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**REPORT TO**  
**WALTER PROJECTS PTY LTD ATF WALTER**  
**DEVELOPMENTS TRUST**

**ON**  
**PRELIMINARY DESKTOP ENVIRONMENTAL**  
**ASSESSMENT**

**FOR**  
**PLANNING PROPOSAL - PROPOSED RESIDENTIAL**  
**DEVELOPMENT**

**AT**  
**1-31 WALTER STREET AND 452-462 WILLOUGHBY**  
**ROAD, WILLOUGHBY, NSW**

Date: 23 August 2019  
Ref: E30088KPrptRev2

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## Executive Summary

Walter Projects Pty Ltd ATF Walter Developments Trust ('the client') commissioned Environmental Investigation Services (EIS)<sup>1</sup> to undertake a preliminary desktop Environmental Site Assessment (ESA) for the planning proposal associated with the proposed residential development at 1-31 Walter Street and 452-462 Willoughby Road, Willoughby, NSW ('the site'). The site location is shown on Figure 1 and the assessment was confined to the site boundaries as shown on Figure 2.

Since the original issue of the report in 2017, EIS have rebranded to JK Environments (JKE). JKE, like EIS, is the environmental division of JK Group and continues to operate alongside JK Geotechnics.

This report has been revised to reflect the current planning proposal for the site and site address. The information presented herein was obtained in January 2017. A site inspection was not undertaken as part of the report revision.

Based on the details provided, JKE understand that a masterplan is being prepared for the planning authority. The planning proposal includes rezoning of the site from R3 (medium density residential) to R4 (high density residential), followed by the construction of a number of four to nine storey residential buildings with associated landscaping. We have assumed that basement parking is likely to be required.

The primary aims of the assessment were to identify any past or present potentially contaminating activities at the site, and to identify the potential for site contamination.

The scope of work included the following:

- Review of site information, including background and site history information from a Lotsearch Pty Ltd *Environmental Risk and Planning Report*;
- A walkover site inspection; and
- Preparation of an ESA report presenting the results of the assessment, including a conceptual site model (CSM).

JKE has previously assessed/investigated the eastern section of the site (452-460 Willoughby Road and 1 – 1A Walter Street) for a separate client. In summary:

- The assessment indicated that the properties being investigated were historically and currently utilised for residential purposes;
- The primary areas of environmental concern (AEC)/potential contamination sources were considered to be imported fill and hazardous building materials;
- The investigation identified fill to a maximum depth of approximately 1.2m, overlying natural clayey and sandy soils. The fill was shallower in the western portion of the properties being investigated; and
- Fill samples were analysed for a broad range of potential contaminants, including hydrocarbons, pesticides, heavy metals and asbestos. An elevated concentration (11mg/kg) of benzo(a)pyrene (a polycyclic aromatic hydrocarbon (PAH) compound) was identified in one fill sample above the health-based site assessment criterion. Elevated zinc and benzo(a)pyrene were also identified at concentrations above the adopted ecological assessment criteria.

During the site inspection (January 2017), the majority of the site was occupied by residential buildings. The site inspection did not identify any obvious potentially contaminating activities at the site. Potential indicators of contamination in the form of slag and ash were identified at the ground surface and in garden beds in some areas.

A summary of the historical land uses and activities identified during the assessment is presented in the table below:

Year(s)	Potential Land Use / Activities
1943	Residential
Circa 1950 to 1970s	462 Willoughby Road - Electrical goods and refrigerator manufacturing Remainder of site – Residential

<sup>1</sup> Environmental consulting division of Jeffery & Katauskas Pty Ltd (J&K)

Year(s)	Potential Land Use / Activities
Circa 1982 to present	462 Willoughby Road - Vacant Remainder of site – Residential

The historical aerial photographs review identified a former quarry to the east of the site which was filled to create the existing recreational area. Considering the filling history of the adjacent land immediately to the east of the site, the recreational areas closest to the site are more likely to have been filled using soil and similar materials, as opposed to the area being landfilled with putrescible waste (however it is possible that the areas further to the east may have been filled with other waste). On this basis, the area immediately to the east of the site has not been identified as an AEC/off-site source of contamination in the CSM.

Based on the scope of work undertaken for this assessment, JKE identified the following potential contamination sources/AEC:

- Fill material;
- Manufacturing of refrigerators and electrical goods;
- Hazardous building materials; and
- Up-gradient, off-site areas (formerly used for manufacturing as noted above).

Considering the above, and based on a qualitative assessment of various lines of evidence as discussed throughout this report, JKE are of the opinion that there is a moderate potential for site contamination across the wider site. There is considered to be a relatively higher potential for contamination in the 462 Willoughby Road portion of the site (former industrial land use) and in the eastern site area where elevated zinc and benzo(a)pyrene was identified during the previous EIS (2016) assessment.

The primary contamination-related risks for future development are likely to include fill soil and potentially contaminated groundwater. Disposal costs for fill soil can be significant and should be considered early in the planning process, particularly where basements are to be constructed. The site inspection and the EIS (2016) investigation has identified the presence of fill at the site, particularly in the eastern areas.

Based on the scope of work undertaken for the assessment, JKE are of the opinion that the historical land uses and potential sources of contamination identified would not preclude the proposed re-zoning and future high density residential development of the site.

As part of the overall planning and development process, JKE recommend the following:

- A preliminary intrusive investigation should be undertaken to make an assessment of the soil and groundwater contamination conditions. Although the investigation should be designed to assess the broader site conditions, a higher density of sampling and more detailed investigation is recommended in the eastern site areas;
- To close out any uncertainty regarding the filling history of the land to the east of the site, a landfill gas analyser (GA or GFM instruments or similar) should be used to screen for bulk landfill gasses such as carbon dioxide and methane during the borehole drilling in the eastern site area;
- A hazardous building materials survey should be undertaken prior to demolition of the buildings. Following demolition of the buildings (and preferably prior to removal of the hardstand), an asbestos clearance certificate should be provided; and
- A waste classification should be undertaken prior to off-site disposal of any surplus materials to be excavated for the proposed basement construction.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of the report.





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Appendix A: Report Figures
Appendix B: Site Information
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## Abbreviations

Area of Environmental Concern	AEC
Australian Height Datum	AHD
Acid Sulfate Soil	ASS
Benzene, Toluene, Ethylbenzene, Xylene	BTEX
Contaminant(s) of Potential Concern	CoPC
Contaminated Land Management	CLM
Conceptual Site Model	CSM
Environmental Investigation Services	EIS
Environmental Protection Authority	EPA
Environmental Site Assessment	ESA
JK Environments	JKE
Local Government Authority	LGA
National Association of Testing Authorities	NATA
National Environmental Protection Measure	NEPM
Organochlorine Pesticides	OCP
Organophosphate Pesticides	OPP
Polycyclic Aromatic Hydrocarbons	PAH
Total Recoverable Hydrocarbons	TRH

## 1 INTRODUCTION

Walter Projects Pty Ltd ATF Walter Developments Trust ('the client') commissioned Environmental Investigation Services (EIS)<sup>2</sup> to undertake a preliminary desktop Environmental Site Assessment (ESA) for the planning proposal associated with the proposed residential development at 1-31 Walter Street and 452-462 Willoughby Road, Willoughby, NSW ('the site'). The site location is shown on Figure 1 and the assessment was confined to the site boundaries as shown on Figure 2.

A geotechnical assessment was undertaken in conjunction with this ESA by JK Geotechnics<sup>3</sup>. The results of the investigation are presented in a separate report (Ref: 30088Zrpt)<sup>4</sup>.

Since the original issue of the report in 2017, EIS has rebranded to JK Environments (JKE). JKE, like EIS, functions as the environmental division of JK Group and continues to operate alongside JK Geotechnics.

This report has been revised to reflect the current planning proposal for the site and site address. The information presented herein was obtained in January 2017. A site inspection was not undertaken as part of the report revision.

### 1.1 Proposed Development Details

Based on the details provided, JKE understand that a masterplan is being prepared for the planning authority. The planning proposal includes rezoning of the site from R3 (medium density residential) to R4 (high density residential), followed by the construction of a number of four to nine storey residential buildings with associated landscaping. We have assumed that basement parking is likely to be required.

### 1.2 Aims and Objectives

The primary aims of the assessment were to identify any past or present potentially contaminating activities at the site, and to identify the potential for site contamination. The assessment objectives were to:

- Review and summarise any relevant EIS/JK investigation reports prepared for properties in the vicinity of the site;
- Provide an appraisal of the past site use(s) based on a review of historical information;
- Assess the current site conditions and use via a site walkover inspection;
- Identify potential contamination sources/areas of environmental concern (AEC) and contaminants of potential concern (CoPC);
- Prepare a conceptual site model (CSM); and
- Provide commentary on contamination-related risks with regards to the proposed re-zoning and future development.

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<sup>2</sup> Environmental consulting division of Jeffery & Katauskas Pty Ltd (J&K) pre-2019

<sup>3</sup> Geotechnical consulting division of J&K

<sup>4</sup> Referred to as JK 2016 Report

### 1.3 Scope of Work

The assessment was undertaken generally in accordance with an EIS proposal (Ref: EP44091KPrev1) of 22 December 2016 and written acceptance from the client of 22 December 2016. The scope of work included the following:

- Review of site information, including background and site history information from a Lotsearch Pty Ltd *Environmental Risk and Planning Report*;
- A walkover site inspection; and
- Preparation of an ESA report presenting the results of the assessment, including a CSM.

The scope of work was undertaken with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)<sup>5</sup>, other guidelines made under or with regards to the Contaminated Land Management Act (1997)<sup>6</sup> and State Environmental Planning Policy No.55 – Remediation of Land (1998)<sup>7</sup>. A list of reference documents/guidelines is included in the appendices.

The revision was undertaken generally in accordance with a JKE proposal (Ref: EP50121BT) of 21 August 2019 and written acceptance from the client of 21 August 2019.

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<sup>5</sup> National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)*. (referred to as NEPM 2013)

<sup>6</sup> Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

<sup>7</sup> *State Environmental Planning Policy No. 55 – Remediation of Land 1998* (NSW) (referred to as SEPP55)

## 2 SITE INFORMATION

### 2.1 Background

EIS has previously investigated the eastern section of the site (452-460 Willoughby Road and 1-1A Walter Street) for a separate client and the results were presented the EIS report dated 30 June 2016 (Ref: E29507Krpt)<sup>8</sup>. The scope of work for the EIS (2016) assessment/investigation included a site history assessment and soil sampling/analysis from five boreholes. In summary:

- The assessment indicated that the properties being investigated were historically and currently utilised for residential purposes;
- The primary AEC/potential contamination sources were considered to be imported fill and hazardous building materials;
- The investigation identified fill to a maximum depth of approximately 1.2m, overlying natural clayey and sandy soils. The fill was shallower in the western portion of the properties being investigated; and
- Fill samples were analysed for a broad range of potential contaminants, including hydrocarbons, pesticides, heavy metals and asbestos. An elevated concentration (11mg/kg) of benzo(a)pyrene (a polycyclic aromatic hydrocarbon (PAH) compound) was identified in one fill sample above the health-based site assessment criterion. Elevated zinc and benzo(a)pyrene were also identified at concentrations above the adopted ecological assessment criteria.

Additional subsurface information for surrounding properties investigated by JK Geotechnics is also presented in the JK (2016) report.

### 2.2 Site Identification

Table 2-1: Site Identification

<b>Site Address:</b>	1-31 Walter Street and 452-462 Willoughby Road, Willoughby, NSW
<b>Lot &amp; Deposited Plan:</b>	Various, as shown on Figure 2
<b>Current Land Use:</b>	Residential
<b>Proposed Land Use:</b>	Residential (apartments)
<b>Local Government Authority:</b>	Willoughby City Council
<b>Current Zoning:</b>	R3 (medium density residential)
<b>Site Area (m<sup>2</sup>):</b>	15,000
<b>RL (AHD in m) (approx.):</b>	50-60
<b>Geographical Location (decimal degrees) (approx.):</b>	Latitude: -33.812063° Longitude: 151.19832°

<sup>8</sup> EIS, (2016). *Report to Greenwood Early Education Centres on Preliminary Environmental Site Assessment for Proposed Childcare Development at 1 and 1A Walter Street & 452-460 Willoughby Road, Willoughby NSW*. (referred to as EIS 2016) – note that the 1A Walter Street property address currently appears as 450 Walter Street

### **2.3 Site Location and Regional Setting**

The site is located in a predominantly residential area of Willoughby, on the north side of Walter Street and to the west of Willoughby Road. A grassed recreational area (Hallstrom Park / Bicentennial Reserve Oval) is located to the east of the site.

### **2.4 Topography**

The regional topography is characterised by a south and east-facing hill side. The site lies at the toe of the hill side and is undulating, with variable slopes towards the south and south-east. The western portion of the site falls towards the south and south-west.

Parts of the site appear to have been levelled to account for the slope and accommodate the existing residences.

### **2.5 Site Inspection**

An inspection of the site was undertaken by JKE on 9 January 2017. The inspection was limited to observations from the street frontage only and did not include a walkover of any individual lots. At the time of the inspection, the north-eastern section of the site (462 Willoughby Road) was vacant. The remainder of the site was occupied by residential dwellings.

A summary of the other inspection findings are outlined in the following subsections. A selection of photographs taken during the inspection is included in the appendices.

#### **2.5.1 Buildings, Structures and Roads**

The site was occupied by various one and two storey, brick or brick rendered residences. Some parts of the buildings such as the eaves and some upper floor additions appeared to be constructed from fibre cement sheeting (possibly containing asbestos). Gravel or concrete driveways were observed at the front of each property.

#### **2.5.2 Boundary Conditions, Soil Stability and Erosion**

The 462 Willoughby Road property (see Figure 2) included a wire mesh fence and lockable gate along the Willoughby Road frontage. The remaining properties were generally bound by timber, brick or stone block fences. There were no obvious signs of soil instability or erosion observed during the inspection.

#### **2.5.3 Visible or Olfactory Indicators of Contamination**

A slag cobble (including metallurgic furnace slag) was observed at the ground surface in the eastern section of the 462 Willoughby Road property (see Figure 2). Pieces of ash were also observed in several garden beds

at the front of several properties along Walter Street. There were no other obvious indicators of contamination observed during the inspection.

#### **2.5.4 Presence of Drums/Chemicals, Waste and Fill Material**

Sandy fill was observed at the ground surface in the eastern section of the 462 Willoughby Road property. This area of the site also included a raised mound which was likely to be fill considering the local topographic features. Fill was considered likely to be present behind raised garden beds and retaining walls at the front of a number of individual properties.

Drums, chemicals or other waste were not observed during the inspection.

#### **2.5.5 Drainage and Services**

Domestic water, sewer and stormwater services were observed in the front yard areas of several properties. Regional stormwater infrastructures was also observed along Walter Street and at the Western end of Walter Street. Considering the site topography, surface water that did not infiltrate the unpaved areas of the site would be expected to drain towards the south and east, and be intercepted by the regional stormwater infrastructure.

#### **2.5.6 Sensitive Environments**

Sensitive environments such as wetlands, ponds, creeks or extensive areas of natural vegetation were not identified on site. A vacant bushland area adjoins the site to the west.

#### **2.5.7 Landscaped Areas and Visible Signs of Plant Stress**

The 462 Willoughby Road property was predominantly grassed and included a number of large casuarina trees. The individual residential properties were relatively well vegetated and included grassed areas and landscaped gardens with various shrubs and trees. All observed vegetation was considered to be in good condition based on a cursory inspection.

### **2.6 Surrounding Land Use**

During the site inspection, JKE observed the following land uses in the immediate surrounds:

- North – Residential apartments. Television studios and associated satellite infrastructure were also located to the north-west.
- South – Walter Street, with one and two storey residences further to the south. An embankment and the Gore Hill Freeway were located to the south of Walter Street, closer towards the central and western end of the site;
- East – Willoughby Road, with public recreational areas further to the east.
- West – Vacant bushland.





JKEnvironments did not observe any land uses in the immediate surrounds that were identified as potential contamination sources for the site. The recreational areas to the east of the site appeared to have been raised by filling.

### **3 GEOLOGY AND HYDROGEOLOGY**

#### **3.1 Regional Geology**

Regional geological information presented in the Lotsearch report (attached in the appendices) indicated that the site is underlain by Hawkesbury Sandstone, which typically consists of medium to coarse grained quartz sandstone with minor shale and laminite lenses. The recreational areas to the east of the site are mapped as being underlain by manmade fill.

Sandstone outcropping was observed at the front of several Walter Street properties (see Figure 2) during the site inspection.

#### **3.2 Acid Sulfate Soil (ASS) Risk and Planning**

The site is not located in an acid sulfate soil (ASS) risk area according to the risk maps prepared by the Department of Land and Water Conservation. ASS information presented in the Lotsearch report (attached in the appendices) indicated that the site is located within a Class 5 area. Works in Class 5 areas that could pose an environmental risk in terms of ASS include works within 500m of adjacent Class 1,2,3,4 land which are likely to lower the water table below 1m AHD on the adjacent land.

Considering the mapping information and the site conditions, including the elevation and geology, an ASS management plan would not be required for development of the site.

#### **3.3 Hydrogeology**

Hydrogeological information presented in the Lotsearch report (attached in the appendices) indicated that the regional aquifer on-site and in the areas immediately surrounding the site includes porous, extensive aquifers of low to moderate productivity. There were a total of 44 registered bores within the report buffer of 2,000m. In summary:

- The nearest registered bores were located over 750m to the east of the site. These were utilised for monitoring purposes;
- The majority of the bores were registered for monitoring purposes; and
- There were no nearby bores registered for domestic or irrigation uses.

The information reviewed for this assessment indicated that the subsurface conditions at the site are likely to consist of residual soils overlying relatively shallow bedrock. The potential for viable groundwater abstraction and use of groundwater under these conditions is considered to be low.

#### **3.4 Receiving Water Bodies**

Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Flat Rock Creek located approximately 70m to the south of the site. This creek eventually discharges into Middle Harbour approximately 2km to the east of the site. The creek may be a potential receptor to overland flows and/or groundwater migrating down-gradient of the site.

## 4 SITE HISTORY INFORMATION

### 4.1 Review of Historical Aerial Photographs

Historical aerial photographs were included in the Lotsearch report. JKE has reviewed the photographs and summarised relevant information in the following table:

Table 4-1: Summary of Historical Aerial Photographs

Year	Details
<b>1943</b>	<p>The site appeared to be occupied by a number of residential-type buildings and the overall configuration appeared relatively similar to the current (2017) site layout. The north-eastern section of the site (the triangular-shaped lot comprising 462 Willoughby Road) appeared to be vacant.</p> <p>Several large commercial/industrial-type buildings and residential buildings were located immediately to the north of the site. Residential buildings were located to the south of the site, beyond Walter Street. A former quarry was evident to the east of the site, beyond Willoughby Road. A tiered quarry cut face was evident at the northern end of the quarry area.</p> <p>The area to the west of the site was vacant bushland and included areas of rock outcropping.</p>
<b>1956</b>	<p>The north-eastern section of the site (462 Willoughby Road) appeared to form part of a larger commercial/industrial complex that extended further to the north. The triangular-shaped block was occupied by part of a large multi-storey building and several smaller structures and objects. The remainder of the site generally appeared to be similar to the previous photograph.</p> <p>The former quarry area to the east of the site appeared to be grassed and possibly used for recreational purposes (i.e. a sports ground).</p>
<b>1961</b>	<p>The north-eastern section of the site appeared to have been redeveloped. Several new buildings were evident in this area. The potential use of this area is not obvious, however the buildings appeared more consistent with commercial/industrial use rather than residential. The remainder of the site generally appeared to be similar to the previous photograph.</p> <p>The immediate surrounds generally appeared similar to the previous photograph, however further quarrying and/or landfilling was evident to the east of the recreational area, to the east of the site.</p>
<b>1965</b>	<p>The site and the immediate surrounds generally appeared to be similar to the previous photograph.</p>
<b>1970</b>	<p>The site and the immediate surrounds generally appeared to be similar to the previous photograph. The land to the east of the recreational area (to the east of the site) appeared to have been filled and levelled.</p>
<b>1982</b>	<p>The north-eastern section of the site (462 Willoughby Road) appeared to be treed and grassed, consistent with the existing 2017 layout. The remainder of the site generally appeared to be similar to the previous photograph.</p> <p>The area immediately to the north of the site appeared to have been redeveloped for residential purposes and was occupied by a number of apartment buildings.</p>
<b>1991</b>	<p>The site generally appeared to be similar to the previous photograph.</p> <p>Construction of the Gore Hill Freeway was underway to the south of the site. This included the construction of the embankment on the southern side of Walter Street (towards the western end of the street). Extensive filling of the former quarry and recreational areas to the east of the site had occurred. Exposed soil was evident at the surface in these areas.</p>

Year	Details
2002	<p>The site generally appeared to be similar to the previous photograph.</p> <p>The Gore Hill Freeway to the south of the site appeared to be complete. The area to the east of the site was grassed and treed and generally appeared consistent with the existing (2017) layout of Hallstrom Park/Bicentennial Reserve Oval.</p>
2009	The site and the immediate surrounds generally appeared to be similar to the previous photograph.

## 4.2 NSW EPA Records

The Lotsearch report (attached in the appendices) included information from the NSW EPA databases for the following:

- Records maintained in relation to contaminated land under Section 58 of the CLM Act 1997;
- Records of notified sites under Section 60 of the CLM Act 1997 (Duty to Report Contamination); and
- Licensed activities under the Protection of the Environment Operations Act (1997<sup>9</sup>).

The search included the site area and surrounding areas in the report buffer of 1,000m. The search indicated the following:

- There were no records for the site or any properties in the report buffer under Section 58 of the CLM Act 1997;
- The site has not been notified under Section 60 of the CLM Act 1997. There was one notified property in the report buffer. This was a service station located approximately 600m to the north of the site and is unlikely to act as an off-site source of contamination; and
- There were no relevant records for licenced activities at the site or in the immediate vicinity under the POEO Act 1997.

## 4.3 Historical Business Directory and Additional Lotsearch Information

Historical business records for the site and surrounding areas in the report buffer were included in the Lotsearch report (attached in the appendices). In summary:

- The 1950 and 1970 directory indicated that business activities at the property to the north of the site and potentially including the 462 Willoughby Road portion of the site included refrigerator and domestic electrical goods manufacturing (these areas were occupied by commercial/industrial buildings in the 1960 and 1970 aerial photographs); and
- A dry cleaning operation was matched to Willoughby Road, however the address of this business was not available.

<sup>9</sup> NSW Government Legislation, (1997). *Protection of the Environment Operations Act 1997*. (referred to as POEO Act 1997)

#### 4.4 Other Local Historic Information

A brief search of information available on the internet (including the Willoughby City Council website) indicated that an incinerator was built off Small Street to the east of the site in the 1930s. The incinerator operated up to 1967.

#### 4.5 Summary of Site History Information

A time line summary of the historical land uses and activities is presented in the table below. The information presented in the table is based on a weight of evidence assessment of the site history documentation and observations made by JKE.

Table 4-2: Summary of Historical Land Uses

Year(s)	Potential Land Use / Activities
1943	Residential
Circa 1950 to 1970s	462 Willoughby Road - Electrical goods and refrigerator manufacturing Remainder of site – Residential
Circa 1982 to present	462 Willoughby Road - Vacant Remainder of site – Residential
1943	Residential

#### 4.6 Integrity of Site History Information

The majority of the site history information was obtained from government organisations as outlined in the relevant sections of this report. The veracity of the information from these sources is considered to be relatively high. A certain degree of information loss can be expected given the lack of specific land use details over time. JKE have relied upon the Lotsearch report and have not independently verified any information contained within. However, it is noted that the Lotsearch report is generated based on databases maintained by various government agencies and is expected to be reliable.

## 5 CONCEPTUAL SITE MODEL

NEPM (2013) defines a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM for the site is presented in the following sub-sections and is based on the site information (including the site inspection information) and the review of site history information. Reference should also be made to the figures attached in the appendices.

### 5.1 Potential Contamination Sources/AEC and CoPC

The potential contamination sources/AEC and CoPC are presented in the following table:

Table 5-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
<p><u>Fill material</u> – The site appears to have been historically filled to achieve the existing levels. The fill may have been imported from various sources and could be contaminated (e.g. waste from the nearby incinerator in the early to mid-1900s).</p> <p>Slag and ash were observed in the surface fill during the January 2017 site inspection and elevated benzo(a)pyrene and zinc were identified in fill in the eastern site area during the EIS (2016) assessment.</p>	<p>Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), PAHs, organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.</p>
<p><u>Manufacturing of Refrigerators and Electrical Goods</u> – The 462 Willoughby Road portion of the site and the wider area to the north were used for manufacturing purposes during the mid-1900s. These activities may have impacted this property and other down-gradient properties in the eastern sections of the site.</p>	<p>PCBs, TRH, BTEX, PAHs, heavy metals and ammonia</p>
<p><u>Hazardous Building Material</u> – Hazardous building materials may be present as a result of former building and demolition activities. These materials may also be present in the existing buildings/ structures on site.</p>	<p>Asbestos and lead</p>
<p><u>Up-gradient, Off-site Areas</u> – The area to the north of the site was used for manufacturing purposes during the mid-1900s as noted above.</p>	<p>As noted for manufacturing</p>

Considering the filling history of the adjacent land immediately to the east of the site (as observed during the aerial photographs review), the recreational areas closest to the site are more likely to have been filled using soil and similar materials, as opposed to the area being landfilled with putrescible waste (however it is possible that the areas further to the east may have been filled with other waste). On this basis, the area immediately to the east of the site has not been identified as an AEC/off-site source of contamination in the CSM.

## 5.2 Known Contamination Sources

Elevated benzo(a)pyrene and zinc was identified in fill in the eastern site area during the JKE (2016) investigation.

## 5.3 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

The mechanisms for contamination, affected media, receptors and exposure pathways relevant to the potential contamination sources/AEC are outlined in the following CSM table:

Table 5-2: CSM

<b>Potential mechanism for contamination</b>	<p>Potential mechanisms for contamination include:</p> <ul style="list-style-type: none"> <li>• Fill material – importation of impacted material, ‘top-down’ impacts (e.g. leaching from surficial material), or sub-surface release (e.g. impacts from buried material);</li> <li>• Manufacturing of Refrigerators and Electrical Goods - ‘top-down’, spills (e.g. leaks through cracks in the pavement), or sub-surface release (e.g. from leaking sub-surface infrastructure such as tanks or sewer pipework);</li> <li>• Hazardous Building Materials – ‘top-down’ (e.g. demolition resulting in surficial impacts in unpaved areas); and</li> <li>• Up-gradient, Off-site Areas (formerly used for manufacturing) – ‘top-down’, spill or sub-surface release. Impacts to the site could occur via migration of contaminated groundwater.</li> </ul>
<b>Affected media</b>	Soil/soil vapour and groundwater have been identified as potentially affected media.
<b>Receptor identification</b>	<p>Human receptors include site occupants/users, construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users.</p> <p>Ecological receptors include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas), and freshwater ecology in Flat Rock Creek.</p>
<b>Potential exposure pathways</b>	<p>Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX). The potential for exposure would typically be associated with the construction and excavation works, and use of unpaved areas (i.e. the gardens) and basement (i.e. vapour inhalation or incidental contact with groundwater seepage).</p> <p>Potential exposure pathways for ecological receptors include primary contact and ingestion.</p>
<b>Potential exposure mechanisms</b>	<p>The following have been identified as potential exposure mechanisms for site contamination:</p> <ul style="list-style-type: none"> <li>• Vapour intrusion into the proposed basement and/or building (either from soil contamination or volatilisation of contaminants from groundwater);</li> <li>• Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas;</li> <li>• Migration of groundwater off-site and into nearby water bodies, including aquatic ecosystems and those being used for recreation; and</li> </ul>

	<ul style="list-style-type: none"> <li>• Migration of groundwater off-site into areas where groundwater is being utilised as a resource (i.e. for irrigation).</li> </ul>
<b>Presence of preferential pathways for contaminant movement</b>	Underground services including sewer and stormwater infrastructure and the associated trenches have the potential to act as preferential pathways for contaminant migration. This could occur via groundwater/seepage if present, or via soil/vapour migration through the pipework and/or trench backfill.

## 5.4 Assessment of Data Gaps

JKE has undertaken a preliminary data gap analysis based on the findings of the assessment. The data gaps and our comments are outlined in the following table:

Table 5-3: Data Gap Assessment

<b>Data Gap</b>	<b>JKE Comments</b>
Historical land titles search was not undertaken	<p>JKE are of the opinion that a historical land titles search for the 462 Willoughby Road property may provide additional useful information regarding the historical use of this area and confirm whether it formed part of the main manufacturing site.</p> <p>Historical land titles information for the remainder of the site is unlikely to alter the CSM as these site areas appeared to be used for residential purposes from at least 1943.</p>
Council Records and SafeWork NSW	<p>Review of council records in relation to historical building and development approvals may provide additional useful information regarding the historical use of the 462 Willoughby Road area of the site.</p> <p>SafeWork NSW records are unlikely to have been maintained during the former manufacturing uses of 462 Willoughby Road, however a targeted search of this property would be prudent.</p>
Soil and Groundwater Sampling	Soil and groundwater sampling and analysis was outside the scope of this assessment.



## **6 CONCLUSIONS**

### **6.1 Contamination Sources/AEC and Potential for Site Contamination**

Based on the scope of work undertaken for this assessment, JKE identified the following potential contamination sources/AEC:

- Fill material;
- Manufacturing of refrigerators and electrical goods;
- Hazardous building materials; and
- Up-gradient, off-site areas (formerly used for manufacturing as noted above).

Considering the above, and based on a qualitative assessment of various lines of evidence as discussed throughout this report, JKE are of the opinion that there is a moderate potential for site contamination across the wider site. There is considered to be a relatively higher potential for contamination in the 462 Willoughby Road portion of the site (former industrial land use) and in the eastern site area where elevated zinc and benzo(a)pyrene was identified during the previous EIS (2016) assessment.

### **6.2 Potential Contamination Related Risks and Future Development**

The primary contamination-related risks for future development are likely to include fill soil and potentially contaminated groundwater. Disposal costs for fill soil can be significant and should be considered early in the planning process, particularly where basements are to be constructed. The site inspection and the JKE (2016) investigation has identified the presence of fill at the site, particularly in the eastern areas.

### **6.3 Conclusions and Recommendations**

Based on the scope of work undertaken for the assessment, JKE are of the opinion that the historical land uses and potential sources of contamination identified would not preclude the proposed re-zoning and future high density residential development of the site.

As part of the overall planning and development process, JKE recommend the following:

- A preliminary intrusive investigation should be undertaken to make an assessment of the soil and groundwater contamination conditions. Although the investigation should be designed to assess the broader site conditions, a higher density of sampling and more detailed investigation is recommended in the eastern site areas;
- To close out any uncertainty regarding the filling history of the land to the east of the site, a landfill gas analyser (GA or GFM instruments or similar) should be used to screen for bulk landfill gasses such as carbon dioxide and methane during the borehole drilling in the eastern site area;
- A hazardous building materials survey should be undertaken prior to demolition of the buildings. Following demolition of the buildings (and preferably prior to removal of the hardstand), an asbestos clearance certificate should be provided; and
- A waste classification should be undertaken prior to off-site disposal of any surplus materials to be excavated for the proposed basement construction.

## 7 LIMITATIONS

The report limitations are outlined below:

- This report has been revised based on a change to the address and the planning proposal. The site was not inspected for preparation of the revision. The site inspection and information presented within the report were obtained in January 2017. JKE takes no responsibility for any changes that may have occurred at the site since January 2017 that may have altered the information and inspection findings;
- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

## Important Information About This Report

These notes have been prepared by JKE to assist with the assessment and interpretation of this report.

### **The Report is based on a Unique Set of Project Specific Factors**

This report has been prepared in response to specific project requirements as stated in the JKE proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

JKE/J&K will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the assessment. If the subject site is sold, ownership of the assessment report should be transferred by JKE to the new site owners who will be informed of the conditions and limitations under which the assessment was undertaken. No person should apply an assessment for any purpose other than that originally intended without first conferring with the consultant.

### **Changes in Subsurface Conditions**

Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an assessment report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

### **This Report is based on Professional Interpretations of Factual Data**

Site assessments identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

### **Assessment Limitations**

Although information provided by a site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

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**Misinterpretation of Site Assessments by Design Professionals**

Costly problems can occur when other design professionals develop plans based on misinterpretation of an assessment report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

**Logs Should not be Separated from the Assessment Report**

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the assessment. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the assessment. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

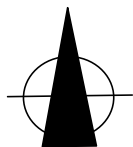
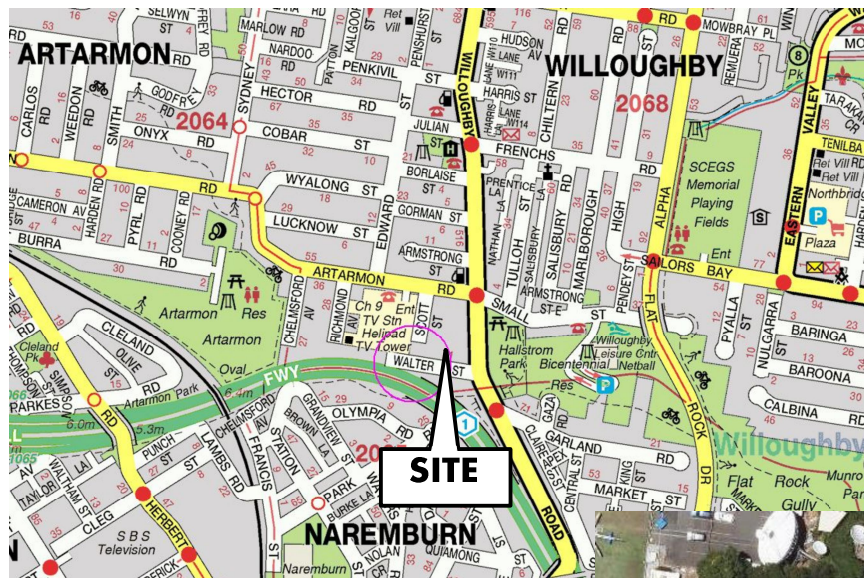
**Read Responsibility Clauses Closely**

Because an environmental site assessment is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.



## **Appendix A: Report Figures**





NOTES:  
Figure has been recreated from <https://maps.six.nsw.gov.au/>  
and UBD on disc (version 7.1)

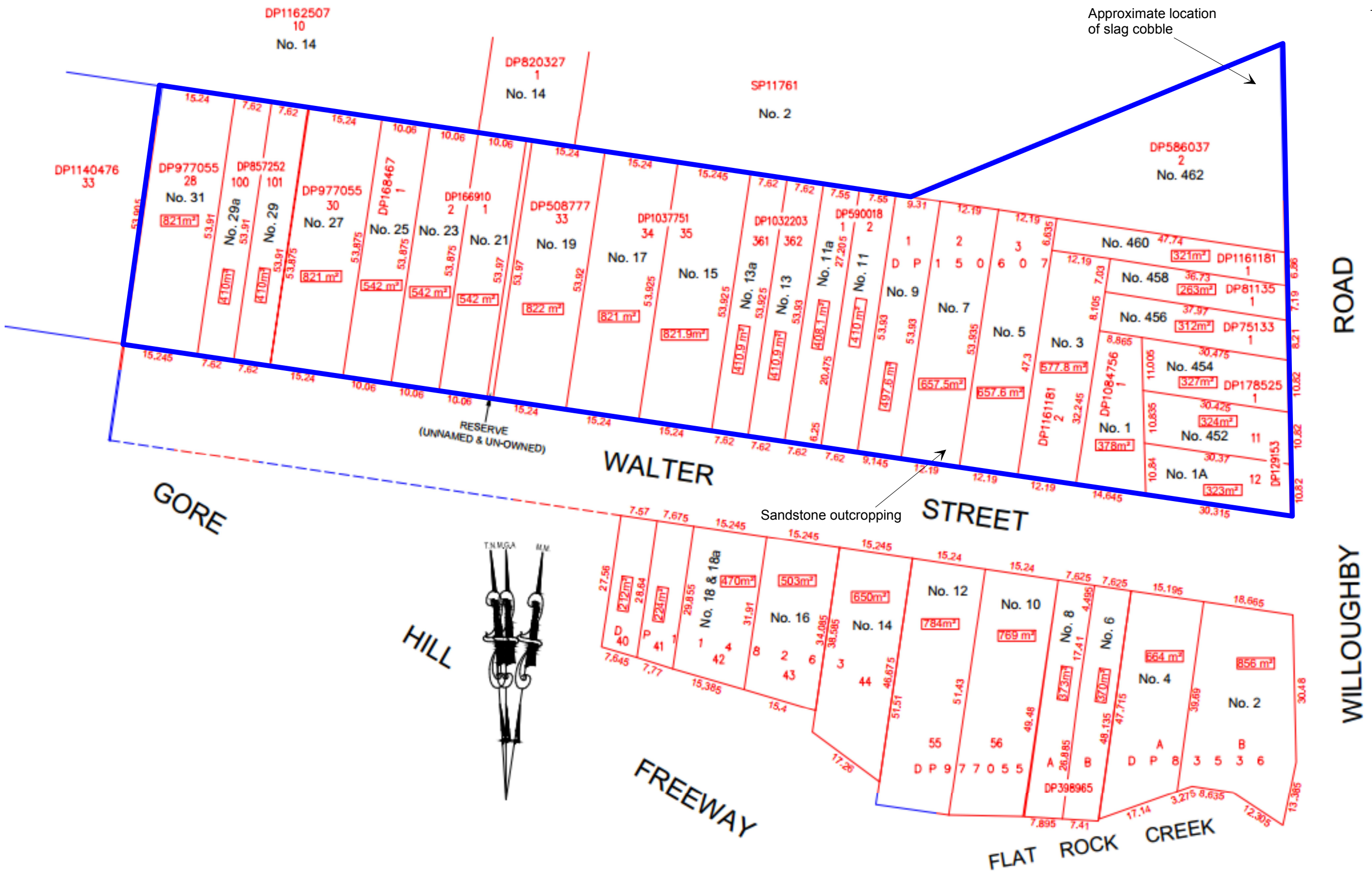
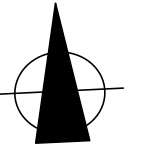
Figure is not to scale. UBD Map ref: 195 Q16

This plan should be read in conjunction with the EIS report

Title: <b>SITE LOCATION PLAN</b>	
Location: 1-31 WALTER STREET AND 452-462 WILLOUGHBY ROAD, WILLOUGHBY	
Report No: E30088KPrptRev2	Figure No: 1
<b>JK ENVIRONMENTS</b>	







LEGEND:

— APPROXIMATE SITE BOUNDARY



Notes: Reference should be made to the report text for a full understanding of this plan.

Image Sources:

Title: <b>SITE FEATURES PLAN</b>	
Location: 1-31 WALTER STREET AND 452-462 WILLOUGHBY STREET, WILLOUGHBY	
Report No: E30088KPrtRev2	Figure No: 2
JK ENVIRONMENTS	





## **Appendix B: Site Information**





## **Selected Site Photos**

Selected Site Photos – 9 January 2017 (E30088KP)



462 Willoughby Rd (facing north-west), showing suspected Fill mound



Slag cobble at surface at eastern end of 462 Willoughby Rd



Sandstone outcropping along 7 Walter Street property frontage

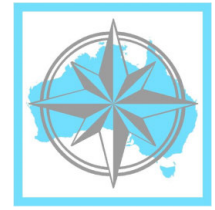


Site along Walter Street frontage (facing north-west)



## **Lotsearch Environmental Risk and Planning Report**

# Lotsearch



## Environmental Risk and Planning Report

**1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068**

**Report Buffer: 1000m**

**Report Date: 23 Dec 2016 13:05:01**

**Disclaimer:**

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



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## Location Confidences

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

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

## Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	Land and Property Information	23/12/2016	23/12/2016	Daily	-	-	-
Topographic Data	Land and Property Information	10/04/2015	01/04/2015	As required	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	06/12/2016	18/11/2016	Monthly	0	0	1
Contaminated Land: Records of Notice	Environment Protection Authority	11/11/2016	11/11/2016	Monthly	0	0	0
Former Gasworks	Environment Protection Authority	01/12/2016	10/05/2013	Monthly	0	0	0
National Waste Management Site Database	Geoscience Australia	01/11/2016	15/11/2012	Quarterly	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	02/12/2016	01/12/2016	Monthly	0	1	2
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	02/12/2016	01/12/2016	Monthly	0	0	1
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	02/12/2016	01/12/2016	Monthly	0	3	5
UPSS Environmentally Sensitive Zones	Department of Environment, Climate Change and Water (NSW)	14/04/2015	12/01/2010	As required	0	0	0
UBD Business to Business Directory 1991	Hardie Grant			Not required	0	1	2
UBD Business Directory 1991 Motor Garages/Service Stations	Hardie Grant			Not required	0	0	6
UBD Business Directory 1970	Hardie Grant			Not required	0	12	15
UBD Business Directory 1970 Drycleaners & Motor Garages/Service Stations	Hardie Grant			Not required	0	2	24
UBD Business Directory 1950	Hardie Grant			Not required	0	16	20
UBD Business Directory 1950 Drycleaners & Motor Garages/Service Stations	Hardie Grant			Not required	0	2	17
Points of Interest	Land and Property Information	10/04/2015	01/04/2015	Annually	0	1	67
Tanks (Areas)	Land and Property Information	10/04/2015	01/04/2015	Annually	0	0	0
Tanks (Points)	Land and Property Information	10/04/2015	01/04/2015	Annually	0	0	0
Major Easements	Land and Property Information	11/06/2014	11/06/2014	As required	0	0	9
State Forest	Land and Property Information	11/04/2016	23/01/2015	As required	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment and Heritage	11/04/2016	31/12/2015	Annually	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1	1	1
Groundwater Boreholes	NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation; Commonwealth of Australia (Bureau of Meteorology) 2015	21/03/2016	01/12/2015	Annually	0	0	44
Geological Units 1:100,000	NSW Department of Industry, Resources & Energy	20/08/2014		None planned	2	-	3
Geological Structures 1:100,000	NSW Department of Industry, Resources & Energy	20/08/2014		None planned	0	-	0
Naturally Occurring Asbestos Potential	NSW Department of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	0	0	0
Soil Landscapes	NSW Office of Environment and Heritage	12/08/2014		None planned	3	-	7
Standard Local Environmental Plan Acid Sulfate Soils	NSW Planning and Environment	07/10/2016	07/10/2016	As required	1	-	-
Dryland Salinity Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	0	0	0
Mining Subsidence Districts	Land and Property Information	31/08/2016	31/08/2016	As required	0	0	0
SEPP 14 - Coastal Wetlands	NSW Planning and Environment	17/12/2015	24/10/2008	Annually	0	0	0

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	No. Features Onsite	No. Features within 100m	No. Features within Buffer
SEPP 26 - Littoral Rainforest	NSW Planning and Environment	17/12/2015	05/02/1988	Annually	0	0	0
SEPP 71 - Coastal Protection	NSW Planning and Environment	17/12/2015	01/08/2003	Annually	0	0	0
SEPP Major Developments 2005	NSW Planning and Environment	09/03/2013	25/05/2005	Under Review	0	0	1
SEPP Strategic Land Use Areas	NSW Planning and Environment	06/07/2016	28/01/2014	Annually	0	0	0
Local Environmental Plan - Land Zoning	NSW Planning and Environment	22/11/2016	04/09/2016	Quarterly	1	12	116
Local Environmental Plan - Minimum Subdivision Lot Size	NSW Planning and Environment	22/11/2016	04/09/2016	Quarterly	0	-	-
Local Environmental Plan - Height of Building	NSW Planning and Environment	22/11/2016	04/09/2016	Quarterly	1	-	-
Local Environmental Plan - Floor Space Ratio	NSW Planning and Environment	22/11/2016	04/09/2016	Quarterly	1	-	-
Local Environmental Plan - Land Application	NSW Planning and Environment	22/11/2016	04/09/2016	Quarterly	1	-	-
Local Environmental Plan - Land Reservation Acquisition	NSW Planning and Environment	22/11/2016	04/09/2016	Quarterly	0	-	-
State Heritage Items	NSW Planning and Environment	22/11/2016	30/10/2015	Quarterly	0	0	1
Local Heritage Items	NSW Planning and Environment	22/11/2016	04/09/2016	Quarterly	0	1	46
Bushfire Prone Land	NSW Rural Fire Service	11/11/2016	12/08/2016	Quarterly	0	0	2
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment and Heritage	08/10/2014	11/10/2013	As required	1	1	10
RAMSAR Wetlands	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	0	0	0
ATLAS of NSW Wildlife	NSW Office of Environment and Heritage	23/12/2016	23/12/2016	Daily	-	-	-



## Aerial Imagery 2015

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



### Legend

- Site Boundary
- Buffer 150m

Scale:  
0 25 50 100  
Meters

Data Sources: Aerial Imagery © 2016 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

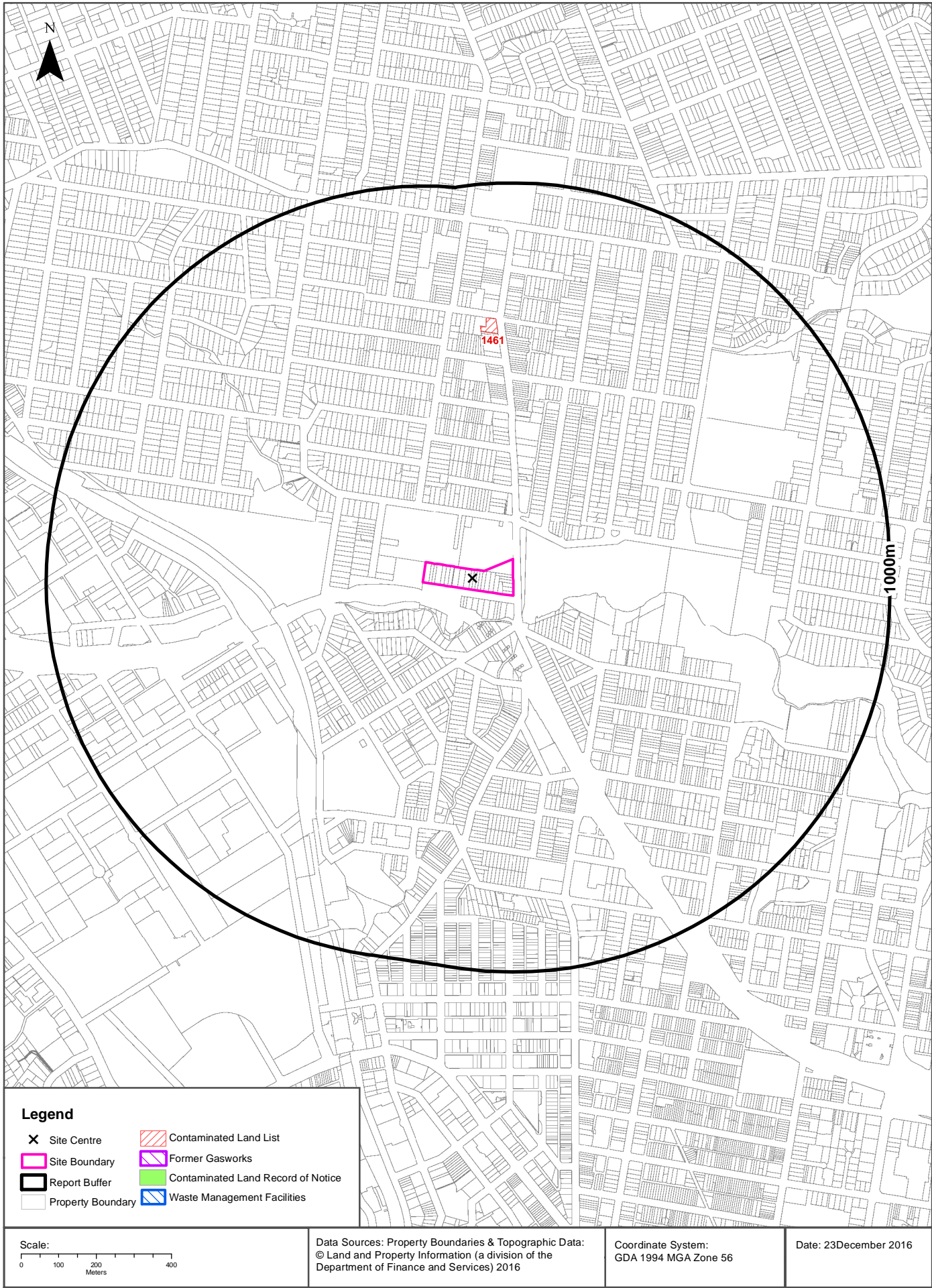
Coordinate System:  
GDA 1994 MGA Zone 56

Date: 22 December, 2016



# Contaminated Land & Waste Management Facilities

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



# Contaminated Land & Waste Management Facilities

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

## List of NSW contaminated sites notified to EPA

Records from the NSW EPA Contaminated Land list within the report buffer:

Map Id	Site	Address	Suburb	Activity	EPA site management class	Status	Dist	Direction	LC
1461	Shell Coles Express Service Station	616-626 Willoughby Road	Willoughby	Service Station	Regulation under CLM Act not required	Current EPA List	601m	North	1

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

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

NSW EPA Contaminated Land List Data Source: Environment Protection Authority  
© State of New South Wales through the Environment Protection Authority

## Contaminated Land & Waste Management Facilities

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

### Contaminated Land: Records of Notice

Record of Notices within the report buffer:

Map Id	Area No	Name	Address	Suburb	Notices	Distance	Direction	LC
N/A	No records in buffer							

Contaminated Land Records of Notice Data Source: Environment Protection Authority  
© State of New South Wales through the Environment Protection Authority  
Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit  
<http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm>

### Former Gasworks

Former Gasworks within the report buffer:

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

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

### National Waste Management Site Database

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

Site Id	Owner	Name	Address	Suburb	Postcode	Landfill	Reprocess	Transfer	Distance	Direction	LC
N/A	No records in buffer										

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





## EPA Activities

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

## Licensed Activities under the POEO Act 1997

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

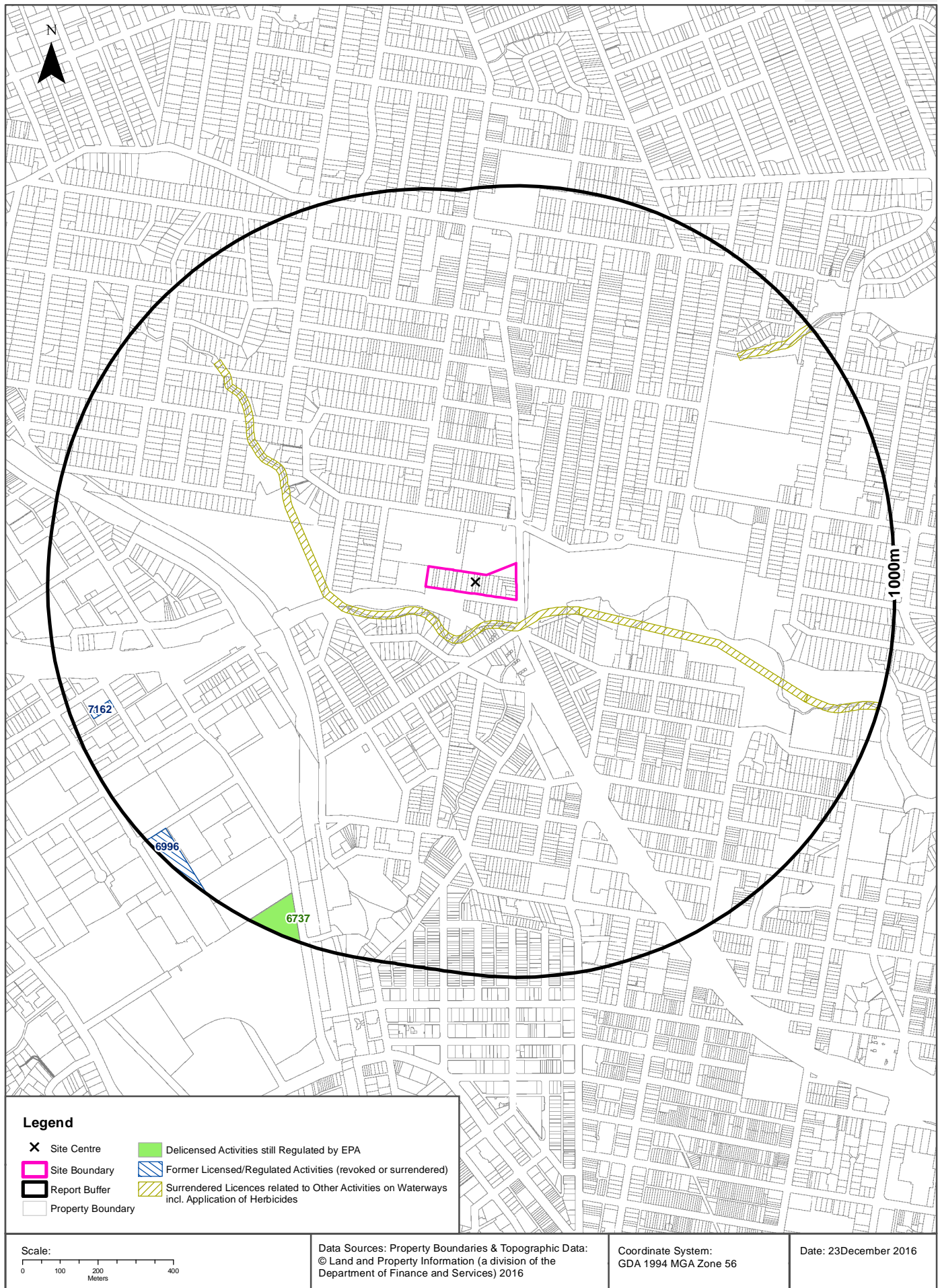
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
2989	TCN CHANNEL NINE PTY LTD	TCN CHANNEL NINE PTY LIMITED	24 ARTARMON ROAD	WILLOUGHBY	Helicopter-related activity	1	0m	North West
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	3	405m	South West

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

# Delicensed & Former Licensed EPA Activities

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068





## EPA Activities

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

## Delicensed Activities still regulated by the EPA

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

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
6737	NORTHERN SYDNEY AND CENTRAL COAST AREA HEALTH SERVICE	ROYAL NORTH SHORE HOSPITAL	PACIFIC HIGHWAY	ST LEONARDS	Hazardous, Industrial or Group A Waste Generation or Storage	1	885m	South West

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

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

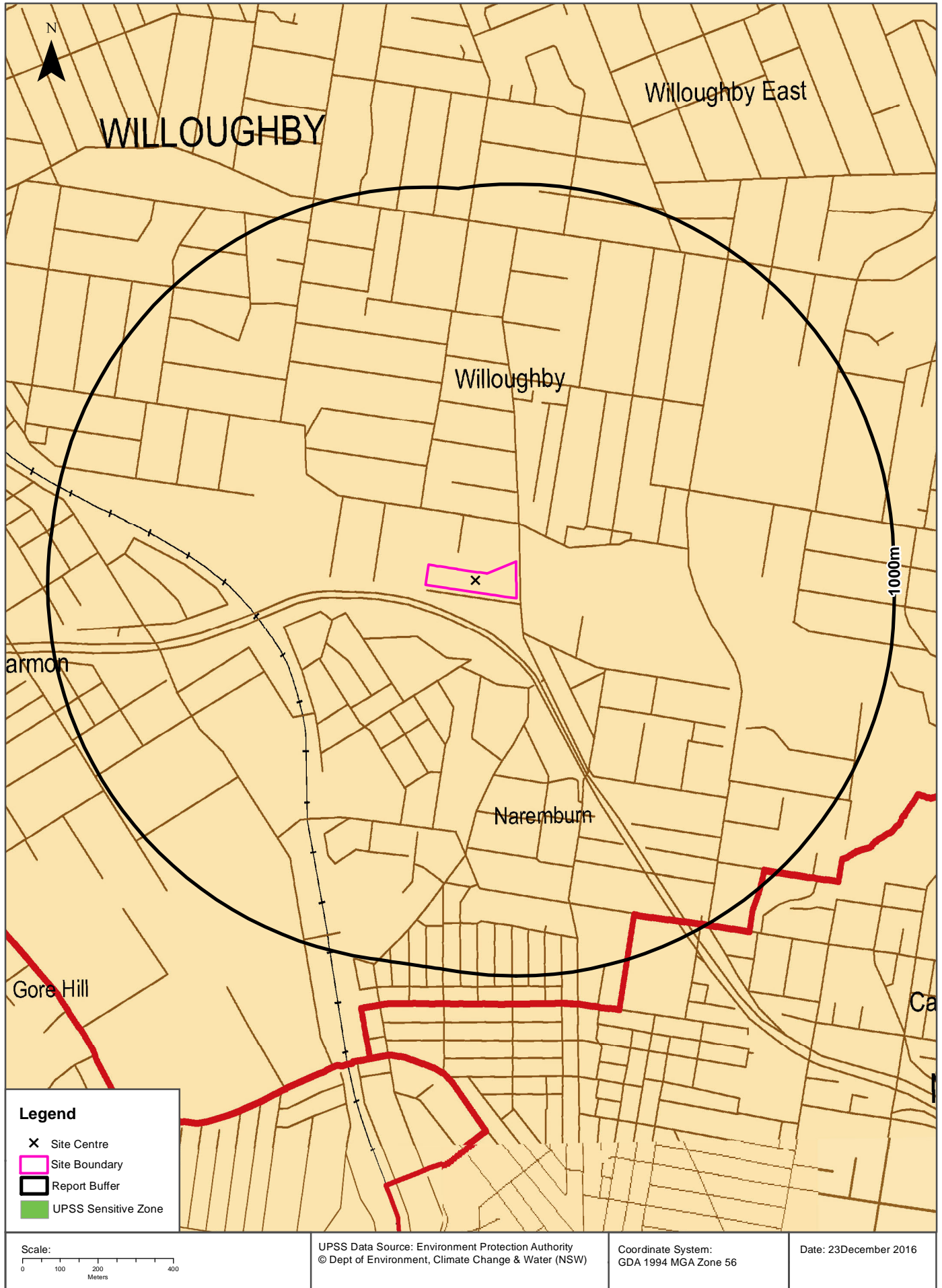
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the report buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	54m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	54m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	54m	-
7162	MAN DIESEL AUSTRALIA PTY LTD	8 WALTHAM STREET, ARTARMON, NSW 2064	Surrendered	26/06/2000	Hazardous, Industrial or Group A Waste Generation or Storage	1	885m	West
6996	MOCKRIDGE BULMER PTY LTD	2/12 FREDERICK STREET, ST LEONARDS, NSW 2065	Surrendered	26/06/2000	Hazardous, Industrial or Group A Waste Generation or Storage	1	940m	South West

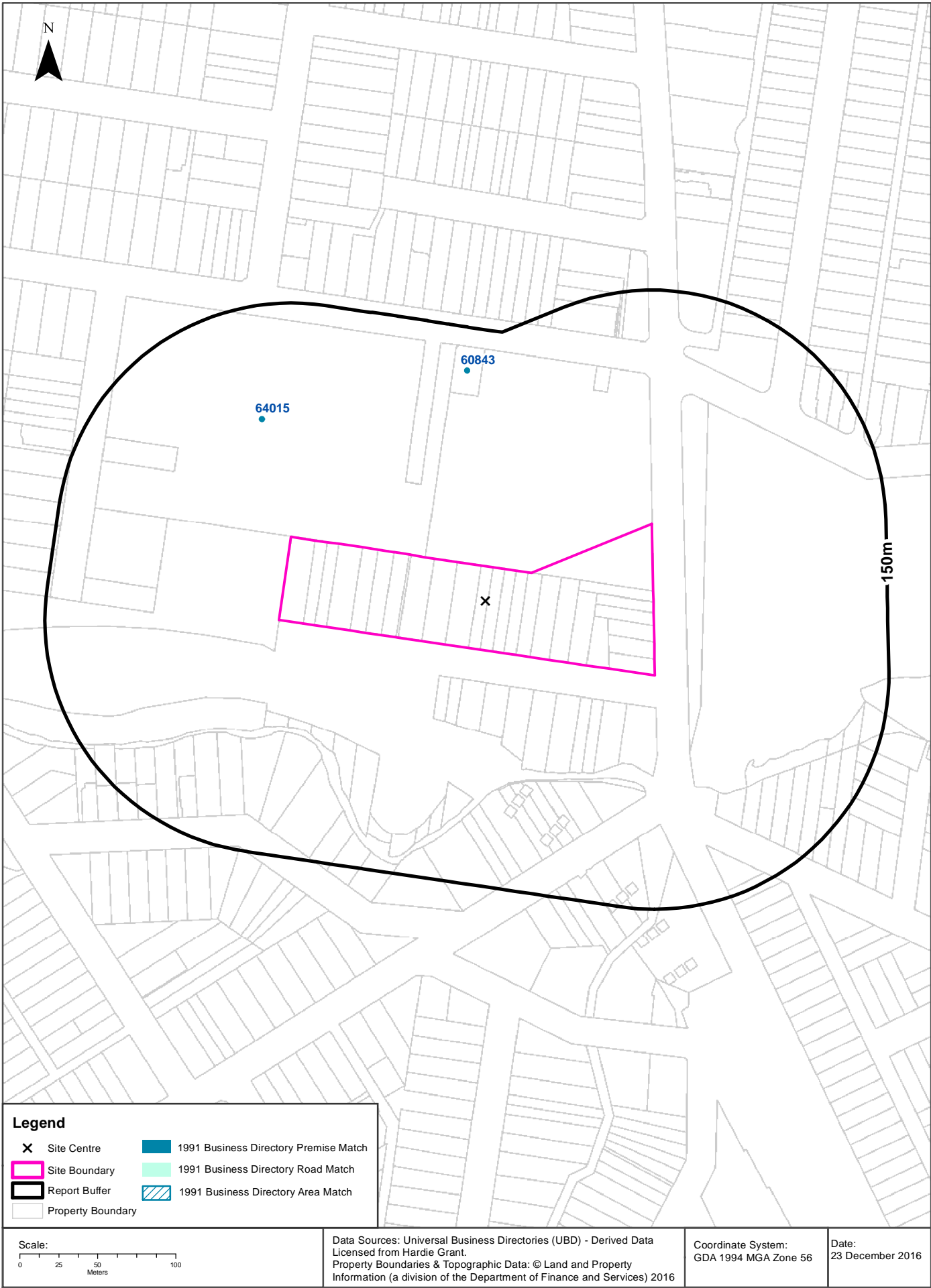
Former Licensed Activities Data Source: Environment Protection Authority  
© State of New South Wales through the Environment Protection Authority

# UPSS Sensitive Zones

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068







## Historical Business Directories

**1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068**

### 1991 Business to Business Directory Records

Records from the 1991 UBD Business to Business Directory within 150m of the site:

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance	Direction
Television Stations	T.C.N Television Corp Ltd	Artarmon Willoughby 2068	64015	Premise Match	76m	North West
Record Mfrs &/or Imps &/or Dists	Carinia Pty Ltd	6 Artarmon Rd Willoughby 2068	60843	Premise Match	120m	North

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

### 1991 Business Directory Motor Garages & Service Stations

Motor Garages & Service Stations from the 1991 UBD Business Directory within 1km of the site:

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance	Direction
Motor Garages & Service Stations	Five Ways Garage Pty. Ltd.	318 Willoughby Rd., Naremburn. 2065.	53735	Premise Match	411m	South East
Motor Garages & Service Stations	Coronation Service Station	626 Willoughby Rd, Willoughby 2068	53664	Premise Match	623m	North
Motor Garages & Service Stations	Eso Northbridge Service Station	Eastern Valley Way, Northbridge	53728	Road Match	793m	North East
Motor Garages & Service Stations	Ampol Willoughby Service Station	Mowbray Rd, Willoughby 2068	53508	Road Match	881m	North
Motor Garages & Service Stations	4 Transaction	22 Waltham St Artarmon	53447	Premise Match	901m	South West
Motor Garages & Service Stations	Traction 4 Pty Ltd	22 Waltham St., Artarmon	53964	Premise Match	901m	South West

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

# 1970 Historical Business Directory Records

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



## Historical Business Directories

**1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068**

### 1970 Business Directory Records

Records from the 1970 UBD Business Directory within 150m of the site:

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
ELECTRICAL CONTRACTORS-LICENSED FIRMS (E305)	Halistroms Pty.Ltd.,462-464 Willoughby Rd.,Willoughby	295022	Premise Match	60m	North
REFRIGERATOR MFRS./DISTRIBUTORS-GAS/KEROSENE(R275)	Hallstroms Pty. Ltd.,462 Willoughby Rd.,Willoughby	356676	Premise Match	60m	North
REFRIGERATOR MFRS.-DOMESTIC-ELECTRIC (R273)	Hallstrom's Pty. Ltd.,462 Willoughby Rd.,Willoughby	356720	Premise Match	60m	North
SIGNWRITERS (S320)	Davola Signs,374 Willoughby Rd.,Naremburn.	361593	Road Match	65m	South East
MOTOR SPARE PARTS DEALERS-RETAIL (M728)	Five Ways Garage Pty. Ltd.,318 Willoughby Rd.,Naremburn	341817	Road Match	65m	South East
MOTOR GARAGES & ENGINEERS (M6S6)	Five Ways Garage Pty. Ltd.,318 Willoughby Rd.NAREMBURN	337807	Road Match	65m	South East
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Five Ways Garage,318 Willoughby Rd.NAREMBURN	341121	Road Match	65m	South East
BUTCHERS-RETAIL (B860)	Hacon, DA& GM., 376 Willoughby Rd., Naremburn	273733	Road Match	65m	South East
MIXED BUSINESSES (M408)	Harris,A. J.,374 Willoughby Rd.,Naremburn	332803	Road Match	65m	South East
MIXED BUSINESSES (M408)	Naremburn Mixed Store,378 Willoughby Rd.,Naremburn	333421	Road Match	65m	South East
BUTCHERS-RETAIL (B860)	Rielly, F., 376 Willoughby Rd., Naremburn	274423	Road Match	65m	South East
TELEVISION STATIONS (T157)	T.C.N.Television Corp.Ltd.,Artarmon Rd.,Willoughby	367730	Premise Match	76m	North West
ACCOUNTANTS & AUDITORS (A040)	Mollard, G, 73a Garland Rd, Naremburn	259095	Premise Match	122m	South East
MOTOR GARAGES & ENGINEERS (M6S6)	Parkside Service Station,311 Willoughby Rd.NAREMBURN	338388	Premise Match	132m	South East
MOTOR GARAGES & ENGINEERS (M6S6)	BP Tower Service Station,Artarmon Rd.WILLOUGHBY	337410	Premise Match	144m	North East

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

### 1970 Business Directory Drycleaners & Service Stations

Drycleaners, Motor Garages & Service Stations from the 1970 UBD Business Directory within 1km of the site:

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MOTOR GARAGES & ENGINEERS (M6S6)	Five Ways Garage Pty. Ltd.,318 Willoughby Rd.NAREMBURN	337807	Road Match	65m	South East
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Five Ways Garage,318 Willoughby Rd.NAREMBURN	341121	Road Match	65m	South East
MOTOR GARAGES & ENGINEERS (M6S6)	Parkside Service Station,311 Willoughby Rd.NAREMBURN	338388	Building Match	132m	South East
MOTOR GARAGES & ENGINEERS (M6S6)	BP Tower Service Station,Artarmon Rd.WILLOUGHBY	337410	Building Match	144m	North East
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Golden Fleece Service Station,445 Willoughby Rd.WILLOUGHBY	341162	Building Match	161m	North East
MOTOR GARAGES & ENGINEERS (M6S6)	Nelsons,R. Service Station,Sailor Bay Rd.NORTHBRIDGE	338321	Road Match	498m	East
DRY CLEANERS,PRESSERS/DYERS (D710)	Plaza Dry Cleaner,Sailors Bay Rd.,Northbridge	292455	Road Match	498m	East
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Caltex Service Station,600 Willoughby Rd.WILLOUGHBY	340929	Building Match	564m	North

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MOTOR GARAGES & ENGINEERS (M6S6)	Harolds Car Care Centre,600 Willoughby Rd.WILLOUGHBY	337981	Building Match	564m	North
DRY CLEANERS,PRESSERS/DYERS (D710)	Saunders,E.,549 Willoughby Rd.,Willoughby	292489	Building Match	565m	North
DRY CLEANERS,PRESSERS/DYERS (D710)	North Side Laundry & Dry Cleaners,284 Willoughby Rd.,Willoughby	292426	Building Match	583m	South
DRY CLEANERS,PRESSERS/DYERS (D710)	Murray,E.,284 Willoughby Rd.,Naremburn	292410	Building Match	587m	South
MOTOR GARAGES & ENGINEERS (M6S6)	Coronation Service Station,626 Willoughby Rd.WILLOUGHBY	337621	Building Match	623m	North
DRY CLEANERS,PRESSERS/DYERS (D710)	Lorraine Dry Cleaners,44 Sailors Bay Rd.,Northbridge	292381	Building Match	649m	East
MOTOR GARAGES & ENGINEERS (M6S6)	BP Gothic Service Station,Penshurst St.WILLOUGHBY	337377	Road Match	688m	North
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Esso Servicenter,Cnr. Sailors Bay Rd. & Eastern Valley WayNORTHBRIDGE	341091	Road Intersection	803m	East
DRY CLEANERS,PRESSERS/DYERS (D710)	Mackellar Dry Cleaners,670 Willoughby Rd.,Willoughby	292386	Building Match	831m	North
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Amoco Service Station,173 Willoughby Rd.CROW'S NEST	340747	Building Match	838m	South
MOTOR GARAGES & ENGINEERS (M6S6)	Total Service Station,Cnr. Mowbray & Willoughby Rds.WILLOUGHBY	338768	Road Intersection	884m	North
MOTOR GARAGES & ENGINEERS (M6S6)	Caldwell,J. N. (Holdings) Pty. Ltd.,22 Northcote St.ST. LEONARDS	337494	Building Match	915m	South
MOTOR GARAGES & ENGINEERS (M6S6)	Hampden Road Auto Port,33 Hampden Rd.ARTARMON	337970	Building Match	923m	West
MOTOR GARAGES & ENGINEERS (M6S6)	Northbridge Service Station,117 Sailor's Bay Rd.NORTHBRIDGE	338346	Building Match	936m	East
MOTOR GARAGES & ENGINEERS (M6S6)	Hindmarsh,I. Motors,7a Dickson Ave.ARTARMON	338015	Building Match	981m	West
MOTOR GARAGES & ENGINEERS (M6S6)	St. Leonards Golden Fleece Service Station,19 Herbert St.ST. LEONARDS	338657	Building Match	984m	South West

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

# 1950 Historical Business Directory Records

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



## Historical Business Directories

**1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068**

### 1950 Business Directory Records

Records from the 1950 UBD Business Directory within 150m of the site:

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
DRY CLEANERS, PRESSERS & DYERS	Hanks and Co. Willoughby Rd., Willoughby	35279	Road Match	0m	North
CARRIERS & CARTAGE CONTRACTORS	Bennett, A. C. F., 26 Walter St., Willoughby	18405	Road Match	0m	South
REFRIGERATOR MFRS.-DOMESTIC-ELECTRIC	Hallstrom's Pty. Ltd., 462 Willoughby Rd., Willoughby	99049	Premise Match	60m	North
MOTOR WRECKERS	Battersby, T. N., 318 Willoughby Rd., Naremburn	87167	Road Match	65m	South East
FRUITERERS & GREENGROCERS	Burke, T., 378 Willoughby Rd., Naremburn	49704	Road Match	65m	South East
GROCERS-RETAIL	Burke, T., 378 Willoughby Rd., Naremburn	56616	Road Match	65m	South East
BUTCHERS-RETAIL	Edenborough, O., 376 Willoughby Rd., Naremburn	13417	Road Match	65m	South East
GROCERS-RETAIL	G. and G. Stores Pty. Ltd., 380 Willoughby Rd., Naremburn	57398	Road Match	65m	South East
GROCERS-RETAIL	Harris, A. J., 374 Willoughby Rd., Naremburn	57680	Road Match	65m	South East
MOTOR GARAGES &/OR ENGINEERS	Wilfred, H. A., 318 Willoughby Rd., Naremburn	84559	Road Match	65m	South East
ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Yager and Cooper, 318 Willoughby Rd., Naremburn	41459	Road Match	65m	South East
ENGINEERS-PRODUCTION	Yager and Cooper, 318 Willoughby Rd., Naremburn	41997	Road Match	65m	South East
INDENTORS & INDENT AGENTS	Yager and Cooper, 318 Willoughby Rd., Naremburn	64271	Road Match	65m	South East
LAWN MOWER SALES & SERVICE	Yager and Cooper, 318 Willoughby Rd., Naremburn	67853	Road Match	65m	South East
LAWN MOWERS-MANUAL-MANUFACTURERS	Yager and Cooper, 318 Willoughby Rd., Naremburn	67873	Road Match	65m	South East
UPHOLSTERERS	Mitchell, H. T. M., 12 Scott St., Willoughby	111240	Premise Match	82m	North West
CARRIERS & CARTAGE CONTRACTORS	Wrench, G. F., 25 Richmond Ave., Willoughby	20098	Premise Match	109m	North West
CARRIERS & CARTAGE CONTRACTORS	Cunningham, S. A., 6 Artarmon Rd., Willoughby	18676	Premise Match	120m	North
MOTOR GARAGES &/OR ENGINEERS	Naremburn Service Station and Garage, 311 Willoughby Rd., Naremburn	84124	Premise Match	132m	South East
MOTOR SERVICE STATIONS-PETROL, Etc.	Naremburn Service Station, 311 Willoughby Rd., Naremburn	86231	Premise Match	132m	South East

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

### 1950 Business Directory Drycleaners & Service Stations

Drycleaners, Motor Garages & Service Stations from the 1950 UBD Business Directory within 1km of the site:

Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
DRY CLEANERS, PRESSERS & DYERS	Hanks and Co. Willoughby Rd., Willoughby	35279	Road Match	0m	North
MOTOR GARAGES &/OR ENGINEERS	Wilfred, H. A., 318 Willoughby Rd., Naremburn	84559	Road Match	65m	South East
MOTOR GARAGES &/OR ENGINEERS	Naremburn Service Station and Garage, 311 Willoughby Rd., Naremburn	84124	Premise Match	132m	South East
MOTOR SERVICE STATIONS-PETROL, Etc.	Naremburn Service Station, 311 Willoughby Rd., Naremburn	86231	Premise Match	132m	South East
MOTOR GARAGES &/OR ENGINEERS	Waite, H. V., 475 Willoughby Rd., Willoughby	84520	Premise Match	343m	North

Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MOTOR GARAGES &/OR ENGINEERS	Crows Nest Towing Services, 22 Station St., Naremburn	83649	Premise Match	385m	South West
DRY CLEANERS, PRESSERS & DYERS	Jones, Dry Cleaners Pty. Ltd. 489 Willoughby Rd., Willoughby	35347	Premise Match	392m	North
DRY CLEANERS, PRESSERS & DYERS	Hanks and Co. 306 Willoughby Rd., Naremburn	35278	Premise Match	529m	South East
DRY CLEANERS, PRESSERS & DYERS	Willoughby Laundry, 604 Willoughby Rd., Willoughby	35831	Premise Match	565m	North
DRY CLEANERS, PRESSERS & DYERS	Dandee Dry Cleaners, 551 Willoughby Rd., Willoughby	35176	Premise Match	571m	North
DRY CLEANERS, PRESSERS & DYERS	Dandee Dry Cleaners, 219 Willoughby Rd., Naremburn	35179	Premise Match	602m	South East
DRY CLEANERS, PRESSERS & DYERS	Rite-Way Dry Cleaners, 563 Willoughby Rd., Willoughby	35654	Premise Match	610m	North
MOTOR GARAGES &/OR ENGINEERS	Coronation Service Station and Garage, 626 Willoughby Rd., Willoughby	83629	Premise Match	630m	North
MOTOR SERVICE STATIONS-PETROL, Etc.	Coronation Service Station and Garage, 626 Willoughby Rd., Willoughby	85896	Premise Match	630m	North
MOTOR GARAGES &/OR ENGINEERS	Hudspith, T. C., Rear 626 Willoughby Rd., Willoughby	83893	Premise Match	630m	North
DRY CLEANERS, PRESSERS & DYERS	"Lorraine" Dry Cleaners, 52 Sailors Bay Rd., Northbridge	35030	Premise Match	668m	East
MOTOR GARAGES &/OR ENGINEERS	Jack, A, W., 117 Sailors Bay Rd., Northbridge	83916	Premise Match	936m	East

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



## Aerial Imagery 2009

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068





## Aerial Imagery 2002

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068





## Aerial Imagery 1991

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



Scale:  
0 25 50 100  
Meters

Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

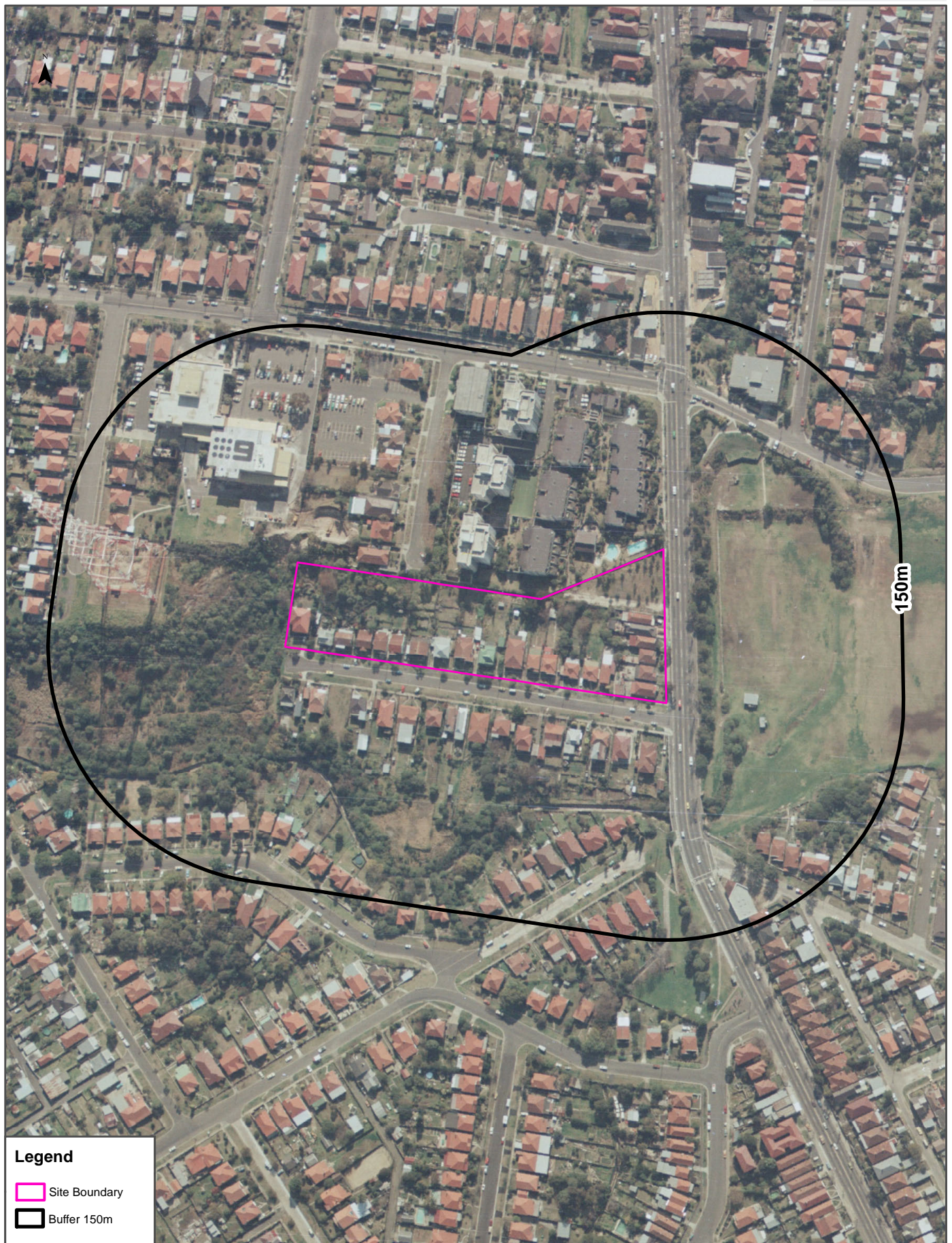
Coordinate System:  
GDA 1994 MGA Zone 56

Date: 22 December 2016



## Aerial Imagery 1982

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



### Legend

-  Site Boundary
-  Buffer 150m

Scale:  
0 25 50 100  
Meters

Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

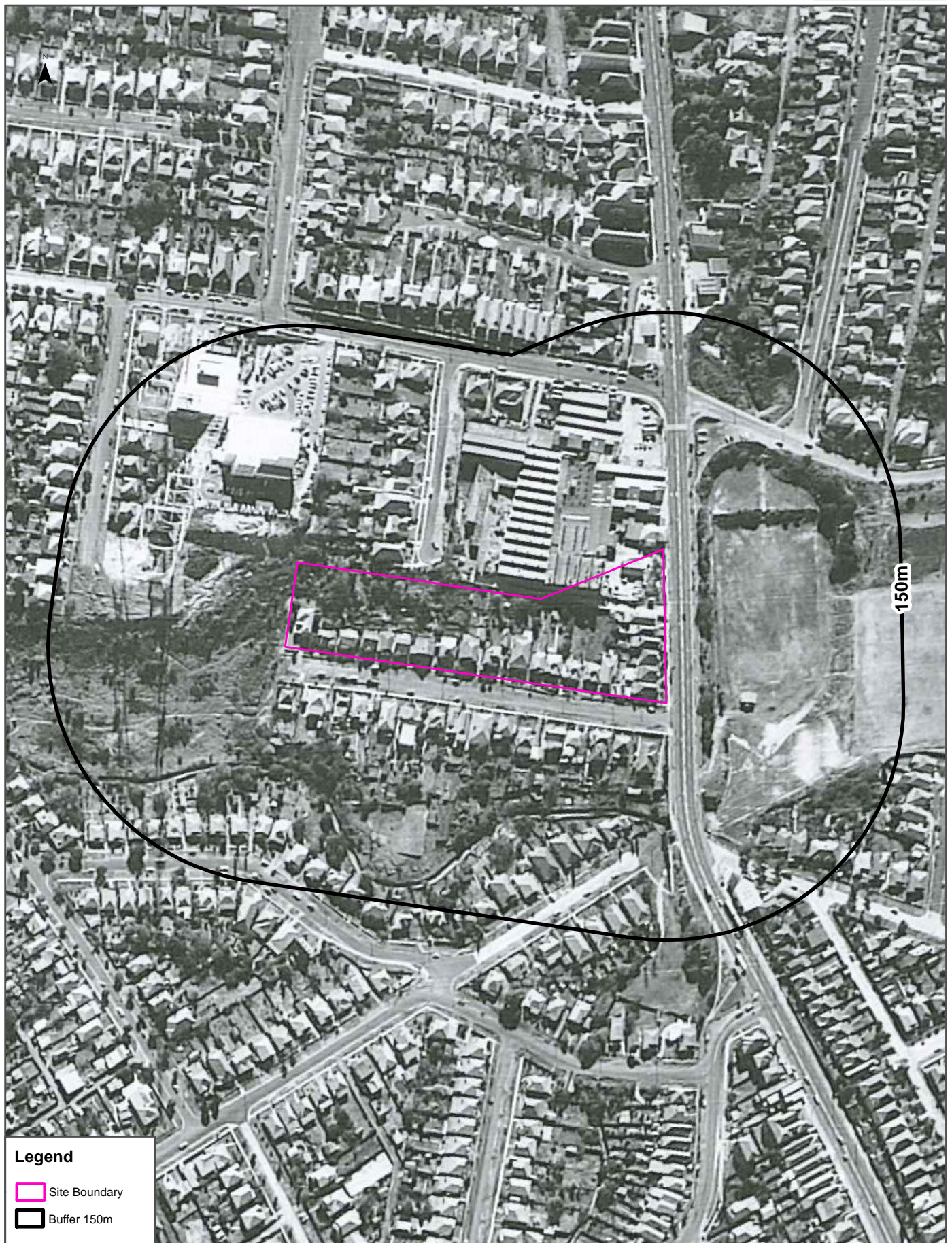
Coordinate System:  
GDA 1994 MGA Zone 56

Date: 22 December 2016



## Aerial Imagery 1970

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



### Legend

- Site Boundary
- Buffer 150m

Scale:

0 25 50 100  
Meters

Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

Coordinate System:  
GDA 1994 MGA Zone 56

Date: 22 December 2016



Aerial Imagery 1965

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



Scale: 0 25 50 100 Meters	Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)	Coordinate System: GDA 1994 MGA Zone 56	Date: 22December 2016
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## Aerial Imagery 1961

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



### Legend

- Site Boundary
- Buffer 150m

Scale:

0 25 50 100  
Meters

Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

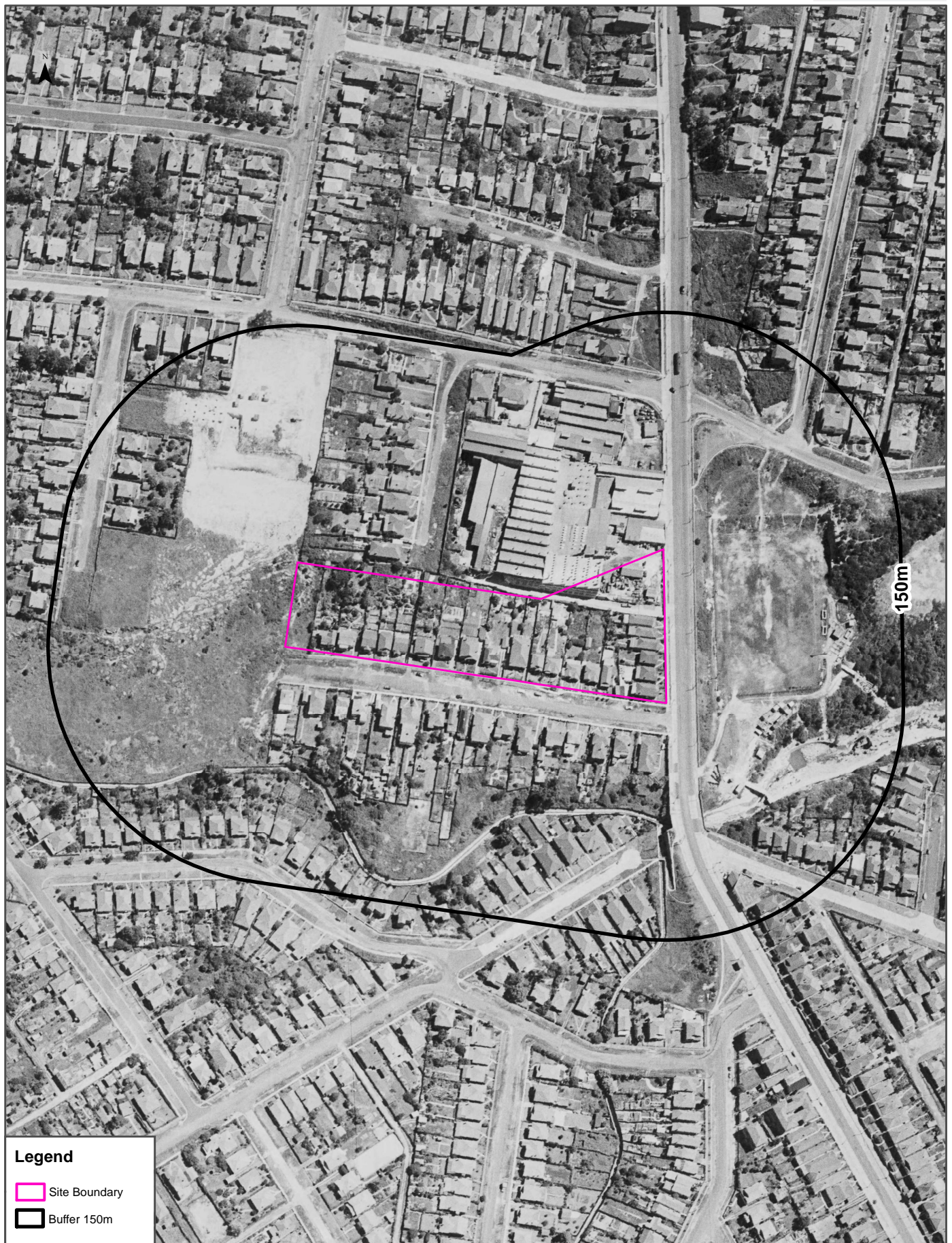
Coordinate System:  
GDA 1994 MGA Zone 56

Date: 22December 2016



## Aerial Imagery 1956

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



### Legend

-  Site Boundary
-  Buffer 150m

Scale:

0 25 50 100  
Meters

Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

Coordinate System:  
GDA 1994 MGA Zone 56

Date: 22 December 2016



# Aerial Imagery 1943

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



## Legend

- ✕ Site Centre
- Site Boundary
- Buffer 150m

Scale:  
0 25 50 100  
Meters

Data Sources: Aerial Imagery © Land and Property Information (a division of the Department of Finance and Services)

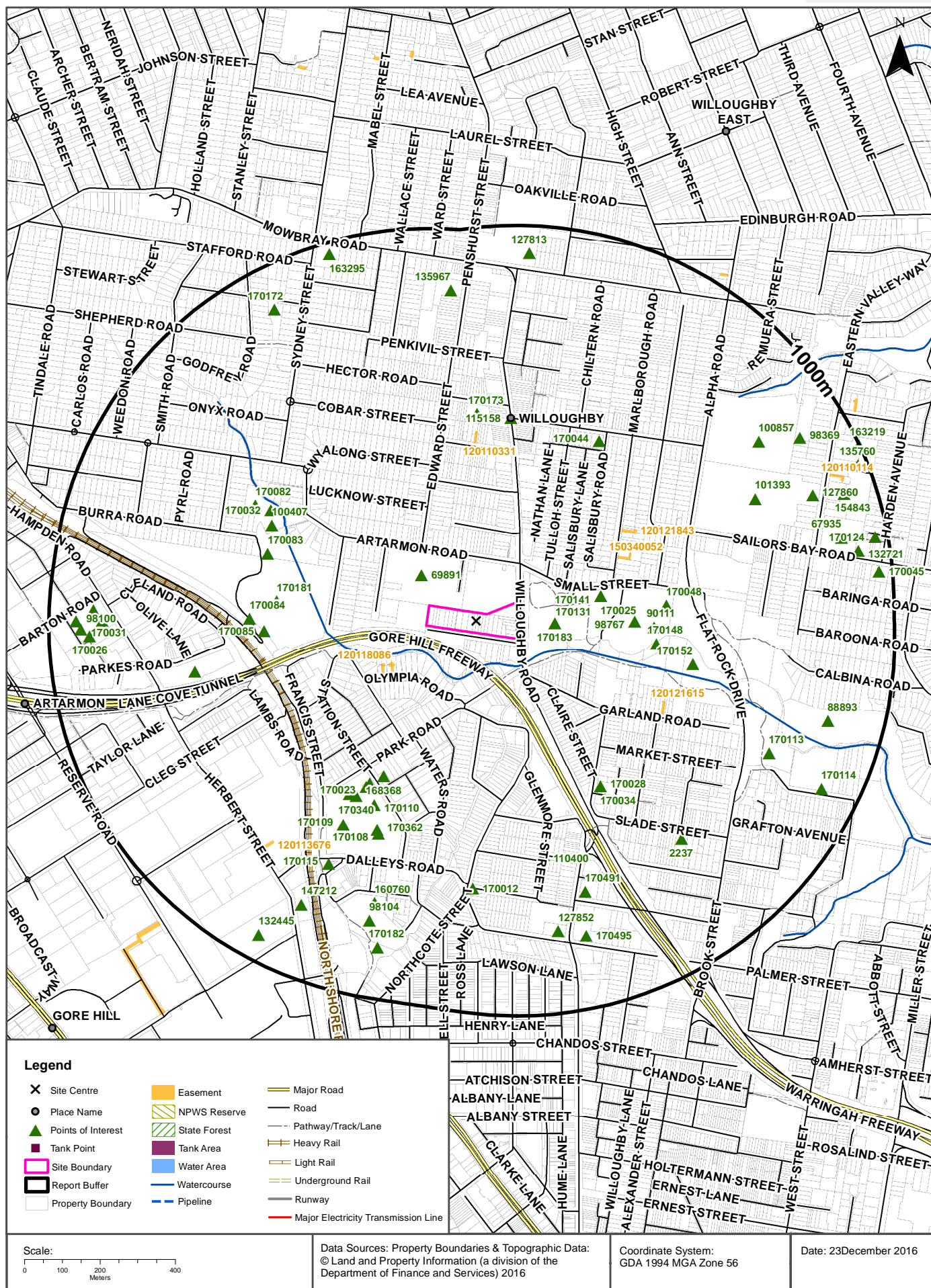
Coordinate System:  
GDA 1994 MGA Zone 56

Date: 23 December 2016



# Topographic Features

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



# Topographic Features

**1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068**

## Points of Interest

What Points of Interest exist within the report buffer?

Map Id	Feature Type	Label	Distance	Direction
69891	Transmission Station	TCN CHANNEL NINE	85m	North West
170183	Park	HALLSTROM PARK	101m	East
170131	Picnic Area	HALLSTROM PARK PLAYGROUND	152m	East
170141	Historic Site	WALTER BURLEY GRIFFIN INCINERATOR	224m	East
170025	Art Gallery	INCINERATOR ART SPACE	224m	East
98767	Sports Court	NETBALL COURTS	312m	East
90111	Park	BICENTENNIAL RESERVE	363m	East
170148	Sports Court	BASKETBALL COURTS	368m	East
170048	Sports Centre	WILLOUGHBY LEISURE CENTRE	397m	East
170181	Sports Field	ARTARMON RESERVE	401m	West
168368	SES Facility	WILLOUGHBY-LANE COVE SES	416m	South West
170085	Sports Court	CRICKET NETS	430m	West
170112	Picnic Area	PLAYGROUND	444m	South West
170083	Park	PLAYGROUND	449m	West
170034	Library	NAREMBURN LIBRARY	449m	South East
170028	Community Facility	NAREMBURN COMMUNITY CENTRE	449m	South East
170023	Community Facility	2ND WILLOUGHBY ANTRANIG SCOUT HALL	457m	South West
100407	Sports Field	BOWLING GREENS	468m	North West
170084	Sports Court	BASKETBALL	469m	West
170152	Sports Field	BICENTENNIAL RESERVE OVAL	470m	East
170044	Place Of Worship	ARMENIAN EVANGELICAL CHURCH	481m	North East
170340	Sports Court	BASKETBALL COURTS	489m	South West
115158	Suburb	WILLOUGHBY	489m	North
170032	Club	ARTARMON BOWLING AND RECREATION CLUB	490m	North West
170111	Sports Court	BASKETBALL NETBALL	491m	South West
170110	Sports Court	CRICKET NETS	495m	South West
170173	Park	SANDERS PARK	512m	North
170082	Sports Field	BOWLING GREENS	531m	North West
170362	Park	NAREMBURN PARK	557m	South West
170108	Sports Field	NAREMBURN PARK 2	567m	South West
170109	Sports Field	NAREMBURN PARK 1	572m	South West
110400	Locality	NAREMBURN	577m	South
91794	Park	ARTARMON PARK	624m	West

Map Id	Feature Type	Label	Distance	Direction
170012	Community Facility	BONGALONG STREET COMMUNITY GARDEN	672m	South
170115	Park	ELLA STREET RESERVE	682m	South West
2237	Ambulance Station	NAREMBURN AMBULANCE STATION	686m	South East
101393	Sports Field	OVAL	689m	North East
170491	Place Of Worship	ANGLICAN CHURCH	694m	South
170113	Park	FLAT ROCK GULLY	732m	South East
160760	Community Facility	NORTHERN SUBURBS TENNIS ASSOCIATION	748m	South
100857	Sports Field	SCEGS WAR MEMORIAL PLAYING FIELD	770m	North East
127852	Special School	NAREMBURN SCHOOL	782m	South
98104	Sports Court	TENNIS COURTS	797m	South
170495	Place Of Worship	CATHOLIC CHURCH	808m	South
147212	Embassy	ROYAL NORWEGIAN CONSULATE-GENERAL	811m	South West
127860	Primary School	SHORE SYDNEY CHURCH OF ENGLAND GRAMMAR SCHOOL	834m	East
135967	Retirement Village	FAIR HAVENS VILLAGE	838m	North
88893	Park	MUNRO PARK	851m	East
170344	Sports Court	TENNIS COURTS	858m	West
170182	Park	TALUS STREET RESERVE	863m	South
98369	Sports Court	TENNIS COURTS	868m	North East
67935	Shopping Centre	NORTHBRIDGE PLAZA	877m	East
170361	Park	CLELAND PARK	882m	West
170172	Park	MARLOW STREET RESERVE	885m	North West
170026	Community Facility	ARTARMON GUIDE HALL	892m	West
170114	Park	DAWSON PLAYGROUND	898m	South East
154843	Medical Centre	NORTHBRIDGE COMMUNITY HEALTH CENTRE	914m	East
170031	Club	ARTARMON DISTRICT TENNIS CLUB	915m	West
132721	Post Office	NORTHBRIDGE POST OFFICE	916m	East
98100	Sports Court	TENNIS COURTS	927m	West
127813	High School	WILLOUGHBY GIRLS HIGH SCHOOL	927m	North
132445	Post Office	ST LEONARDS POST BUSINESS CENTRE	932m	South West
170045	Child Care Centre	NORTHSIDE BAPTIST PRESCHOOL	963m	East
170124	Park	KING PARK	965m	East
163295	Community Home	ELIZABETH LODGE AGED CARE FACILITY	969m	North
135760	Retirement Village	NORTHBRIDGE GARDENS RETIREMENT VILLAGE	975m	East
163219	Community Home	ST PAULS RESIDENTIAL AGED CARE	998m	North East

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

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## Topographic Features

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

### Tanks (Areas)

What are the Tank Areas located within the report buffer?

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

Map Id	Tank Type	Status	Name	Capture Method	Feature Currency	Distance	Direction
N/A	No records in buffer						

### Tanks (Points)

What are the Tank Points located within the report buffer?

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

Map Id	Tank Type	Status	Name	Capture Method	Feature Currency	Distance	Direction
N/A	No records in buffer						

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

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## Major Easements

What Major Easements exist within the report buffer?

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

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120107628	Primary	Undefined		133m	South West
120118086	Primary	Undefined		135m	South West
120114285	Primary	Undefined		152m	South West
150340052	Primary	Right of way	Variable	295m	North East
120121843	Primary	Undefined		338m	North East
120121615	Primary	Undefined		419m	South East
120110331	Primary	Undefined		438m	North
120113676	Primary	Undefined		702m	South West
120110114	Primary	Undefined		897m	East

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

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## Topographic Features

**1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068**

### State Forest

What State Forest exist within the report buffer?

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

State Forest Data Source: © Land and Property Information (2015)

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### National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the report buffer?

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

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

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# Elevation Contours (m AHD)

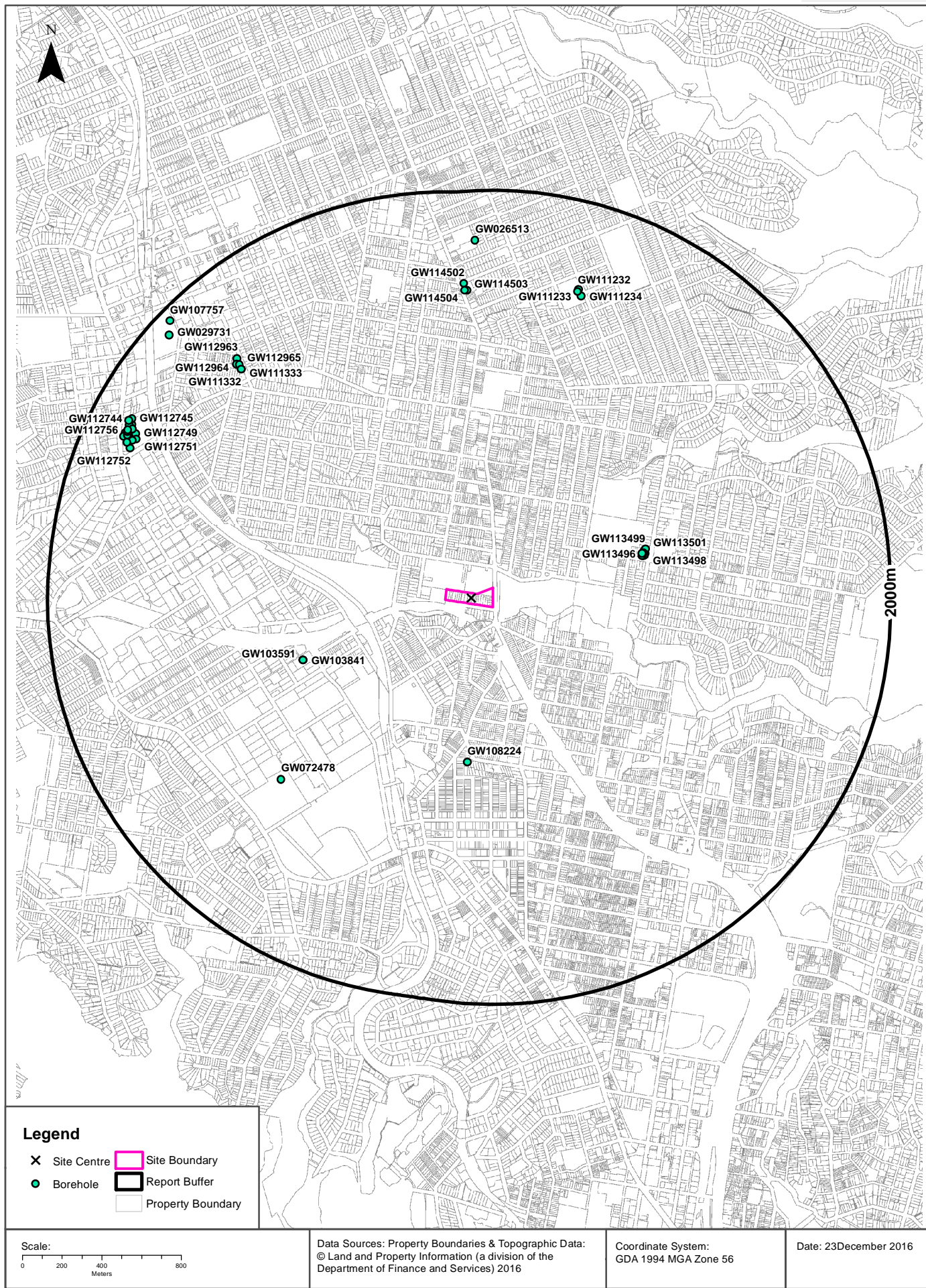
1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068





# Groundwater Boreholes

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



# Hydrogeology & Groundwater

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

## Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the report buffer:

Description
Porous, extensive aquifers of low to moderate productivity

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

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## Groundwater Boreholes

Boreholes within 2km of the site:

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth	Drilled Depth	Salinity	SWL	Yield	Elev	Dist	Dir
GW113502	10BL601455	Bore	Private	Monitoring	Macquarie Drilling	14/04/2007	4.00	4.00					769m	East
GW113503	10BL601455	Bore	Private	Monitoring	Macquarie Drilling	20/01/2014	5.00	5.00					772m	East
GW113495	10BL601455	Bore	Private	Monitoring	Macquarie Drilling	20/04/2007	5.00	5.00					773m	East
GW103841	10BL159969	Bore		Monitoring	Intertec Drilling Services	11/01/2001	5.80	5.80					776m	West
GW103591	10BL159969	Bore	Private	Monitoring	Intertec Drilling Services	11/01/2001	5.80	5.80					776m	West
GW113496	10BL601455	Bore	Private	Monitoring	Macquarie Drilling	20/04/2007	8.00	8.00					777m	East
GW113504	10BL601455	Bore	Private	Monitoring	Macquarie Drilling	23/04/2007	4.50	4.50					778m	East
GW113500	10BL601455	Bore	Private	Monitoring	Macquarie Drilling	19/04/2007	6.00	6.00					780m	East
GW113497	10BL601455	Bore	Private	Monitoring	Macquarie Drilling	23/04/2007	8.00	8.00					782m	East
GW113498	10BL601455	Bore	Private	Monitoring	Macquarie Drilling	20/04/2007	6.00	6.00					787m	East
GW113499	10BL601455	Bore	Private	Monitoring	Macquarie Drilling	19/04/2007	5.00	5.00					788m	East
GW108224	10BL600442, 10WA109080	Bore	Private	Domestic	Intertec Drilling Services	05/09/2006	132.40	132.40		35.00	0.300		792m	South
GW113501	10BL601455	Bore	Private	Monitoring	Macquarie Drilling	20/04/2007	7.00	7.00					794m	East
GW072478		Bore		Domestic	Intertec Drilling Services	10/01/1995	180.50	180.50	270	48.00	0.700		1224m	South West
GW114503	10BL604470	Bore	Private	Monitoring	SOILCHECK PTY LTD	28/10/2010	8.00	8.00		2.50			1501m	North
GW114504	10BL604470	Bore	Private	Monitoring	SOILCHECK PTY LTD	28/10/2010	8.00	8.00		2.50			1502m	North
GW111332	10BL604464	Bore	Other Govt	Monitoring	SOILCHECK	24/01/2011	3.20	3.20					1513m	North West
GW111333	10BL604464	Bore	Private	Monitoring	SOILCHECK	24/01/2011	9.00	9.00					1513m	North West



GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth	Drilled Depth	Salinity	SWL	Yield	Elev	Dist	Dir
GW111234	10BL604175	Bore	Other Govt	Monitoring		11/08/2010	4.50	4.50		2.40			1534m	North
GW114502	10BL604470	Bore	Private	Monitoring	SOILCHECK PTY LTD	28/10/2010	8.00	8.00		2.50			1535m	North
GW112965	10BL605047	Bore	Local Govt	Monitoring		15/03/2012	9.00	9.00					1537m	North West
GW112964	10BL605047	Bore	Local Govt	Monitoring		15/03/2012	2.00	2.00					1548m	North West
GW111232	10BL604175	Bore	Other Govt	Monitoring		16/11/2010	4.50	4.50		2.40			1550m	North
GW111233	10BL604175	Bore	Other Govt	Monitoring		11/08/2010	4.30	4.30		1.80			1561m	North
GW112963	10BL605047	Bore	Local Govt	Monitoring		15/03/2012	9.00	9.00					1567m	North West
GW112751	10BL603114	Bore	Private	Monitoring	TERRATEST	16/03/2009	6.00	6.00					1732m	North West
GW112752	10BL603114	Bore	Private	Monitoring	TERRATEST	16/03/2009	6.00	6.00					1743m	North West
GW112750	10BL603114	Bore	Private	Monitoring	TERRATEST	09/04/2009	6.00	6.00					1747m	North West
GW112749	10BL603114	Bore	Private	Monitoring	TERRATEST	08/04/2009	6.50	6.50					1748m	North West
GW026513	10BL019159	Bore open thru rock	Private	Irrigation		01/12/1966	64.00	64.00	Fresh				1750m	North
GW111773	10BL603110	Bore	Private	Monitoring	Terratest Pty Ltd	16/03/2012	5.50	6.00					1769m	North West
GW112747	10BL603114	Bore	Private	Monitoring	TERRATEST	25/03/2009	12.00	12.00					1772m	North West
GW112748	10BL603114	Bore	Private	Monitoring	TERRATEST	25/03/2009	12.00	12.00					1774m	North West
GW112754	10BL603114	Bore	Private	Monitoring	TERRATEST	18/03/2009	11.00	11.00					1782m	North West
GW112745	10BL603114	Bore	Private	Monitoring	TERRATEST	23/03/2009	12.00	12.00					1784m	North West
GW112753	10BL603114	Bore	Private	Monitoring	TERRATEST	27/08/2013	10.50	10.50					1790m	North West
GW112746	10BL603114	Bore	Private	Monitoring	TERRATEST	23/03/2013	12.00	12.00					1791m	North West
GW112756	10BL603114	Bore	Private	Monitoring	TERRATEST	23/03/2013	11.00	11.00					1796m	North West
GW112744	10BL603114	Bore	Private	Monitoring	TERRATEST	24/03/2013	11.00	11.00					1797m	North West
GW112755	10BL603114	Bore	Private	Monitoring	TERRATEST	23/03/2009	11.00	11.00					1798m	North West
GW112743	10BL603114	Bore	Private	Monitoring	TERRATEST	23/03/2009	11.00	11.00					1798m	North West
GW112742	10BL603114	Bore	Private	Monitoring	TERRATEST	24/03/2009	11.00	11.00					1810m	North West
GW029731	10BL019677	Bore open thru rock	Local Govt	Recreation		01/04/1967	21.60	21.60					1893m	North West
GW107757	10BL165399, 10BL602036, 10WA109507	Bore		Recreation	Intertec Drilling Services	29/07/2005	162.60	162.60	1360	25.60	0.300		1938m	North West

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

# Hydrogeology & Groundwater

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

## Driller's Logs

Drill log data relevant to the boreholes within 2km of the site:

Groundwater No	Drillers Log	Distance	Direction
GW103591	0.00m-2.00m ROAD BASE 2.00m-4.00m CLAY 4.00m-5.80m SANDY CLAY	776m	West
GW103841	0.00m-0.20m ROAD BASE 0.20m-4.00m STIFF CLAY 4.00m-5.80m SANDY CLAY	776m	West
GW108224	0.00m-0.60m clay, sandy 0.60m-2.80m sandstone, weathered 2.80m-3.10m clay 3.10m-25.50m sandstone, weathered 25.50m-27.00m sandstone, grey quartz 27.00m-29.00m shale 29.00m-35.00m sandstone, quartz grey 35.00m-41.00m shale 41.00m-52.00m sandstone, grey 52.00m-54.00m sandstone, quartz grey 54.00m-61.00m sandstone, grey 61.00m-65.00m shale 65.00m-81.00m sandstone, grey 81.00m-84.00m sandstone, grey quartz siltstone 84.00m-98.00m sandstone, grey 98.00m-100.00m sandstone, grey quartz 100.00m-106.50m sandstone, grey 106.50m-109.00m sandstone, dark brown 109.00m-110.50m sandstone, grey quartz 110.50m-112.00m siltstone 112.00m-132.40m sandstone, grey	792m	South
GW072478	0.00m-2.50m CONCRETE OVERBURDEN 2.50m-5.10m MOIST CLAY 5.10m-28.70m L/G MED. GRAIN SANDSTONE 28.70m-30.10m LIGHT GREY MED. GRAIN S/STONE QUARTZ MATRIX 30.10m-35.90m L/GREY GRAIN SANDSTONE 35.90m-37.20m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 37.20m-45.30m L/GREY MED GRAIN S/STONE 45.30m-54.30m DARK GREY SHALE 54.30m-72.40m L/GREY CEMENTED S/STONE 72.40m-75.40m DARK GREY SHALE 75.40m-109.70m L/GREY MED GRAIN S/STONE 109.70m-110.60m QUARTZ LAYER 110.60m-121.80m L/GREY MED GRAIN S/STONE 121.80m-123.30m DARK GREY SHALE 123.30m-135.40m L/GREY MED GRAIN S/STONE 135.40m-138.00m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 138.00m-139.80m WATER BEARING QUARTZ 139.80m-143.80m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 143.80m-144.40m WATER BEARING QUARTZ 144.40m-154.10m L/GREY CEMENTED SANDSTONE 154.10m-163.70m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 163.70m-166.90m QUARTZ LAYER 166.90m-168.70m GREY MED GRAIN S/STONE 168.70m-180.50m L/GREY MED GRAIN SANDSTONE	1224m	South West
GW114503	0.00m-0.20m FILL, GRAVEL 0.20m-0.40m FILL, SILTY CLAY 0.40m-1.60m FILL SILTY CLAY SOFT MOIST 1.60m-5.00m RESIDUAL CLAY VERY STIFF BELOW 2.5m 5.00m-6.00m RESIDUAL CLAY VERY STIFF MOIST, GREY RED 6.00m-7.00m SANDY CLAY BECOMING SOFT, BEC. MOIST 7.00m-8.00m RESIDUAL CLAYEY SAND, DENSE, MOIST, DARK GREY	1501m	North
GW114504	0.00m-0.20m FILL, GRAVEL, LOOSE, DRY, PURPLE, COARSE 0.20m-0.40m FILL, SILTY CLAY VERY SOFT, MOIST, LOW PLASTICITY 0.40m-1.40m FILL, SILTY CLAY, SOFT, MOIST 1.40m-5.00m RESIDUAL CLAY STIFF BEC. VERY STIFF 5.00m-6.00m RESIDUAL CLAY V EY STIFF, MOIST 6.00m-8.00m RESIDUAL SANDY CLAY STIFF BEC. SOFT	1502m	North

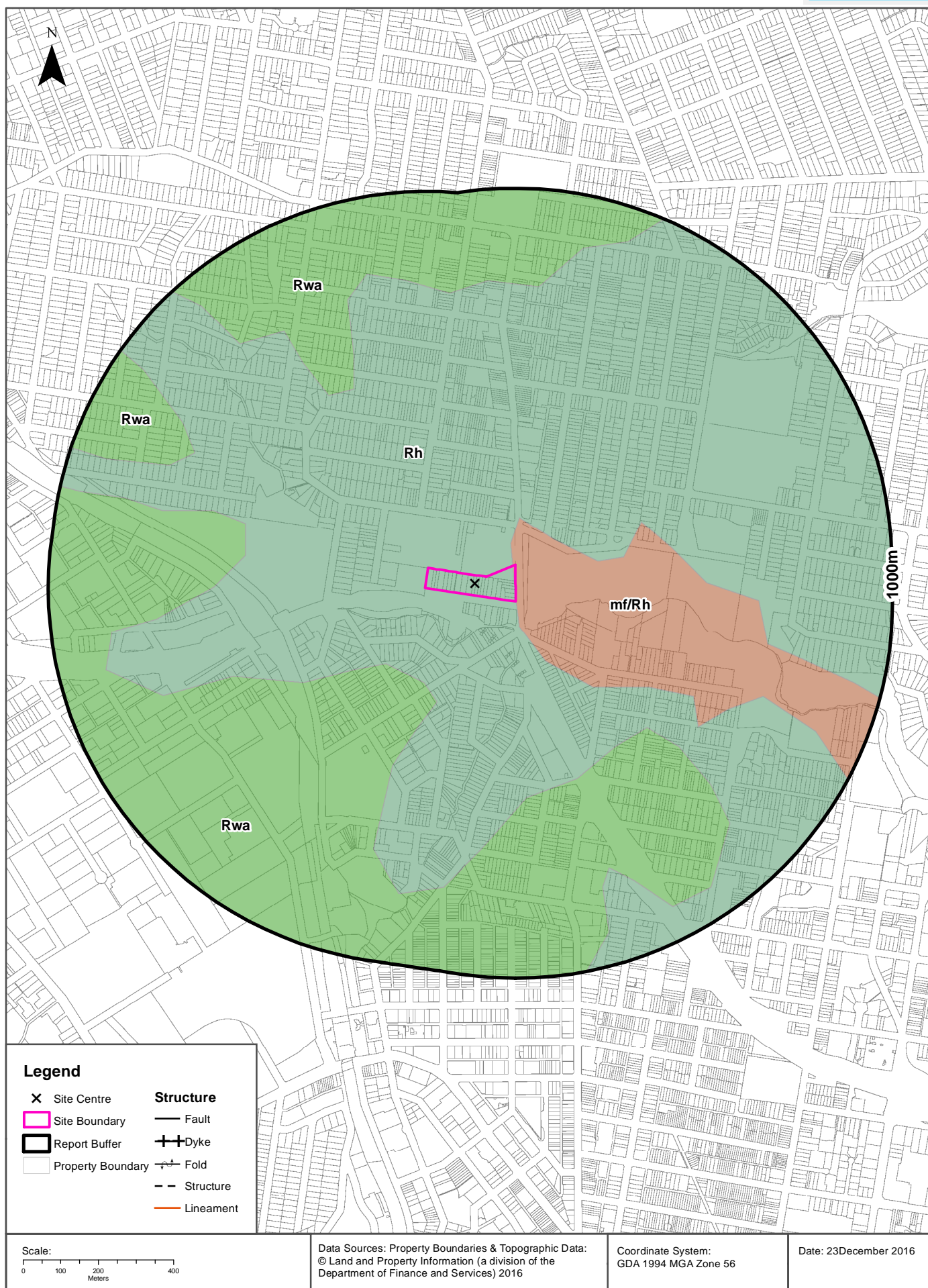
Groundwater No	Drillers Log	Distance	Direction
GW111332	0.00m-0.18m CONCRETE 0.18m-2.80m FILL,SILTY SANDY CLAY,ORANGE BROWN 2.80m-3.00m SILTY CLAY,LIGHT GREY MOTTLED RED/BROWN 3.00m-3.20m SHALE GREY WEATHERED	1513m	North West
GW111333	0.00m-0.17m CONCRETE 0.17m-2.80m FILL,SILTY SANDY CLAY,ORANGE BROWN 2.80m-3.00m SILTY CLAY,LIGHT GREY MOTT.RED.BROWN 3.00m-9.00m SHALE,GREY WEATHERED	1513m	North West
GW111234	0.00m-0.20m CONCRETE 0.20m-0.95m FILL, SANDY CLAY,SOME GRAVEL AND IRONSTONE 0.95m-1.10m FILL,SANDY CLAY,FINE SAND 1.10m-1.50m FILL,CLAYEY GRAVELLY SAND 1.50m-4.50m SILTY CLAY,LOW PLASTICITY,DARK GREY TO BROWN	1534m	North
GW114502	0.00m-0.20m FILL GRAVEL,LOOSE DRY 0.20m-0.60m FILL, SILTY CLAY VERY SOFT 0.60m-1.60m FILL SILTY CLAY, SOFT, MOIST 1.60m-4.30m RESIDUAL CLAY STIFF 4.30m-5.00m RESIDUAL CLAY VERY STIFF 5.00m-7.00m RESIDUAL SANDY CLAY 7.00m-8.00m RESIDUAL CLAYEY SAND,DENSE,MOIST,SANDSTONE	1535m	North
GW111232	0.00m-0.20m CONCRETE 0.20m-0.30m FILL,SANDY GRAVEL 0.30m-0.50m FILL CLAYEY SAND 0.50m-0.75m FILL SANDY CLAY 0.75m-1.40m FILL SANDY CLAY,L/PLASTICITY 1.40m-1.50m CLAYEY SAND 1.50m-2.20m SILTY CLAY M/PLASTICITY 2.20m-2.30m SILTY CLAY,TRACES OF GRAVEL 2.30m-4.50m SILTY CLAY,RED TO BROWN WITH GREY	1550m	North
GW111233	0.00m-0.15m CONCRETE 0.15m-0.30m FILL,SAND,FINE TO MEDIUM GRAINED 0.30m-0.80m FILL,GRAVELLY SAND,FINE TO MEDIUM GRAINED 0.80m-1.60m FILL,SANDY CLAY,LOW PLASTICITY 1.60m-2.00m SILTY CLAY,MEDIUM PLASTICITY,BROWN 2.00m-2.15m SILTY CLAY,GREY TO BROWN 2.15m-4.30m SILTY CLAY,L/PLASTICITY,SOME WHITE TO YELLOW SANDS,IRONSTONE BANDING	1561m	North
GW026513	0.00m-9.14m Clay Soil 9.14m-12.19m Sandstone White Soft 12.19m-13.71m Shale Water Supply 13.71m-22.86m Sandstone White Soft 22.86m-31.08m Sandstone 31.08m-35.05m Sandstone White 35.05m-36.57m Shale 36.57m-39.01m Sandstone White 39.01m-39.62m Shale 39.62m-57.91m Sandstone White 57.91m-59.43m Sandstone White Soft Water Supply 59.43m-60.35m Shale Sandy 60.35m-64.00m Driller	1750m	North
GW111773	0.00m-0.20m CONCRETE 0.20m-0.80m FILL,CLAY YELLOW/ BROWN,SOME BRICK 0.80m-2.40m CLAY YELLOW BROWN,DRY,LOOSE,L/PLAS. 2.40m-4.30m CLAY BROWN/GREY/RED,STIFF,L/PLAST.IRONSTONE 4.30m-6.00m CLAY GREY/RED,DRY,HARD,L/PLASTICITY	1769m	North West
GW029731	0.00m-3.45m Clay Red Sandy 0.00m-3.45m Gravel 0.00m-3.45m Boulders Large 3.45m-6.70m Ironstone Gravel 3.45m-6.70m Clay Red Yellow Puggy Sandy 6.70m-17.98m Shale Grey Black Hard 17.98m-21.64m Sandstone Grey Very Fractured Medium-coarse 17.98m-21.64m Clay Bands	1893m	North West

Groundwater No	Drillers Log	Distance	Direction
GW107757	0.00m-1.40m FILL 1.40m-4.30m CLAY:BROWN,RED, WHITE 4.30m-5.10m SHALE; BROWN,WEATHERED 5.10m-5.50m CLAY BROWN 5.50m-16.80m SHALE GREY 16.80m-18.50m SANDSTONE GREY,SHALE GREY 18.50m-28.70m SANDSTONE GREY 28.70m-29.00m SANDSTONE GREY,FRACTURED 29.00m-42.40m SANDSTONE L/GREY 42.40m-42.80m SILTSTONE D/GREY 42.80m-51.10m SANDSTONE L/GREY 51.10m-65.70m SANDSTONE L/GREY,QUARTZ 65.70m-66.70m SHALE,GREY,SILTY 66.70m-74.60m SANDSTONE L/GREY 74.60m-76.10m SANDSTONE L/GREY 76.10m-76.30m SHALE L/GREY,SOFT 76.30m-88.00m SANDSTONE L/GREY 88.00m-88.60m SHALE,SILTY,D/GREY 88.60m-162.60m SANDSTONE L/GREY,GREY	1938m	North West

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp  
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# Geology 1:100,000

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068





## Geology

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

### Geological Units

What are the Geological Units onsite?

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

What are the Geological Units within the report buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
mf/Rh							Sydney	1:100,000
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000

### Geological Structures

What are the Geological Structures onsite?

Feature	Name	Description	Map Sheet	Dataset
No features				1:100,000

What are the Geological Structures within the report buffer?

Feature	Name	Description	Map Sheet	Dataset
No features				1:100,000

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

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## Naturally Occurring Asbestos Potential

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

## Naturally Occurring Asbestos Potential

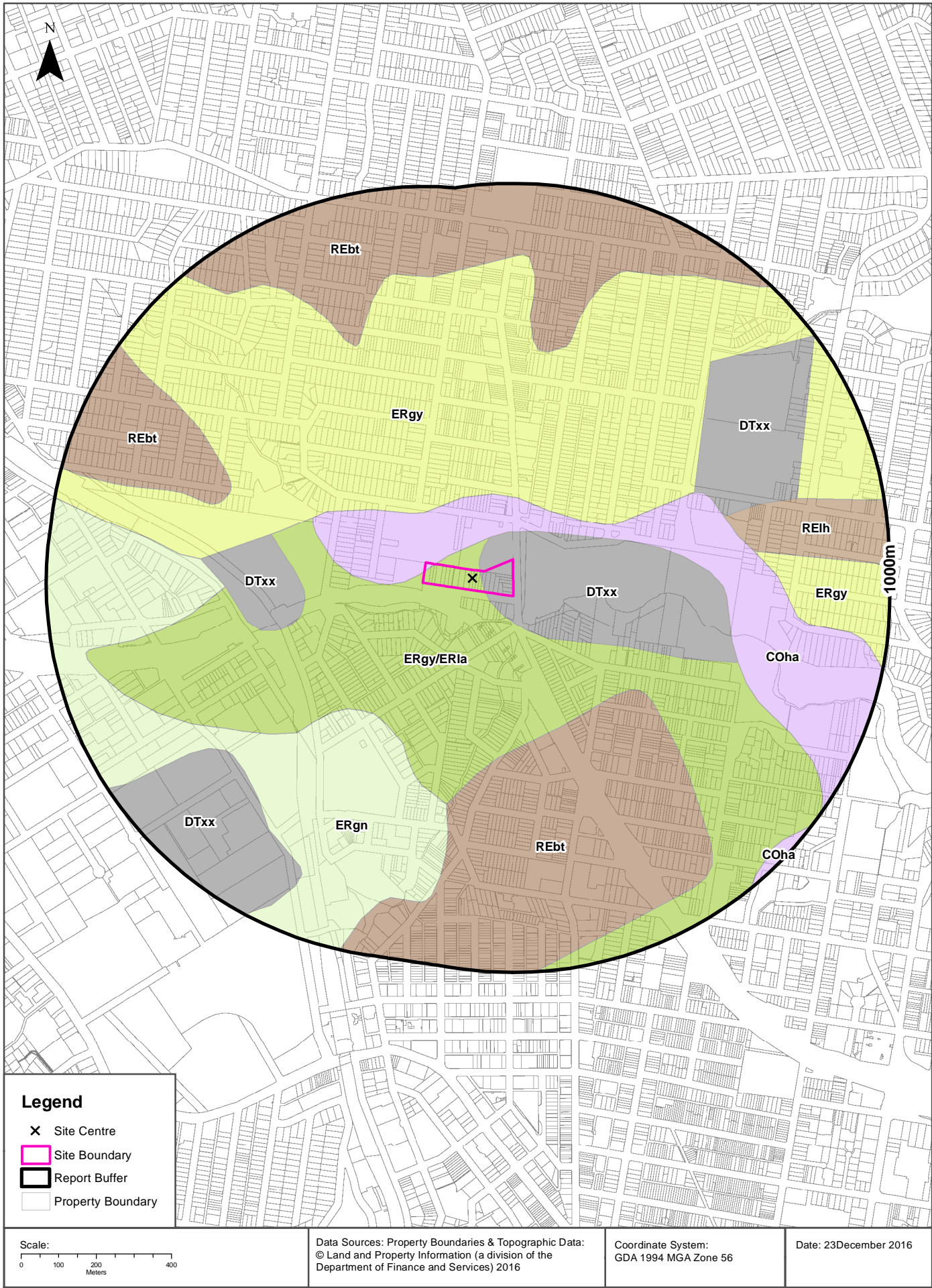
Naturally Occurring Asbestos Potential within the report buffer?

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

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

Soil Landscapes

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068





## Soils

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

## Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
COha	HAWKESBURY		COLLUVIAL	Sydney	1:100,000
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Sydney	1:100,000
ERgy/ERla	GYMEA/LAMBERT		EROSIONAL	Sydney	1:100,000

What are the Soil Landscapes within the report buffer?

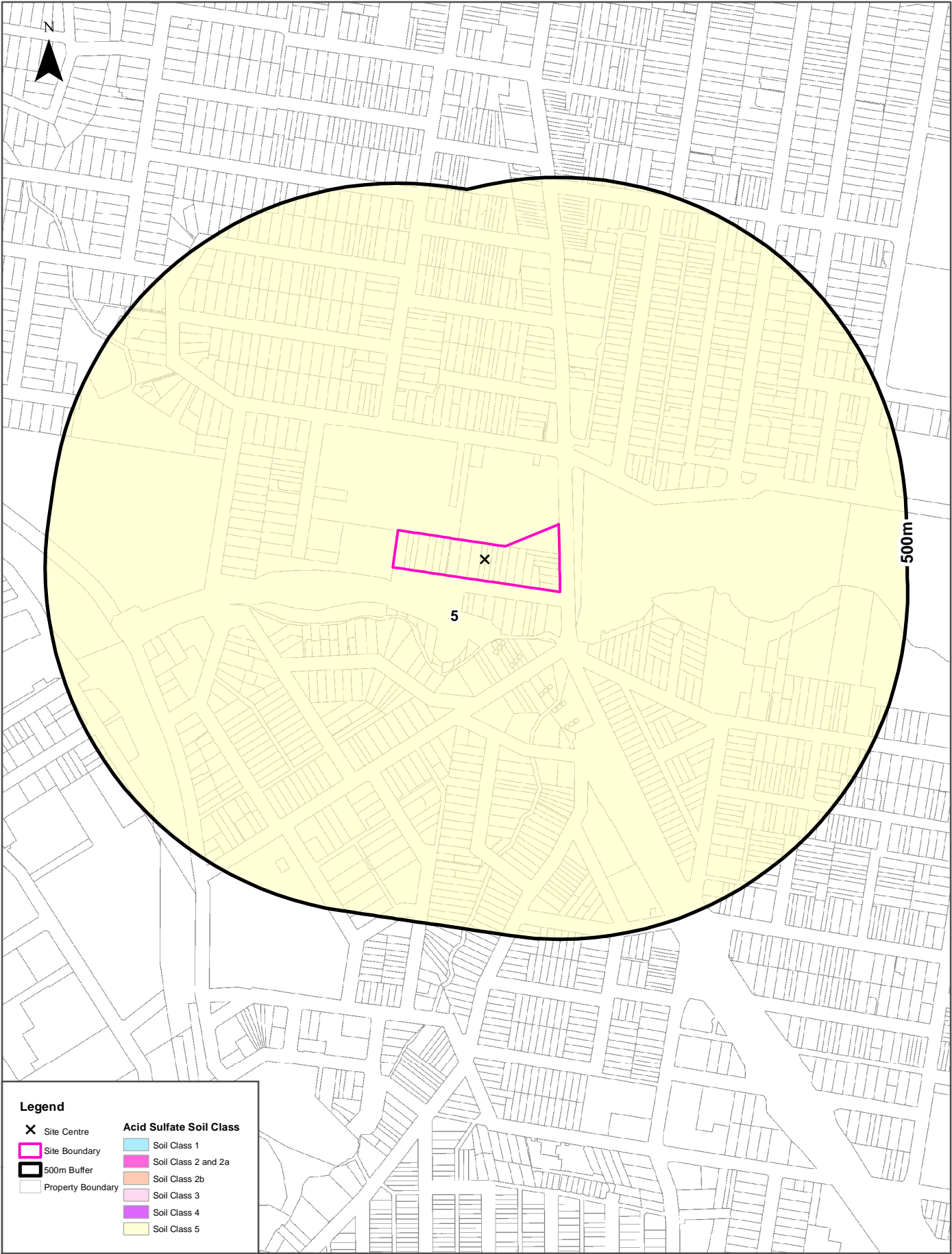
Soil Code	Name	Group	Process	Map Sheet	Scale
COha	HAWKESBURY		COLLUVIAL	Sydney	1:100,000
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Sydney	1:100,000
ERgn	GLENORIE		EROSIONAL	Sydney	1:100,000
ERgy	GYMEA		EROSIONAL	Sydney	1:100,000
ERgy/ERla	GYMEA/LAMBERT		EROSIONAL	Sydney	1:100,000
REbt	BLACKTOWN		RESIDUAL	Sydney	1:100,000
RElh	LUCAS HEIGHTS		RESIDUAL	Sydney	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage

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Acid Sulfate Soils

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



**Legend**

X Site Centre

Site Boundary

500m Buffer

Property Boundary

**Acid Sulfate Soil Class**

Soil Class 1
Soil Class 2 and 2a
Soil Class 2b
Soil Class 3
Soil Class 4
Soil Class 5

Scale:

0 50 100 200 Meters

Data Sources: Property Boundaries & Topographic Data:  
© Land and Property Information (a division of the  
Department of Finance and Services) 2016

Coordinate System:  
GDA 1994 MGA Zone 56

Date: 23December 2016

## Standard Local Environmental Plan Acid Sulfate Soils

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

## Standard Local Environmental Plan Acid Sulfate Soils

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

Soil Class	Description	LEP
5	Works within 500 metres of adjacent Class 1, 2, 3, or 4 land that is below 5 metres AHD and by which the watertable is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk	Willoughby Local Environmental Plan 2012

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

Soil Class	Description	LEP	Distance	Direction
None				

Acid Sulfate Data Source Accessed 07/10/2016: NSW Crown Copyright - Planning and Environment  
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## Dryland Salinity

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

## Dryland Salinity

Is there Dryland Salinity data onsite?

**No**

Is there Dryland Salinity data within the report buffer?

**No**

What Dryland Salinity assessments are given?

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

Dryland Salinity Data Source : National Land and Water Resources Audit

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

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

# Mining Subsidence Districts

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

## Mining Subsidence Districts

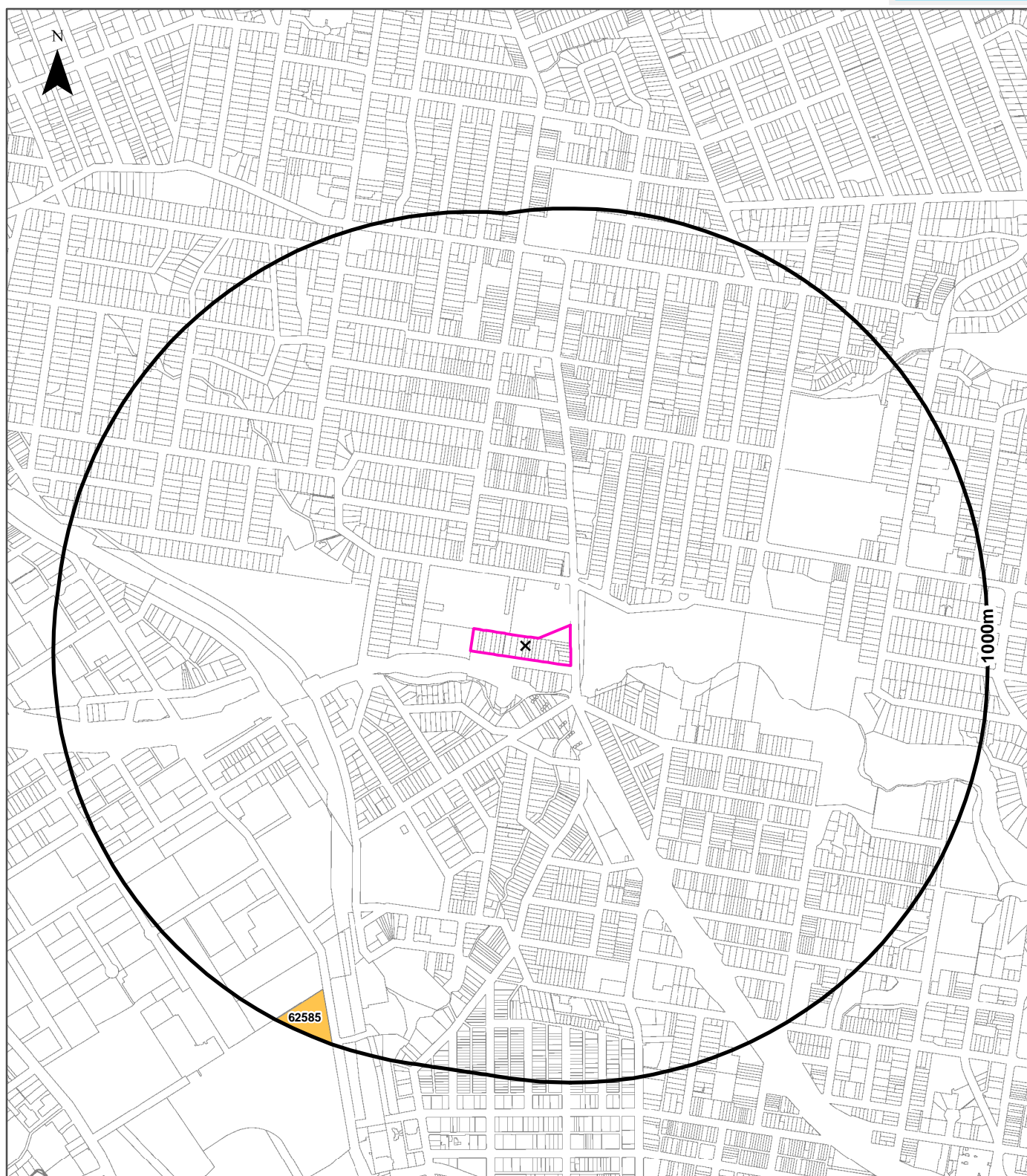
Mining Subsidence Districts within the report buffer?

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

Mining Subsidence District Data Source: © Land and Property Information (2016)  
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# State Environmental Planning Policy

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



## Legend

- |                   |                                |  |
|-------------------|--------------------------------|--|
| ✕ Site Centre     | SEPP 14 - Coastal Wetlands     | Strategic Land Use - Future Residential Growth Areas         |
| Site Boundary     | SEPP 26 - Littoral Rainforests | Strategic Land Use - Additional Rural Village Land           |
| Report Buffer     | SEPP 71 - Coastal Protection   | Strategic Land Use - Biophysical Strategic Agricultural Land |
| Property Boundary | SEPP Major Developments 2005   | Strategic Land Use - Critical Industry Cluster (Equine)      |
|                   |                                | Strategic Land Use - Critical Industry Cluster (Viticulture) |

Scale:  
0 100 200 400  
Meters

Data Sources: Property Boundaries & Topographic Data:  
© Land and Property Information (a division of the  
Department of Finance and Services) 2016

Coordinate System:  
GDA 1994 MGA Zone 56

Date: 23 December 2016



## Environmental Zoning

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

### State Environmental Planning Policy Protected Areas

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

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

SEPP Protected Areas Data Source: NSW Department of Planning & Environment

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### State Environmental Planning Policy Major Developments (2005)

State Environmental Planning Policy Major Developments within the report buffer?

Map Id	Feature	Effective Date	Distance	Direction
62585	Royal North Shore Hospital redevelopment site	29/09/2006	885m	South West

SEPP Major Development Data Source: NSW Department of Planning & Environment

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### State Environmental Planning Policy Strategic Land Use Areas

State Environmental Planning Policy Strategic Land Use Areas onsite or within the report buffer?

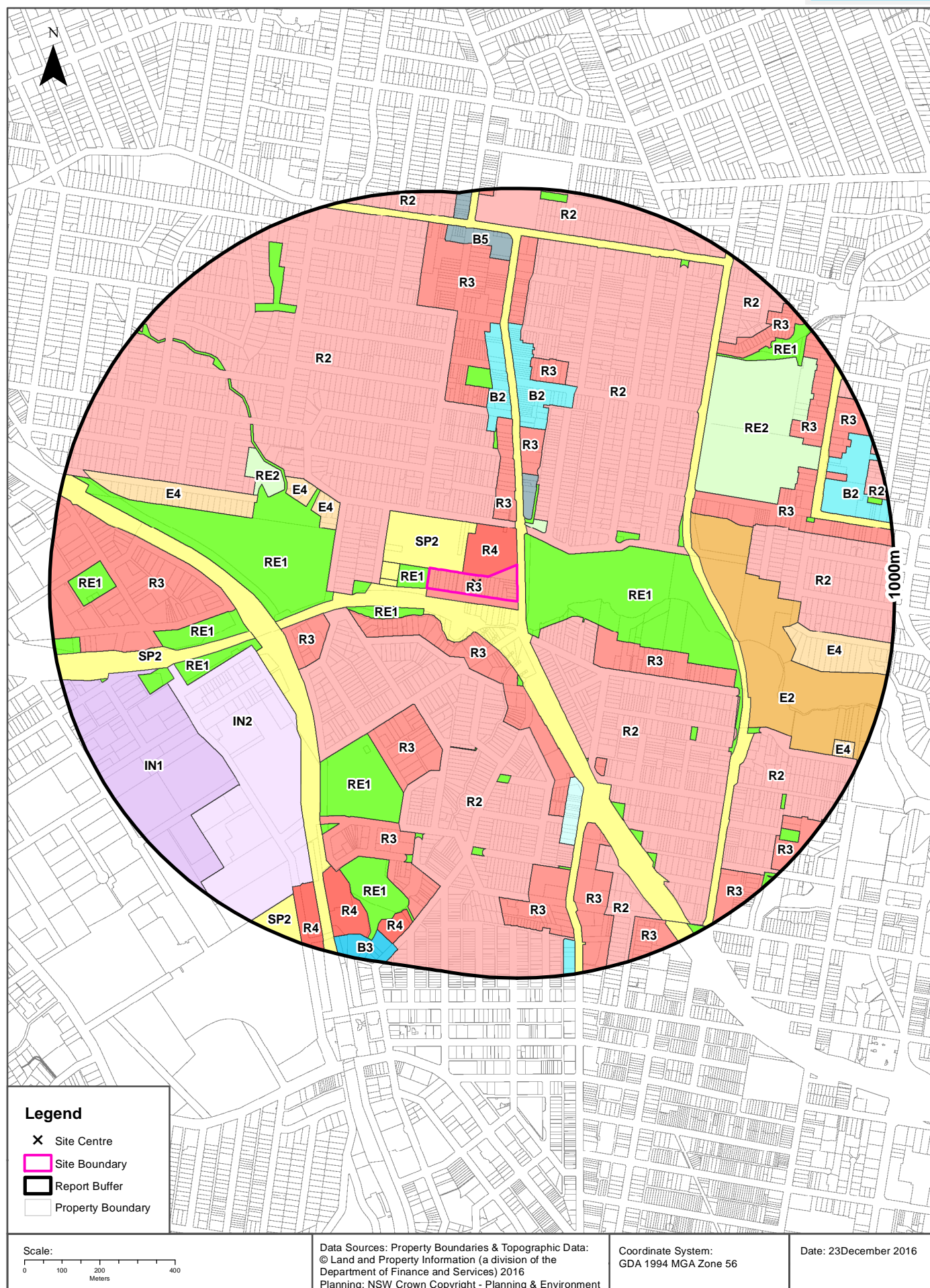
Strategic Land Use	SEPPNo	Effective Date	Amendment	Amendment Year	Distance	Direction
No records within buffer						

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

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# LEP Planning Zones

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



# Local Environmental Plan

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

## Land Zoning

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

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		0m	Onsite
R4	High Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		0m	North
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		0m	West
SP2	Infrastructure	Classified Road	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		0m	North
SP2	Infrastructure	Telecommunications	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		0m	North West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		20m	East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		54m	West
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		67m	South
SP2	Infrastructure	Telecommunications	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		80m	West
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		86m	North East
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		93m	South East
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		97m	North West
RE2	Private Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		106m	North East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		114m	North East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		117m	North
B5	Business Development		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		126m	North East
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		126m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		147m	West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		193m	South East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		221m	South East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		243m	North
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		248m	West
E4	Environmental Living		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		270m	North West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		270m	East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		275m	West
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		310m	South West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		313m	North
B2	Local Centre		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		358m	North
B2	Local Centre		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		365m	North
E4	Environmental Living		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		366m	North West



Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Railway	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		397m	West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		399m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		416m	South West
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		428m	North
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		428m	East
RE2	Private Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		439m	North West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		453m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		460m	South
E2	Environmental Conservation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		464m	East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		464m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		464m	West
IN2	Light Industrial		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		472m	South West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		474m	North
SP2	Infrastructure	Classified Road	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		474m	West
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		482m	East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		484m	West
B1	Neighbourhood Centre		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		487m	South
E4	Environmental Living		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		490m	West
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		492m	North
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		510m	West
RE2	Private Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		512m	North East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		567m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		584m	South East
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		605m	East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		614m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		622m	North West
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		628m	South
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		631m	South East
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		636m	South East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		636m	North
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		646m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		661m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		666m	South West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		671m	South East
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		680m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		696m	South East

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		698m	South
IN1	General Industrial		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		703m	West
E4	Environmental Living		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		704m	East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		704m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		709m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		712m	West
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		717m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		728m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		746m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		755m	North West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		766m	North West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		768m	North East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		773m	North East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		775m	East
R4	High Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		779m	South
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		798m	North East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		798m	North East
B5	Business Development		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		808m	North
B2	Local Centre		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		818m	East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		824m	West
R4	High Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		835m	South West
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		849m	East
R4	High Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		849m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		867m	South East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		875m	North East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		880m	West
SP2	Infrastructure	Hospital	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		885m	South West
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		886m	North
R3	Medium Density Residential		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	21/11/2014		888m	South East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		890m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		901m	North East
B2	Local Centre		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		903m	South
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		903m	South East
B3	Commercial Core		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		915m	South
E4	Environmental Living		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		916m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		921m	South East

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		925m	North West
B5	Business Development		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		926m	North
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		930m	West
SP2	Infrastructure	Classified Road	North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	21/11/2014		931m	South East
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		932m	North West
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		938m	East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		943m	East
RE1	Public Recreation		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	21/11/2014		963m	South East
RE1	Public Recreation		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	21/11/2014		971m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		972m	North
E2	Environmental Conservation		North Sydney Local Environmental Plan 2013	02/08/2013	13/09/2013	21/11/2014		982m	South East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		982m	North
B2	Local Centre		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		988m	East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	15/08/2014		996m	South East

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## Local Environmental Plan

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

### Minimum Subdivision Lot Size

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

Symbol	Minimum Lot Size	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
No Data							

### Maximum Height of Building

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

Symbol	Maximum Height of Building	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
M	12.00 m	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	13/06/2014		100

### Floor Space Ratio

What are the onsite Local Environmental Plan Floor Space Ratios?

Symbol	Floor Space Ratio	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
L	0.90	LEP	21/12/2012	31/01/2013	04/03/2016		100

### Land Application

What are the onsite Local Environmental Plan Land Applications?

Application Type	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
Included	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013		100

### Land Reservation Acquisition

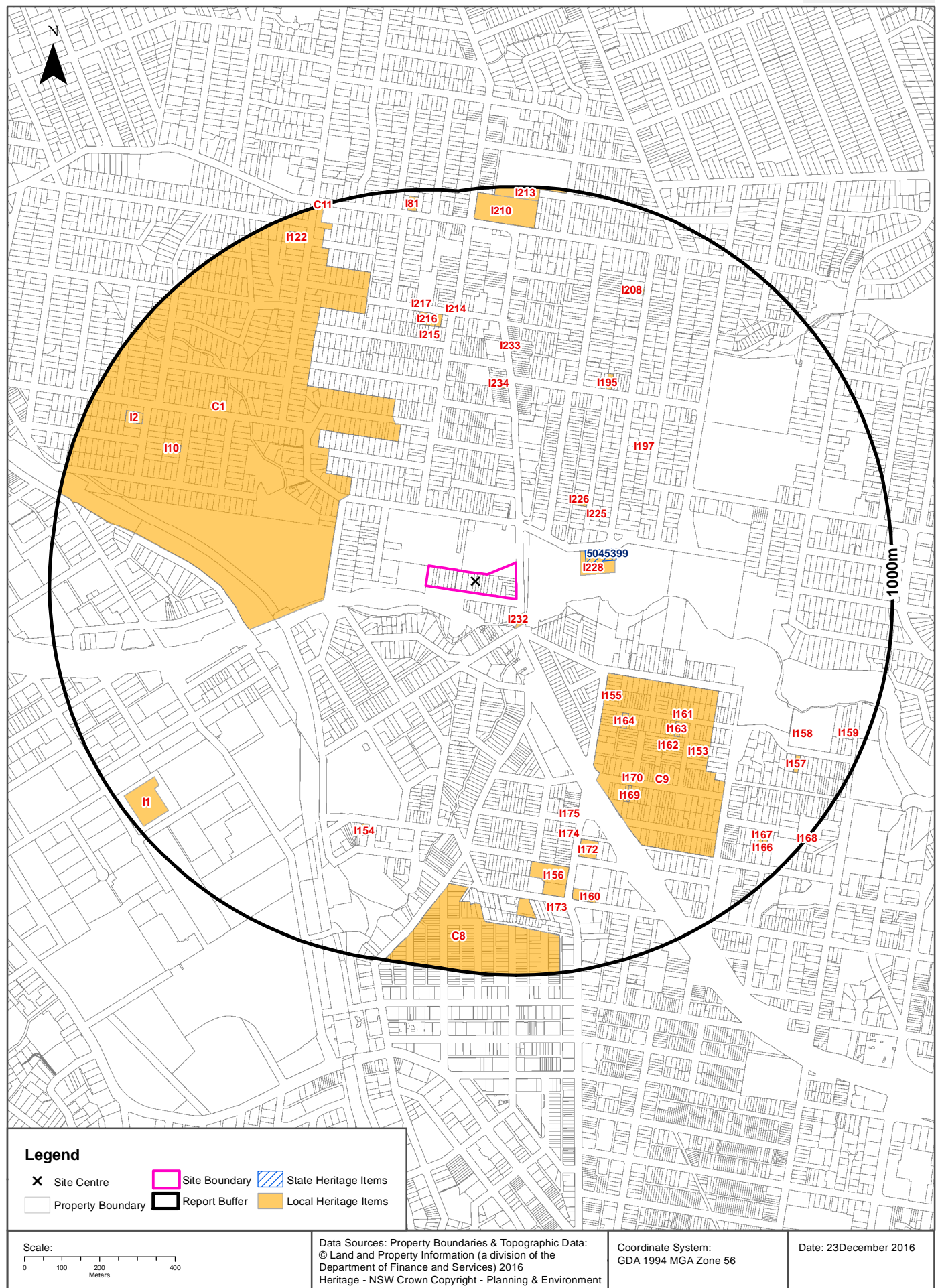
What are the onsite Local Environmental Plan Land Reservation Acquisitions?

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

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# Heritage Items

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



## Heritage

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

### State Heritage Items

What are the State Heritage Items located within the report buffer?

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
5045399	Walter Burley Griffin Incinerator	2 Small Street Willoughby	Willoughby		00084	278	186m	East

Heritage Data Source: NSW Crown Copyright - Planning & Environment

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### Local Heritage Items

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

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I232	Bridge	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	37m	South East
I228	Incinerator	Item - General	State	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	170m	East
I225	Semi-detached house (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	217m	North East
I226	Semi-detached house (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	224m	North East
C1	Artamon	Conservation Area - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	263m	North West
C9	Naremburn Central Township	Conservation Area - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	312m	South East
I155	House	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	340m	South East
I164	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	413m	South East
I197	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	445m	North East
I234	Bridgeview Hotel (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	463m	North
I195	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	521m	North East
I161	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	529m	South East
I163	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	534m	South East
I162	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	540m	South East
I233	Group of shops (front facade only)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	568m	North
I170	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	573m	South East

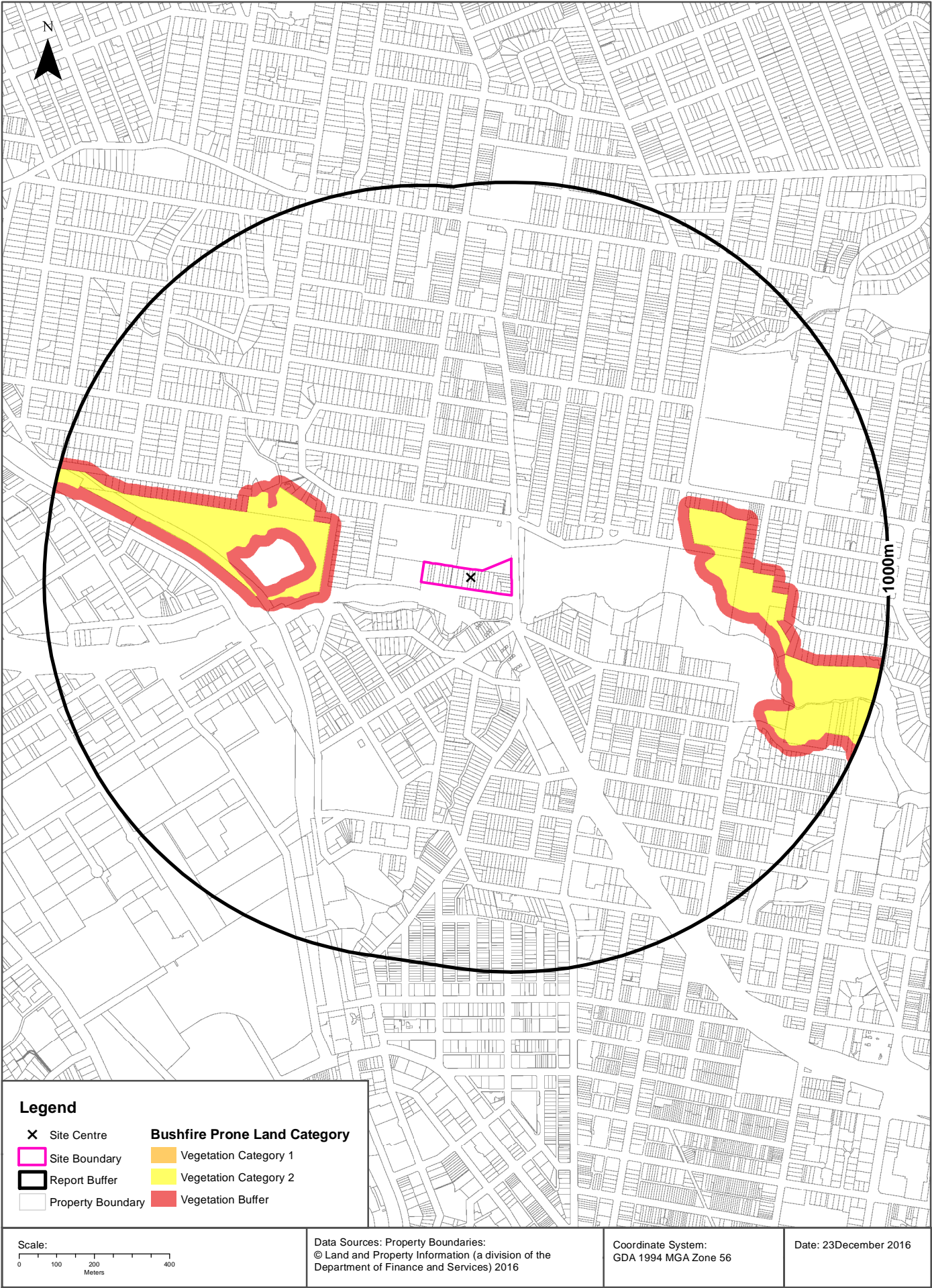


Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I175	Shops	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	574m	South
I169	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	578m	South East
I153	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	605m	South East
I174	Group of shops	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	621m	South
I214	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	634m	North
I215	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	636m	North
I216	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	638m	North
I217	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	640m	North
I154	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	652m	South West
I172	St Cuthbert's Anglican Church (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	660m	South East
I156	Converted Naremburn Public School and Resources Centre	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	698m	South
I10	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	727m	North West
C8	Naremburn	Conservation Area - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	773m	South
I208	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	774m	North East
I160	St Leonards Church (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	782m	South
I156	Converted Naremburn Public School and Resources Centre	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	793m	South
I173	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	809m	South
I158	Dry stone wall and water channel	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	829m	South East
I157	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	849m	South East
I2	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	851m	North West
I1	Industrial building (including surviving industrial elements)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	882m	South West
I210	Willoughby Girls High School	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	890m	North
I167	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	890m	South East
I166	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	901m	South East
I122	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	921m	North West

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I81	House (including original interiors and original fence elements)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	944m	North
I159	'Fatty' Dawson's Ruins	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	945m	East
I213	Willoughby Public School	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	965m	North
C11	South Chatswood	Conservation Area - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	998m	North West
I168	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	999m	South East

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## Natural Hazards

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

### Bushfire Prone Land

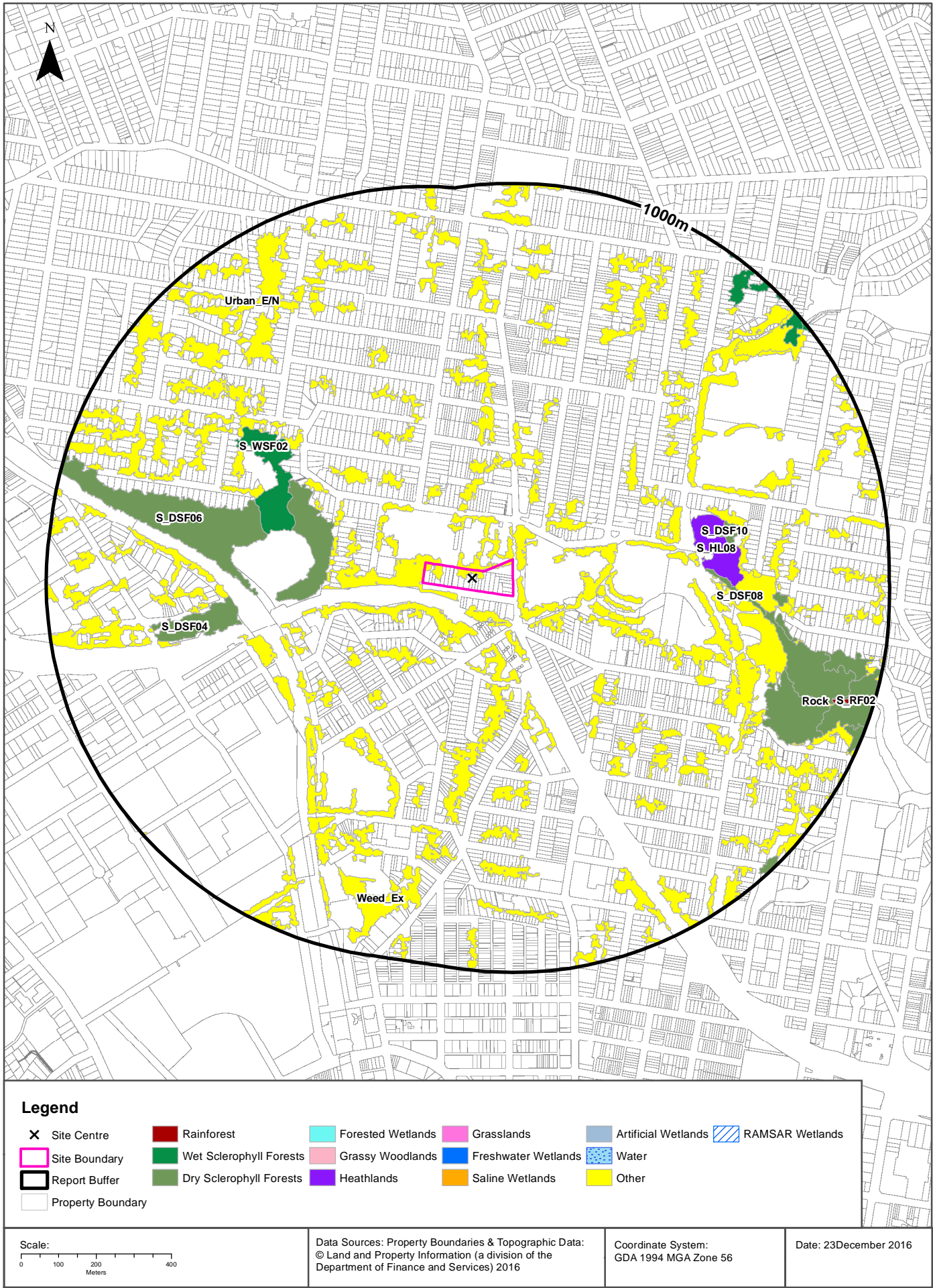
What are the nearest Bushfire Prone Land Categories that exist within the report buffer?

Bushfire Prone Land Category	Distance	Direction
Vegetation Buffer	232m	West
Vegetation Category 2	262m	West

Bushfire Prone Land Data Reference - NSW RFS GIS Data Set

# Ecological Constraints - Native Vegetation & RAMSAR Wetlands

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068



## Ecological Constraints

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

### Native Vegetation

What native vegetation exists within the report buffer?

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Direction
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/ Native	0m	Onsite
S_DSF06	S_DSF06: Coastal Sandstone Foreshores Forest			17: Pittosporum dominant	25: Edge disturbances only	1: Low	E.piperita/ A.costata+/- E.pilularis	250m	West
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			11: Semi sheltered dry/mesic	25: Edge disturbances only	2: Moderate	E.saligna/ E.pilularis/ S.glomullifera/ A.costata+/- E.resinifera/ E.piperita	361m	North West
S_HL08	S_HL08: Coastal Sandstone Heath-Mallee			19: Dense heath	13: Weeds	2: Moderate	A.distyla/ B.ericifolia/ Leptospermum spp/ A.hispida	480m	East
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			15: Grassy natives and exotics	25: Edge disturbances only	2: Moderate	E.pilularis/ A.costata/ C.gummifera+/- E.resinifera	491m	West
S_DSF08	S_DSF08: Coastal Sandstone Riparian Forest			10: Mesic/rainforest	13: Weeds	3: High	E.piperita/ A.costata/ T.laurina	509m	East
S_DSF10	S_DSF10: Hornsby Enriched Sandstone Exposed Woodland			19: Dense heath	15: Regrowth	2: Moderate	E.haemastoma/ C.gummifera/ A.littoralis+/- E.piperita/ E.sieberi/ A.hispida	542m	East
Weed_Ex	Weed_Ex: Weeds and Exotics			00: Not assessed	00: Not assessed	0: Not assessed	Exotic Species >90%cover	587m	East
Rock	Rock			00: Not assessed	00: Not assessed	0: Not assessed	Rock	844m	East
S_RF02	S_RF02: Coastal Sandstone Gallery Rainforest			10: Mesic/rainforest	13: Weeds	3: High	C.apetalum/ T.laurina/ C.serratifolia	888m	East

Native Vegetation of the Sydney Metropolitan Area : NSW Office of Environment and Heritage

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### RAMSAR Wetlands

What RAMSAR Wetland areas exist within the report buffer?

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

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



## Ecological Constraints

1-31 Walter Street and 450-462 Willoughby Road, Willoughby, NSW 2068

### ATLAS of NSW Wildlife

Endangered & Vulnerable Species on the ATLAS of NSW Wildlife database, within 10km of the site?

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Amphibia	Hylidae	<i>Litoria aurea</i>	Green and Golden Bell Frog	No	Endangered, Protected	Vulnerable
Amphibia	Myobatrachidae	<i>Heleioporus australiacus</i>	Giant Burrowing Frog	No	Vulnerable, Protected	Vulnerable
Amphibia	Myobatrachidae	<i>Pseudophryne australis</i>	Red-crowned Toadlet	No	Vulnerable, Protected	
Aves	Accipitridae	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	No	Vulnerable, Protected	CAMBA
Aves	Accipitridae	<i>Hieraaetus morphnoides</i>	Little Eagle	No	Vulnerable, Protected	
Aves	Accipitridae	<i>Lophoictinia isura</i>	Square-tailed Kite	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Accipitridae	<i>Pandion cristatus</i>	Eastern Osprey	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Anatidae	<i>Nettapus coromandelianus</i>	Cotton Pygmy-Goose	No	Endangered, Protected	
Aves	Anseranatidae	<i>Anseranas semipalmata</i>	Magpie Goose	No	Vulnerable, Protected	
Aves	Ardeidae	<i>Botaurus poiciloptilus</i>	Australasian Bittern	No	Endangered, Protected	Endangered
Aves	Ardeidae	<i>Ixobrychus flavicollis</i>	Black Bittern	No	Vulnerable, Protected	
Aves	Artamidae	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	No	Vulnerable, Protected	
Aves	Burhinidae	<i>Burhinus grallarius</i>	Bush Stone-curlew	No	Endangered, Protected	
Aves	Burhinidae	<i>Esacus magnirostris</i>	Beach Stone-curlew	No	Critically Endangered Species, Protected	
Aves	Cacatuidae	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Cacatuidae	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo population in the Hornsby and Ku-ring-gai Local Government Areas	No	Endangered Population, Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Cacatuidae	<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	No	Vulnerable, Protected, Category 2 Sensitive Species	
Aves	Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	No	Endangered, Protected	
Aves	Columbidae	<i>Ptilinopus superbus</i>	Superb Fruit-Dove	No	Vulnerable, Protected	
Aves	Diomedidae	<i>Diomedea exulans</i>	Wandering Albatross	No	Endangered, Protected	E,J
Aves	Diomedidae	<i>Phoebastria fusca</i>	Sooty Albatross	No	Vulnerable, Protected	Vulnerable
Aves	Diomedidae	<i>Thalassarche cauta</i>	Shy Albatross	No	Vulnerable, Protected	Vulnerable
Aves	Diomedidae	<i>Thalassarche melanophrys</i>	Black-browed Albatross	No	Vulnerable, Protected	Vulnerable
Aves	Estrildidae	<i>Stagonopleura guttata</i>	Diamond Firetail	No	Vulnerable, Protected	
Aves	Haematopodidae	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	No	Vulnerable, Protected	
Aves	Haematopodidae	<i>Haematopus longirostris</i>	Pied Oystercatcher	No	Endangered, Protected	
Aves	Laridae	<i>Onychoprion fuscata</i>	Sooty Tern	No	Vulnerable, Protected	
Aves	Laridae	<i>Sternula albifrons</i>	Little Tern	No	Endangered, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Meliphagidae	<i>Anthochaera phrygia</i>	Regent Honeyeater	No	Critically Endangered Species, Protected	Critically Endangered

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Aves	Neosittidae	Daphoenositta chrysoptera	Varied Sittella	No	Vulnerable, Protected	
Aves	Petroicidae	Petroica boodang	Scarlet Robin	No	Vulnerable, Protected	
Aves	Procellariidae	Ardena carneipes	Flesh-footed Shearwater	No	Vulnerable, Protected	J,K
Aves	Procellariidae	Macronectes giganteus	Southern Giant Petrel	No	Endangered, Protected	Endangered
Aves	Procellariidae	Pterodroma leucoptera leucoptera	Gould's Petrel	No	Vulnerable, Protected	Endangered
Aves	Psittacidae	Glossopsitta pusilla	Little Lorikeet	No	Vulnerable, Protected	
Aves	Psittacidae	Lathamus discolor	Swift Parrot	No	Endangered, Protected, Category 3 Sensitive Species	Critically Endangered
Aves	Scolopacidae	Calidris ferruginea	Curlew Sandpiper	No	Endangered, Protected	CE,C,J,K
Aves	Scolopacidae	Limosa limosa	Black-tailed Godwit	No	Vulnerable, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Spheniscidae	Eudyptula minor	Little Penguin in the Manly Point Area (being the area on and near the shoreline from Cannae Point generally northward to the point near the intersection of Stuart Street and Oyama Cove Avenue, and extending 100 metres offshore from that shoreline)	No	Endangered Population, Protected	
Aves	Strigidae	Ninox connivens	Barking Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Strigidae	Ninox strenua	Powerful Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Tytonidae	Tyto novaehollandiae	Masked Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Tytonidae	Tyto tenebricosa	Sooty Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Mammalia	Balaenidae	Eubalaena australis	Southern Right Whale	No	Endangered, Protected	Endangered
Mammalia	Balaenopteridae	Megaptera novaeangliae	Humpback Whale	No	Vulnerable, Protected	Vulnerable
Mammalia	Burramyidae	Cercartetus nanus	Eastern Pygmy-possum	No	Vulnerable, Protected	
Mammalia	Dasyuridae	Dasyurus maculatus	Spotted-tailed Quoll	No	Vulnerable, Protected	Endangered
Mammalia	Dasyuridae	Dasyurus viverrinus	Eastern Quoll	No	Endangered, Protected	Critically Endangered
Mammalia	Dugongidae	Dugong dugon	Dugong	No	Endangered, Protected	
Mammalia	Emballonuridae	Saccolaimus flaviventris	Yellow-bellied Sheath-tail-bat	No	Vulnerable, Protected	
Mammalia	Molossidae	Mormopterus norfolkensis	Eastern Freetail-bat	No	Vulnerable, Protected	
Mammalia	Otariidae	Arctocephalus forsteri	New Zealand Fur-seal	No	Vulnerable, Protected	
Mammalia	Otariidae	Arctocephalus pusillus doriferus	Australian Fur-seal	No	Vulnerable, Protected	
Mammalia	Peramelidae	Isodon obesulus obesulus	Southern Brown Bandicoot (eastern)	No	Endangered, Protected	Endangered
Mammalia	Peramelidae	Perameles nasuta	Long-nosed Bandicoot population in inner western Sydney	No	Endangered Population, Protected	
Mammalia	Peramelidae	Perameles nasuta	Long-nosed Bandicoot, North Head	No	Endangered Population, Protected	
Mammalia	Petauridae	Petaurus australis	Yellow-bellied Glider	No	Vulnerable, Protected	
Mammalia	Phascolarctidae	Phascolarctos cinereus	Koala	No	Vulnerable, Protected	Vulnerable
Mammalia	Potoroidae	Aepyprymnus rufescens	Rufous Bettong	No	Vulnerable, Protected	
Mammalia	Pteropodidae	Pteropus poliocephalus	Grey-headed Flying-fox	No	Vulnerable, Protected	Vulnerable
Mammalia	Vespertilionidae	Falsistrellus tasmaniensis	Eastern False Pipistrelle	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Miniopterus australis	Little Bentwing-bat	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	No	Vulnerable, Protected	

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Mammalia	Vespertilionidae	Myotis macropus	Southern Myotis	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Scoteanax rueppellii	Greater Broad-nosed Bat	No	Vulnerable, Protected	
Reptilia	Cheloniidae	Chelonia mydas	Green Turtle	No	Vulnerable, Protected	Vulnerable
Reptilia	Dermochelyidae	Dermochelys coriacea	Leatherback Turtle	No	Endangered, Protected	Endangered
Reptilia	Varanidae	Varanus rosenbergi	Rosenberg's Goanna	No	Vulnerable, Protected	
Flora	Casuarinaceae	Allocasuarina portuensis	Nielsen Park She-oak	No	Endangered, Protected, Category 3 Sensitive Species	Endangered
Flora	Convolvulaceae	Wilsonia backhousei	Narrow-leafed Wilsonia	No	Vulnerable, Protected	
Flora	Dilleniaceae	Hibbertia puberula		No	Endangered, Protected	
Flora	Dilleniaceae	Hibbertia superans		No	Endangered, Protected	
Flora	Elaeocarpaceae	Tetratheca glandulosa		No	Vulnerable, Protected	
Flora	Elaeocarpaceae	Tetratheca juncea	Black-eyed Susan	No	Vulnerable, Protected	Vulnerable
Flora	Ericaceae	Epacris purpurascens var. purpurascens		No	Vulnerable, Protected	
Flora	Euphorbiaceae	Chamaesyce psammogeton	Sand Spurge	No	Endangered, Protected	
Flora	Fabaceae (Faboideae)	Dillwynia tenuifolia		No	Vulnerable, Protected	
Flora	Fabaceae (Faboideae)	Pultenaea parviflora		No	Endangered, Protected	Vulnerable
Flora	Fabaceae (Mimosoideae)	Acacia bynoeana	Bynoe's Wattle	No	Endangered, Protected	Vulnerable
Flora	Fabaceae (Mimosoideae)	Acacia gordonii		No	Endangered, Protected	Endangered
Flora	Fabaceae (Mimosoideae)	Acacia pubescens	Downy Wattle	No	Vulnerable, Protected	Vulnerable
Flora	Fabaceae (Mimosoideae)	Acacia terminalis subsp. terminalis	Sunshine Wattle	No	Endangered, Protected	Endangered
Flora	Grammitidaceae	Grammitis stenophylla	Narrow-leaf Finger Fern	No	Endangered, Protected, Category 3 Sensitive Species	
Flora	Haloragaceae	Haloragodendron lucasii		No	Endangered, Protected	Endangered
Flora	Lamiaceae	Prostanthera junonis	Somersby Mintbush	No	Endangered, Protected	Endangered
Flora	Malvaceae	Lasiopetalum joyceae		No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Callistemon linearifolius	Netted Bottle Brush	No	Vulnerable, Protected, Category 3 Sensitive Species	
Flora	Myrtaceae	Darwinia biflora		No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Eucalyptus camfieldii	Camfield's Stringybark	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Eucalyptus fracta	Broken Back Ironbark	No	Vulnerable, Protected	
Flora	Myrtaceae	Eucalyptus nicholii	Narrow-leaved Black Peppermint	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Eucalyptus pulverulenta	Silver-leafed Gum	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Leptospermum deanei		No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Melaleuca biconvexa	Biconvex Paperbark	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Melaleuca deanei	Deane's Paperbark	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Syzygium paniculatum	Magenta Lilly Pilly	No	Endangered, Protected	Vulnerable
Flora	Myrtaceae	Triplarina imbricata	Creek Triplarina	No	Endangered, Protected	Endangered
Flora	Orchidaceae	Caladenia tessellata	Thick Lip Spider Orchid	No	Endangered, Protected, Category 2 Sensitive Species	Vulnerable
Flora	Orchidaceae	Genoplesium baueri	Bauer's Midge Orchid	No	Endangered, Protected, Category 2 Sensitive Species	Endangered



Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Flora	Orchidaceae	<i>Microtis angusii</i>	Angus's Onion Orchid	No	Endangered, Protected, Category 2 Sensitive Species	Endangered
Flora	Orchidaceae	<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	No	Endangered, Protected, Category 2 Sensitive Species	Endangered
Flora	Orchidaceae	<i>Sarcophilus hartmannii</i>	Hartman's Sarcophilus	No	Vulnerable, Protected, Category 2 Sensitive Species	Vulnerable
Flora	Poaceae	<i>Deyeuxia appressa</i>		No	Endangered, Protected	Endangered
Flora	Poaceae	<i>Dichanthium setosum</i>	Bluegrass	No	Vulnerable, Protected	Vulnerable
Flora	Proteaceae	<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Small-flower Grevillea	No	Vulnerable, Protected	Vulnerable
Flora	Proteaceae	<i>Persoonia hirsuta</i>	Hairy Geebung	No	Endangered, Protected, Category 3 Sensitive Species	Endangered
Flora	Proteaceae	<i>Persoonia nutans</i>	Nodding Geebung	No	Endangered, Protected	Endangered
Flora	Rutaceae	<i>Asterolasia buxifolia</i>		No	Endangered, Protected	
Flora	Santalaceae	<i>Thesium australe</i>	Austral Toadflax	No	Vulnerable, Protected	Vulnerable
Flora	Thymelaeaceae	<i>Pimelea curviflora</i> var. <i>curviflora</i>		No	Vulnerable, Protected	Vulnerable
Flora	Thymelaeaceae	<i>Pimelea spicata</i>	Spiked Rice-flower	No	Endangered, Protected	Endangered
Flora	Hygrophoraceae	<i>Camarophyllopsis kearneyi</i>		No	Endangered, Protected	
Flora	Hygrophoraceae	<i>Hygrocybe anomala</i> var. <i>ianthinomarginata</i>		No	Vulnerable, Protected	
Flora	Hygrophoraceae	<i>Hygrocybe aurantipes</i>		No	Vulnerable, Protected	
Flora	Hygrophoraceae	<i>Hygrocybe austropratensis</i>		No	Endangered, Protected	
Flora	Hygrophoraceae	<i>Hygrocybe collucera</i>		No	Endangered, Protected	
Flora	Hygrophoraceae	<i>Hygrocybe griseoramosa</i>		No	Endangered, Protected	
Flora	Hygrophoraceae	<i>Hygrocybe lanecovensii</i>		No	Endangered, Protected	
Flora	Hygrophoraceae	<i>Hygrocybe reesiaae</i>		No	Vulnerable, Protected	
Flora	Hygrophoraceae	<i>Hygrocybe rubronivea</i>		No	Vulnerable, Protected	

Data does not include records not defined as either endangered or vulnerable, and category 1 sensitive species are also excluded. NSW Office of Environment and Heritage's Atlas of NSW Wildlife, which holds data from a number of custodians. Data obtained 21/12/2016

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## **Appendix C: Guidelines and Reference Documents**





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Contaminated Land Management Act 1997 (NSW)

Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map Series

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

NSW EPA, (2011). Guidelines for Consultants Reporting on Contaminated Sites (2011)

NSW EPA, (2017). Guidelines for the NSW Site Auditor Scheme, 3rd Edition

National Environment Protection Council (NEPC), (2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

State Environmental Planning Policy No.55 – Remediation of Land 1998 (NSW)