance	Direction
Former Gasworks	Liverpool Gasworks – operated from 1907 – 1928. Remediation of the Site has occurred	1150	South west

3.2.12 Search of Potentially Contaminating Activities

A search for potentially contaminating activities undertaken for the Site and a 500 m buffer area identified no current potentially contaminating activities.

3.2.13 Other Current Potentially Contaminating Activities

A search of other current potentially contaminating activities undertaken for the Site and 200 m buffer area identified no other potentially contaminating activities.

3.3 Previous Investigations

ERM understands that no previous investigations relating to site contamination have been undertaken within the Site.

4. SITE INSPECTION

A site inspection to confirm the nature of current land use was undertaken on 15 September 2021 by Shane Williams, a suitably qualified ERM environmental scientist.

- Site photographs are presented in Appendix B.

The site was located in a mixed use area comprising commercial / industrial properties, medium – high density residential dwellings. Liverpool Hospital is located immediately to the east of the Site.

The Site was accessed via Goulburn Street and comprised 4 brick residential buildings. During the site inspection, the surface of the Site was noted to be comprised of concrete driveway / access ways and unsealed ornamental gardens. Concrete within the Site was generally observed to be free from cracks and or significant deformities. Vegetation within the Site and on the site boundary was observed to be healthy and free from visible stress.

The Site was observed to be generally flat with a slight slope to the South East. While no surface waters were present during the site inspection, during periods of rainfall it is likely that surface waters would like be directed to stormwater infrastructure located within the Site boundary or adjacent roadways.

During the site inspection, no evidence (vents, risers, filler points etc.) of fuel / chemical storage or illegal waste disposal / buried drums etc. was noted. Information provided by the site manager indicated that the Site had no history of fuel storage and has always been utilised for residential dwellings.

During the site inspection the following features were noted within each lot:

- **Lot 61:** A 3 storey residential unit building with eaves on top floor which may be comprised of Potential Asbestos Containing Materials (PACM). Metal windows, door frames, and down pipes. The rear fence is timber paling.
- **Lot 63:** Single story brick residential building and a possible commercial (small business) building. A fully enclosed brick garage sits at the rear of the property with additional access via lane way from Campbell Street. While ERM notes that a hazardous materials survey was not undertaken the garage walls were consider to be comprised of PACM.
- **Lot 69 and Lot 71** – Both lots contain a 3 storey brick residential unit building. Eaves are considered to be constructed of PACM.

5. CONCEPTUAL SITE MODEL

5.1 Potential Sources of Contamination

Based on the site history and background data reviewed and ERM's professional experience, there are no Contaminants of Potential Concern (CoPC) associated with current and historical land uses undertaken in the general area are.

Potential Source	CoPC	Comment
Hazardous building materials	<ul style="list-style-type: none"> Asbestos, PCBs, lead 	<ul style="list-style-type: none"> While ERM notes that this investigation did not include completion of a hazardous materials assessment, due to the age of the building structures (early to mid-1960's) the potential for surface contamination associated with degraded hazardous materials used within building structures should be considered.
Uncontrolled fill	<ul style="list-style-type: none"> Asbestos, total recoverable hydrocarbons (TRH); benzene, toluene, ethylbenzene and xylenes (BTEX); semi-volatile organic compounds (SVOCs), Volatile Organic Compounds (VOCs), heavy metals; polycyclic aromatic hydrocarbons (PAHs), phenols, OCP / OPP 	<ul style="list-style-type: none"> Potential for uncontrolled fill materials to have been imported to the Site from adjacent former industrial sites or during construction of the existing building structures.
Historical onsite and surrounding land uses	<ul style="list-style-type: none"> Asbestos, TRH, BTEX, OCP / OPP, PAH, Heavy Metals, SVOCs, VOCs, and PFAS. 	<ul style="list-style-type: none"> ERM notes that based on historical aerial imagery, the Site appears to have utilised for residential dwellings since initial development. The surrounding area has been utilised for a range of potentially contaminating land uses included the Liverpool hospital site (potential fuel / chemical storage) and other historical commercial / industrial land uses.

5.2 Potential Pathways

The primary potential exposure pathways of concern at the Site are:

- Inhalation of vapour (from soil and/or groundwater) and contaminated dust (from soils);
- Dermal contact and / or incidental ingestion with contaminated surface water and soils / sediments;
- Transport of contamination through surface water flows;
- Transport of contamination to underlying groundwater aquifers; and
- Transport of contaminants through mechanical transport.

5.3 Potential Receptors

Key receptors have been identified as:

- Current site users (residential) and adjacent sensitive receptors e.g. adjacent residents;
- Future site users (commercial / industrial);
- Groundwater beneath the Site and potential future users of groundwater; and
- Workers carrying out installation or maintenance works within the Site.

5.4 Conceptual Site Model

Based on the results of the desktop assessment, site inspection and the potential sources, pathways and receptors identified above ERM developed the below Conceptual Site Model (CSM)

Potential Sources	Pathways	Potential Receptors	Risk of Potentially Complete Pollutant Linkage	Comment
Uncontrolled fill	<ul style="list-style-type: none"> ■ Dermal contact and / or incidental ingestion with contaminated surface waters / soils. 	<ul style="list-style-type: none"> ■ Current and future site users; and ■ Workers carrying out development, installation or maintenance works within the Site. 	<ul style="list-style-type: none"> ■ Low - Moderate 	<ul style="list-style-type: none"> ■ Historical filling of the Site may have occurred following demolition of historical structures and construction of existing residential dwellings
	<ul style="list-style-type: none"> ■ Transport of contamination through surface water flows. 	<ul style="list-style-type: none"> ■ Adjacent sensitive receptors; ■ Current and future site users; and ■ Workers carrying out development, installation or maintenance works within the Site. 	<ul style="list-style-type: none"> ■ Low 	
	<ul style="list-style-type: none"> ■ Transport of contamination to underlying groundwater aquifers 	<ul style="list-style-type: none"> ■ Adjacent sensitive receptors; and ■ Future potential on-site users of groundwater. 	<ul style="list-style-type: none"> ■ Low -Moderate 	
	<ul style="list-style-type: none"> ■ Transport of contaminants through mechanical transport 	<ul style="list-style-type: none"> ■ Workers carrying out development, installation or maintenance works within the Site. 	<ul style="list-style-type: none"> ■ Low - Moderate 	
Historical onsite and surrounding land uses	<ul style="list-style-type: none"> ■ Dermal contact and / or incidental ingestion with contaminated surface waters / soils. 	<ul style="list-style-type: none"> ■ Current and future site users; and ■ Workers carrying out development, installation or maintenance works within the Site. 	<ul style="list-style-type: none"> ■ Low 	<ul style="list-style-type: none"> ■ Potential onsite migration of CoPCs from current / historical commerce/ industrial land uses including wire manufacturing, fuel chemical storage etc.

Potential Sources	Pathways	Potential Receptors	Risk of Potentially Complete Pollutant Linkage	Comment
	<ul style="list-style-type: none"> Transport of contamination through surface water flows. 	<ul style="list-style-type: none"> Adjacent sensitive receptors; Current and future site users; and Workers carrying out development, installation or maintenance works within the Site. 	<ul style="list-style-type: none"> High 	
	<ul style="list-style-type: none"> Transport of contamination to underlying groundwater aquifers 	<ul style="list-style-type: none"> Adjacent sensitive receptors; and Future potential on-site users of groundwater. 	<ul style="list-style-type: none"> Low - Moderate 	
	<ul style="list-style-type: none"> Transport of contaminants through mechanical transport 	<ul style="list-style-type: none"> Workers carrying out development, installation or maintenance works within the Site. 	<ul style="list-style-type: none"> Low 	
Hazardous building materials	<ul style="list-style-type: none"> Inhalation of contaminated dust. 	<ul style="list-style-type: none"> Current and future site users; and Workers carrying out development, installation or maintenance works within the Site 	<ul style="list-style-type: none"> Low - moderate 	<ul style="list-style-type: none"> While ERM notes that this investigation did not include completion of a hazardous materials assessment, due to the age of the building structures (late 1970's / early 1980's) and the demolition of former structures within the Site the potential for surface contamination associated with degraded hazardous materials used within building structures should be considered.
	<ul style="list-style-type: none"> Transport of contaminants through mechanical transport 	<ul style="list-style-type: none"> Current and future site users; and Workers carrying out development, installation or maintenance works within the Site. 	<ul style="list-style-type: none"> Low - moderate 	

5.5 Qualitative Evaluation of Environmental Risk

The results of the PSI indicate the Site presents a low risk of contamination that may impact current / future land users, however ERM considers there may be a potential risk to human health / ecological receptors due to the following potentially complete pollutant linkages identified at the Site:

- Potential uncontrolled fill materials associated with historical land uses or construction of the existing building structures;
- potential impacted surface materials resulting from degradation of hazardous materials within onsite building structures; and
- potential for groundwater impact from current / historical chemical / fuel storage at adjacent commercial / industrial buildings located within close proximity to the Site.

Based on information reviewed as part of this PSI, it is the opinion of ERM that while the risk to current onsite human health is generally considered to be low, where Sacco require a greater understanding of liabilities or where there is a planned change of land use or planned intrusive / construction works, a detailed site investigation (DSI) of soil and groundwater conditions should be undertaken to assess the contamination status of the Site.

- Prior to undertaking investigation works, a Sampling and Analysis Quality Plan (SAQP) detailing the requirements for further investigation should be developed.

While the specific requirements of the investigation would be detailed within the SAQP, ERM considers that the DSI should be undertaken on a targeted basis in consideration of the identified contaminants of potential concern (CoPCs) and include an assessment of soil and groundwater as follows:

- a targeted sampling approach to assess potential waste classification requirements during any future basement excavation works and point sources of contamination such as uncontrolled fill and contaminated soils / groundwater's associated with historical onsite and offsite land uses; and
- the collection of background samples to ensure collected results are assessed in consideration of naturally occurring conditions.

6. CONCLUSIONS AND RECOMMENDATIONS

ERM was engaged by Sacco) c/o Team 2 to undertake a PSI of the property located at 61 – 71 Goulburn Street, Liverpool, NSW (the Site).

ERM understands that the Site is planned to be redeveloped as a private hospital / medical facility. The objective of these works was to undertake a PSI that refines the current understanding of the Site and aids Sacco in assessing potential constraints associated with site contamination.

To meet the above objectives, ERM undertook a PSI including a review of the NSW EPA contaminated land register, historical aerial photographs, groundwater-bore information; relevant government databases, published soil, geology and topographic maps and a site inspection.

The results of the PSI indicated the following:

- The site was located in a mixed use area comprising commercial / industrial properties, medium – high density residential dwellings. Liverpool Hospital is located immediately to the east of the Site.
- The majority of the Site is underlain by Cenozoic sediments comprising of unconsolidated alluvial clay, silt, sand, and gravel deposits. The northern portion of the Site is underlain by Middle Triassic sediments comprising shale, carbonaceous claystone, laminate, lithic sandstone, and rare coal.
- Results of desktop searches indicated groundwater to be present within the surrounding area at depths ranging from 1.1 m bgl to 8.5 m bgl with registered groundwater bores. Groundwater bores within the surrounding area were reported to be used for a mix of monitoring, exploration and research, water supply, manufacturing / industry and irrigated agriculture purposes.
- Historical records indicated that the Site was initially developed in the 1940's and constructed to its current configuration in the early 1980's.

Based on information reviewed as part of this PSI, ERM considers while the risk to human health ecological receptors is generally low, the following potential SPR linkages may potentially be present at the Site:

- Potential uncontrolled fill materials associated with historical demolition / filling activities or construction of the existing building structures;
- potential impacted surface materials resulting from degradation of hazardous materials within onsite building structures; and
- potential for groundwater impact from current / historical chemical / fuel storage at adjacent commercial / industrial buildings located within close proximity to the Site.

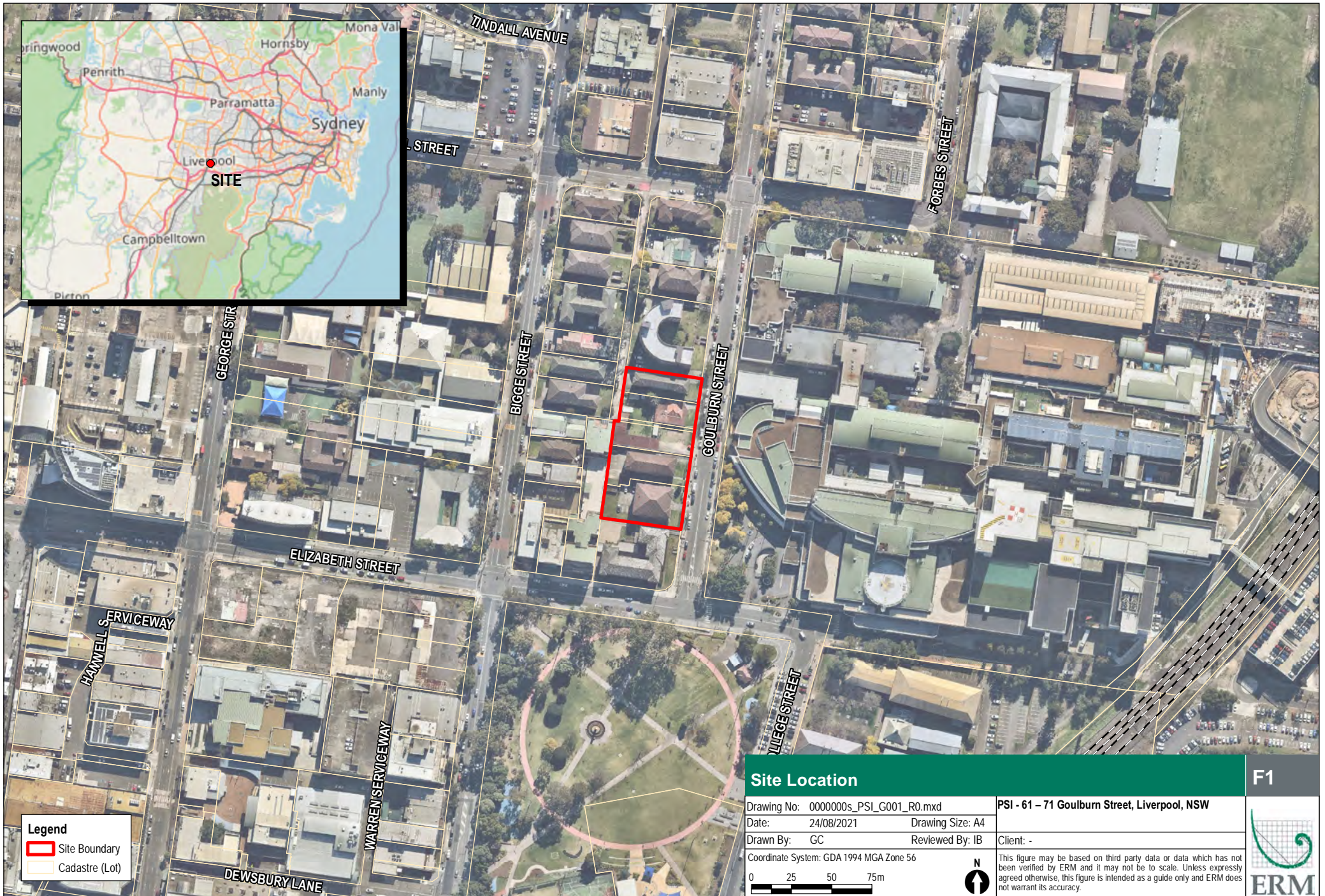
ERM has reviewed Ministerial Direction 4.4 – Remediation of Contaminated Land; and provides this PSI to address Ministerial Direction 4.4(1), as follows:

- A planning proposal authority must not include in a particular zone (within the meaning of the local environmental plan) any land to which this direction applies if the inclusion of the land in that zone would permit a change of use of the land, unless:
- (b) if the land is contaminated, the planning proposal authority is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for all the purpose for which land in the zone concerned is permitted to be used.

Based on information reviewed as part of this PSI, it is the opinion of ERM that while the risk to current onsite human health is generally considered to be low, a DSI is required to be undertaken to more fully assess the potential for contamination as identified within this PSI.

Where contamination is identified that would pose a risk to receptors, a Remedial Action Plan (RAP) would need to be developed, approved by an appropriate authority and implemented to ensure the Site is suitable for the intended land use prior to construction.

APPENDIX A FIGURES



F1



Legend

Site Boundary

Cadastre (Lot)

Site Layout

Drawing No: 0000000s_PSI_G002_R0.mxd	PSI - 61 - 71 Goulburn Street, Liverpool, NSW
Date: 24/08/2021	Drawing Size: A4
Drawn By: GC	Reviewed By: IB
Client: -	
Coordinate System: GDA 1994 MGA Zone 56	
0 10 20 30m	
N	
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.	

F2



APPENDIX B SITE PHOTOGRAPHS



Photograph 1

View of site entrance facing west



Photograph 2

View of site entrance facing west



Photograph 3

View of sealed portion of Site



Photograph 4

View of grassed portion of Site



Photograph 5

Sealed area and adjacent stormwater easement



Photograph 6

View of garage area, likely constructed of PACM



Photograph 7

Potential degraded PACM



Photograph 8

View of rear / garage area



Photograph 9

Onsite building structure


APPENDIX C DESKTOP SEARCH RESULTS

Due Diligence Insight Report

61-71 Goulburn Street
Liverpool, NSW

20 August 2021



An aerial photograph of a dense, green forest. A prominent, light-colored, rocky outcrop or cliff face is visible, running diagonally from the upper left towards the lower right. The forest is thick with trees, and the overall scene is captured from a high angle, looking down on the landscape.

Understanding your report

Your Report has been produced by Land Insight and Resources (Land Insight).

Your Report is based on information available from public databases and sources at the date of reporting. The information gathered relates to land that is within a 200 to 2000m radius (buffer zone) from the boundaries of the Property. A smaller or larger radius may be applied for certain records (as listed under records and as shown in report maps).

While every effort is made to ensure the details in your Report are correct, Land Insight cannot guarantee the accuracy or completeness of the information or data provided.

The report provided by Land Insight includes data listed on page 4 (table of contents). All sources of data and definitions are provided in the Product Guide (Attached). For a full list of references, metadata, publications or additional information not provided in this report, please contact info@liresources.com.au

The report does not include title searches; dangerous good searches or; property certificates (unless requested); or information derived from a physical inspection, such as hazardous building materials, areas of infilling or dumping/spilling of potentially contaminated materials. It is important to note that these documents and an inspection can contain information relevant to contamination that may not be identified by this Report.

Due to the ongoing nature of database development and frequency of updates provided by various state government regulators the data displayed within this report is only current from date of production.

This Report, and your use of it, is regulated by Land Insight's Terms and Conditions (See Land Insight's Product Guide).

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Attachment A - Report Maps

Attachment B - Historical Imagery

Land Insight Product Guide and Terms and Conditions

SUMMARY

 Section 1	PROPERTY SETTING	Identified
Sensitive Receptors Planning Control Heritage Soil and Land Information Geology and Topography		
 Section 2	HYDROGEOLOGY	Identified
Aquifer Groundwater Bores and Other Borehole investigations Groundwater Dependent Ecosystems (GDE) Hydrogeology Units Wetlands		
 Section 3	ENVIRONMENTAL REGISTERS LICENCES AND INCIDENTS	Identified
Contaminated Land Public Register Sites Regulate by Other Jurisdictional Body (Former Gaswork sites / PFAS sites) Licensing and Regulated Sites National Pollutant Inventory (NPI)		
 Section 4	POTENTIALLY CONTAMINATED AREAS	Identified
Former Potentially Contaminated Land Current and Historical Potentially Contaminating activities (PCA)		
 Section 5	NATURAL HAZARDS	Identified
Erosion risk Bushfire prone land Fire history Flood hazards		



Section 1 Property Setting



1.1 SENSITIVE RECEPTORS

Map 1.1 (200m Buffer)

Sensitive receptor	Category	Distance (m)	Direction
Bigge Park	Parks	152.6	South
Liverpool Hospital School	School Education	119.3	East
Liverpool Hospital	Hospital	133.2	East
South Western Sydney Clinical School, UNSW	Education Facility	49.1	East
TAFE NSW Liverpool	School Education	164.3	South-east
Liverpool Community Health Service	Health Care Services	148.2	North
All Saints Catholic College	School Education	107.8	West
Health Services Building	Hospital	159.0	North-east
Liverpool Child and Family Health Centre	Health Care Services	150.7	North
South Western Sydney Local Health District	Community Centres & Services	34.0	East
Bigge Street Medical Centre	Health Care Services	145.1	North

1.2 PLANNING CONTROLS

Map 1.2 (onsite)

Zoning

Code	Zoning	Details
B4	Mixed Use	Liverpool Local Environmental Plan 2008 - Amendment No 56

Environmental Planning Instruments

Type	Category	Details
State Environmental Planning Policy	Wind Turbine Buffer Zone Map	State Environmental Planning Policy (Western Sydney Aerotropolis) 2020

Other Planning Information

Type	Category	Details
Not identified	-	-

1.3 HERITAGE

Map 1.3 (200m Buffer)

State and Local Heritage

Site ID	Site Name	Type	Details	Distance (m)	Direction
89	Plan of Town of Liverpool (early town centre street layout'Hoddle 1827)	Heritage conservation Area	Item - General significance= Local	0.3	East
79	Cast-iron letterbox	Heritage conservation Area	Item - General significance= Local	105.9	South-east
82	Bigge Park	Heritage conservation Area	Item - General significance= State	59.1	South
85	All Saints Roman Catholic School	Heritage conservation Area	Item - General significance= Local	152.8	West
-	Bigge Park Conservation Area	Heritage conservation Area	Conservation Area - General significance= Local	onsite	onsite
80	Liverpool College (TAFE) site, including Blocks A'G, chimneystack, fences, gatehouses and archaeolo*	Heritage conservation Area	Item - General significance= State	114.3	South-east
5053937	Liverpool TAFE College (former Liverpool Hospital)	Complex / Group	Type= Complex / Group	114.3	South-east

Australian Heritage Database

Site ID	Site Name	Type	Details	Distance (m)	Direction
Not identified	-	-	-	-	-

Commonwealth Heritage List, National Heritage List and World Heritage Area.

1.4 SOIL AND LAND USE INFORMATION

Map 1.4a/1.4b (onsite)

Soil Landscape

Soil Landscape	bt	BLACKTOWN	Soil Group	RESIDUAL
Description	<p>Landscape—gently undulating rises on Wianamatta Group shales. Local relief to 30 m, slopes usually >5%. Broad rounded crests and ridges with gently inclined slopes. Cleared Eucalypt woodland and tall open-forest (dry sclerophyll forest).</p> <p>Soils—shallow to moderately deep (>100 cm) hardsetting mottled texture contrast soils, red and brown podzolic soils (Dr3.21, Dr3.31, Db2.11, Db2.21) on crests grading to yellow podzolic soils (Dy2.11, Dy3.11) on lower slopes and in drainage lines.</p> <p>Limitations—localised seasonal waterlogging, localised water erosion hazard, moderately reactive highly plastic subsoil, localised surface movement potential.</p>			

Salinity

Salinity Hazard	Very High	Sydney Metropolitan Western Study Area Hydrogeological Landscapes
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Radon

Radon Level	Bq/m ³	5 - 19
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Typical radon levels in Australia are low and the values shown are the average values for each census district. For specific location, factors such as the local geology and house type could lead to different values. (ARPANSA).

Acid Sulfate Soil

ASS Risk Map (Table 1.4.1)	On the Property?	Within Buffer?
Class 1	-	Yes
Class 5	Yes	Yes

National Acid Sulfate Soils Atlas

Atlas of Australian ASS (Table 1.4.2)	Cq(p4)	ASS in inland lakes, waterways, wetlands and riparian zones	Probability of Occurrence	Extremely low probability of occurrence
--	--------	---	---------------------------	---

Table 1.4.1. Classification scheme in the ASS Planning Maps

Class of Land as shown on ASS Planning Maps	
1	Any works.
2a	Works below the natural ground surface. Works by which the watertable is likely to be lowered.
2b	Works other than ploughing below the natural ground surface. Works by which the watertable is likely to be lowered.
3	Works more than 1 metre below the natural ground surface. Works by which the watertable is likely to be lowered more than 1 metre below the natural ground surface.
4	Works more than 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered more than 2 metres below the natural ground surface.
5	Works within 500 metres of adjacent Class 1, 2a, 2b, 3 or 4 land that is below 5 metres Australian Height Datum and by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2a, 2b, 3 or 4 land.

For each class of land, the maps identify the type of works likely to present an environmental risk if undertaken in the particular class of land. If these types of works are proposed, further investigation is required to determine if ASS are actually present and whether they are present in such concentrations as to pose a risk to the environment.

Table 1.4.2. Atlas of Australian Acid Sulfate Soils¹ (ASRIS) (CSIRO/NatCASS)

Probability of Occurrence of ASS ¹	
A	High Probability of occurrence - (>70% chance of occurrence in mapping unit)
B	Low Probability of occurrence - (6-70% chance of occurrence in mapping unit)
C	Extremely low probability of occurrence - (1-5% chance of occurrence in mapping unit)
D	No probability of occurrence - (<1% chance of occurrence in mapping unit)
x	Disturbed ASS¹ terrain - (ASS ¹ material present below urban development).
u	Unclassified - (Insufficient information to classify map unit)
Zones	
a	Potential acid sulfate soil material and/or Monosulfidic Black Ooze (MBO).
b, c	Potential acid sulfate soil generally within upper 1 m.
c, d, e	ASS ¹ generally within upper 1 m.
f	ASS ¹ generally below 1 m from the surface
g	ASS ¹ , generally below 3 m from the surface.
h	ASS ¹ generally within 1 m of the surface.
i, j	ASS ¹ generally below 1 m of the surface.
k	ASS ¹ material and/or Monosulfidic Black Ooze (MBO).
l, m, n, o, p, q	ASS ¹ generally within upper 1 m in wet / riparian areas.
Subscripts to codes	
(a)	Actual acid sulfate soil (AASS) = sulfuric material.
(p)	Potential acid sulfate soil (PASS) = sulfidic material.
(q)	Monosulfidic Black Ooze (MBO) is organic ooze enriched by iron monosulfides.
Confidence levels	
(1)	All necessary analytical and morphological data are available
(2)	Analytical data are incomplete but are sufficient to classify the soil with a reasonable degree of confidence
(3)	No necessary analytical data are available, but confidence is fair, based on a knowledge of similar soils in similar environments
(4)	No necessary analytical data are available, and classifier has little knowledge or experience with ASS, hence classification is provisional

¹Acid Sulfate Soils (ASS) are all those soils in which sulfuric acid may be produced, is being produced, or has been produced in amounts that have a lasting effect on main soil characteristics (Pons 1973). Acid sulfate soil (ASS) may include PASS or AASS + PASS. Potential acid sulfate soil (PASS) = sulfidic material. Actual acid sulfate soil (AASS) = sulfuric material.

1.5 GEOLOGY AND TOPOGRAPHY

Map 1.5 (onsite)

Geology

Map Sheet	Code	Formation	Age	Group	Dominant Lithology	Description
Newcastle to Wollongong Coastal Quaternary Mapping	CZ_a	-	Cenozoic	Alluvium	Clastic sediment	Unconsolidated alluvial clay, silt, sand, and gravel deposits.
Penrith 1:100,000 Geological Sheet	Twib	Bringelly Shale	Middle Triassic	Wianamatta Group	Shale	Shale, carbonaceous claystone, laminite, lithic sandstone, rare coal.

Naturally Occurring Asbestos Potential (NOA)

Category	On the Property?	Within Buffer?
Not identified	-	-

Topography

Topography	10 mAHD
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Section 2 Hydrogeology



2.1 HYDROGEOLOGY AND GROUNDWATER BORES

Map 2.1 (2000m Buffer)

	On the Property?	Within Buffer?
Aquifer Type	Porous, extensive aquifers of low to moderate productivity	Porous, extensive aquifers of low to moderate productivity
Drinking Water Catchments	Not identified	Not identified
Protected Riparian Corridor	Not identified	Brickmakers Creek Cabramatta Creek Georges River
UPSS Environmentally Sensitive Zone	SYDNEY COAST-GEORGES RIVER	SYDNEY COAST-GEORGES RIVER
Wetlands	Not identified	Estuarine Wetland Reservoir

Groundwater Bores

Map ID	Groundwater Bore ID	Authorised Purpose	Completion Date	Bore Depth (m)	Drilled Depth (m)	SWL (m)	Salinity	Yield (L/s)	Distance (m)	Direction
36	GW113068	Monitoring	10/07/2003	10	10				360.8	South-east
37	GW113069	Monitoring	10/07/2003	10	10				413.0	South-east
40	GW113072	Monitoring	11/07/2003	9.5	9.5				446.8	South-east
38	GW113070	Monitoring	10/07/2003	10	10				505.3	South-east
41	GW113073	Monitoring	11/07/2003	10	10				528.1	South-east
39	GW113071	Monitoring	10/07/2003	10	10				603.7	South-east

Map ID	Groundwater Bore ID	Authorised Purpose	Completion Date	Bore Depth (m)	Drilled Depth (m)	SWL (m)	Salinity	Yield (L/s)	Distance (m)	Direction
15	GW058698	Exploration or research	1/07/1984	19.5	19.5				626.7	East
42	GW113074	Monitoring	11/07/2003	10	10				645.7	South-east
50	GW116613	Null	N/A	9	23.5				660.0	South-west
49	GW116612	Null	N/A	9	23.5				667.7	South-west
51	GW116614	Null	N/A	9	23.3				668.2	South-west
43	GW113075	Monitoring	11/07/2003	9.5	9.5				693.2	South-east
33	213404	Unknown							722.6	North-east
13	GW058697	Exploration or research	1/07/1984	19.2	19.2	8.5		0.13	783.2	East
18	GW102641	Manufacturing and industry	1/01/1998	16.5	16.7	5.13	420.00 mg/L	0.2	930.1	South
3	GW029192	Water supply, Manufacturing and industry	1/11/1968	2.4	2.4				1035.0	South
24	GW029197	Water supply, Manufacturing and industry	1/11/1968	2.4	2.4				1045.0	South-east
2	GW029196	Water supply, Manufacturing and industry	1/11/1968	2.4	2.4				1055.6	South-east
1	GW029194	Water supply, Manufacturing and industry	1/11/1968	2.4	2.4				1066.6	South-east
7	GW029195	Water supply, Manufacturing and industry	1/11/1968	2.4	2.4				1066.6	South-east
25	GW029193	Water supply, Manufacturing and industry	1/11/1968	2.4	2.4				1078.2	South-east
19	GW103801	Monitoring	11/03/1992	3	3				1158.8	West
20	GW103804	Monitoring	10/04/1995	3	3				1158.8	West
21	GW103802	Monitoring	10/04/1995	5	5				1158.8	West
22	GW103805	Monitoring	10/03/1995	4	4				1158.8	West
23	GW103800	Monitoring	11/03/1992	3	3				1158.8	West
27	GW103803	Monitoring	10/04/1995	3	3				1158.8	West
28	GW103799	Monitoring	12/06/1991	3.3	3.3				1158.8	West
35	GW113200	Monitoring	12/11/2013	10	10				1265.5	South-west
16	GW101283	Monitoring	11/06/1996	4.6	4.6	1.4			1672.6	West
29	GW101282	Monitoring	11/06/1996	4	4	1.1			1672.6	West
17	GW101281	Monitoring	11/06/1996	3.5	3.5	1.3			1672.8	West
30	GW101280	Monitoring	11/06/1996	6	6	1.34			1672.9	West

Map ID	Groundwater Bore ID	Authorised Purpose	Completion Date	Bore Depth (m)	Drilled Depth (m)	SWL (m)	Salinity	Yield (L/s)	Distance (m)	Direction
31	GW016829	Water supply	1/02/1958	5.4		3.6		2.27	1678.1	South
5	GW028330	Water supply, Manufacturing and industry	1/01/1966	6.4	6.4	1.8			1692.1	South-east
6	GW024497	Water supply, Manufacturing and industry	1/10/1965	3	3				1719.0	South-east
46	GW111872	Monitoring	31/10/2008	6	6				1747.6	South
14	GW025907	Water supply, Manufacturing and industry	1/04/1966	2.4	2.4				1788.2	South-east
4	GW027745	Water supply, Manufacturing and industry	1/02/1968	2.4	2.4				1811.7	South-east
11	GW027249	Water supply, Manufacturing and industry	1/07/1967	2.4	2.4				1811.7	South-east
8	GW031044	Water supply, Manufacturing and industry	1/10/1968	2.4	2.4				1828.3	South-east
47	GW111873	Monitoring	30/10/2008	7.2	0				1829.9	South
12	GW027250	Water supply, Manufacturing and industry	1/07/1967	2.4	2.4				1835.4	South-east
48	GW111874	Monitoring	30/10/2008	6	6				1843.7	South
26	GW031045	Water supply, Manufacturing and industry	1/10/1968	2.4	2.4				1851.8	South-east
34	GW029639	Water supply, Manufacturing and industry	1/02/1969	2.5	2.5				1875.5	South-east
9	GW031293	Water supply, Manufacturing and industry	1/12/1968	2.4	2.4				1899.4	South-east
45	213011	Unknown							1952.0	North-west
32	GW017343	Irrigated agriculture		30.4			3001-7000 ppm		1975.1	East
10	GW031063	Water supply, Manufacturing and industry	1/05/1969	2.4	2.4				1986.6	South-east
44	GW114196	Monitoring	1/06/2010	10	10				1995.2	South

Groundwater Bores Driller Lithology Details

Groundwater Bore ID	From Depth – To Depth (m)	Lithology	Distance (m)	Direction
GW113068	#N/A		360.8	South-east
GW113069	#N/A		413.0	South-east
GW113072	#N/A		446.8	South-east
GW113070	#N/A		505.3	South-east
GW113073	#N/A		528.1	South-east
GW113071	#N/A		603.7	South-east

GW058698	0m-11.5m Clay black grey 11.5m-12m Clay coarse sandy gravel 12m-19m Clay grey sandy 19m-19.5m Shale	626.7	East
GW113074	#N/A	645.7	South-east
GW116613	#N/A	660.0	South-west
GW116612	#N/A	667.7	South-west
GW116614	#N/A	668.2	South-west
GW113075	#N/A	693.2	South-east
213404	#N/A	722.6	North-east
GW058697	0m-5m Clay stiff 5m-6m Sand soft silty 6m-8m Sand coarse silty, wood charcoal 8m-14m Sand grey silty coarse water supply 14m-16m Clay grey silty, some coarse sand 16m-18.3m Clay grey silty 18.3m-19.2m Slate clayey	783.2	East
GW102641	0m-2m Brown lt. clay 2m-3.4m Clay red and brown 3.4m-10.5m Silt lt. brown and fine sand 10.5m-14.2m Silt claying brown yellow 14.2m-16.1m Gravels 16.1m-16.7m Shale	930.1	South
GW029192	0m-2.43m Loam sandy	1035.0	South
GW029197	0m-2.43m Loam sandy	1045.0	South-east
GW029196	0m-2.43m Loam sandy	1055.6	South-east
GW029194	0m-2.43m Loam sandy	1066.6	South-east
GW029195	0m-2.43m Loam sandy	1066.6	South-east
GW029193	0m-2.43m Loam sandy	1078.2	South-east
GW103801	0m-0.1m Concrete 0.1m-1m Fill,sand/gravel,dark grey 1m-3m Clay,grey brown	1158.8	West
GW103804	0m-0.1m Concrete 0.1m-0.2m Sandy gravelly fill,black 0.2m-3m Clay,black,yellow brown,soft	1158.8	West
GW103802	0m-0.1m Concrete 0.1m-0.2m Sandy fill 0.2m-1.5m Clay black,soft,moist 1.5m-4.1m Clay yello brown,soft 4.1m-5m Clay highly weathered,brown	1158.8	West
GW103805	0m-0.2m Concrete gravelly fill 0.2m-1.5m Clay orangy brown 1.5m-2.5m Clay yellow brown,puggy 2.5m-4m Sandy clay	1158.8	West
GW103800	0m-0.2m Concrete 0.2m-1m Fill,sand,dark grey 1m-3m Clay,grey,brown,semiplastic	1158.8	West
GW103803	0m-0.1m Concrete 0.1m-0.2m Sandy fill 0.2m-1.5m Clay grey yellow brown 1.5m-3m Clay,yellow brown soft puggy	1158.8	West
GW103799	0m-0.1m Concrete 0.1m-3m Sand/grey/brown medium 3m-3.3m Clay grey/brown soft silty	1158.8	West
GW113200	#N/A	1265.5	South-west
GW101283	0m-0.3m Gravelly sand (fill) 0.3m-4m Silt to sandy clay 4m-4.6m Interbedded sandy gravel and clay	1672.6	West

GW101282	0m-1m Sand (fill) 1m-3.8m Sandy to gravelly clay 3.8m-4m Clayey gravel	1672.6	West
GW101281	0m-1m Clayey sand (fill) 1m-3.5m Silty to sandy clay	1672.8	West
GW101280	0m-0.2m Sandy clay (fill) 0.2m-4.2m Clay with minor gravel 4.2m-6m Interbedded gravels and clays	1672.9	West
GW016829	#N/A	1678.1	South
GW028330	0m-5.48m Driller 5.48m-6.4m Sand nominal water supply	1692.1	South-east
GW024497	0m-0.3m Topsoil 0.3m-1.21m Clay 1.21m-2.43m Loam sandy 2.43m-3.04m Sand	1719.0	South-east
GW111872	#N/A	1747.6	South
GW025907	0m-0.91m Clay 0.91m-1.52m Loam sandy 1.52m-2.43m Sand	1788.2	South-east
GW027745	0m-1.52m Loam sandy 1.52m-2.43m Sand	1811.7	South-east
GW027249	0m-1.52m Clay soil 1.52m-2.43m Sand	1811.7	South-east
GW031044	0m-2.44m Loam sandy	1828.3	South-east
GW111873	#N/A	1829.9	South
GW027250	0m-1.52m Clay soil 1.52m-2.43m Sand	1835.4	South-east
GW111874	#N/A	1843.7	South
GW031045	0m-2.44m Loam sandy	1851.8	South-east
GW029639	#N/A	1875.5	South-east
GW031293	0m-1.83m Clay 1.83m-2.44m Loam sandy	1899.4	South-east
213011	#N/A	1952.0	North-west
GW017343	#N/A	1975.1	East
GW031063	0m-1.52m Clay 1.52m-2.13m Loam sandy 2.13m-2.43m Sand water supply	1986.6	South-east
GW114196	#N/A	1995.2	South

2.2 HYDROGEOLOGY AND OTHER BOREHOLES

Map 2.2 (500m Buffer)

	On the Property?	Within Buffer?
Groundwater Vulnerability	Not identified	Not identified
Groundwater Exclusion Zones ^{1,2}	Not identified	Not identified
Hydrogeologic Unit	Late Permian/Triassic sediments (porous media - consolidated)	Late Permian/Triassic sediments (porous media - consolidated) Surficial Sediment Aquifer (porous media - unconsolidated)

¹ - Botany Groundwater Management Zones (BGMZ): Zone 1 – the use of groundwater remains banned; Zones 2 to 4 – domestic groundwater use is banned, especially for drinking water, watering gardens, washing windows and cars, bathing, or to fill swimming pools.

² - Williamstown Groundwater Management Zones (WGMZ): Primary Management Zone – this area has significantly higher levels of PFAS detected and therefore, the strongest advice applies. Secondary Management Zone – this area has some detected levels of PFAS; Broader Management Zone – the topography and hydrology of the area means PFAS detections could occur now and into the future.

Groundwater Dependent Ecosystems (GDE)

	On the Property?	Within Buffer?
Aquatic	Not identified	High potential GDE - from national assessment High potential for GW interaction
Terrestrial	Not identified	Not identified

Aquatic - Ecosystems that rely on the Surface expression of groundwater.

Terrestrial - Ecosystems that rely on the Subsurface expression of groundwater.

Other Known Borehole Investigations (Coal Seam Gas (CSG), Petroleum Wells and Other Boreholes)

Borehole ID	Purpose	Project	Client/ Licence	Date Drilled	Depth (m)	Distance (m)	Direction
TP_PB141	Borehole	NWRL_R452_SouthSydneyFr eightLine	ARTC	7/04/200 9	2	405.9	South



Section 3 Environmental Registers, Licences and Incidents



3.1 CONTAMINATED LAND PUBLIC REGISTER

Map 3.1 (1000m Buffer)

Sites Notified as Contaminated to the EPA

Site Name	Address	Activity that caused Contamination	EPA Site Management Class (Table 3.1.1)	Distance (m)	Direction
Caltex Service Station Moorebank	2 Bridges ROAD MOOREBANK	Service Station	Regulation under CLM Act not required	960.0	South-east
Joyce Foam Products	5-9 Bridges ROAD MOOREBANK	Chemical Industry	Regulation under CLM Act not required	645.0	South-east
Warwick Farm Public School	95 Lawrence Hargrave ROAD WARWICK FARM	Landfill	Regulation under CLM Act not required	980.0	North

If the record does not contain a complete street address and/or cannot be located, the records' geographic location will be approximated and reported as being within the surrounding area.

Contaminated Land Record of Notices

Site Name	Area n°	Address	Notices	Distance (m)	Direction
Not identified	-	-	-	-	-

If the record does not contain a complete street address and/or cannot be located, the records' geographic location will be approximated and reported as being within the surrounding area.

Table 3.1.1. EPA Site Management Class Explanation

Table 3.1.1 EPA Site Management Class	
EPA Site Management Class	
Under Assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment

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

The EPA maintains a record of sites that have been notified to the EPA by owners or occupiers as contaminated land. The sites notified to the EPA are recorded on the register at various stages of the assessment and/or remediation process.

3.2 SITES REGULATED BY OTHER JURISDICTIONAL BODY

Map 3.2 (2000m Buffer)

Defence, Military Sites and UXO Areas

Site name	Type*	Details	Distance (m)	Direction
Liverpool	Unexploded Ordnance (UXO)	Potential presence of UXO = Other This site is part of the Defence Liverpool area. [Source: Department of Defence Australian Government]	onsite	onsite

*RCIP (Regional Contamination Investigation Program). UXO (Unexploded Ordnance Areas)

Former Gasworks Sites

Site name	Description	Distance (m)	Direction
Former Gaswork	Liverpool Gasworks, which operated from 1907 to 1928. Remediation of the site has been undertaken with the site deemed as suitable for the intended land use of recreation and open space.	1150.0	South-west

PFAS Sites

Site name	Description	Source	Distance (m) *	Direction
Not identified	-	-	-	-

National Pollutant Inventory (NPI)

Facility name	Address	Primary ANZSIC Class	Latest report	Distance (m)	Direction
Liverpool Sewage Treatment System	Scrivener Road	Sewerage and Drainage Services	2018/2019	822.2	East
PMP Print Moorebank	31 Heathcote Road	Printing	2018/2019	1730.9	South
Visy Board Warwick Farm	41- 51 Scrivener Street	Corrugated Paperboard and Paperboard Container Manufacturing	2018/2019	600.7	East
Prysmian Australia Liverpool	1 Heathcote Road	Electric Cable and Wire Manufacturing	2018/2019	341.1	South-east
Flint Group Moorebank Site	23 Seton Road	Paint and Coatings Manufacturing	2017/2018	1691.8	South-east
ARYZTA Liverpool	Gate 2, Homepride Avenue	Bread Manufacturing (Factory based)	2018/2019	1096.1	North
Moorebank Bakery	90 Moorebank Avenue	Bread Manufacturing (Factory based)	2018/2019	1680.0	South
Joyce Foam Products Moorebank	5-9 Bridges Road	Polymer Foam Product Manufacturing	2018/2019	341.1	South-east
Polyfoam (Sydney) Pty Ltd	Factory 3B M5 Industry park, 1 Moorebank Avenue	Rigid and Semi-Rigid Polymer Product Manufacturing	2018/2019	814.0	South
Liverpool	36-42 Orange Grove Road	Soft Drink, Cordial and Syrup Manufacturing	2010/2011	1191.3	North-west
Schweppes Moorebank	376 Newbridge St	Soft Drink, Cordial and Syrup Manufacturing	2015/2016	992.0	South
Hannanprint - Warwick Farm	8 PRIDDLE STREET	Printing	2018/2019	477.0	East

3.3 LICENCES, APPROVALS & NOTICES

Map 3.3 (500m Buffer)

Licences

Licence N°	Licence holder	Location Name	Premise Address	Fee Based Activity	Distance (m)*	Direction
12208	SYDNEY TRAINS	SYDNEY TRAINS	SYDNEY TRAINS, HAYMARKET	Railway infrastructure operations Rolling stock operations	Not mapped	Not mapped
13421	JOHN HOLLAND RAIL PTY LTD	JOHN HOLLAND RAIL NETWORK	JOHN HOLLAND RAIL NETWORK, PARRAMATTA	Railway infrastructure operations	Not mapped	Not mapped
21361	QUBE LOGISTICS (RAIL) PTY LTD	ROLLING STOCK OPERATED ON A LICENSED RAIL NETWORK, MOOREBANK, NSW	ROLLING STOCK OPERATED ON A LICENSED RAIL NETWORK, MOOREBANK, NSW	Rolling stock operations	Not mapped	Not mapped
818	PRYSMIAN AUSTRALIA PTY LTD	1 HEATHCOTE ROAD	1 HEATHCOTE ROAD, LIVERPOOL	Metal waste generation	340.0	South-east

If the record does not contain a complete street address and/or cannot be located, the records' geographic location will be approximated and reported as being within the surrounding area.

Surrendered Licences still Regulated by EPA

Licence N°	Licence holder	Location Name	Premise Address	Fee Based Activity	Status	Distance (m)*	Direction
20966	CPB CONTRACTORS PTY LIMITED	Moorebank Precinct East - Rail Access Land Package No.1	3 km Rail Link Between SSFL and the Proposed Import-Export Terminal, NORTH SYDNEY	Crushing, grinding or separating, Land-based extractive activity	Surrendered	Not mapped	Not mapped
11355	SYDNEY SOUTH WEST AREA HEALTH SERVICE	LIVERPOOL HEALTH SERVICE	ELIZABETH STREET, LIVERPOOL	Hazardous, Industrial or Group A Waste Generation or Storage	Surrendered	20.0	East
12839	HEALTHSCOPE LIMITED	Sydney Southwest Private Hospital	40 Bigge St, LIVERPOOL	Hazardous, Industrial or Group A Waste Generation or Storage	Surrendered	1650.0	North
13316	JOHN HOLLAND PTY LTD	Liverpool Turnback Project	Bigge Street, LIVERPOOL, NSW, 2170	Railway systems activities	Surrendered	270.0	South-east

If the record does not contain a complete street address and/or cannot be located, the records' geographic location will be approximated and reported as being within the surrounding area.

Clean Up and Penalty Notices

Location ID	Notice Type	Notice N°	Licence holder	Location Name	Premise Address	Distance (m)*	Direction
309	Penalty Notice	1565149	PRYSMIAN AUSTRALIA PTY LTD	PRYSMIAN AUSTRALIA PTY LIMITED	1 HEATHCOTE ROAD, LIVERPOOL, NSW, LIVERPOOL BC	340.0	South-east

If the record does not contain a complete street address and/or cannot be located, the records' geographic location will be approximated and reported as being within the surrounding area.



Section 4 Potentially Contaminated Areas



4.1 FORMER POTENTIALLY CONTAMINATED LAND

Map 4.1 (500m Buffer)

Contaminated Legacy Areas / Historic Incident Sites

Site Name	Description	Distance (m)	Direction
Not identified	-	-	-

Includes known contaminated areas such as James Hardies Asbestos waste legacy areas, Pasminco Smelter and Uranium processing site.

Derelict Mines and Quarries

Site name	Description	Distance (m)	Direction
Not identified	-	-	-

Historical Landfills

Site name	Description	Distance (m)	Direction
Not identified	-	-	-

4.2 CURRENT POTENTIALLY CONTAMINATING ACTIVITIES (PCA)

Map 4.2 (500m Buffer)

Industries, businesses and activities that may cause contamination

Site name	Category	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

***Status:**

Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.

Current: business is operating on the day this report was issued.

Former: business that have been closed or discontinued 1 to 2 years prior from the day this report was issued. All former sites older than 2 years will be reported in the 'Historical Potentially Contaminating Activities' section 4.4 in this report.

Included in this search:

Type	Type	Type
Cattle Dip Sites	Liquid Fuel Depots	Substation/Switching Stations
Dry Cleaners	Operating Mines	Telephone Exchanges
Fire Rescue	Power Stations	Wastewater Treatment Plants
Gas Terminals	Petrol Stations	Waste Management Facilities

Includes industries or business activities associated with potentially contaminating activities. Records identified within section 4.2 are considered to have a higher likelihood of contamination risk associated with the type of business activity. The contamination risk associated with these records is based solely on the type of activity undertaken by the business, and in conjunction with business activities deemed to be of moderate to high risk of potential contamination identified in State Government regulatory body (EPA) published regulations or guidelines.

The records identified have not been risk ranked based on any current or previous site inspection. Please note that records not identified within this section (due to error or unforeseen omission) does not necessarily mean that the screened area is not potentially contaminated or free of any risks.

4.3 OTHER POTENTIALLY CONTAMINATING ACTIVITIES

Map 4.3 (200m Buffer)

Industries, businesses and activities that may cause contamination considered of lesser risk

Site name	Category	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

***Status:**

Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.

Current: business is operating on the day this report was issued.

Former: business that have been closed or discontinued 1 to 2 years prior from the day this report was issued. All former sites older than 2 years will be reported in the 'Historical Potentially Contaminating Activities' section 4.4 in this report.

Includes industries or business activities records associated with potentially contaminating activities that are not listed in section 4.2 of this report. Records identified within this section are considered to have a lesser likelihood of contamination risk associated with the type of business activity. The contamination risk associated with the records listed in this section are based solely on the type of activity undertaken and have not been risk ranked based on any current or previous site inspection, as such, some of the sites listed in section 4.3 can be potentially of high risk. Industries or business activities deemed of a negligible risk of contamination are not reported. Please note that any record not identified within this section (due to error or unforeseen omission) does not necessarily mean that the screened area is not potentially contaminated or free of any risks.

4.4 HISTORICAL POTENTIALLY CONTAMINATING ACTIVITIES

(not mapped)

1930 Historical Business Data

Activity	Name	Address	Positional accuracy ¹	Distance (m)	Direction
Not identified	-	-	-	-	-

1940 Historical Business Data

Activity	Name	Address	Positional accuracy ¹	Distance (m)	Direction
Not identified	-	-	-	-	-

1950 Historical Business Data

Activity	Name	Address	Positional accuracy ¹	Distance (m)	Direction
Carriers - Light Transportation	Ranyard L W	101 Bigge Street, Liverpool,NSW	Address	79.1	South-west
Metal - Merchants	Cumberland Rural Co-operative Ltd	Bigge Street, Liverpool,NSW	Street		South-west
Printers - General	Brown R A	Elizabeth Street, Liverpool,NSW	Street		West
Tanneries	Liverpool Tannery Pty Ltd	Wilson Street, Liverpool,NSW	Street		South-west
Taxi - Truck Service	Geoghegan T F	Bigge Street, Liverpool,NSW	Street		South-west

1965 Historical Business Data

Activity	Name	Address	Positional accuracy ¹	Distance (m)	Direction
Car Replacement Parts	Wilson Manufacturing Pty Ltd	61,Goulburn,NSW	Address	0.0	South
Dry Cleaning Services	Camillos Dry Cleaning&Laundry	75,Goulburn,NSW	Address	22.2	South
Air Conditioning - Domestic	FLORIDA AIR CONDITIONING PTY LTD	51,Goulburn,NSW	Address	78.0	North
Engineers - Refrigeration	Florida Air Conditioning Pty Ltd	51,Goulburn,NSW	Address	78.0	North
Grocers - W/Salers	Mandarano G	304,Liverpool,NSW	Address	166.1	South-west

1970 Historical Business Data

Activity	Name	Address	Positional accuracy ¹	Distance (m)	Direction
Carriers - Heavy Industrial Transportation	Childs WA	12 Elizabeth, Liverpool,NSW	Address	59.2	South
Printers - General	Brown, R. A.,	69 Elizabeth St, Liverpool	Address	78.4	West
Pest Control Services	Preventa Pest	56 Bigge Street, Liverpool,NSW	Address	102.0	North
Weed Control	Preventa Pest	56 Bigge Street, Liverpool,NSW	Address	102.0	North
Engineers - Civil	Unit Design Pty Ltd	161 Bigge Street, Liverpool,NSW	Address	170.9	South-west

Activity	Name	Address	Positional accuracy ¹	Distance (m)	Direction
Motor Sport Services	Court House Auto Port	Bigge Street, Liverpool,NSW	Street		South-west
Tyre Retailers	Esso Servicentre.	Elizabeth St, Liverpool	Street		West

1980 Historical Business Data

Activity	Name	Address	Positional accuracy ¹	Distance (m)	Direction
Builder Handyman Contractor Equipment Sale/ Hire	Morganti V	133 Elizabeth St, Liverpool,NSW	Address	143.8	West
Surgical Equipment & Supplies	Surgical Services Pty Ltd	42 Bigge St, Liverpool,NSW	Address	157.8	North
Cars - New	Warren Peter (Liverpool) Pty Ltd	26 Elizabeth St, Liverpool,NSW	Address	196.8	South-west

1990 Historical Business Data

Activity	Name	Address	Positional accuracy ¹	Distance (m)	Direction
Furniture Storage & Removals	Campbelltown Taxi Trucks	55 Goulburn St, Liverpool,NSW	Address	16.3	North
Furniture Storage & Removals	Trend Removals & Storage	55 Goulburn St, Liverpool,NSW	Address	16.3	North
Taxi - Truck Service	Campbelltown Taxi Trucks	55 Goulburn St, Liverpool,NSW	Address	16.3	North
Cars - New	Peter Warren (Liverpool) Pty Ltd	26 Elizabeth, Liverpool,NSW	Address	196.8	South-west
Cars - New	Warren Peter Pty Ltd	26 Elizabeth, Liverpool,NSW	Address	196.8	South-west

2005 Historical Business Data

Activity	Name	Address	Positional accuracy ¹	Distance (m)	Direction
Recyclers	St Vincent De Paul Society, Liverpool	102 Bigge St, LIVERPOOL,NSW,2170	Address	41.3	West
Diagnostic Radiology Services	South West Radiology Pty Ltd	51 Goulburn St, LIVERPOOL,NSW,2170	Address	78.0	North
Fire Brigades	ATP Finance Solutions, Liverpool	Suite 302/161 Bigge St, LIVERPOOL,NSW,2170	Address	133.4	North
General Practitioners & Medicine	Day L J	45 Goulburn St, LIVERPOOL,NSW,2170	Address	146.2	North
Gastroenterologist	Loh Christopher	Suite 6 42 Bigge St, LIVERPOOL,NSW,2170	Address	157.8	North
Hearing Aid & Audio Specialists & Services	Macarthur Audiology & Hearing Services, Liverpool	42-48 Bigge St, LIVERPOOL,NSW,2170	Address	157.8	North
Engineers - Consultants	Cattarin & Co Pty Ltd	Suite 206, 161 Bigge St, LIVERPOOL,NSW,2170	Address	170.9	South-west
Charcoal Supplies	Surgical Services Pty Ltd	41 Goulburn St, LIVERPOOL,NSW,2170	Address	184.5	North
Digital Printers	Mann David Dr, Liverpool	Suite 7, 41 Goulburn St, LIVERPOOL,NSW,2170	Address	184.5	North
Bus & Truck Rental Hire	Thrifty, Liverpool	Cnr Bigge & Elizabeth Sts, LIVERPOOL,NSW,2170	Street		South-west

2010 Historical Business Data

Activity	Name	Address	Positional accuracy ¹	Distance (m)	Direction
Engineers - Mechanical	Triple M Mechanical Services	Suite 2 11 Elizabeth St LIVERPOOL 2170 NSW	Address	37.6	South-west
Engineers - Consultants	Cattarin & Co Pty Ltd	Suite 206 161-169 Bigge St LIVERPOOL 2170 NSW	Address	162.3	South-west
Car Or Mini-Bus Hire	Thrifty Car Rental	Cnr Bigge & Elizabeth Sts LIVERPOOL 2170 NSW	Street		South-west
Car Or Mini-Bus Hire	Alcher Holdings Pty Ltd	Cnr Bigge & Elizabeth Sts LIVERPOOL 2170 NSW	Street		South-west
Cleaning - Industrial/Commercial Contractors	Purcells Cleaning Service	Bigge St LIVERPOOL 2170 NSW	Street		South-west

2015 Historical Business Data

Activity	Name	Address	Positional accuracy ¹	Distance (m)	Direction
Tilers - Wall & Floor	C Tilemaster Pty Ltd	Unit 6/ 53 Goulburn St, Liverpool,NSW,2170	Address	57.2	North
Glass Processing & Manufacturing	Jet Speed Motor Sport & Extreme Car Audio Pty Ltd	4 Bridges Rd,Chipping Norton,NSW,2170	Address	123.3	East
Hearing Aid & Audio Specialists & Services	Macarthur Audiology & Hearing Services	42- 48 Bigge St, Liverpool,NSW,2170	Address	147.8	North
Cardiologists	Day L J	45 Goulburn St, Liverpool,NSW,2170	Address	148.9	North
Surgical Equipment & Supplies	Surgical Services Pty Ltd	41 Goulburn St, Liverpool,NSW,2170	Address	185.0	North
Employment - Agencies	WISE Employment Liverpool	Level 2 Suite 2 171 Bigge St, Liverpool,NSW,2170	Address	188.8	South-west
Employment - Agencies	CVGT AUSNAC	Suite 3 Level2 171 Bigge St, Liverpool,NSW,2170	Address	188.8	South-west
Bus & Truck Rental Hire	Thrifty Car Rental	Cnr Bigge & Elizabeth Sts, Liverpool,NSW,2170	Street		South-west
Cleaning - Industrial/Commercial Contractors	Purcell's Cleaning Service	Bigge St, Liverpool,NSW,2170	Street		South-west
Diagnostic Radiology Services	Spectrum Medical Imaging	Ground Floor 171 Bigge St, Liverpool,NSW,2170	Street		South-west

Land Insight uses a number of address geocoding techniques and characterised them according to the following criteria: completeness (match rates) and positional accuracy. When a historical street address does not contain complete details or a match is not found, a record identified as being in the surrounding area will be included for reference and the accuracy of the data is approximate only. The positional accuracy of the records is listed below:

Historical data positional accuracy and georeferencing results explanation		
Positional accuracy	Georeferenced	Description
Address	Located to the address level	<i>When street address and names fully match.</i>
Street	Located to the street centroid	<i>When street names match but no exact address was found. Location is approximate.</i>

Place	Located to the structure, building or complex	<i>When building, residential complex or structure name match but no exact address was found. Location is approximate.</i>
Suburb	Located to the suburb area	<i>When suburb name match but no exact address was found. Location is approximate.</i>

The data used in this section was extracted from range of historical commercial trade directories and historical business listing information. The business addresses were geocoded using historical information and cannot be relied upon as some of the addresses no longer exist. From 2005, the historical business records in this section are considered more accurate as information was extracted from digital directories with geographic coordinate location information available. For more information on how these records were geocoded and the methodology used by Land Insight, contact us at info@landinsight.co.

Historical Industries or business activities deemed to be of negligible or lesser risk are not reported. Please note that any record not identified within this section (due to error or unforeseen omission) does not necessarily mean that the screened area is not potentially contaminated or free of any risks.



Section 5 Natural Hazards



5.1 Natural Hazards

Map 5.1 (500m Buffer)

Erosion Risk

Category	On the Property?	Within Buffer?
Existing Erosion/ Sedimentation	Yes	Yes

Fire Hazard

Category	On the Property?	Within Buffer?
Bush Fire Prone Land (BLP)	-	-
Fire History	-	-

Flood Hazard

Category	On the Property?	Within Buffer?
Probable Maximum Flood	-	Yes



Tower Three, Level 24
300 Barangaroo Avenue
Sydney NSW 2000 Australia
02 8067 8870
info@liresources.com.au
www.liresrouces.com.au

A low-angle, upward-looking photograph of a suspension bridge at night. The bridge's steel lattice towers and cables are silhouetted against a deep blue twilight sky. In the background, a city skyline is visible, including a prominent skyscraper with illuminated windows. The overall mood is dramatic and architectural.

Appendix A

REPORT MAPS



Subject Area and Sensitive Receptors

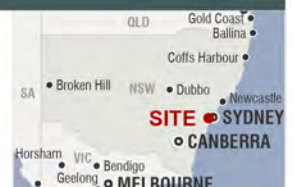


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- | | | | |
|------------------------------|----------------------------|----------------------|--------------------|
| Subject area | Sensitive receptors | Health Care Services | School Education |
| Community Centres & Services | Hospital | Parks | Stormwater channel |
| Education Facility | | | Sewer main |
| | | | Water main |

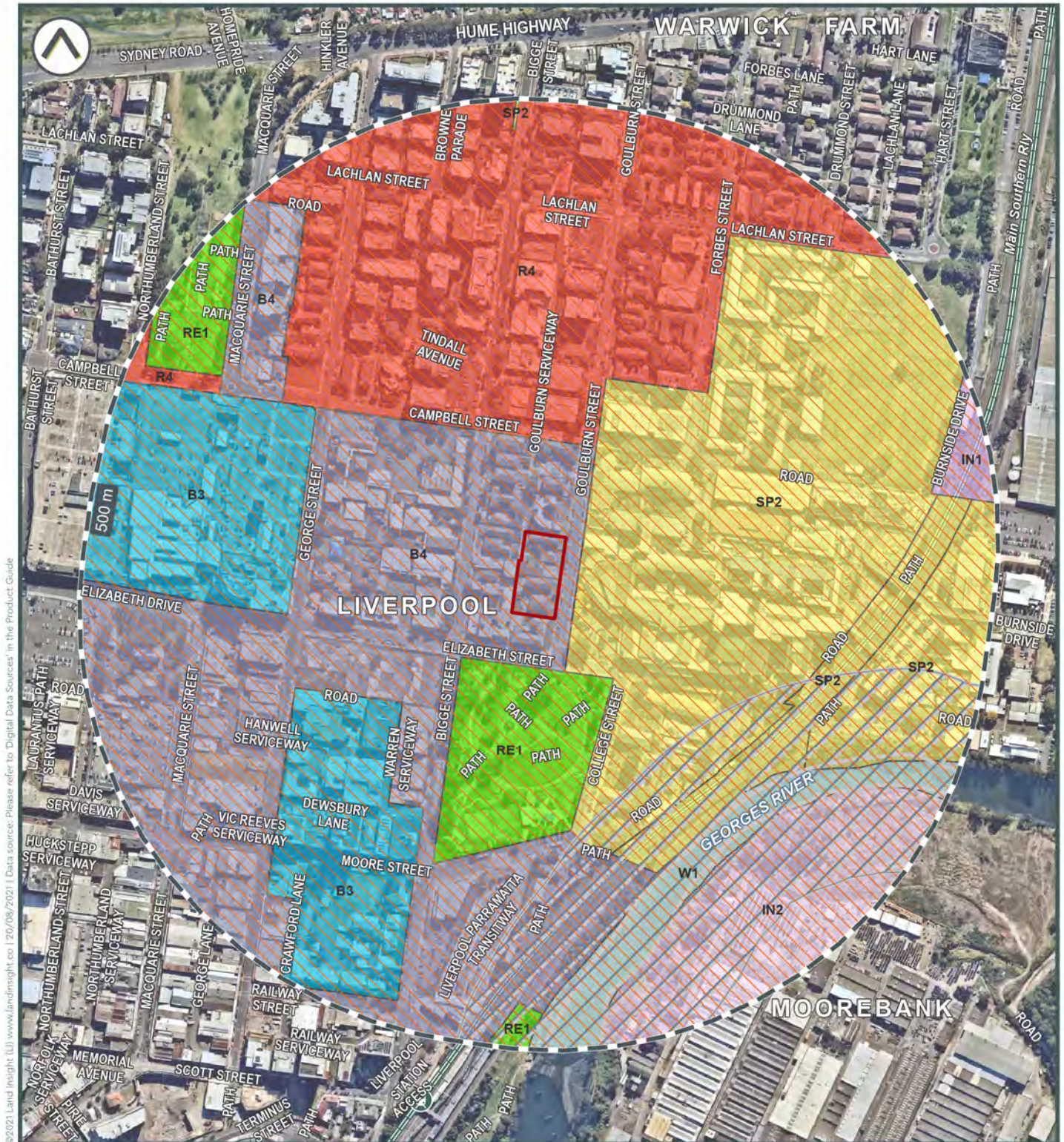


Land Insight do no warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that this company shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.





Planning Controls



Subject area
Local Provisions

Land Zoning
B3 | Commercial Core
B4 | Mixed Use
IN1 | General Industrial
IN2 | Light Industrial

R4 | High Density Residential
RE1 | Public Recreation
SP2 | Special Purposes Zone - Infrastructure
W1 | Natural Waterways

Coastal Management SEPP
Coastal Use Area Map
Coastal Environment Area Map

0 50 100 150 200 250m



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Heritage



- | | | |
|----------------------------------|----------------------------------|------------------------------|
| Subject area | Heritage conservation Area (LEP) | National Heritage List (NHL) |
| State Heritage Register | World Heritage Area (WHA) | |
| Commonwealth Heritage List (CHL) | | |

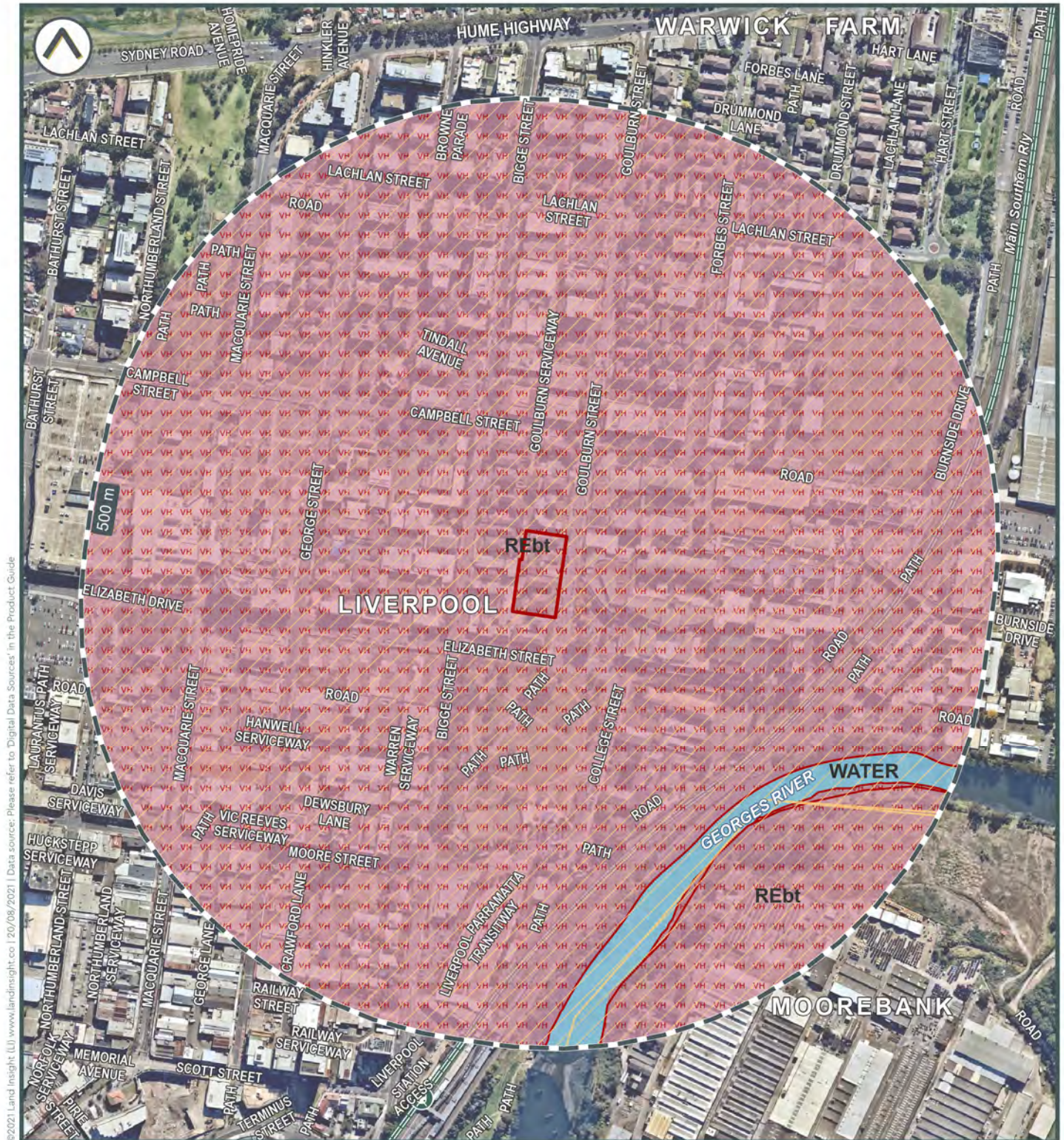


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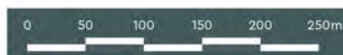




Soil Landscape and Salinity

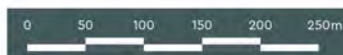
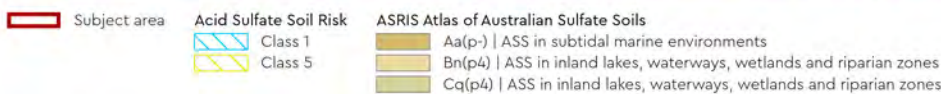
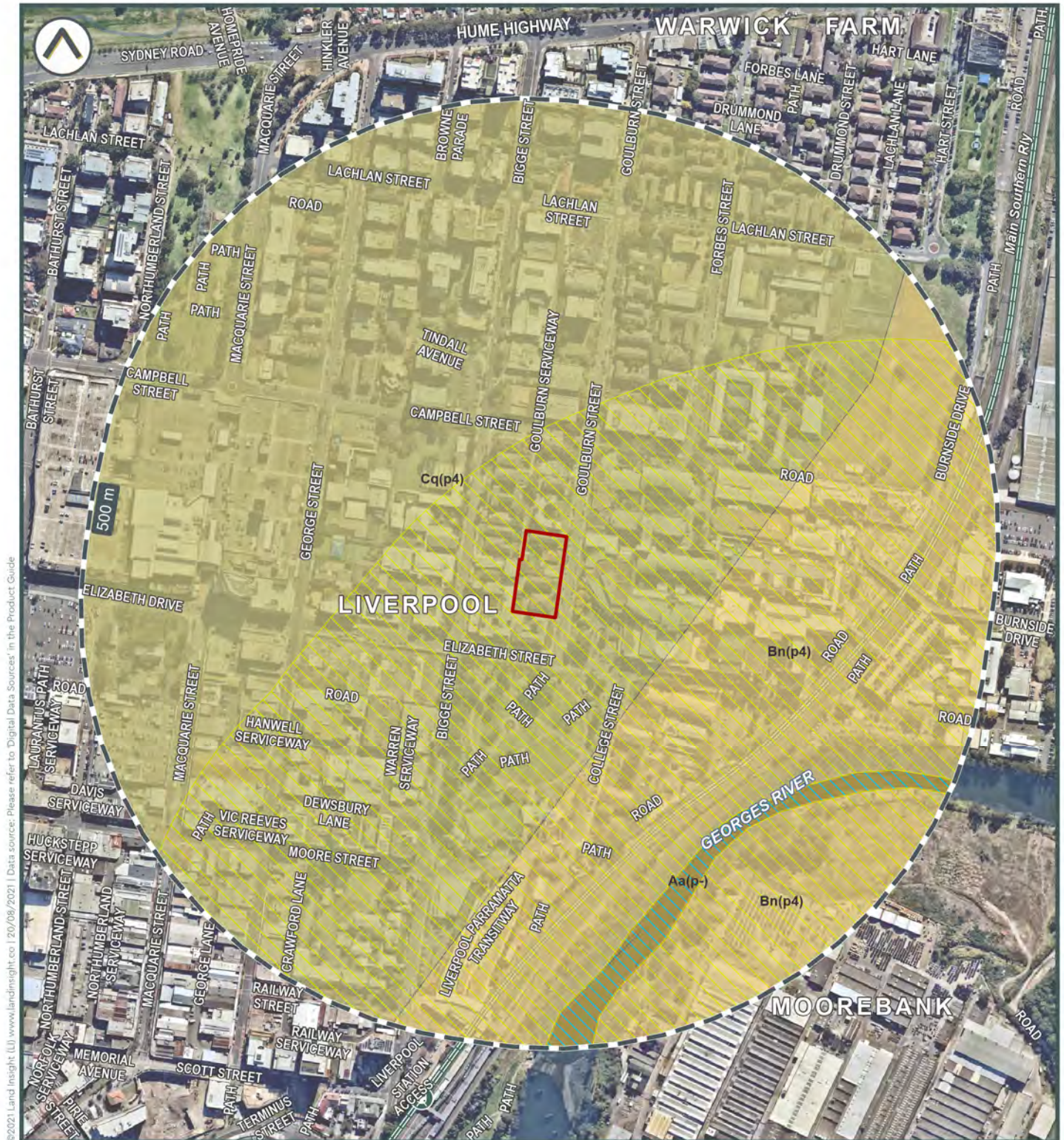


Subject area Salinity Hazard Radon Level (Bq/m3) Soils Landscape
Very High 5-19 REbt | RESIDUAL
WATER | WATER





Acid Sulfate Soils

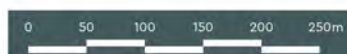
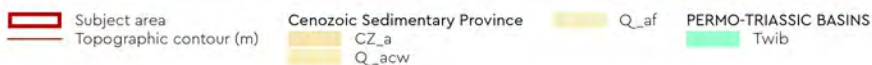
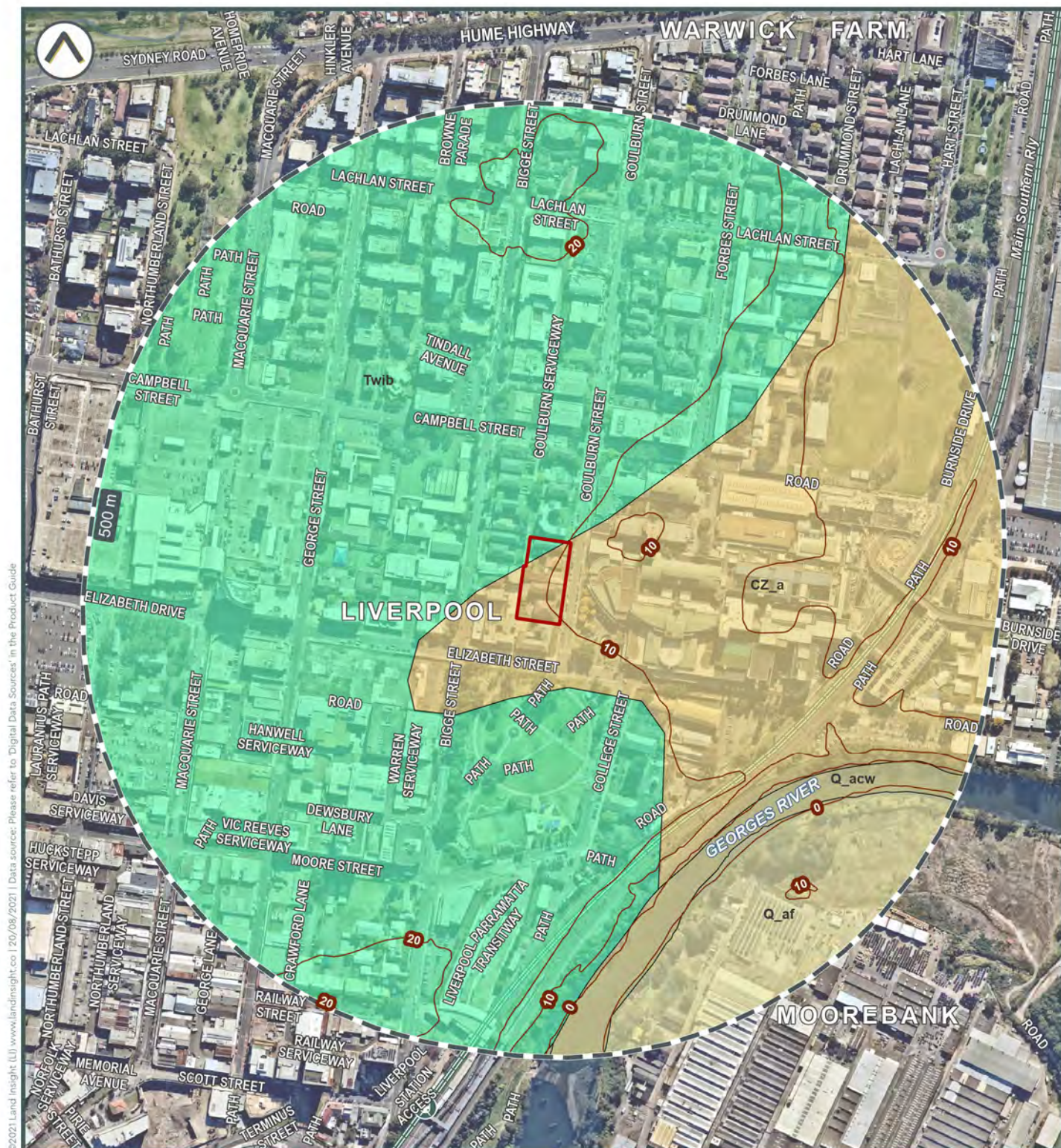


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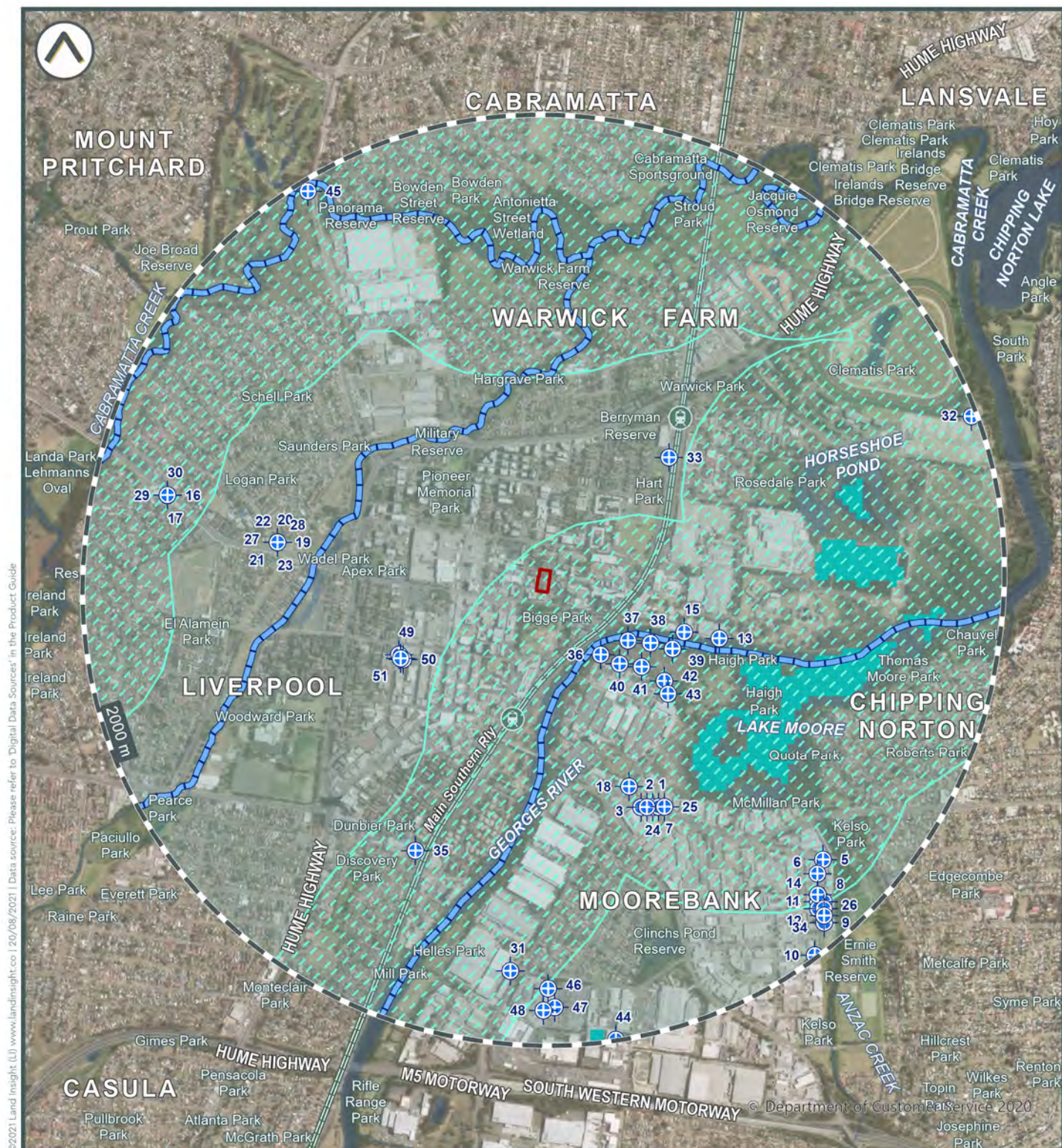


Geology and Topography





Hydrogeology and Groundwater Boreholes



Subject area



Groundwater bores



Protected Riparian Corridor

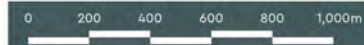


UPSS Environmentally Sensitive Zone

Wetlands

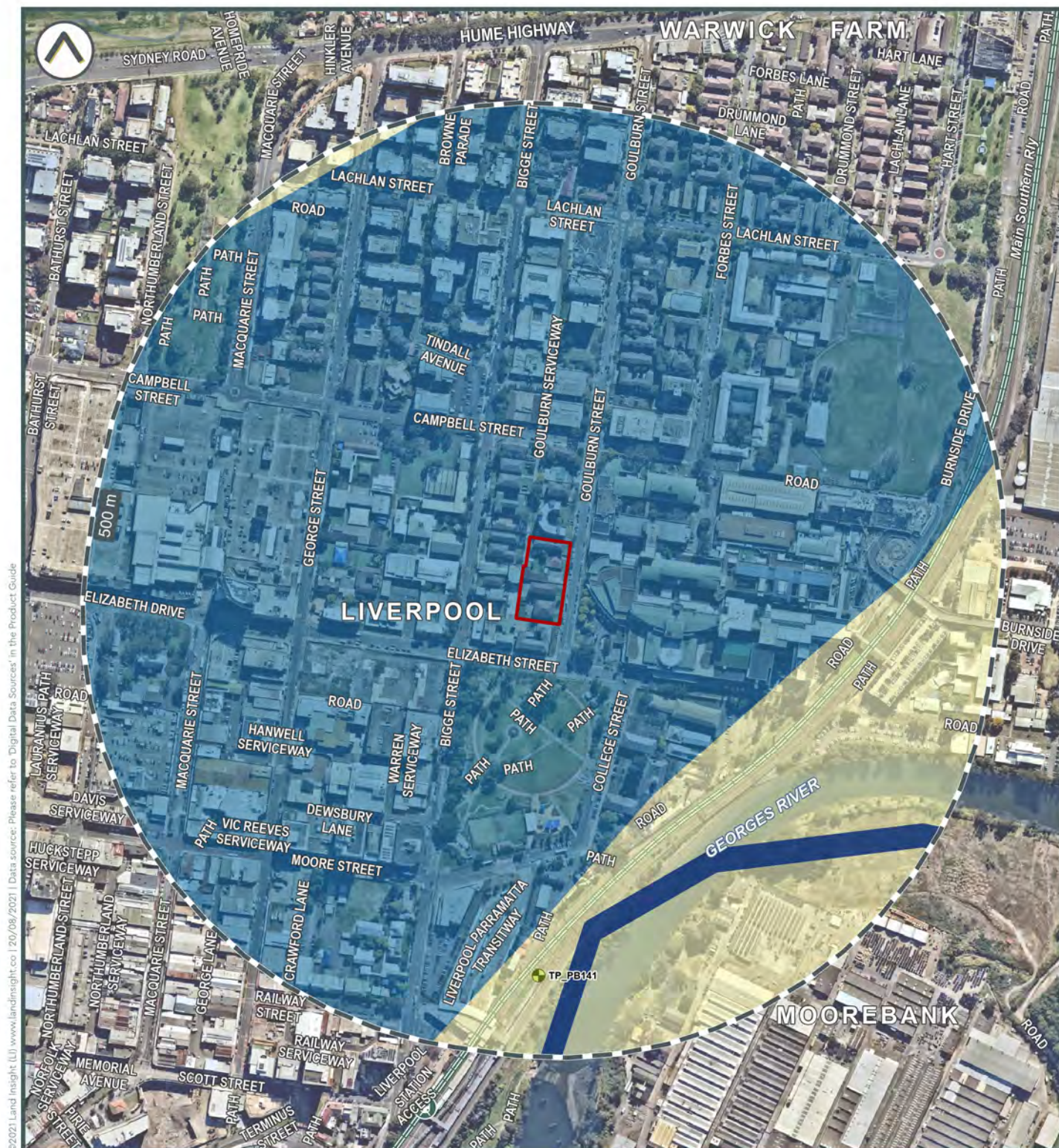
Aquifer type

Porous, extensive aquifers of low to moderate productivity



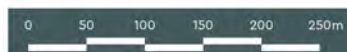


Hydrogeology and Other Boreholes



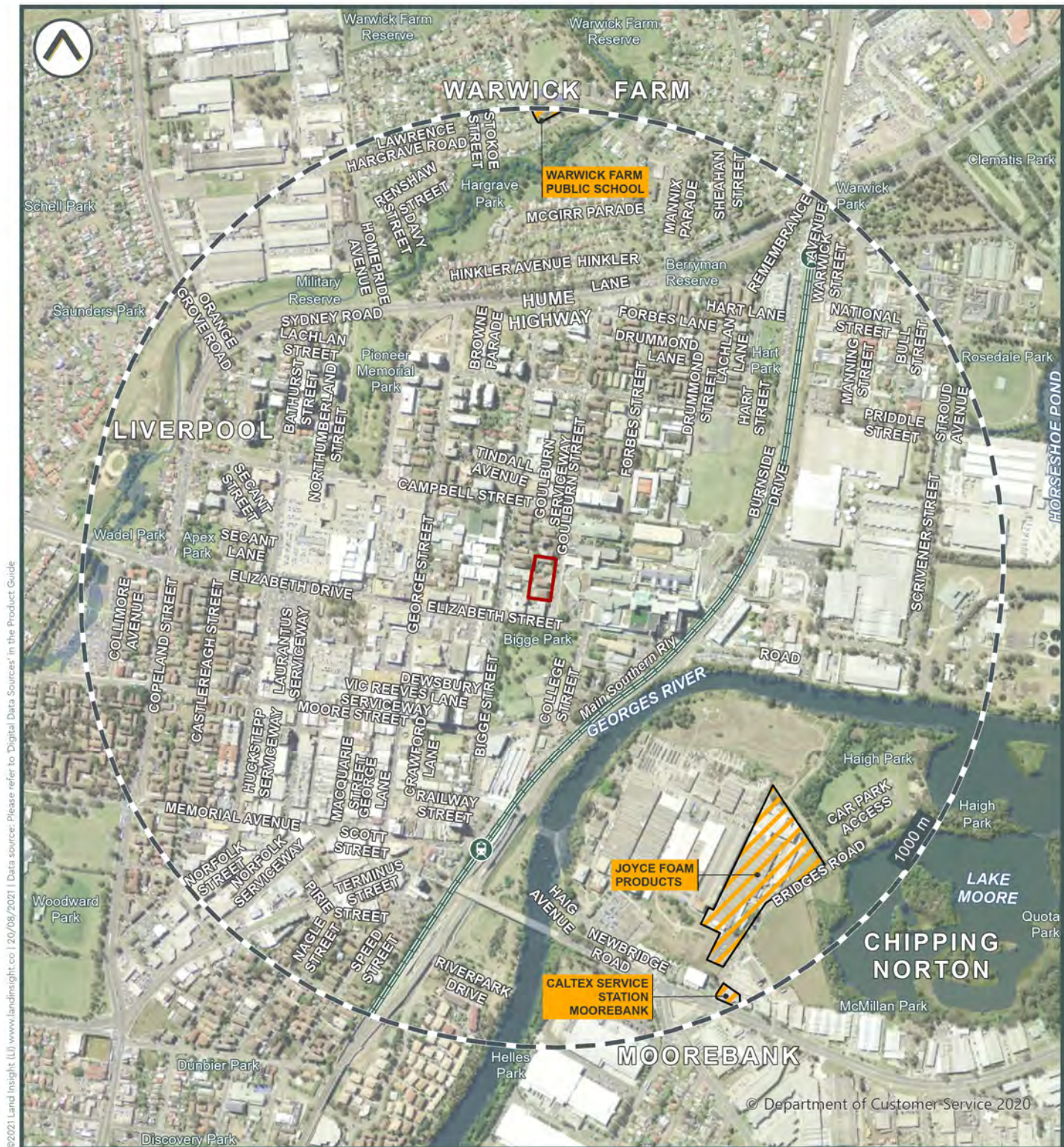
- Subject area
- Other borehole/monitoring well location
- Ecosystems that rely on the Surface expression of Groundwater**
- High potential GDE – from national assessment

- Ecosystems that rely on the Surface expression of Groundwater**
- High potential for GW interaction
- Hydrogeologic Unit**
- Surficial Sediment Aquifer (porous media – unconsolidated)
- Late Permian/Triassic sediments (porous media – consolidated)





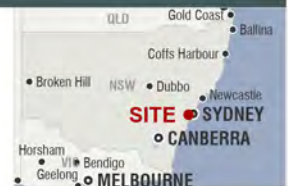
Contaminated Land Public Register



- Subject area
- Contaminated Land Register (EPA)
- Contaminated Land Register (EPA)
- Contaminated Land Record of Notices

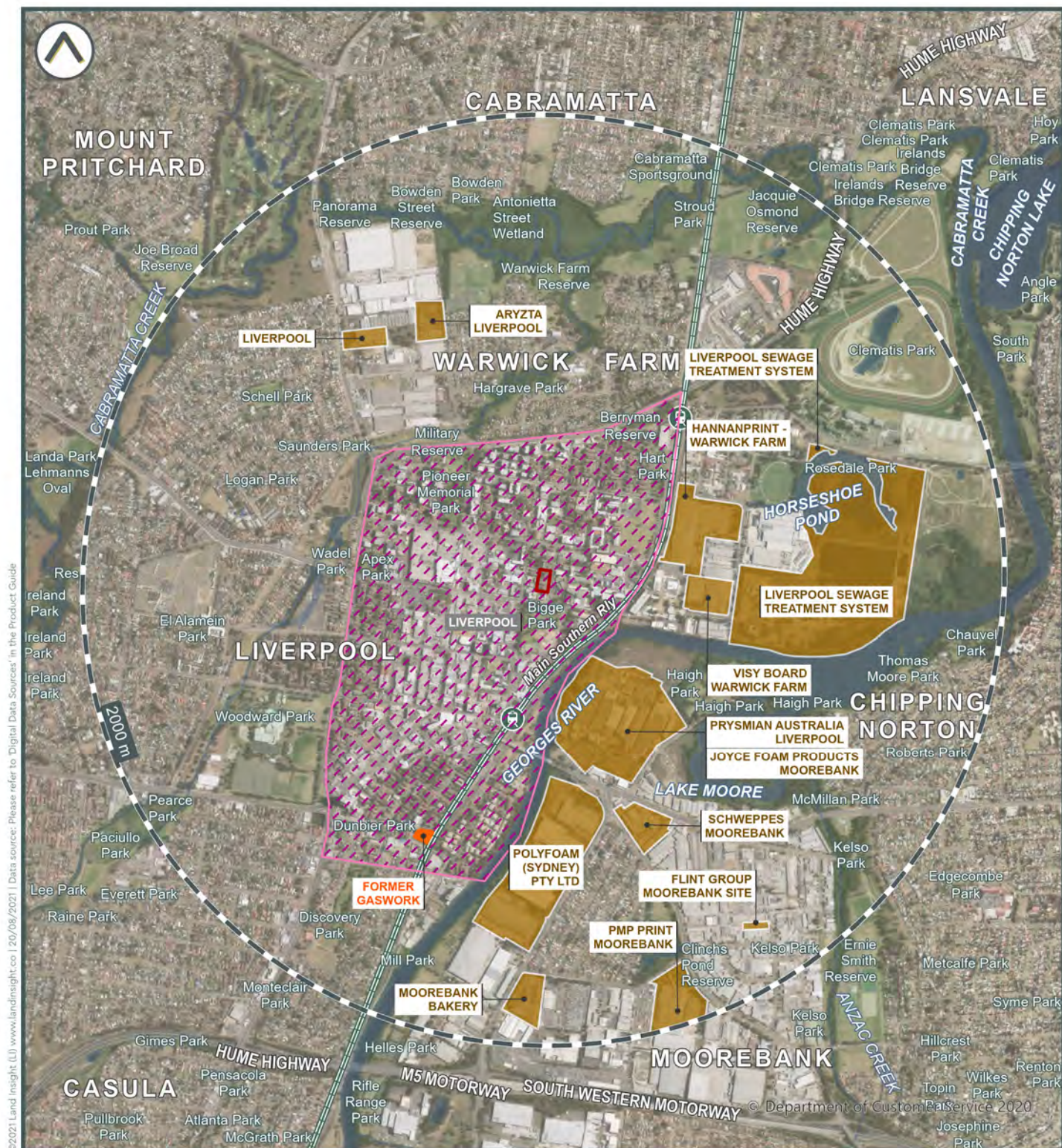


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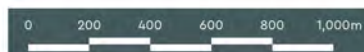




Sites Regulated by other Jurisdictional Body

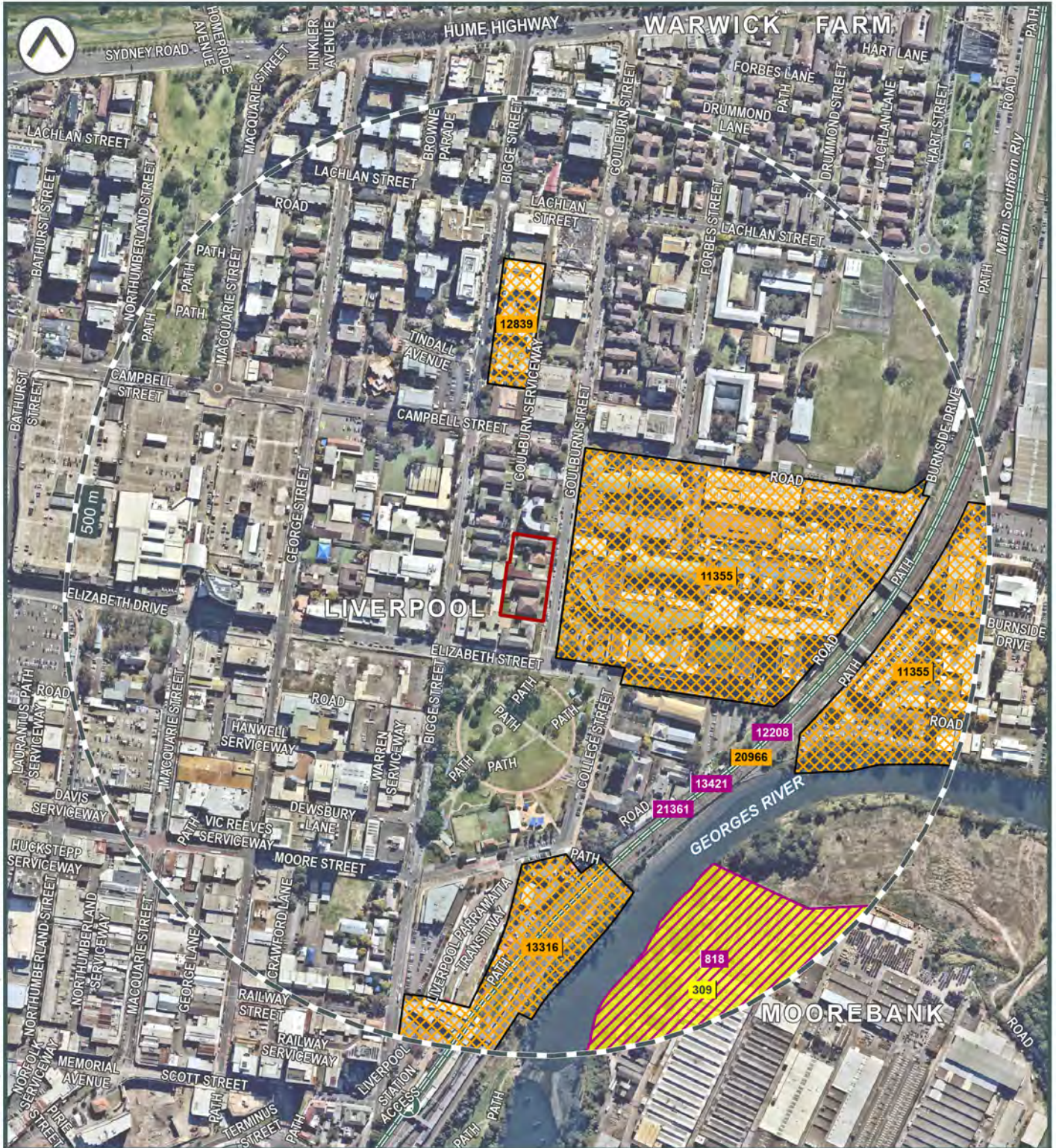


- Subject area
- NPI Facilities
- Former Gasworks Sites
- Unexploded Ordnance (UXO) Areas
- Other

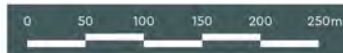




Licensing Under the POEO Act



- Subject area
- POEO Licences Issued
- Clean Up and Penalty Notices
- Surrendered Licences still Regulated by EPA








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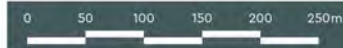


Former Potentially Contaminated Land



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-  Subject area
  Contaminated Legacy Areas
  Derelict Mines and Quarries
-  James Hardie asbestos
-  Historical (Legacy) Landfills



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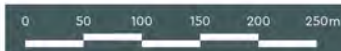


Current Potentially Contaminating Activities (PCAs)



- | | | | |
|--------------------------|------------------------|-----------------------------|------------------------------|
| Subject area | Fire Rescue | Operating Mines | Substation/switching station |
| Cattle Dip Sites | Gas Terminals | Power Stations | Telephone Exchanges |
| Operational Dry Cleaners | Liquid Fuel Depots | Operational Petrol Stations | Wastewater Treatment Plants |
| Former Dry Cleaners | Former Petrol Stations | Waste Management Facilities | |

Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.





Other Potentially Contaminating Activities



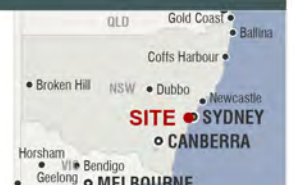
©2021 Land Insight (LI) www.landinsight.co | 20/06/2021 | Data source: Please refer to 'Digital Data Sources' in the Product Guide

- | | | | |
|---|---|---|------------------------------------|
| Subject area | Commercial & Trade Directory | Tanks* | Underground Storage Tank – Current |
| Other potentially contaminating activities | Aboveground Storage Tank – Current | Underground Storage Tank – Former/Unknown | |
| Former potentially contaminating activities | Aboveground Storage Tank – Former | Unknown | |

*This is not an exhaustive list of all tanks



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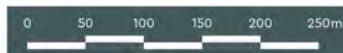




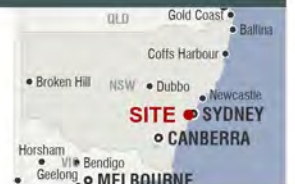
Fire and Flood Hazards



- Subject area
- Erosion Hazard
Minor to moderate
- Flood Hazard
Probable Maximum Flood



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An aerial photograph of a vibrant turquoise river winding through a rugged, rocky landscape. The river is flanked by steep, rocky banks and dense, lush green vegetation. The water's color is a striking blue-green, contrasting sharply with the grey and brown tones of the surrounding rocks and the deep green of the trees. The perspective is from directly above, looking down at the river as it flows through the valley.

Appendix B

HISTORIC IMAGERY

Historic Aerial Photograph - 1930



LIR-02039 Aerial Photograph 1930 18.08.2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide



Historic Aerial Photograph - 1943



LIR-02039 Aerial Photograph 1943 18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m



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Historic Aerial Photograph - 1953



LIR-02039 Aerial Photograph 1943 18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide



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Historic Aerial Photograph - 1961



LIR-02039 Aerial Photograph 1961 18.08.2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m



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Historic Aerial Photograph - 1965



LIR-02039 Aerial Photograph 1965 18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m



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Historic Aerial Photograph - 1970



Historic Aerial Photograph - 1975

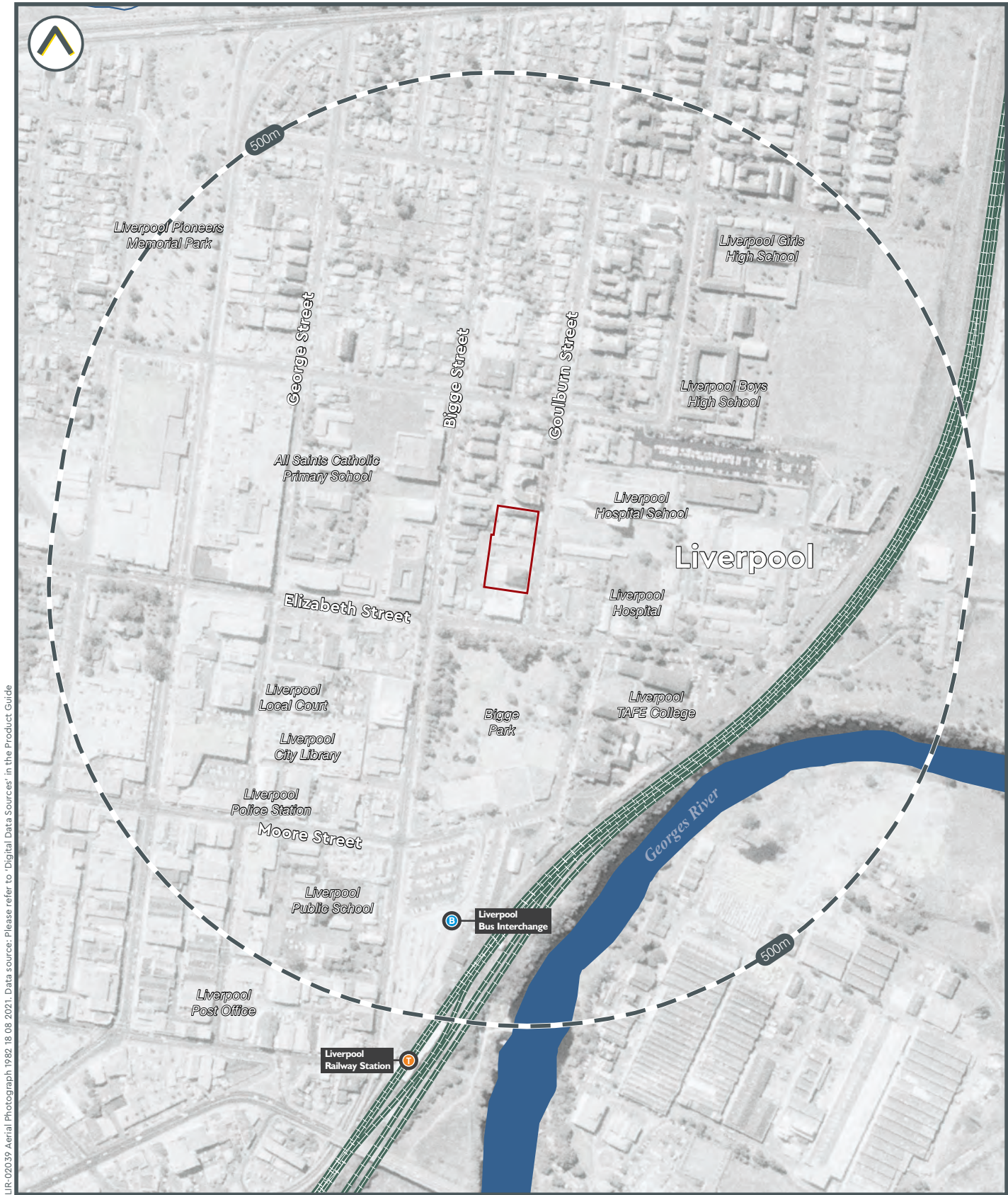


LIR-02039 Aerial Photograph 1965 18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m

Historic Aerial Photograph - 1982



Historic Aerial Photograph - 1986



LIR-02039 Aerial Photograph 1986 18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m



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The map shows an aerial view of Liverpool, NSW, Australia. A dashed white circle with a 500m radius is centered on the city. Key locations labeled include Liverpool Pioneers Memorial Park, All Saints Catholic Primary School, Elizabeth Street, Moore Street, Liverpool Local Court, Liverpool City Library, Liverpool Police Station, Liverpool Public School, Liverpool Post Office, Liverpool Railway Station, Liverpool Bus Interchange, Bigge Park, Bigge Street, Goulburn Street, Liverpool Hospital, Liverpool TAFE College, Liverpool Hospital School, Liverpool Boys High School, and Liverpool Girls High School. The Georges River is visible on the right side of the map.

A horizontal scale bar with a dark grey background. It is marked with '0' at the left end and '200m' at the right end. The bar is divided into four equal segments by three vertical white lines.



A map of New South Wales, Australia. The state is labeled 'NEW SOUTH WALES'. The capital, 'Canberra', is marked with a black dot. The 'SITE' is indicated by a red arrow pointing to a location on the coast near 'SYDNEY'. 'Newcastle' is also marked with a black dot further north on the coast. The 'Pacific Ocean' is to the east, and 'Bass Strait' is to the south.

Historic Aerial Photograph - 1994



LIR-02039 Aerial Photograph 1991/18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m



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Historic Aerial Photograph - 1998



LIR-02039 Aerial Photograph 1998 18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m



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Historic Aerial Photograph - 2002



LIR-02039 Aerial Photograph 1998 18 08 2021 Data source: Please refer to 'Digital Data Sources' in the Product Guide



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Historic Aerial Photograph - 2005



LIR-02039 Aerial Photograph 2005 18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m

Historic Aerial Photograph - 2009



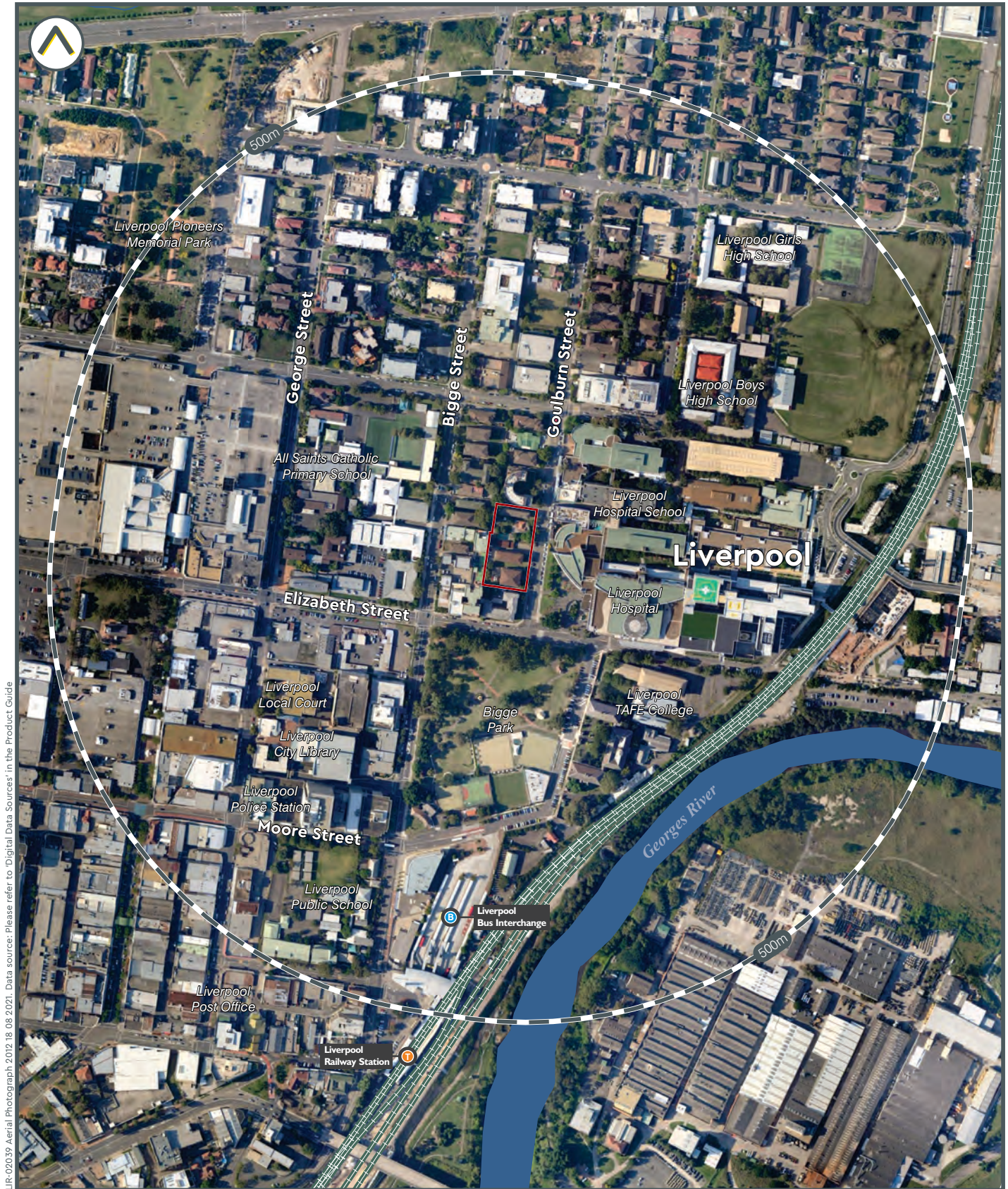
LIR-02039 Aerial Photograph 2005 18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide



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Historic Aerial Photograph - 2012



LIR-02039 Aerial Photograph 2012 18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m

Historic Aerial Photograph - 2015



LIR-02039 Aerial Photograph 2015 18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m



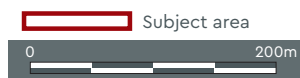
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Historic Aerial Photograph - 2018



LIR-02039 Aerial Photograph 2015 18 08 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide



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Historic Aerial Photograph - 2021



LIR-02039 Aerial Photograph 2021 18.08.2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide



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County Of Cumberland Planning Scheme - 1951



1969-1991 1:25,000 Topographic Map (Liverpool 9030-2S)



LIR-02039 Pre-1991 Topographic Map 18 08 2021. Data source: 'Digital Data Sources' in the Product Guide

Subject area

0 200m



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