REPORT TO

FOREST CENTRAL BUSINESS PARK PTY LTD

ON

PRELIMINARY STAGE 1 ENVIRONMENTAL SITE ASSESSMENT

FOR

PROPOSED MEDICAL CENTRE

AT

LOT 7 IN DP1020015 – 49 FRENCHS FOREST ROAD EAST, FRENCHS FOREST, NSW

Date: 10 December 2019

Ref: E32505BTrptRev1

JKEnvironments

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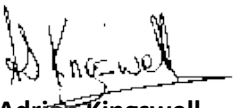

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Executive Summary

Forest Central Business Park ('the client') commissioned JK Environments (JKE)[1] to undertake a preliminary Stage 1 Environmental Site Assessment (PESA) for the proposed medical centre at Lot 7 in DP1020015 – 49 Frenchs Forest Road East, Frenchs Forest, 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.

It is understood the proposed development includes construction of a four-storey building with roof top plant rooms, over four levels of basement incorporating parking and proposed clinical radiation bunker zone. It is assumed that excavation of at least 13m will be required for the basement construction.

The primary aims of the assessment were to identify any past or present potentially contaminating activities at the site, identify the potential for site contamination, and make a preliminary assessment of the soil contamination conditions. 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* and other sources;
- Preparation of a CSM;
- Design and implementation of a sampling, analysis and quality plan (SAQP);
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

The site history review indicated that the site was owned or leased to individuals with professions listed as grazier, fruiter and or farmer and aerial photographs showed that the site was part of a larger cleared and potentially agricultural property during this time. The site inspection also identified stockpiles of fill soil being stored on the site.

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

- Fill material;
- Agricultural land use; and
- Hazardous building materials.

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 low to moderate potential for site contamination.

Based on the potential contamination sources/AEC identified, and the perceived potential for contamination, further investigation of the contamination conditions is considered to be required.

The site has been used for agricultural purposes which is listed in Table 1 of the SEPP55 Planning Guidelines as an activity that may cause contamination. On this basis, a Stage 2 investigation is triggered. Although soil sampling has been undertaken, the majority of the western portion of the site and areas beneath the stored materials were not assessed due to accessibility constraints. Further investigation of the stockpiled materials, areas beneath the stockpiled materials and areas beneath the stored materials on the site should be undertaken to address these data gaps.

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 development. However, the following is recommended to better assess the risks associated with the CoPC:

- Sampling and analysis of the stockpiled materials should be undertaken in accordance with the NSW EPA Waste Classification Guidelines prior to offsite disposal of the material;
- Following removal of the stockpiles and other stored materials, an inspection of the site surface should be undertaken across the site;

[1] Environmental consulting division of Jeffery & Katauskas Pty Ltd (J&K)

- Additional sampling should be undertaken in the western portion of the site beneath the stockpiled materials following their removal to confirm the preliminary waste classification and characterise the site contamination conditions in this section of the site.

Considering the findings of the assessment, JKE are of the opinion that the site can be made suitable for the proposed development subject to the appropriate implementation of the recommendations. The investigation report should confirm the conclusion in relation to site suitability based on the additional data obtained.

JKE consider that the assessment objectives outlined in Section 1.2 have been addressed.

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

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Attachments

Abbreviations

Asbestos Fines/Fibrous Asbestos	**AF/FA**
Ambient Background Concentrations	**ABC**
Added Contaminant Limits	**ACL**
Asbestos Containing Material	**ACM**
Australian Drinking Water Guidelines	**ADWG**
Area of Environmental Concern	**AEC**
Australian Height Datum	**AHD**
Acid Sulfate Soil	**ASS**
Above-Ground Storage Tank	**AST**
Below Ground Level	**BGL**
Benzo(a)pyrene Toxicity Equivalent Factor	**BaP TEQ**
Bureau of Meteorology	**BOM**
Benzene, Toluene, Ethylbenzene, Xylene	**BTEX**
Cation Exchange Capacity	**CEC**
Contaminated Land Management	**CLM**
Contaminant(s) of Potential Concern	**CoPC**
Chain of Custody	**COC**
Conceptual Site Model	**CSM**
Development Application	**DA**
Dial Before You Dig	**DBYD**
Data Quality Indicator	**DQI**
Data Quality Objective	**DQO**
Detailed Site Investigation	**DSI**
Ecological Investigation Level	**EIL**
Ecological Screening Level	**ESL**
Environmental Management Plan	**EMP**
Excavated Natural Material	**ENM**
Environment Protection Authority	**EPA**
Environmental Site Assessment	**ESA**
Ecological Screening Level	**ESL**
Fibre Cement Fragment(s)	**FCF**
General Approval of Immobilisation	**GAI**
Health Investigation Level	**HILs**
Hardness Modified Trigger Values	**HMTV**
Health Screening Level	**HSL**
Health Screening Level-Site Specific Assessment	**HSL-SSA**
International Organisation of Standardisation	**ISO**
JK Environments	**JKE**
Lab Control Spike	**LCS**
Light Non-Aqueous Phase Liquid	**LNAPL**
Map Grid of Australia	**MGA**
National Association of Testing Authorities	**NATA**
National Environmental Protection Measure	**NEPM**
Organochlorine Pesticides	**OCP**
Organophosphate Pesticides	**OPP**
Polycyclic Aromatic Hydrocarbons	**PAH**
Potential ASS	**PASS**
Polychlorinated Biphenyls	**PCBs**
Photo-ionisation Detector	**PID**
Protection of the Environment Operations	**POEO**
Practical Quantitation Limit	**PQL**
Quality Assurance	**QA**
Quality Control	**QC**

Remediation Action Plan	**RAP**
Relative Percentage Difference	**RPD**
Site Assessment Criteria	**SAC**
Sampling, Analysis and Quality Plan	**SAQP**
Site Audit Statement	**SAS**
Site Audit Report	**SAR**
Site Specific Assessment	**SSA**
Source, Pathway, Receptor	**SPR**
Specific Contamination Concentration	**SCC**
Standard Penetration Test	**SPT**
Standard Sampling Procedure	**SSP**
Standing Water Level	**SWL**
Trip Blank	**TB**
Toxicity Characteristic Leaching Procedure	**TCLP**
Total Recoverable Hydrocarbons	**TRH**
Trip Spike	**TS**
Upper Confidence Limit	**UCL**
United States Environmental Protection Agency	**USEPA**
Underground Storage Tank	**UST**
Virgin Excavated Natural Material	**VENM**
Volatile Organic Compounds	**VOC**
World Health Organisation	**WHO**
Work Health and Safety	**WHS**

Units

Litres	**L**
Metres BGL	**mBGL**
Metres	**m**
Millivolts	**mV**
Millilitres	**ml or mL**
Milliequivalents	**meq**
micro Siemens per Centimetre	**µS/cm**
Micrograms per Litre	**µg/L**
Milligrams per Kilogram	**mg/kg**
Milligrams per Litre	**mg/L**
Parts Per Million	**ppm**
Percentage	**%**

1 INTRODUCTION

Forest Central Business Park ('the client') commissioned JK Environments (JKE)[2] to undertake a preliminary Stage 1 Environmental Site Assessment (PESA) for the proposed commercial development at Lot 7 in DP1020015 – 49 Frenchs Forest Road East, Frenchs Forest, 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 investigation was undertaken in conjunction with this assessment by JK Geotechnics[3]. The results of the investigation are presented in a separate report (Ref. 32505Srpt[4]).

1.1 Proposed Development Details

It is understood the proposed development includes construction of a four-storey building with roof top plant rooms, over four levels of basement incorporating parking and proposed clinical radiation bunker zone. It is assumed that excavation of at least 13m will be required for the basement construction.

1.2 Aims and Objectives

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

- Provide an appraisal of the past site use(s) based on a review of historical records;
- Assess the current site conditions and use(s) via a site walkover inspection;
- Identify potential contamination sources/areas of environmental concern (AEC) and contaminants of potential concern (CoPC);
- Assess the soil contamination conditions via implementation of a preliminary sampling and analysis program;
- Prepare a conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);
- Provide a preliminary waste classification for off-site disposal of soil;
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

1.3 Scope of Work

The assessment was undertaken generally in accordance with a JKE proposal (Ref: EP49869BTRev1) of 5 July 2019 and written acceptance from the client of 8 July 2019. The scope of work included the following:

[2] Environmental consulting division of Jeffery & Katauskas Pty Ltd (J&K)

[3] Geotechnical consulting division of J&K

[4] Referred to as JK Geotechnics (2019)

- Review of site information, including background and site history information from a Lotsearch Pty Ltd *Environmental Risk and Planning Report* and other sources;
- Preparation of a CSM;
- Design and implementation of a sampling, analysis and quality plan (SAQP);
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

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

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

[6] Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

[7] *State Environmental Planning Policy No. 55 – Remediation of Land 1998* (NSW) (referred to as SEPP55)

2 SITE INFORMATION

2.1 Site Identification

Table 2-1: Site Identification

Current Site Owner:	Forest Central Business Park Pty Limited
Site Address:	49 Frenchs Forest Road East, Frenchs Forest, NSW
Lot & Deposited Plan:	Lot 7 in DP1020015
Current Land Use:	Storage yard for civil works (assumed to be Warringah Road upgrade)
Proposed Land Use:	Commercial (medical centre)
Local Government Authority:	Northern Beaches Council
Current Zoning:	B7 – Business Park
Site Area (m^2):	1,800
RL (AHD in m) (approx.):	158.72 – 160.25
Geographical Location (decimal degrees) (approx.):	Latitude: -33.752629 Longitude: 151.239671

2.2 Site Location and Regional Setting

The site is located in a predominantly commercial area of Frenchs Forest. The site is bounded by Warringah Road to the south. The site is located approximately 1.1km to the south-west of Middle Creek.

2.3 Topography

The regional topography is generally flat with the site itself sloping down towards the south at approximately 5° to Warringah Road. Parts of the site appear to have been levelled to account for the current site use as a storage yard.

2.4 Site Inspection

A walkover inspection of the site was undertaken by JKE on 1 August 2019. The inspection was limited to accessible areas of the site and immediate surrounds. A summary of the inspection findings are outlined in the following subsections:

2.4.1 Current Site Use and/or Indicators of Former Site Use

At the time of the inspection, the site was being utilised as a storage yard or lay down area and comprised several soil (fill) and gravel stockpiles, cast concrete drainage pits and supplies, and a shipping container. No

other structures were present on the site and the visible ground surface appeared to be covered with compacted blue metal gravel. The site was entirely fenced with 2m high metal wire fencing.

2.4.2 Visible or Olfactory Indicators of Contamination

No visible or olfactory indicators of contamination were observed during the site inspection.

2.4.3 Presence of Drums/Chemicals, Waste and Fill Material

The ground surface of the site was observed to be covered with blue metal gravel and several stockpiles of fill and gravel were located along the western boundary of the site.

2.4.4 Drainage and Services

It would be expected that any surface water and run off would flow towards the south in keeping with the site topography. Stormwater pits were not observed on the site.

2.4.5 Sensitive Environments

Sensitive environments such as wetlands, ponds, creeks or extensive areas of natural vegetation were not identified on site or in the immediate surrounds.

2.4.6 Landscaped Areas and Visible Signs of Plant Stress

Vegetation was observed along the southern boundary and included small to medium trees and shrubs. The vegetation appeared to be in good condition based on a cursory inspection with little to no die back evident.

2.5 Surrounding Land Use

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

- North – Forest Central Business Park (commercial office spaces);
- South – Warringah Road with further commercial business beyond;
- East – asphaltic concrete covered car park also utilised for weekend market stalls; and
- West – Forest Central Business Park (commercial office spaces) and other commercial properties beyond.

JKE did not observe any land uses in the immediate surrounds that were identified as potential contamination sources for the site.

2.6 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the assessment in order to establish whether any major underground services exist at the site or in the immediate vicinity that could act as a preferential pathway for contamination migration.

The DBYD plans indicated that a sewer main extends through the central section of the site in a north-south direction. The sewer is understood to be at a depth of approximately 3m below ground and also extends through the northern business park (commercial) properties. Considering the geological conditions (discussed in Section 3.1), there is a potential for the sewer trench to act as a preferential pathway for contamination migration (i.e. through relatively permeable backfill). Copies of the relevant plans are attached in the appendices.

2.7 Section 10.7 Planning Certificate

The section 10.7 (2 and 5) planning certificates were reviewed for the assessment. Copies of the certificates are attached in the appendices. A summary of the relevant information is outlined below:

- The land is not deemed to be: significantly contaminated; subject to a management order; subject of an approved voluntary management proposal; or subject to an on-going management order under the provisions of the CLM Act 1997;
- The land is not the subject of a Site Audit Statement (SAS);
- The land does not comprise critical habitat; and
- The land is not located in a heritage conservation area.

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 Triassic aged deposits of the Wianamatta Group, which typically consists of shale and laminite.

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 indicated that the site is not located within a risk area.

A review of the council Northern Beaches (formerly Warringah) Council Local Environmental Plan (LEP) 2011 indicates that the site is not located within an ASS risk area.

3.3 Hydrogeology

Hydrogeological information presented in the Lotsearch report 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 28 registered bores within the report buffer of 2,000m. In summary:

- The nearest registered bore was located approximately 110m from the site. This was utilised for waste disposal purposes;
- The majority of the bores were registered for monitoring purposes;
- There were no nearby bores (i.e. within 400m) registered for domestic or irrigation (stock) uses; and
- The drillers log information from the closest registered bores typically identified fill and/or clay soil to depths of 0.3m-10.66m, underlain by sandstone bedrock.

The information reviewed for this assessment indicated that the subsurface conditions at the site are likely to consist of relatively low permeability (residual) soils overlying shallow bedrock. The potential for viable groundwater abstraction and use of groundwater under these conditions is considered to be low. There is a reticulated water supply in the area and consumption of groundwater is not expected to occur. Use of groundwater is not proposed as part of the development.

Considering the local topography and surrounding land features, JKE would generally expect groundwater to flow towards the south-west.

3.4 Receiving Water Bodies

Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Middle Creek located approximately 1.1km to the north-east of the site. This is down-gradient, however due to the distance from site, it is not considered to be a potential receptor.

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
1943	The site appeared to be vacant and predominantly grassed (possibly used for grazing purposes) with an unpaved driveway extending through the site from the north-west corner to the south-east corner. The site appeared to be part of a larger residential/farming property. The residential dwelling associated with the driveway and larger property was visible to the north with what appeared to be a racetrack further to the west. Warringah Road was visible to the south of the site and Frenchs Forest Road was visible to the north. The land to the immediate west appeared to be disused scrubland with medium sized trees. To the south-east of the site beyond Warringah Road, a residential dwelling was observed and a larger commercial style building.
1956	The site and immediate surrounds appeared relatively similar to the previous photograph. Some clearing of the land was evident to the west.
1961	Landscaping of the site surface appeared to have taken place. The driveway running through the site appeared to be paved and the landscaping on either side was visible. A tennis court was visible to the immediate west, with a drive-in theatre beyond. To the north of the site buildings and infrastructure were observed (where the existing Forest Central Business Park is located).
1965	The site appeared similar to the previous photograph. A large commercial style building was visible on the property to the north-east of the site.
1970	The site appeared similar to the previous photograph. The land directly to the east of the site appeared to have been paved (car park) and a large commercial style building was visible on the property to the south of the site beyond Warringah Road. Development was also observed to be underway on the property to the south-east of the site beyond Warringah Road.
1982	The site appeared similar to the previous photograph. The property to the south-east of the site was observed to be undergoing development.
1991	The site appeared similar to the previous photograph. A large commercial style building was visible on the property to the west and north-west of the site (formerly the drive-in theatre). Further development was also visible to the north-east and south-west (beyond Warringah Road) of the site with new commercial buildings visible.
2005	A structure was visible in the north-east corner of the site and the ground surface across the majority of the western section of the site appeared to have been scoured of vegetation resulting in exposed soils at the surface. Development of Forest Central Business Park was visible with the driveway extending down from Frenchs Forest Road East through the business park and past numerous buildings. The building to the west of the site appeared to have been extended.
2009	The site appeared to be used for parking for the Forest Central Business Park with exposed soils still visible across the north-west corner and trees visible along the southern boundary and in the south-east corner of the site. The surrounding land appeared similar to the previous photograph.
2018	The site appeared to be utilised as a storage yard for civil works with stockpiles, shipping containers and other materials visible. The surrounding land appeared to be similar to the previous photograph.

4.2 Review of Historical Land Title Records

Historical land title records were reviewed for the assessment. The record search was undertaken by Advance Legal Searchers Pty Ltd. Copies of the title records are attached in the appendices. The title records indicate the following:

- Between 1897 and 1956 the site was owned by individuals including farmers, graziers, and a lease to fruiters;
- Since 1954 the site has been owned by government or business entities including: Northern Forests Development Company Pty Limited, The Commonwealth of Australia, Australian Telecommunication Commission; and Forest Central Business Park Pty Limited; and
- Forest Central Business Park Pty Limited, the current owner of the site, have been the proprietor since 2002.

The historical land title records identified land uses (farming, grazing and fruit growing), which could have resulted in significant contamination. JKE consider that several of the professions listed on the title records are likely to be associated with site related activities.

4.3 SafeWork NSW Records

SafeWork NSW records were reviewed for the assessment. Copies of relevant documents are attached in the appendices. The search did not identify any licences to store dangerous goods including underground fuel storage tanks (USTs), above ground storage tanks (ASTs) or chemicals at the site.

4.4 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 sites notified in accordance with the Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997 (2015)[8]; and
- Licensed activities under the Protection of the Environment Operations Act (1997)[9].

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 with regards to the Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997. There was one notified property in the report buffer. This appeared to have been notified to the EPA twice and was recorded as 7-eleven at Beacon Hill and 7-

[8] NSW EPA, (2015). *Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997.* (referred to as Duty to Report Contamination)

[9] Protection of the Environment Operations Act 1997 (NSW) (referred to as POEO Act 1997)

eleven / Mobil at Frenchs Forest. Both entries had the same street address. This property is located over 600m downgradient of the site and is not considered to pose a contamination risk to the site; and

- There were no records for licenced activities at the site under the POEO Act 1997. Current and historical licenses were identified for several properties within the report buffer, including the application of herbicides along waterways, road construction and waste generation or storage, however these activities are considered unlikely to pose a contamination risk to the site based on the activity or distance/gradient from the site.

4.5 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). The records indicated that no businesses have been registered at the site between the 1950s and 1990s. JKE are of the opinion that the historical businesses registered within the report buffer are unlikely to represent potential off-site sources of site contamination due to the local topography and their direction from the site (typically cross or down gradient).

In addition to the above, JKE have reviewed additional information contained within the Lotsearch report and note the following:

- There were no local or state heritage items at the site or in the immediate surrounds; and
- There were no significant ecological constraints at the site or in the immediate surrounds.

4.6 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
Pre-1954	Historical land title records indicated that the site was owned or leased to individual with professions listed as grazier, fruiter and or farmer. Aerial photographs of the same time indicate that the site was part of a large cleared and potentially agricultural property during this time. Significant contamination of the land may have occurred as a result of these professions and any site related activities.
2002 - 2005	Potential filling of the site may have occurred during construction of the Forest Central Business Park. The aerial photograph indicated a structure on the site and exposed soils at the surface.
2009 – 2018	Potential for contamination of the site from storage of contaminated materials (stockpiles) and other civil works materials.

4.7 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.

A review of the CSM in relation to source, pathway and receptor (SPR) linkages has been undertaken as part of the Tier 1 risk assessment process, as outlined in Section 10.

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
Fill material – The site may have been historically filled to achieve the existing levels. Fill stockpiles were also observed during the site inspection and aerial photographs indicated that the yard has been utilised as a civil storage yard since at least 2009. The fill may have been imported from various sources and could be contaminated.	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), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.
Historical agricultural use – The site appears to have been used for grazing, fruit growing and or farming purposes. This could have resulted in contamination across the site via use of machinery, application of pesticides and building/demolition of various structures.	Heavy metals, TRH, PAHs, OCPs, PCBs and asbestos JKE note that pesticides only became commercially available in the 1940s. Prior to this time pesticides were predominantly heavy metal compounds.
Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition activities.	Asbestos, lead and PCBs

5.2 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

Potential mechanism for contamination	The potential mechanisms for contamination are most likely to include 'top-down' impacts and spills. There is a potential for sub-surface releases to have occurred if deep fill (or other buried industrial infrastructure) is present, although this is considered to be the least likely mechanism for contamination.

Affected media	Soil/soil vapour have been identified as potentially affected media. The potential for groundwater impacts is considered to be relatively low. However, groundwater would need to be considered in the event significant contamination was identified in soil.
Receptor identification	Human receptors include site occupants/users (including adults and children), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users, and groundwater users. Ecological receptors include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas).
Potential exposure pathways	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 future use of the site. Potential exposure pathways for ecological receptors include primary contact and ingestion. Exposure during future site use could occur via direct contact with soil in unpaved areas such as gardens, inhalation of airborne asbestos fibres during soil disturbance, or inhalation of vapours within enclosed spaces such as buildings and basements.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the proposed basement and/or building (either from soil contamination or volatilisation of contaminants from groundwater); • Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; and • Migration of groundwater off-site into areas where groundwater is being utilised as a resource (i.e. for stock).
Presence of preferential pathways for contaminant movement	The sewer (see Figure 2) and the associated sewer trench/trench backfill is a potential preferential pathway for contaminant migrations. This could occur via groundwater/seepage if present, or via soil/vapour migration through the sewer and/or trench backfill.

6 SAMPLING, ANALYSIS AND QUALITY PLAN

6.1 Data Quality Objectives (DQO)

Data Quality Objectives (DQOs) were developed to define the type and quality of data required to achieve the project objectives outlined in Section 1.2. The DQOs were prepared with reference to the process outlined in Schedule B2 of NEPM (2013) and the Guidelines for the NSW Site Auditor Scheme, 3rd Edition (2017)[10]. The seven-step DQO approach for this project is outlined in the following sub-sections.

The DQO process is validated in part by the Data Quality Assurance/Quality Control (QA/QC) Evaluation. The Data (QA/QC) Evaluation is summarised in Section 8.1 and the detailed evaluation is provided in the appendices.

6.1.1 Step 1 - State the Problem

The CSM identified potential sources of contamination/AEC at the site that may pose a risk to human health and the environment. Investigation data is required to assess the contamination status of the site, assess the risks posed by the contaminants in the context of the proposed development/intended land use, and assess whether remediation is required. A waste classification is required prior to off-site disposal of excavated soil/bedrock. The assessment was constrained by access limitations associated with the existing structures and stored materials on site.

6.1.2 Step 2 - Identify the Decisions of the Study

The objectives of the assessment are outlined in Section 1.2. The decisions to be made reflect these objectives and are as follows:

- Did the site inspection, or does the historical information identify potential contamination sources/AEC at the site?
- Are any results above the SAC?
- Do potential risks associated with contamination exist, and if so, what are they?
- Is remediation required?
- Is the site characterisation sufficient to provide adequate confidence in the above decisions?
- Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

6.1.3 Step 3 - Identify Information Inputs

The primary information inputs required to address the decisions outlined in Step 2 include the following:

- Existing relevant environmental data from previous reports;
- Site information, including site observations and site history documentation;
- Sampling of soil;
- Observations of sub-surface variables such as soil type, photo-ionisation detector (PID) concentrations, odours and staining;

[10] NSW EPA (2017). *Guidelines for the NSW Site Auditor Scheme, 3rd ed.* (referred to as Site Auditor Guidelines 2017)

- Laboratory analysis of soils for the CoPC identified in the CSM; and
- Field and laboratory QA/QC data.

6.1.4 Step 4 - Define the Study Boundary

The sampling will be confined to the site boundaries as shown in Figure 2 (spatial boundary). The sampling was completed between 1 and 2 August 2019 (temporal boundary). The assessment of potential risk to adjacent land users has been made based on data collected within the site boundary.

Sampling was not undertaken beneath the existing stockpiles of stored materials due to access constraints.

6.1.5 Step 5 - Develop an Analytical Approach (or Decision Rule)

6.1.5.1 Tier 1 Screening Criteria

The laboratory data will be assessed against relevant Tier 1 screening criteria (referred to as SAC), as outlined in Section 7. Exceedances of the SAC do not necessarily indicate a requirement for remediation or a risk to human health and/or the environment. Exceedances are considered in the context of the CSM and valid SPR-linkages.

For this assessment, the individual results have been assessed as either above or below the SAC. Statistical evaluation of the dataset via calculation of mean values and/or 95% upper confidence limit (UCL) values has not been undertaken due to the spatial distribution of the data and the number of samples submitted for analysis.

6.1.5.2 Field and Laboratory QA/QC

Field QA/QC included analysis of an intra-laboratory duplicate and trip blank samples. Further details regarding the sampling and analysis undertaken, and the acceptable limits adopted, is provided in the Data Quality (QA/QC) Evaluation in the appendices.

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the attached laboratory reports. These criteria were developed and implemented in accordance with the laboratory's National Association of Testing Authorities, Australia (NATA) accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

In the event that acceptable limits are not met by the laboratory analysis, other lines of evidence are reviewed (e.g. field observations of samples, preservation, handling etc) and, where required, consultation with the laboratory is undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, JKE typically adopt the most conservative concentration reported (or in some cases, consider the data from the affected sample as an estimate).

6.1.5.3 Appropriateness of Practical Quantitation Limits (PQLs)

The PQLs of the analytical methods are considered in relation to the SAC to confirm that the PQLs are less than the SAC. In cases where the PQLs are greater than the SAC, a discussion of this is provided.

6.1.6 Step 6 – Specify Limits on Decision Errors

To limit the potential for decision errors, a range of quality assurance processes are adopted. A quantitative assessment of the potential for false positives and false negatives in the analytical results is undertaken with reference to Schedule B(3) of NEPM (2013) using the data quality assurance information collected.

Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. For this assessment, the null hypothesis has been adopted which is that, there is considered to be a complete SPR linkage for the CoPC identified in the CSM unless this linkage can be proven not to (or unlikely to) exist. The null hypothesis has been adopted for this assessment.

6.1.7 Step 7 - Optimise the Design for Obtaining Data

The most resource-effective design will be used in an optimum manner to achieve the assessment objectives. Adjustment of the assessment design can occur following consultation or feedback from project stakeholders. For this investigation, the design was optimised via consideration of the various lines of evidence used to select the sample locations, the media being sampled, and also by the way in which the data were collected.

The sampling plan and methodology are outlined in the following sub-sections.

6.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology adopted for this assessment is outlined in the table below:

Table 6-1: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	Samples were collected from seven locations as shown on the attached Figure 2. Based on the site area (1,800m^2), this number of locations corresponded to a sampling density of approximately one sample per 257m^2. The sampling plan was not designed to meet the minimum sampling density for hotspot identification, as outlined in the NSW EPA Contaminated Sites Sampling Design Guidelines (1995)[11].
Sampling Plan	The sampling locations were placed on a judgemental sampling plan and were broadly positioned for site coverage, taking into consideration areas that were not easily accessible. This sampling plan was considered suitable to make a preliminary assessment of potential risks associated with the AEC and CoPC identified in the CSM, and assess whether further investigation is warranted.

[11] NSW EPA, (1995), *Contaminated Sites Sampling Design Guidelines.* (referred to as EPA Sampling Design Guidelines 1995)

Aspect	Input
Set-out and Sampling Equipment	Sampling locations were set out using a tape measure. In-situ sampling locations were cleared for underground services by an external contractor prior to sampling as outlined in the SSP. Samples were collected using a drill rig equipped with spiral flight augers. Soil samples were obtained from a Standard Penetration Test (SPT) split-spoon sampler, or directly from the auger when conditions did not allow use of the SPT sampler.
Sample Collection and Field QA/QC	Soil samples were obtained between 1 and 2 August 2019 in accordance with the standard sampling procedure (SSP) attached in the appendices. Soil samples were collected from the fill and natural profiles based on field observations. The sample depths are shown on the logs attached in the appendices. Samples were placed in glass jars with plastic caps and teflon seals with minimal headspace. Samples for asbestos analysis were placed in zip-lock plastic bags. During sampling, soil at selected depths was split into primary and duplicate samples for field QA/QC analysis.
Field Screening	A portable Photoionisation Detector (PID) fitted with a 10.6mV lamp was used to screen the samples for the presence of volatile organic compounds (VOCs). PID screening for VOCs was undertaken on soil samples using the soil sample headspace method. VOC data was obtained from partly filled zip-lock plastic bags following equilibration of the headspace gases. PID calibration records are maintained on file by JKE. Fill/spoil at the sampling locations was visually inspected during the works for the presence of fibre cement fragments.
Decontami-nation and Sample Preservation	Sampling personnel used disposable nitrile gloves during sampling activities. Soil samples were preserved by immediate storage in an insulated sample container with ice in accordance with the SSP. On completion of the fieldwork, the samples were stored temporarily in fridges in the JKE warehouse before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard chain of custody (COC) procedures.

6.3 Analytical Schedule

The analytical schedule (for primary samples) is outlined in the following table:

Table 6-2: Analytical Schedule (Primary Samples)

Analyte/CoPC	Fill Samples	Natural Soil Samples
Heavy Metals	7	5
TRH/BTEX	7	5
PAHs	7	5
OCPs/OPPs	7	0
PCBs	7	0
Asbestos	6	0

Analyte/CoPC	Fill Samples	Natural Soil Samples
Toxicity characteristic leachate procedure (TCLP) nickel for waste classification purposes	1	0

6.3.1 Laboratory Analysis

Samples were analysed by an appropriate, NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. Reference should be made to the laboratory reports attached in the appendices for further details.

Table 6-3: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (the intra-laboratory duplicate and trip blank samples)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	223166 and 223166-A

7 SITE ASSESSMENT CRITERIA (SAC)

The SAC were derived from the NEPM 2013 and other guidelines as discussed in the following sub-sections. The guideline values for individual contaminants are presented in the attached report tables and further explanation of the various criteria adopted is provided in the appendices.

7.1 Soil

Soil data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013) as outlined below.

7.1.1 Human Health

- Health Investigation Levels (HILs) for a 'commercial/industrial' land use exposure scenario (HIL-D);
- Health Screening Levels (HSLs) for a 'commercial/industrial' land use exposure scenario (HSL-D). HSLs were calculated based on conservative assumptions including a 'sand' type and a depth interval of 0m to 1m;
- Where exceedances of the HSLs were reported for hydrocarbons (TRH/BTEX and naphthalene), the soil health screening levels for direct contact presented in the CRC Care Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document (2011)[12] were considered; and
- Asbestos was assessed on the basis of presence/absence. Asbestos HSLs were not adopted as detailed asbestos quantification was not undertaken.

7.1.2 Environment (Ecological – terrestrial ecosystems)

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for a 'commercial/industrial' land use exposure scenario. These have only been applied to the top 2m of soil as outlined in NEPM (2013). The criterion for benzo(a)pyrene has been increased from the value presented in NEPM (2013) based on the Canadian Soil Quality Guidelines[13];
- ESLs were adopted based on the soil type; and
- EILs for selected metals were calculated based on the most conservative added contaminant limit (ACL) values presented in Schedule B(1) of NEPM (2013) and published ambient background concentration (ABC) values presented in the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)[14]. This method is considered to be adequate for the Tier 1 screening.

[12] Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care), (2011). Technical Report No. 10 - *Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document*

[13] Canadian Council of Ministers of the Environment, (1999). *Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)* (referred to as the Canadian Soil Quality Guidelines)

[14] Olszowy, H., Torr, P., and Imray, P., (1995), *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4*. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission.

7.1.3 Management Limits for Petroleum Hydrocarbons

Management limits for petroleum hydrocarbons (as presented in Schedule B1 of NEPM 2013) were considered (if required) following evaluation of human health and ecological risks, and risks to groundwater.

7.1.4 Waste Classification

Data for the waste classification assessment were assessed in accordance with the Waste Classification Guidelines, Part 1: Classifying Waste (2014)[15] as outlined in the following table:

Table 7-1: Waste Categories

Category	Description
General Solid Waste (non-putrescible)	• If Specific Contaminant Concentration (SCC) ≤ Contaminant Threshold (CT1) then Toxicity Characteristics Leaching Procedure (TCLP) not needed to classify the soil as general solid waste; and • If TCLP ≤ TCLP1 and SCC ≤ SCC1 then treat as general solid waste.
Restricted Solid Waste (non-putrescible)	• If SCC ≤ CT2 then TCLP not needed to classify the soil as restricted solid waste; and • If TCLP ≤ TCLP2 and SCC ≤ SCC2 then treat as restricted solid waste.
Hazardous Waste	• If SCC > CT2 then TCLP not needed to classify the soil as hazardous waste; and • If TCLP > TCLP2 and/or SCC > SCC2 then treat as hazardous waste.
Virgin Excavated Natural Material (VENM)	Natural material (such as clay, gravel, sand, soil or rock fines) that meet the following: • That has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial mining or agricultural activities; • That does not contain sulfidic ores or other waste; and • Includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved from time to time by a notice published in the NSW Government Gazette.

[15] NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste.* (referred to as Waste Classification Guidelines 2014)

8 RESULTS

8.1 Summary of Data (QA/QC) Evaluation

The data evaluation is presented in the appendices. In summary, JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

8.2 Subsurface Conditions

A summary of the subsurface conditions encountered during the investigation is presented in the following table. Reference should be made to the borehole logs attached in the appendices for further details.

Table 8-1: Summary of Subsurface Conditions

Profile	Description
Fill	Fill was encountered at the surface in all boreholes and extended to depths of approximately 0.3m to 1.0m. The fill typically comprised silty gravelly clay, silty clay and silty clayey gravel with inclusions of igneous gravel, ash and sand. Neither staining nor odours were observed in the fill materials during fieldwork. Asbestos containing material was not observed in the fill material during fieldwork.
Natural Soil	Silty clay natural soil was encountered in all boreholes beneath the fill material and extended to depths of 2.3m to 3.0m Neither staining nor odours were observed in the natural soil during fieldwork.
Bedrock	Siltstone or sandstone bedrock was encountered beneath the natural soil in BH8 at a depth of 2.3m.
Groundwater	Groundwater seepage was not encountered in the boreholes during drilling. All boreholes remained dry on completion of drilling and a short time after.

8.3 Field Screening

PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. All results were 0ppm isobutylene equivalents which indicates a lack of PID detectable VOCs.

8.4 Soil Laboratory Results

The soil laboratory results are compared to the relevant SAC in the attached report tables. A summary of the results assessed against the SAC is presented below:

8.4.1 Human Health and Environmental (Ecological) Assessment

Table 8-2: Summary of Soil Laboratory Results – Human Health and Environmental (Ecological)

Analyte	Results Compared to SAC
Heavy Metals	All heavy metals results were below the SAC.
TRH	The TRH (F3) concentration of 2,400mg/kg reported in one sample (BH8 0.5-0.7m), exceeded the ecological SAC of 1,700mg/kg. All other TRH results were below the SAC.
BTEX	All BTEX results were below the SAC.
PAHs	All PAH results were below the SAC.
OCPs and OPPs	All OCP and OPP results were below the SAC.
PCBs	All PCB results were below the SAC.
Asbestos	All asbestos results were below the SAC (i.e. asbestos was absent in the soil samples analysed for the investigation).

8.4.2 Management Limits (Ecological)

Table 8-3: Summary of Soil Laboratory Results – Management Limits (Ecologcial)

Analyte	Results Compared to SAC
TRH	All TRH results were below the SAC.

8.4.3 Waste Classification Assessment

The laboratory results were assessed against the criteria presented in Part 1 of the Waste Classification Guidelines, as summarised previously in this report. A summary of the results is presented in the following table:

Table 8-4: Summary of Soil Laboratory Results Compared to CT and SCC Criteria

Analyte	No. of Samples Analysed	No. of Results > CT Criteria	No. of Results > SCC Criteria	Comments
Heavy Metals	12	3	0	The nickel concentration exceeded the CT1 criterion in one fill sample collected from BH2 (0.0-0.2m). The nickel concentration was 50mg/kg.
TRH	12	0	0	-
BTEX	12	0	0	-
Total PAHs	12	0	0	-

Analyte	No. of Samples Analysed	No. of Results > CT Criteria	No. of Results > SCC Criteria	Comments
Benzo(a)pyrene	12	0	0	-
OCPs & OPPs	6	0	0	-
PCBs	6	0	0	-
Asbestos	6	-	-	Asbestos was not detected in the samples analysed.

Table 8-5: Summary of Soil Laboratory Results Compared to TCLP Criteria

Analyte	No. of Samples Analysed	No. of Results > TCLP Criteria	Comments
Nickel	1	0	-

9 WASTE CLASSIFICATION ASSESSMENT

The stockpiles of fill and gravel as observed at the site were not sampled and are therefore not included in this waste classification. As a majority of the site surface was not able to be inspected due to stored materials including stockpiled soils, the following waste classification is preliminary only.

9.1 Preliminary Waste Classification of In-situ Fill

Based on the results of the assessment, and at the time of reporting, the fill material is classified as **General Solid Waste (non-putrescible)**. This classification should be confirmed following removal of the stockpiles and other stored materials from the site surface. Should significant quantities of fill material require disposal, JKE consider that further assessment will be required to adequately assess and classify the fill material at the site. Surplus fill should be disposed of to a facility that is appropriately licensed to receive this waste stream. The facility should be contacted to obtain the required approvals prior to commencement of excavation.

Fill and contaminated soil disposal costs are significant and may affect project viability. These costs should be assessed at an early stage of the project development to avoid significant future unexpected additional costs.

9.2 Preliminary Classification of Natural Soil and Bedrock

Based on the scope of work undertaken for this assessment, and at the time of reporting, JKE are of the opinion that it is likely that the natural soil and bedrock at the site meets the definition of **VENM** for off-site disposal or re-use purposes. Following removal of the fill material an inspection of the surface of the natural soil and bedrock should be undertaken by a suitably qualified environmental consultant to confirm this classification. VENM is considered suitable for re-use on-site (from a contamination viewpoint), or alternatively, the information included in this report may be used to assess whether the material is suitable for beneficial reuse at another site as fill material.

In accordance with Part 1 of the Waste Classification Guidelines, the VENM is pre-classified as general solid waste and can also be disposed of accordingly to a facility that is licensed to accept it.

10 DISCUSSION

10.1 Tier 1 Risk Assessment and Review of CSM

For a contaminant to represent a risk to a receptor, the following three conditions must be present:

1. Source – The presence of a contaminant;
2. Pathway – A mechanism or action by which a receptor can become exposed to the contaminant; and
3. Receptor – The human or ecological entity which may be adversely impacted following exposure to contamination.

If one of the above components is missing, the potential for adverse risks is relatively low.

10.1.1 Soil

TRH (F3) was encountered in fill above the ecological SAC at one location (BH8). This exceedance was located at a depth of 0.5m below existing ground level and the sample of the overlying fill material (0.0-0.1m) did not report elevated concentrations of TRH above the ecological SAC. Due to the depth of the exceedance there is not considered to be a complete SPR linkage in the current site configuration.

In the context of the proposed development, the elevated concentration of TRH encountered in the fill above the ecological SAC is not considered to pose an unacceptable risk to ecological site receptors for the following reasons:

- The site is a commercial property located in an urban setting and is not located in an ecological sensitive area which could impact any endangered species on site therefore it would be reasonable to assume there are no endangered or species on site; and
- The existing flora at the site does not show any significant signs of stress.

No asbestos materials were encountered on the site surface or in the soil during the fieldwork for the assessment. The inspection of the site surface was limited to accessible areas and sampling was completed from boreholes using auger drilling methods which limits the disturbance of the soil. However, based on the site observations and soil results, risks associated with the potential occurrence of asbestos in fill are considered to be low, and JKE are of the opinion that they can be addressed via the implementation of an unexpected finds protocol (UFP) which is outlined in Section 10.4.

Elevated concentrations of the remaining CoPC were not encountered above the adopted SAC in any of the soil samples analysed.

10.2 Decision Statements

The decision statements are addressed below:

> *Did the site inspection, or does the historical information identify potential contamination sources/AEC at the site?*

The site inspection identified storage of fill and gravel stockpiles on the site. In addition, the site history review identified fill material and agricultural land use as potential contamination sources at the site.

Are any results above the SAC?

Yes. One soil sample reported an elevated TRH (F3) concentration above the ecological SAC,

Do potential risks associated with contamination exist, and if so, what are they?

JKE are of the opinion that ecological risks associated with the elevated concentration of TRH (F3) in fill at the site are low. However, comment cannot be made on any potential risk associated with the stockpiled materials, areas beneath the stockpiles and areas beneath the stored material generally located on the western portion of the site, as these have not been included in the assessment.

Is remediation required?

Based on the data obtained to date remediation is not required.

Is the site characterisation sufficient to provide adequate confidence in the above decisions?

The site characterisation is considered to be sufficient for a preliminary assessment of the site

Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

JKE are of the opinion that the area of investigation can be made suitable for the proposed development outlined in Section 1.1, subject to the implementation of the recommendations outlined in Section 11.

10.3 Data Gaps

An assessment of data gaps is provided in the following table:

Table 10-1: Data Gap Assessment

Data Gap	Assessment
Council Records	The review of council records was limited to planning-related information within the section 10.7 certificate and/or within the Local Environmental Plan (as outlined in the Lotsearch report attached in the appendices). JKE are of the opinion that further review of council records such as building approval and development application records is unlikely to identify any information that would alter the outcome of the assessment at this stage.

Data Gap	Assessment
The stockpiles, areas beneath the stockpiles and areas beneath the stored materials on the site have not been assessed.	Inspection of the site surface and sampling of the stockpiles and areas beneath the stockpiles and stored materials at the site was not undertaken due to accessibility and the preliminary nature of the assessment. Recommendations are included in the report to address this data gap.
Sampling Density	The minimum sampling density for hotspot identification has not been met due to access issues. Recommendations are included to address this data gap.
Soil vapour and Groundwater sampling	Based on the site history and the results reported, the potential for soil vapour and or groundwater contamination to pose a risk to the receptors is considered to be low. Additional work to address this data gap is not recommended based on the findings of the assessment.

10.4 Unexpected Finds Protocol

There is considered to be a low to moderate potential for contamination-related unexpected finds to occur at the site during the proposed development works, however, further investigation is recommended. Unexpected finds would typically be able to be identified by visual or olfactory indicators and could include:

- Waste materials in fill, including building and demolition waste;
- Fibre cement fragments (e.g. ACM);
- Stained fill/soil;
- Odorous soils (e.g. hydrocarbon odours); and/or
- Ash, slag and/or coal wash.

The following should be implemented in the event of an unexpected find:

- All work in the immediate vicinity should cease and temporary barricades should be erected to isolate the area;
- A suitably qualified contaminated land consultant[16] should be engaged to inspect the find and provide advice on the appropriate course of action; and
- Any actions should be implemented and validated to demonstrate that there are no unacceptable risks to the receptors.

In the interim Remedial actions are not currently proposed for the site. The following unexpected finds procedure should be implemented. Unexpected finds would typically be able to be identified by visual or olfactory indicators and could include:

- Waste materials in fill, including building and demolition waste;
- Fibre cement fragments (e.g. ACM);
- Stained fill/soil;
- Odorous soils (e.g. hydrocarbon odours); and/or
- Ash, slag and/or coal wash.

[16] JKE recommend that the consultancy engaged for the work be a member of the Australian Contaminated Land Consultants Associated (ACLCA), and/or the individual undertaking the works be certified under one of the NSW EPA endorsed certified practitioner schemes

The following should be implemented in the event of an unexpected find:

- All work in the immediate vicinity should cease, and the contaminated land consultant (who was engaged to complete the initial inspection(s) should be contacted immediately to inspect and document the find;
- Temporary barricades should be erected to isolate the area;
- The consultant should develop and implement a strategy to assess the issue and provide guidance on the appropriate course of action; and
- Any actions should be implemented and validated to demonstrate that there are no unacceptable risks to the receptors.

11 CONCLUSIONS AND RECOMMENDATIONS

11.1 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;
- Agricultural land use; and
- Hazardous building materials.

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 low to moderate potential for site contamination.

11.2 Assessment of the Need for Further Investigation

Based on the potential contamination sources/AEC identified, and the perceived potential for contamination, further investigation of the contamination conditions is considered to be required.

The site has been used for agricultural purposes which is listed in Table 1 of the SEPP55 Planning Guidelines as an activity that may cause contamination. On this basis, a Stage 2 investigation is triggered. Although soil sampling has been undertaken, the majority of the western portion of the site and areas beneath the stored materials were not assessed due to accessibility constraints. Further investigation of the stockpiled materials, areas beneath the stockpiled materials and areas beneath the stored materials on the site should be undertaken to address these data gaps.

11.3 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 development. However, the following is recommended to better assess the risks associated with the CoPC:

- Sampling and analysis of the stockpiled materials should be undertaken in accordance with the NSW EPA Waste Classification Guidelines prior to offsite disposal of the material;
- Following removal of the stockpiles and other stored materials, an inspection of the site surface should be undertaken across the site;
- Additional sampling should be undertaken in the western portion of the site beneath the stockpiled materials following their removal to confirm the preliminary waste classification and characterise the site contamination conditions in this section of the site.

Considering the findings of the assessment, JKE are of the opinion that the site can be made suitable for the proposed development subject to the appropriate implementation of the recommendations. The investigation report should confirm the conclusion in relation to site suitability based on the additional data obtained.

JKE consider that the assessment objectives outlined in Section 1.2 have been addressed.

12 LIMITATIONS

The report limitations are outlined below:

- 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.

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

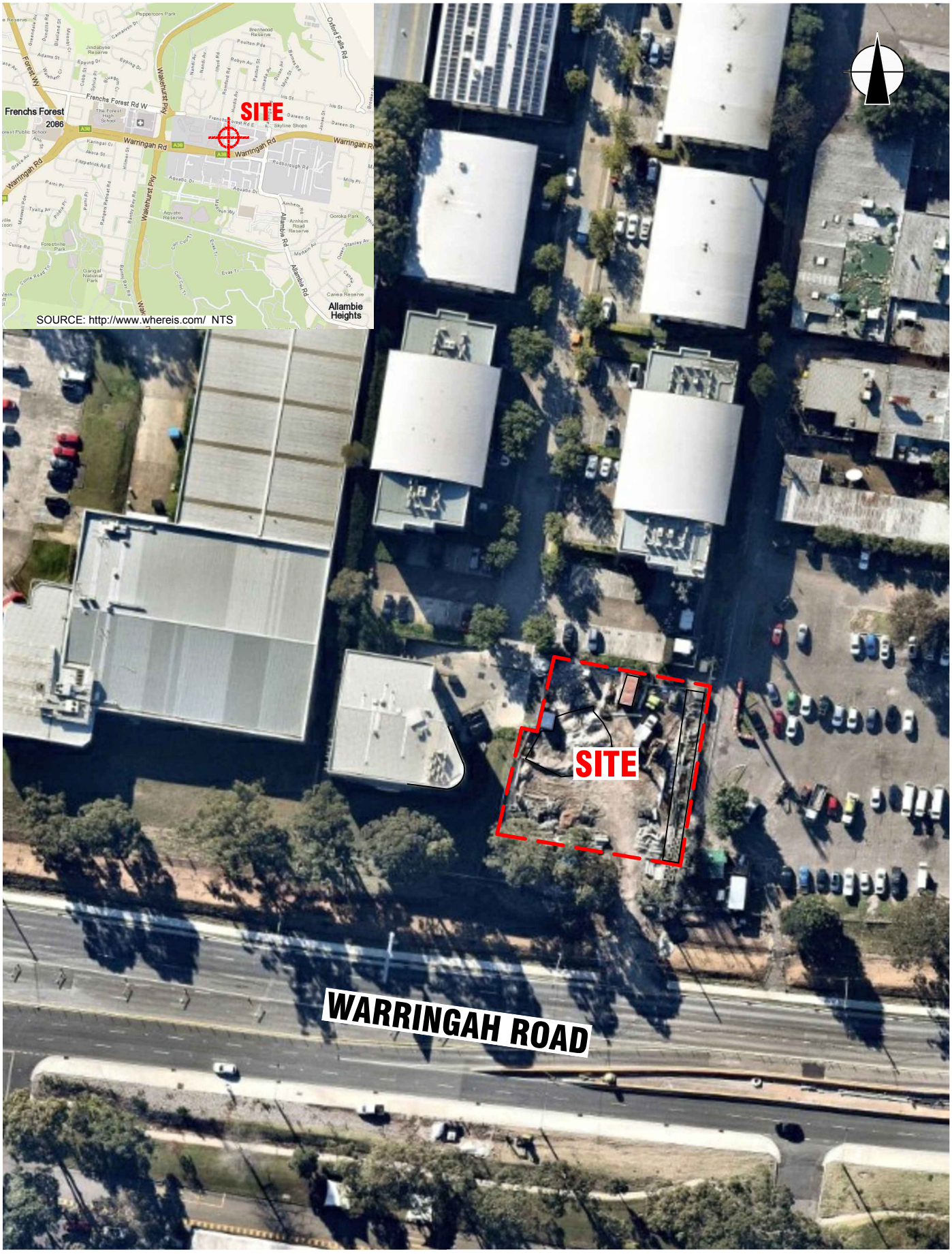
Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other 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



AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 10 20 30 40 50

SCALE 1:1000 @A4 METRES

This plan should be read in conjunction with the Environmental report.

Title: **SITE LOCATION PLAN**

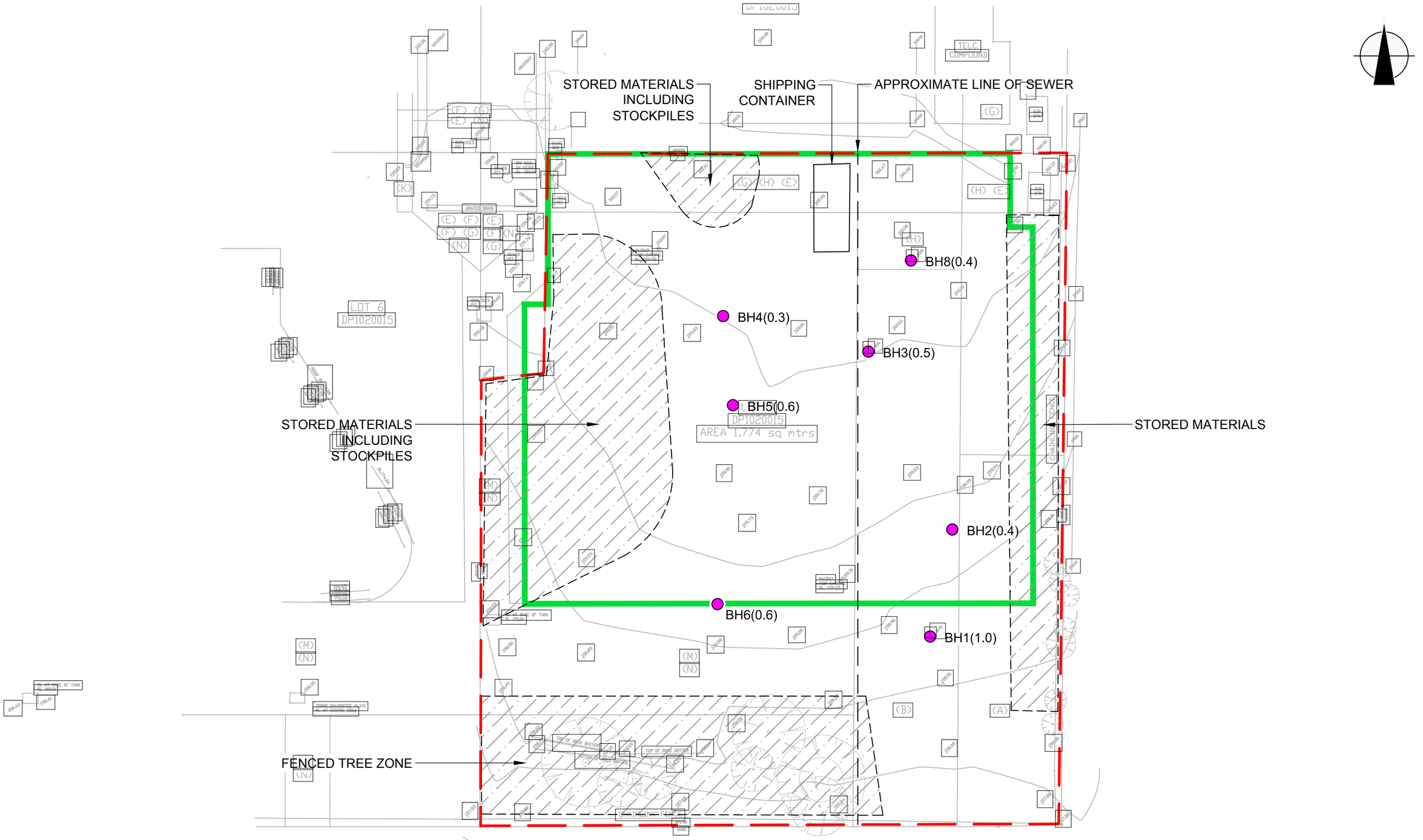
Location: FRENCHS FOREST BUSINESS PARK
FRENCHS FOREST, NSW

Report No: E32505BT

Figure: 1

JKEnvironments

PLOT DATE: 30/08/2019 10:44:36 AM DWG FILE: S:\5 EIS\5C EIS JOBS\32000'S\E32505BT FRENCHS FOREST\CAD\E32505BT.DWG



LEGEND

- APPROXIMATE SITE BOUNDARY
- OUTLINE OF PROPOSED BASEMENT 3
- BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)

SCALE 0 2.5 5 7.5 10 12.5 METRES 1:250 @A3

This plan should be read in conjunction with the Environmental report.

Title: **SAMPLE LOCATION PLAN**

Location: FRENCHS FOREST BUSINESS PARK FRENCHS FOREST, NSW

Report No: E32505BT

Figure: 2

JKEnvironments

PLOT DATE: 30/08/2019 10:43:46 AM DWG FILE: S:\5 EIS\5C EIS JOBS\32000'S\E32505BT FRENCHS FOREST\CAD\E32505BT.DWG

STORED MATERIALS INCLUDING STOCKPILES

SHIPPING CONTAINER

APPROXIMATE LINE OF SEWER

BH8	0.5-0.7
TRH(F3)	2.400mg/kg

BH8(0.4)

BH4(0.3)

BH3(0.5)

STORED MATERIALS INCLUDING STOCKPILES

BH5(0.6)

STORED MATERIALS

BH2(0.4)

BH6(0.6)

BH1(1.0)

FENCED TREE ZONE

LOT 6 DP1020015

DP1020015 AREA 1,774 sq mtrs

TELC. COMPOUND

LEGEND

- APPROXIMATE SITE BOUNDARY
- OUTLINE OF PROPOSED BASEMENT 3
- BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
- SOIL CONTAMINATION ABOVE SAC FOR ECOLOGICAL RISK (mg/kg)

0 2.5 5 7.5 10 12.5

SCALE 1:250 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: **CONTAMINATION LOCATION PLAN**

Location: FRENCHS FOREST BUSINESS PARK FRENCHS FOREST, NSW

Report No: E32505BT

Figure: 3

JKEnvironments

PLOT DATE: 30/08/2019 10:58:12 AM DWG FILE: S:\5 EIS\5C EIS JOBS\32000'S\E32505BT FRENCHS FORESTCAD\E32505BT.DWG

Appendix B: Laboratory Summary Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ABC:	Ambient Background Concentration	**PCBs:**	Polychlorinated Biphenyls
ACM:	Asbestos Containing Material	**PCE:**	Perchloroethylene (Tetrachloroethylene or Teterachloroethene)
ADWG:	AustralianDrinking Water Guidelines	**pH_{KCL} :**	pH of filtered 1:20, 1M KCL extract, shaken overnight
AF:	Asbestos Fines	**pH_{ox} :**	pH of filtered 1:20 1M KCl after peroxide digestion
ANZG	Australian and New Zealand Guidelines	**PQL:**	Practical Quantitation Limit
B(a)P:	Benzo(a)pyrene	**RS:**	Rinsate Sample
CEC:	Cation Exchange Capacity	**RSL:**	Regional Screening Levels
CRC:	Cooperative Research Centre	**SAC:**	Site Assessment Criteria
CT:	Contaminant Threshold	**SCC:**	Specific Contaminant Concentration
EILs:	Ecological Investigation Levels	**S_{Cr}:**	Chromium reducible sulfur
ESLs:	Ecological Screening Levels	**S_{POS}:**	Peroxide oxidisable Sulfur
FA:	Fibrous Asbestos	**SSA:**	Site Specific Assessment
GIL:	Groundwater Investigation Levels	**SSHSLs:**	Site Specific Health Screening Levels
HILs:	Health Investigation Levels	**TAA:**	Total Actual Acidity in 1M KCL extract titrated to pH6.5
HSLs:	Health Screening Levels	**TB:**	Trip Blank
HSL-SSA:	Health Screening Level-SiteSpecific Assessment	**TCA:**	1,1,1 Trichloroethane (methyl chloroform)
NA:	Not Analysed	**TCE:**	Trichloroethylene (Trichloroethene)
NC:	Not Calculated	**TCLP:**	Toxicity Characteristics Leaching Procedure
NEPM:	National Environmental Protection Measure	**TPA:**	Total Potential Acidity, 1M KCL peroxide digest
NHMRC:	National Health and Medical Research Council	**TS:**	Trip Spike
NL:	Not Limiting	**TRH:**	Total Recoverable Hydrocarbons
NSL:	No Set Limit	**TSA:**	Total Sulfide Acidity (TPA-TAA)
OCP:	Organochlorine Pesticides	**UCL:**	Upper Level Confidence Limit on Mean Value
OPP:	Organophosphorus Pesticides	**USEPA**	United States Environmental Protection Agei
PAHs:	Polycyclic Aromatic Hydrocarbons	**VOCC:**	Volatile Organic Chlorinated Compounds
ppm:	Parts per million	**WHO:**	World Health Organisation

Table Specific Explanations:

HIL Tables:

- The chromium results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- Carcinogenic PAHs is a toxicity weighted sum of analyte concentrations for a specific list of PAH compounds relative to B(a)P. It is also refered to as the B(a)P Toxic Equivalence Quotient (TEQ).
- Statistical calculations are undertaken using ProUCL (USEPA). Statistical calculation is usually undertaken using data from fill samples.

EIL/ESL Table:

- ABC Values for selected metals have been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with high traffic have been quoted).

Waste Classification and TCLP Table:

- Data assessed using the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014).
- The assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion.
- Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde.

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TABLE A
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.
HIL-D: 'Commercial/Industrial'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos		
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC)			3000	900	3600	240000	1500	730	6000	400000	4000	40	80	2000	2500	45	530	3600	50	2000	7	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH1	0.0-0.2	Fill: silty gravelly clay	5	<0.4	31	16	22	0	14	56	1.4	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH1	0.0-0.2	Laboratory duplicate	6	<0.4	41	23	15	0	8	39	5.8	0.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH1	0.0-0.2	Laboratory triplicate	5	<0.4	31	26	16	0	12	53	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1	0.5-0.7	Silty clay	<4	<0.4	19	3	12	<0.1	3	10	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2	0.0-0.2	Fill: silty clay	<4	<0.4	29	31	6	0	50	86	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH2	0.5-0.7	Silty clay	12	<0.4	40	6	31	0	5	24	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH3	0.0-0.3	Fill: silty clay	4	<0.4	25	13	12	<0.1	9	35	0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH3	0.7-0.9	Silty clay	7	<0.4	15	5	14	<0.1	6	160	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH4	0.0-0.3	Fill: silty clay	<4	<0.4	33	23	12	<0.1	11	26	3.2	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH5	0.0-0.3	Fill: silty clay	<4	<0.4	51	23	14	<0.1	17	21	4.1	0.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH6	0.0-0.3	Fill: silty clay	<4	<0.4	16	38	21	<0.1	14	35	5.6	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH6	0.6-0.8	Silty clay	<4	<0.4	16	2	9	<0.1	3	3	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH8	0.0-0.1	Fill: silty clayey gravel	<4	<0.4	11	96	7	<0.1	7	26	1.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH8	0.0-0.1	Laboratory duplicate	<4	<0.4	15	51	4	<0.1	5	21	0.87	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH8	0.0-0.1	Laboratory triplicate	<4	<0.4	16	43	4	<0.1	5	23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH8	0.5-0.7	Silty clay	10	<0.4	36	<1	92	0	<1	12	0.2	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			16	16	16	16	16	16	16	16	14	14	8	8	8	8	8	8	8	8	8	6
Maximum Value			12	<PQL	51	96	92	0.4	50	160	5.8	0.8	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	NC

Concentration above the SAC **VALUE**

TABLE B
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C_6-C_{10} (F1)	$>C_{10}$-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Field PID Measurement
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1	ppm
NEPM 2013 HSL Land Use Category					**HSL-D: COMMERCIAL/INDUSTRIAL**							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH1	0.0-0.2	Fill: silty gravelly clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH1	0.0-0.2	Laboratory duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH1	0.0-0.2	Laboratory triplicate	0m to <1m	Sand	NA	NA	NA	NA	NA	NA	NA	0
BH1	0.5-0.7	Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH2	0.0-0.2	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH2	0.5-0.7	Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH3	0.0-0.3	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH3	0.7-0.9	Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH4	0.0-0.3	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH5	0.0-0.3	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH6	0.0-0.3	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH6	0.6-0.8	Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH8	0.0-0.1	Fill: silty clayey gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH8	0.0-0.1	Laboratory duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH8	0.0-0.1	Laboratory triplicate	0m to <1m	Sand	NA	NA	NA	NA	NA	NA	NA	0
BH8	0.5-0.7	Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
Total Number of Samples					14	14	14	14	14	14	14	16
Maximum Value					<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL

Concentration above the SAC **VALUE**

The guideline corresponding to the elevated value is highlighted in grey in the Site Assessment Criteria Table below

SITE ASSESSMENT CRITERIA

					C_6-C_{10} (F1)	$>C_{10}$-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1
NEPM 2013 HSL Land Use Category					**HSL-D: COMMERCIAL/INDUSTRIAL**						
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**							
BH1	0.0-0.2	Fill: silty gravelly clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH1	0.0-0.2	Laboratory duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH1	0.0-0.2	Laboratory triplicate	0m to <1m	Sand	NA	NA	NA	NA	NA	NA	NA
BH1	0.5-0.7	Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH2	0.0-0.2	Fill: silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH2	0.5-0.7	Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH3	0.0-0.3	Fill: silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH3	0.7-0.9	Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH4	0.0-0.3	Fill: silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH5	0.0-0.3	Fill: silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH6	0.0-0.3	Fill: silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH6	0.6-0.8	Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH8	0.0-0.1	Fill: silty clayey gravel	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH8	0.0-0.1	Laboratory duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH8	0.0-0.1	Laboratory triplicate	0m to <1m	Sand	NA	NA	NA	NA	NA	NA	NA
BH8	0.5-0.7	Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL

TABLE C
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category				COMMERCIAL/INDUSTRIAL																	
							AGED HEAVY METALS-EILs						EILs		ESLs							
				pH	CEC ($cmol_c/kg$)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																			
BH1	0.0-0.2	Fill: silty gravelly clay	Coarse	NA	NA	NA	5	31	16	22	14	56	<1	<0.1	<25	<50	260	220	<0.2	<0.5	<1	<3	0.2
BH1	0.0-0.2	Laboratory duplicate	Coarse	NA	NA	NA	6	41	23	15	8	39	<1	<0.1	<25	<50	300	250	<0.2	<0.5	<1	<3	0.5
BH1	0.0-0.2	Laboratory triplicate	Coarse	NA	NA	NA	5	31	26	16	12	53	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1	0.5-0.7	Silty clay	Coarse	NA	NA	NA	<4	19	3	12	3	10	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH2	0.0-0.2	Fill: silty clay	Coarse	NA	NA	NA	<4	29	31	6	50	86	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH2	0.5-0.7	Silty clay	Coarse	NA	NA	NA	12	40	6	31	5	24	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH3	0.0-0.3	Fill: silty clay	Coarse	NA	NA	NA	4	25	13	12	9	35	<1	<0.1	<25	<50	210	250	<0.2	<0.5	<1	<3	0.1
BH3	0.7-0.9	Silty clay	Coarse	NA	NA	NA	7	15	5	14	6	160	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH4	0.0-0.3	Fill: silty clay	Coarse	NA	NA	NA	<4	33	23	12	11	26	<1	<0.1	<25	<50	650	870	<0.2	<0.5	<1	<3	0.3
BH5	0.0-0.3	Fill: silty clay	Coarse	NA	NA	NA	<4	51	23	14	17	21	<1	NA	<25	<50	1300	1600	<0.2	<0.5	<1	<3	0.4
BH6	0.0-0.3	Fill: silty clay	Coarse	NA	NA	NA	<4	16	38	21	14	35	<1	<0.1	<25	<50	1000	1200	<0.2	<0.5	<1	<3	0.56
BH6	0.6-0.8	Silty clay	Coarse	NA	NA	NA	<4	16	2	9	3	3	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH8	0.0-0.1	Fill: silty clayey gravel	Coarse	NA	NA	NA	<4	11	96	7	7	26	<1	<0.1	<25	<50	650	1200	<0.2	<0.5	<1	<3	0.1
BH8	0.0-0.1	Laboratory duplicate	Coarse	NA	NA	NA	<4	15	51	4	5	21	<1	<0.1	<25	<50	650	1200	<0.2	<0.5	<1	<3	0.1
BH8	0.0-0.1	Laboratory triplicate	Coarse	NA	NA	NA	<4	16	43	4	5	23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH8	0.5-0.7	Silty clay	Coarse	NA	NA	NA	10	36	<1	92	<1	12	<1	NA	<25	<50	2400	1100	<0.2	<0.5	<1	<3	<0.05
Total Number of Samples							16	16	16	16	16	16	14	8	14	14	14	14	14	14	14	14	14
Maximum Value							12	51	96	92	50	160	<PQL	<PQL	<PQL	<PQL	2400	1600	<PQL	<PQL	<PQL	<PQL	0.56

Concentration above the SAC

The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below

EIL AND ESL ASSESSMENT CRITERIA

				pH	CEC ($cmol_c/kg$)	Clay Content (% clay)	AGED HEAVY METALS-EILs						EILs		ESLs							
							Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																			
BH1	0.0-0.2	Fill: silty gravelly clay	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	640	215	170	1700	3300	75	135	165	180	72
BH1	0.0-0.2	Laboratory duplicate	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	640	215	170	1700	3300	75	135	165	180	72
BH1	0.0-0.2	Laboratory triplicate	Coarse	NA	NA	NA	160	323	113	1963	60	232	--	--	--	--	--	--	--	--	--	--	--
BH1	0.5-0.7	Silty clay	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	--	215	170	1700	3300	75	135	165	180	72
BH2	0.0-0.2	Fill: silty clay	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	640	215	170	1700	3300	75	135	165	180	72
BH2	0.5-0.7	Silty clay	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	--	215	170	1700	3300	75	135	165	180	72
BH3	0.0-0.3	Fill: silty clay	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	640	215	170	1700	3300	75	135	165	180	72
BH3	0.7-0.9	Silty clay	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	--	215	170	1700	3300	75	135	165	180	72
BH4	0.0-0.3	Fill: silty clay	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	640	215	170	1700	3300	75	135	165	180	72
BH5	0.0-0.3	Fill: silty clay	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	--	215	170	1700	3300	75	135	165	180	72
BH6	0.0-0.3	Fill: silty clay	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	640	215	170	1700	3300	75	135	165	180	72
BH6	0.6-0.8	Silty clay	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	--	215	170	1700	3300	75	135	165	180	72
BH8	0.0-0.1	Fill: silty clayey gravel	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	640	215	170	1700	3300	75	135	165	180	72
BH8	0.0-0.1	Laboratory duplicate	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	640	215	170	1700	3300	75	135	165	180	72
BH8	0.0-0.1	Laboratory triplicate	Coarse	NA	NA	NA	160	323	113	1963	60	232	--	--	--	--	--	--	--	--	--	--	--
BH8	0.5-0.7	Silty clay	Coarse	NA	NA	NA	160	323	113	1963	60	232	370	--	215	170	1700	3300	75	135	165	180	72

TABLE D
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful	Total Scheduled	PCBs	C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl benzene	Total Xylenes	
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	50	0.2	0.5	1	1	100
General Solid Waste CT1			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	<50	<50	650		NSL		10,000	10	288	600	1,000	-
General Solid Waste SCC1			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	<50	<50	650		NSL		10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	<50	<50	2600		NSL		40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	<50	<50	2600		NSL		40,000	72	2,073	4,320	7,200	-
Sample Reference	**Sample Depth**	**Sample Description**																									
BH1	0.0-0.2	Fill: silty gravelly clay	5	<0.4	31	16	22	0.4	14	56	1.4	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	110	240	350	<0.2	<0.5	<1	<3	Not Detected
BH1	0.0-0.2	Laboratory duplicate	6	<0.4	41	23	15	0.3	8	39	5.8	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	140	260	400	<0.2	<0.5	<1	<3	NA
BH1	0.0-0.2	Laboratory triplicate	5	<0.4	31	26	16	0.1	12	53	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1	0.5-0.7	Silty clay	<4	<0.4	19	3	12	<0.1	3	10	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH2	0.0-0.2	Fill: silty clay	<4	<0.4	29	31	6	0.1	**50**	86	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH2	0.5-0.7	Silty clay	12	<0.4	40	6	31	0.1	5	24	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH3	0.0-0.3	Fill: silty clay	4	<0.4	25	13	12	<0.1	9	35	0.5	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	220	220	<0.2	<0.5	<1	<3	Not Detected
BH3	0.7-0.9	Silty clay	7	<0.4	15	5	14	<0.1	6	160	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH4	0.0-0.3	Fill: silty clay	<4	<0.4	33	23	12	<0.1	11	26	3.2	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	250	660	910	<0.2	<0.5	<1	<3	Not Detected
BH5	0.0-0.3	Fill: silty clay	<4	<0.4	51	23	14	<0.1	17	21	4.1	0.4	NA	NA	NA	NA	NA	<25	<50	440	1300	1740	<0.2	<0.5	<1	<3	NA
BH6	0.0-0.3	Fill: silty clay	<4	<0.4	16	38	21	<0.1	14	35	5.6	0.56	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	340	1100	1440	<0.2	<0.5	<1	<3	Not Detected
BH6	0.6-0.8	Silty clay	<4	<0.4	16	2	9	<0.1	3	3	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH8	0.0-0.1	Fill: silty clayey gravel	<4	<0.4	11	96	7	<0.1	7	26	1.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	160	810	970	<0.2	<0.5	<1	<3	Not Detected
BH8	0.0-0.1	Laboratory duplicate	<4	<0.4	15	51	4	<0.1	5	21	0.87	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	140	810	950	<0.2	<0.5	<1	<3	NA
BH8	0.0-0.1	Laboratory triplicate	<4	<0.4	16	43	4	<0.1	5	23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH8	0.5-0.7	Silty clay	10	<0.4	36	<1	92	0.1	<1	12	0.2	<0.05	NA	NA	NA	NA	NA	<25	<50	280	2800	3080	<0.2	<0.5	<1	<3	NA
Total Number of samples			16	16	16	16	16	16	16	16	14	14	8	8	8	8	8	14	14	14	14	14	14	14	14	14	6
Maximum Value			12	<PQL	51	96	92	0.4	50	160	5.8	0.56	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	440	2800	3080	<PQL	<PQL	<PQL	<PQL	NC

Concentration above the CT1 — **VALUE**
Concentration above SCC1 — **VALUE**
Concentration above the SCC2 — **VALUE**

TABLE E
SOIL LABORATORY TCLP RESULTS
All data in mg/L unless stated otherwise

			Nickel
PQL - Envirolab Services			0.02
TCLP1 - General Solid Waste			2
TCLP2 - Restricted Solid Waste			8
TCLP3 - Hazardous Waste			>8
Sample Reference	**Sample Depth**	**Sample Description**	
BH2	0.0-0.2	Fill: silty clay	
Total Number of samples			0
Maximum Value			<PQL

General Solid Waste	**VALUE**
Restricted Solid Waste	**VALUE**
Hazardous Waste	**VALUE**

TABLE F
SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS
All data in mg/kg unless stated otherwise

			C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**COMMERCIAL/INDUSTRIAL**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH1	0.0-0.2	Coarse	<25	<50	260	220
BH1	0.0-0.2	Coarse	<25	<50	300	250
BH1	0.0-0.2	Coarse	NA	NA	NA	NA
BH1	0.5-0.7	Coarse	<25	<50	<100	<100
BH2	0.0-0.2	Coarse	<25	<50	<100	<100
BH2	0.5-0.7	Coarse	<25	<50	<100	<100
BH3	0.0-0.3	Coarse	<25	<50	210	250
BH3	0.7-0.9	Coarse	<25	<50	<100	<100
BH4	0.0-0.3	Coarse	<25	<50	650	870
BH5	0.0-0.3	Coarse	<25	<50	1300	1600
BH6	0.0-0.3	Coarse	<25	<50	1000	1200
BH6	0.6-0.8	Coarse	<25	<50	<100	<100
BH8	0.0-0.1	Coarse	<25	<50	650	1200
BH8	0.0-0.1	Coarse	<25	<50	650	1200
BH8	0.0-0.1	Coarse	NA	NA	NA	NA
BH8	0.5-0.7	Coarse	<25	<50	2400	1100
Total Number of Samples			14	14	14	14
Maximum Value			<PQL	<PQL	2400	1600

Concentration above the SAC **VALUE**

MANAGEMENT LIMIT ASSESSMENT CRITERIA

			C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**COMMERCIAL/INDUSTRIAL**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH1	0.0-0.2	Coarse	700	1000	3500	10000
BH1	0.0-0.2	Coarse	700	1000	3500	10000
BH1	0.0-0.2	Coarse	--	--	--	--
BH1	0.5-0.7	Coarse	700	1000	3500	10000
BH2	0.0-0.2	Coarse	700	1000	3500	10000
BH2	0.5-0.7	Coarse	700	1000	3500	10000
BH3	0.0-0.3	Coarse	700	1000	3500	10000
BH3	0.7-0.9	Coarse	700	1000	3500	10000
BH4	0.0-0.3	Coarse	700	1000	3500	10000
BH5	0.0-0.3	Coarse	700	1000	3500	10000
BH6	0.0-0.3	Coarse	700	1000	3500	10000
BH6	0.6-0.8	Coarse	700	1000	3500	10000
BH8	0.0-0.1	Coarse	700	1000	3500	10000
BH8	0.0-0.1	Coarse	700	1000	3500	10000
BH8	0.0-0.1	Coarse	--	--	--	--
BH8	0.5-0.7	Coarse	700	1000	3500	10000

TABLE G
SOIL LABORATORY RESULTS COMPARED T0 DIRECT CONTACT CRITERIA
All data in mg/kg unless stated otherwise

Analyte		C_6-C_{10}	>C_{10}-C_{16}	>C_{16}-C_{34}	>C_{34}-C_{40}	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services		25	50	100	100	0.2	0.5	1	1	1	
CRC 2011 -Direct contact Criteria		82,000	62,000	85,000	120,000	1,100	120,000	85,000	130,000	29,000	
Site Use		**Intrusive Maintenance Worker - DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH1	0.0-0.2	<25	<50	260	220	<0.2	<0.5	<1	<3	<1	0
BH1	0.0-0.2	<25	<50	300	250	<0.2	<0.5	<1	<3	<1	0
BH1	0.0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	0
BH1	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH2	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH2	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH3	0.0-0.3	<25	<50	210	250	<0.2	<0.5	<1	<3	<1	0
BH3	0.7-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH4	0.0-0.3	<25	<50	650	870	<0.2	<0.5	<1	<3	<1	0
BH5	0.0-0.3	<25	<50	1300	1600	<0.2	<0.5	<1	<3	<1	0
BH6	0.0-0.3	<25	<50	1000	1200	<0.2	<0.5	<1	<3	<1	0
BH6	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH8	0.0-0.1	<25	<50	650	1200	<0.2	<0.5	<1	<3	<1	0
BH8	0.0-0.1	<25	<50	650	1200	<0.2	<0.5	<1	<3	<1	0
BH8	0.0-0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	0
BH8	0.5-0.7	<25	<50	2400	1100	<0.2	<0.5	<1	<3	<1	0
Total Number of Samples		14	14	14	14	14	14	14	14	14	16
Maximum Value		<PQL	<PQL	2400	1600	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL

Concentration above the SAC **VALUE**

TABLE H
SOIL INTRA-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH5 (0.0-0.3m)	Arsenic	4	<4	<4	NC	NC
Dup Ref = DUP1	Cadmium	0.4	<0.4	<0.4	NC	NC
	Chromium	1	51	27	39.0	62
Envirolab Report: 223166	Copper	1	23	23	23.0	0
	Lead	1	14	17	15.5	19
	Mercury	0.1	<0.1	<0.1	NC	NC
	Nickel	1	17	23	20.0	30
	Zinc	1	21	30	25.5	35
	Naphthalene	0.1	<0.1	<0.1	NC	NC
	Acenaphthylene	0.1	<0.1	0.1	0.1	67
	Acenaphthene	0.1	<0.1	<0.1	NC	NC
	Fluorene	0.1	<0.1	<0.1	NC	NC
	Phenanthrene	0.1	0.2	0.2	0.2	0
	Anthracene	0.1	<0.1	<0.1	NC	NC
	Fluoranthene	0.1	0.6	0.6	0.6	0
	Pyrene	0.1	1	0.9	1.0	11
	Benzo(a)anthracene	0.1	0.3	0.3	0.3	0
	Chrysene	0.1	0.4	0.4	0.4	0
	Benzo(b,j+k)fluoranthene	0.2	0.7	0.6	0.7	15
	Benzo(a)pyrene	0.05	0.4	0.3	0.4	29
	Indeno(123-cd)pyrene	0.1	0.2	0.2	0.2	0
	Dibenzo(ah)anthracene	0.1	<0.1	<0.1	NC	NC
	Benzo(ghi)perylene	0.1	0.4	0.3	0.4	29
	TRH C6-C10 (F1)	25	<25	<25	NC	NC
	TRH >C10-C16 (F2)	50	<50	<50	NC	NC
	TRH >C16-C34 (F3)	100	1300	860	1080.0	41
	TRH >C34-C40 (F4)	100	1600	1100	1350.0	37
	Benzene	0.2	<0.2	<0.2	NC	NC
	Toluene	0.5	<0.5	<0.5	NC	NC
	Ethylbenzene	1	<1	<1	NC	NC
	m+p-xylene	2	<2	<2	NC	NC
	o-xylene	1	<1	<1	NC	NC

RPD Results Above the Acceptance Criteria VALUE

TABLE I
SUMMARY OF FIELD QA/QC RESULTS

ANALYSIS	Envirolab PQL		TB[S]
			1/08/2019
	mg/kg	µg/L	mg/kg
TRH C6-C10 (F1)	10	10	<25
Benzene	0.2	0.2	<0.2
Toluene	0.5	0.5	<0.5
Ethylbenzene	1	1	<1
m+p-xylene	2	2	<2
o-xylene	1	1	<1

Explanation:

[W] Sample type (water)

[S] Sample type (sand)

BTEX concentrations in trip spikes are presented as % recovery

Values above PQLs/Acceptance criteria **VALUE**

Appendix C: Site Information and Site History

Proposed Development Plans

PROJECT MAUI - ONCOLOGY

WARRINGAH ROAD & WAKEHURST PARKWAY, FRENCHS FOREST

SHEET LIST DA			
Sheet Number	Sheet Name	Current Revision	Current Revision Date
DA			
000-Specification + Site			
DA-000	COVER SHEET	8	09.12.19
DA-010	SITE PLAN - EXISTING	5	09.12.19
DA-011	SITE PLAN - PROPOSED	8	09.12.19
DA-012	SITE ANALYSIS PLAN	3	04.12.19
DA-015	SURVEY PLAN	5	09.12.19
DA-020	DEMOLITION PLAN	4	09.12.19
DA-021	EXCAVATION PLAN	4	09.12.19
DA-050	ROOF PLAN	4	04.12.19
100-General Arrangement Plans			
DA-099	FLOOR PLAN - BASEMENT 4	1	04.12.19
DA-100	FLOOR PLAN - BASEMENT 3	6	04.12.19
DA-101	FLOOR PLAN - BASEMENT 2	6	04.12.19
DA-102	FLOOR PLAN - BASEMENT 1	6	04.12.19
DA-103	FLOOR PLAN - GROUND	6	04.12.19
DA-104	FLOOR PLAN - LEVEL 1	4	04.12.19
DA-105	FLOOR PLAN - LEVEL 2	4	04.12.19
DA-106	FLOOR PLAN - LEVEL 3	4	04.12.19
DA-120	FLOOR PLAN - SIGNAGE	4	04.12.19
200-Elevations			
DA-200	ELEVATIONS - SHEET 1	4	04.12.19
DA-201	ELEVATIONS - SHEET 2	4	04.12.19
DA-202	ELEVATIONS - SHEET 3	3	04.12.19
300-Sections			
DA-300	SECTIONS - SHEET 1	5	09.12.19
DA-301	SECTIONS - SHEET 2	5	09.12.19
800-Shadow Studies			
DA-800	SHADOW STUDIES - SHEET 1	3	04.12.19
DA-801	SHADOW STUDIES - SHEET 2	4	04.12.19
900-Perspectives			
DA-900	3D VIEWS	4	04.12.19
DA-901	PHOTOMONTAGE	4	04.12.19
1000-Notification Plans			
DA-1000	NOTIFICATION PLAN - SITE	4	04.12.19
DA-1001	NOTIFICATION PLAN - ELEVATIONS	3	04.12.19

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Issue for Information	28.08.19
3	Draft DA Issue	30.08.19
4	ISSUE FOR DA	05.09.19
5	REISSUE FOR DA	06.09.19
6	REISSUE FOR DA	27.11.19
7	ISSUE FOR DA	04.12.19
8	REISSUE FOR DA	09.12.19

DRAWING LEGEND:

1. Architectural drawings shall be read in conjunction with other consultant drawings and specifications. Any discrepancies shall be referred to team 2 architects before proceeding with work.
2. All dimensions and levels are in millimeters unless noted otherwise. No dimension shall be obtained by scaling the drawing.
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NOTE:

EASEMENTS SUBJECT TO FINAL SURVEY

Client
GenesisCare
11/41-43 Bourke Rd
Alexandria NSW 2015

Builder
Erilyan
1/27 Hotham Parade
Artarmon NSW 2064

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MELBOURNE
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ABN: 72 104 833 507
Reg Vic: 19340

Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
COVER SHEET

Project #	Scale	Drwn	Chkd
856	1 : 50 @A1		

Drawing #: DA-000

Rev: 8

1 Site - Existing
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Draft DA Issue	30.08.19
3	ISSUE FOR DA	05.09.19
4	ISSUE FOR DA	04.12.19
5	REISSUE FOR DA	09.12.19

DRAWING LEGEND:

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NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client
GenesisCare
11/41-43 Bourke Rd
Alexandria NSW 2015

Builder
Erilyan
1/27 Hotham Parade
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0 1 2 3 4 5
SCALE 1:100

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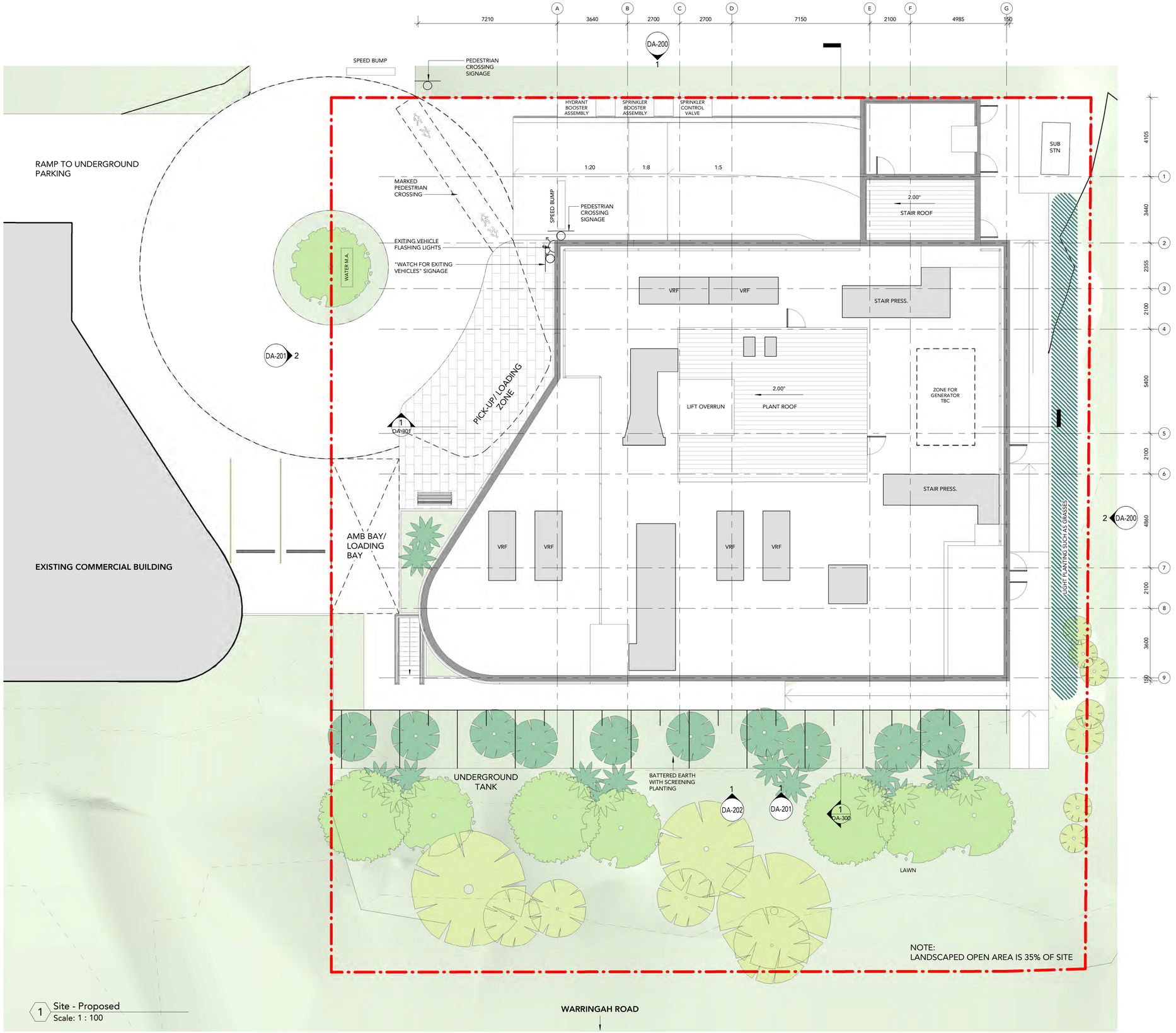
Reg Vic: 19340

Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
SITE PLAN - EXISTING

Project #:	Scale:	Drw:	Chd:
856	1 : 100 @A1	Author	Checker

Drawing #: DA-010
Rev: 5



1 Site - Proposed
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
3	Draft DA Issue	30.08.19
2	Issue for Information	30.08.19
4	Updated Drawing for Information	03.09.19
5	ISSUE FOR DA	05.09.19
6	REISSUE FOR DA	27.11.19
7	ISSUE FOR DA	04.12.19
8	REISSUE FOR DA	09.12.19

DRAWING LEGEND:

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LEGENDS:

- PROPOSED WALLS & FLOORS
- NEIGHBOURING EXISTING BUILDINGS
- EXISTING PLANTING
- PROPOSED PLANTING
- DEMOLITION/EXCAVATION AREA

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client
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Alexandria NSW 2015

Builder
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1/27 Hotham Parade
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0 1 2 3 4 5
SCALE 1:100

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Reg Vic: 19340

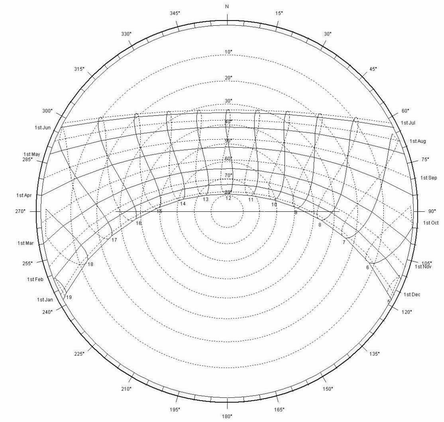
Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
SITE PLAN - PROPOSED

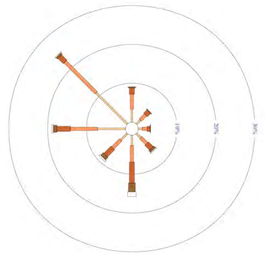
Project #:	Scale:	Drw:	Chd:
856	As indicated @A1	Author	Checker

Drawing #: DA-011
Rev: 8

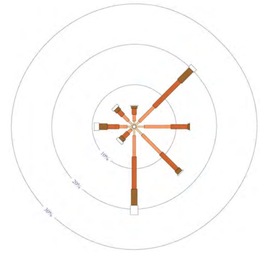
LOCATION PLAN
SIX MAPS



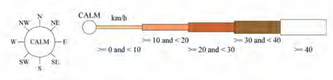
SUN PATH DIAGRAM
SYDNEY



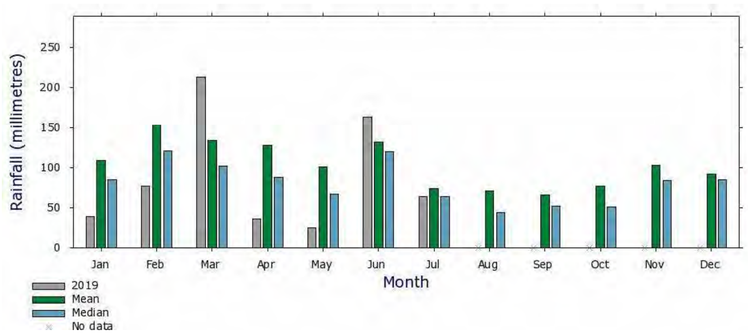
WIND DIRECTION AND STRENGHT 9AM
SYDNEY



WIND DIRECTION AND STRENGHT 3PM
SYDNEY

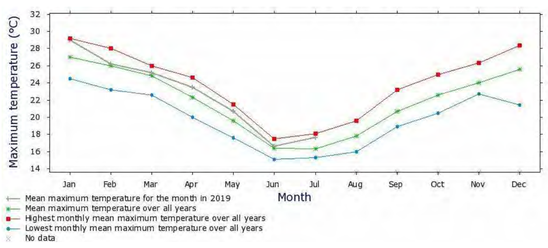


LOCATION PLAN
SIX MAPS

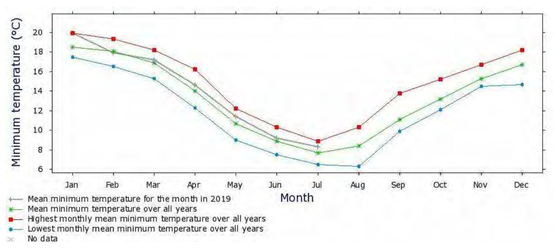


RAINFALL DATA: BELROSE
CLIMATE DATA FROM BUREAU OF METEOROLOGY

SITE PLAN
SIX MAPS



MAXIMUM TEMPERATURE DATA: TERRY HILLS
CLIMATE DATA FROM BUREAU OF METEOROLOGY



MINIMUM TEMPERATURE DATA: TERRY HILLS
CLIMATE DATA FROM BUREAU OF METEOROLOGY

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Draft DA Issue	30.08.19
2	ISSUE FOR DA	05.09.19
3	ISSUE FOR DA	04.12.19

DRAWING LEGEND:

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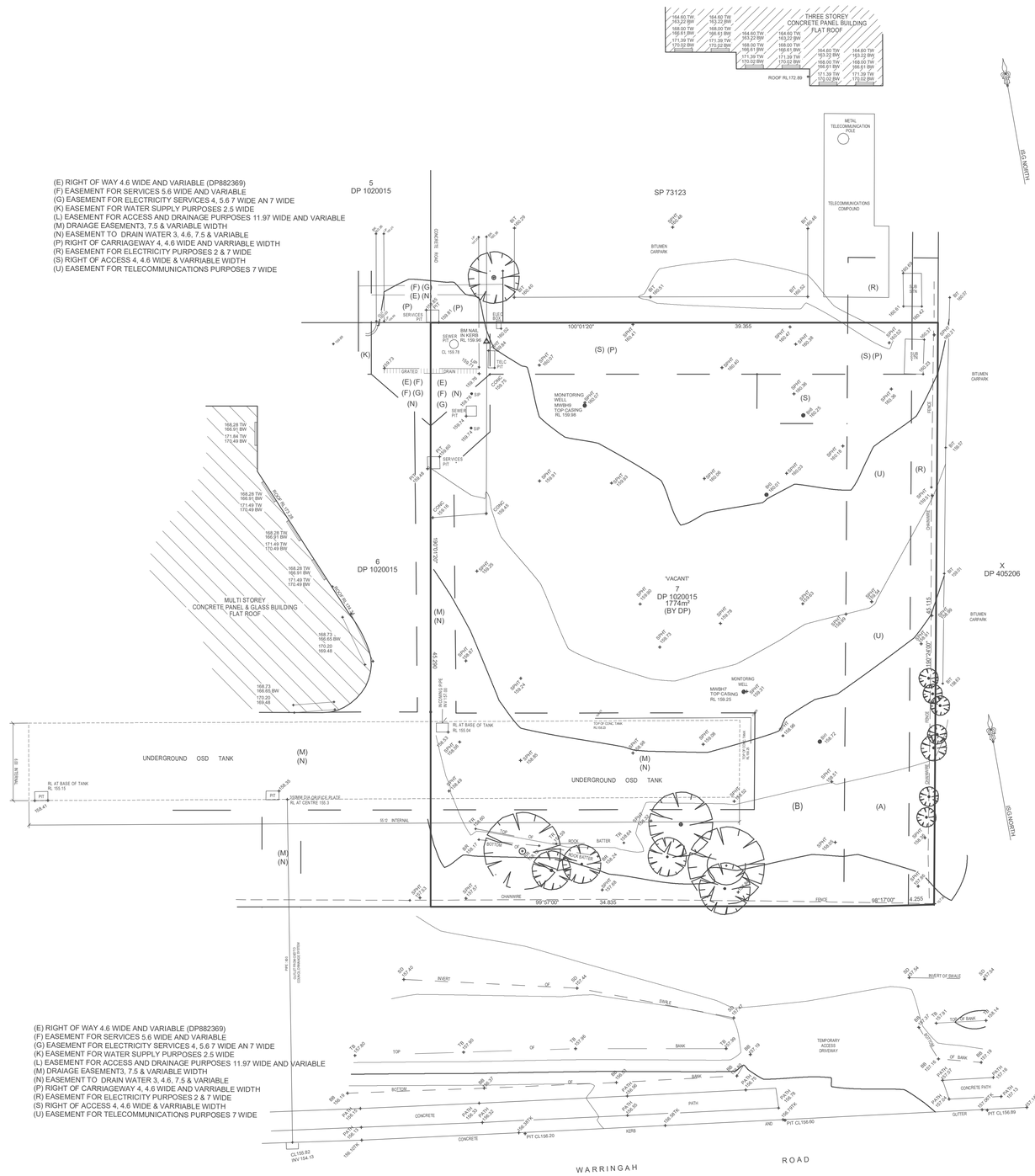
Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
SITE ANALYSIS PLAN

Project #:	Scale:	Drw:	Chd:
856	@A1	Author	Checker

Drawing #: DA-012
Rev: 3



1 Site - Survey
Scale: 1 : 200

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Draft DA Issue	30.08.19
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4	ISSUE FOR DA	04.12.19
5	REISSUE FOR DA	09.12.19

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NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client
GenesisCare
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Alexandria NSW 2015

Builder
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0 1 2 3 4 5 10
SCALE 1:200

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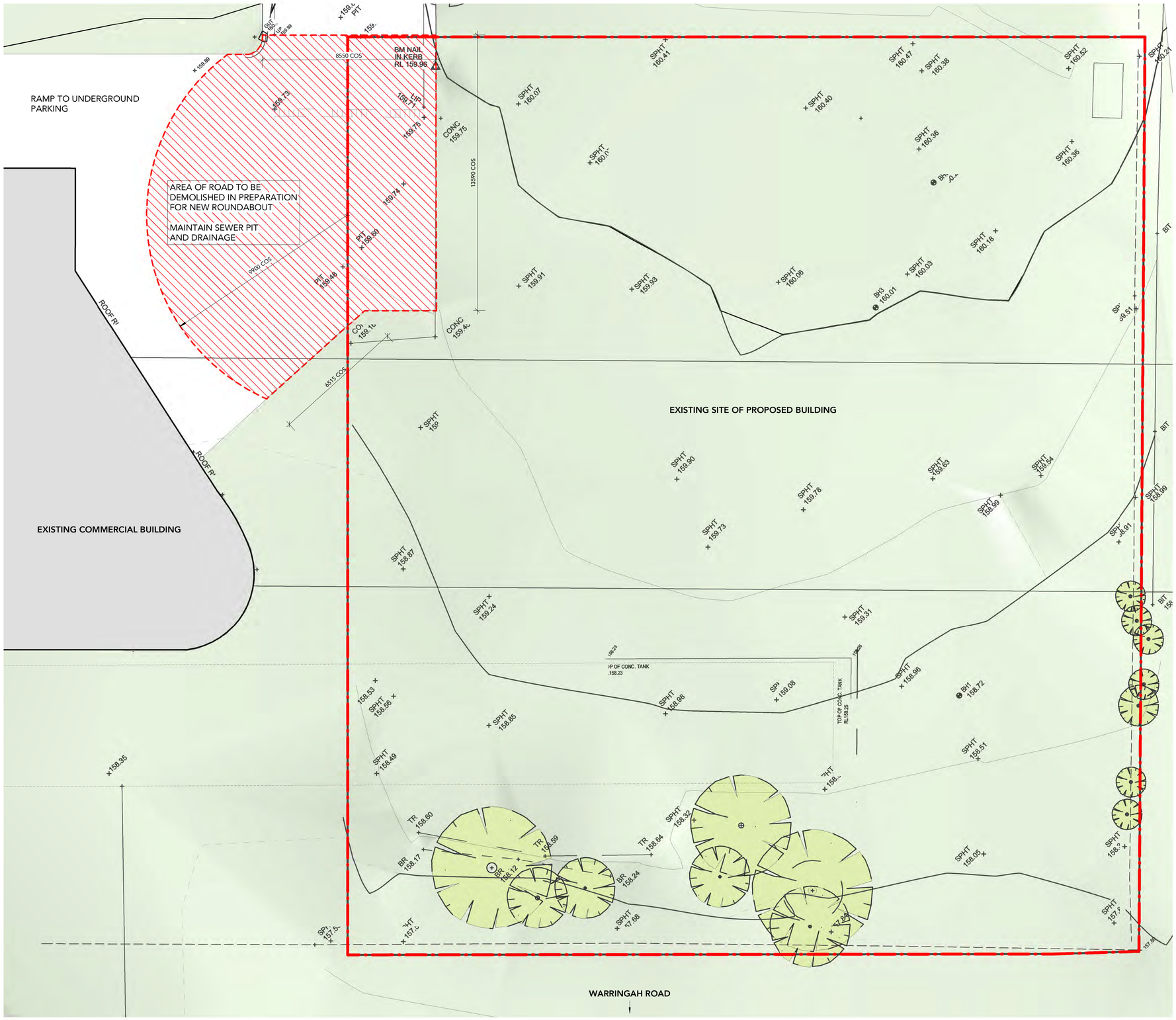
Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
SURVEY PLAN

Project #:	Scale:	Drw:	Chd:
856	1 : 200 @A1	Author	Checker

Drawing #: DA-015
Rev: 5



1 Site - Demolition
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Draft DA Issue	30.08.19
2	ISSUE FOR DA	05.09.19
3	ISSUE FOR DA	04.12.19
4	REISSUE FOR DA	09.12.19

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LEGENDS:

- PROPOSED WALLS & FLOORS
- NEIGHBOURING EXISTING BUILDINGS
- EXISTING PLANTING
- PROPOSED PLANTING
- DEMOLITION/EXCAVATION AREA

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client
GenesisCare
11/41-43 Bourke Rd
Alexandria NSW 2015

Builder
Erilyan
1/27 Hotham Parade
Artarmon NSW 2064

0 1 2 3 4 5
SCALE 1:100

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Reg Vic: 19340

Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
DEMOLITION PLAN

Project #:	Scale:	Drw:	Chd:
856	As indicated @A1	Author	Checker

Drawing #: DA-020
Rev: 4

34140 COS

1570 COS | 31045 COS | 1525 COS

4935 COS | 5160 COS | 30215 COS | 20115 COS

BM NAIL IN KERB RL 159.96

RAMP TO UNDERGROUND PARKING

AREA TO BE EXCAVATED FOR BASEMENT PARKING
FOR DEPTH PLEASE REFER TO SECTIONS

ALLOW TO PROTECT SERVICES DURING EXCAVATION AND CONSTRUCTION

EXISTING SITE OF PROPOSED BUILDING

EXISTING COMMERCIAL BUILDING

ROOF RI

WARRINGAH ROAD

TOP OF CONC. TANK RL158.25

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

1 Site - Excavation
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Draft DA Issue	30.08.19
2	ISSUE FOR DA	05.09.19
3	ISSUE FOR DA	04.12.19
4	REISSUE FOR DA	09.12.19

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LEGENDS:

- PROPOSED WALLS & FLOORS
- NEIGHBOURING EXISTING BUILDINGS
- EXISTING PLANTING
- PROPOSED PLANTING
- DEMOLITION/EXCAVATION AREA

Client
GenesisCare
11/41-43 Bourke Rd
Alexandria NSW 2015

Builder
Erilyan
1/27 Hotham Parade
Artarmon NSW 2064

0 1 2 3 4 5
SCALE 1:100

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Reg Vic: 19340

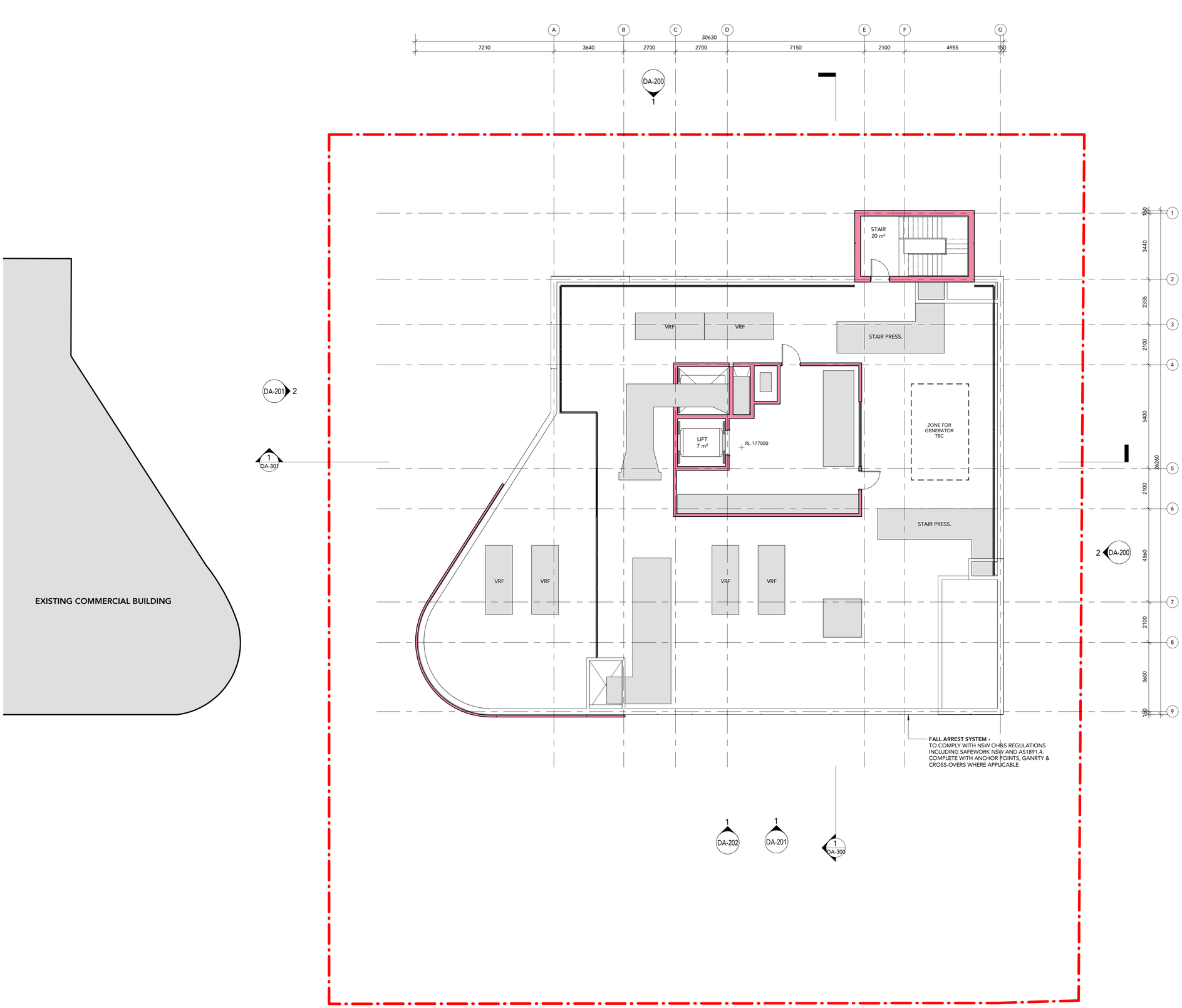
Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
EXCAVATION PLAN

Project #:	Scale:	Drw:	Chd:
856	As indicated @A1	Author	Checker

Drawing #: DA-021

Rev: 4



1 Floor Plan - Roof
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Draft DA Issue	30.08.19
3	ISSUE FOR DA	05.09.19
4	ISSUE FOR DA	04.12.19

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LEGENDS:

- PROPOSED WALLS & FLOORS
- NEIGHBOURING EXISTING BUILDINGS
- EXISTING PLANTING
- PROPOSED PLANTING
- DEMOLITION/EXCAVATION AREA

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client
GenesisCare
11/41-43 Bourke Rd
Alexandria NSW 2015

Builder
Erilyan
1/27 Hotham Parade
Artarmon NSW 2064

0 1 2 3 4 5
SCALE 1:100

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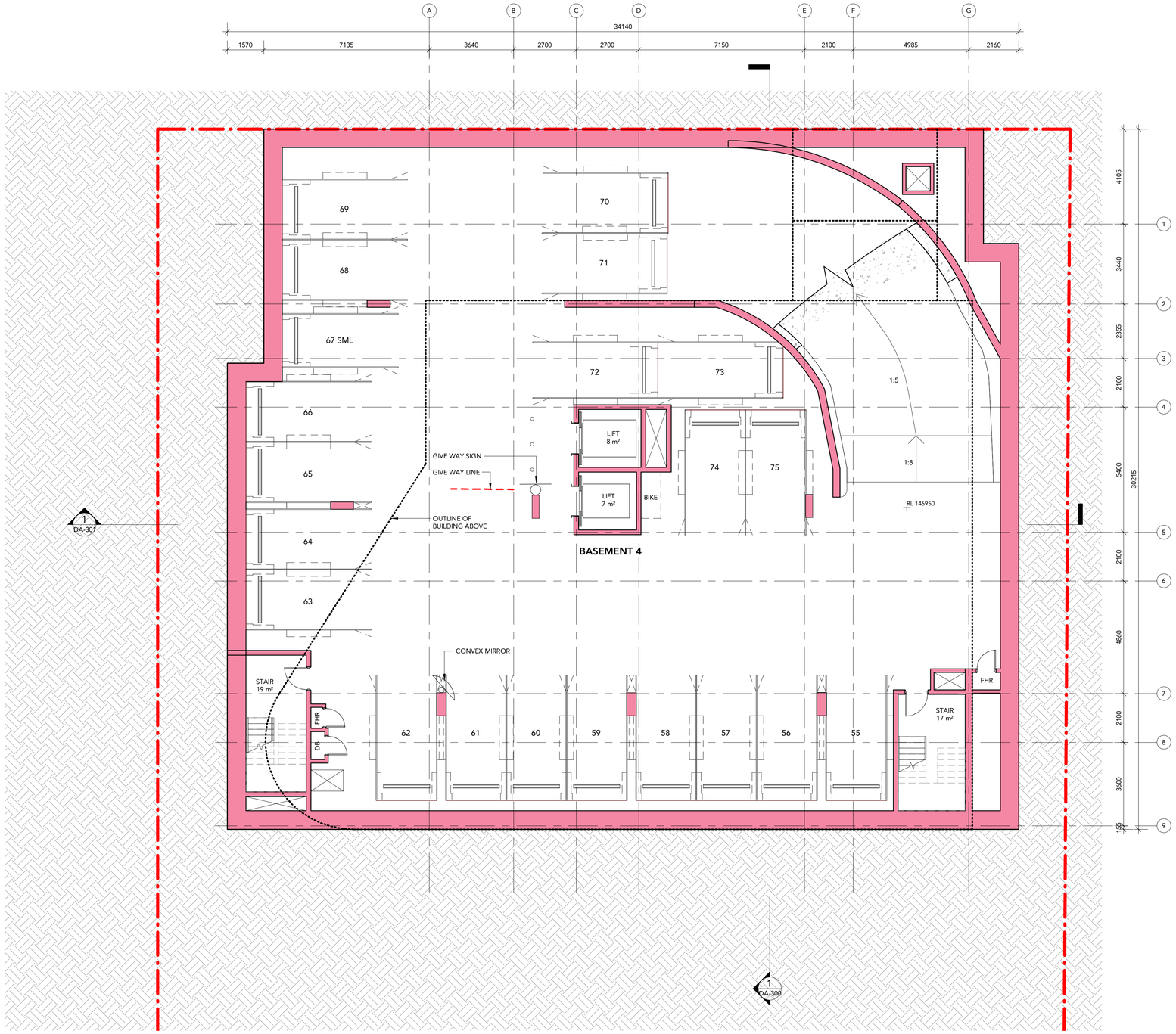
ABN: 72 104 833 507
Reg Vic: 19340

Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
ROOF PLAN

Project #:	Scale:	Drw:	Chd:
856	As indicated @A1	Author	Checker

Drawing #: DA-050
Rev: 4



1 Floor Plan - Basement 4
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	ISSUE FOR DA	04.12.19

DRAWING LEGEND:

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LEGENDS:

- PROPOSED WALLS & FLOORS
- NEIGHBOURING EXISTING BUILDINGS
- EXISTING PLANTING
- PROPOSED PLANTING
- DEMOLITION/EXCAVATION AREA

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client
GenesisCare
11/41-43 Bourke Rd
Alexandria NSW 2015

Builder
Erilyan
1/27 Hotham Parade
Artarmon NSW 2064

0 1 2 3 4 5
SCALE 1:100

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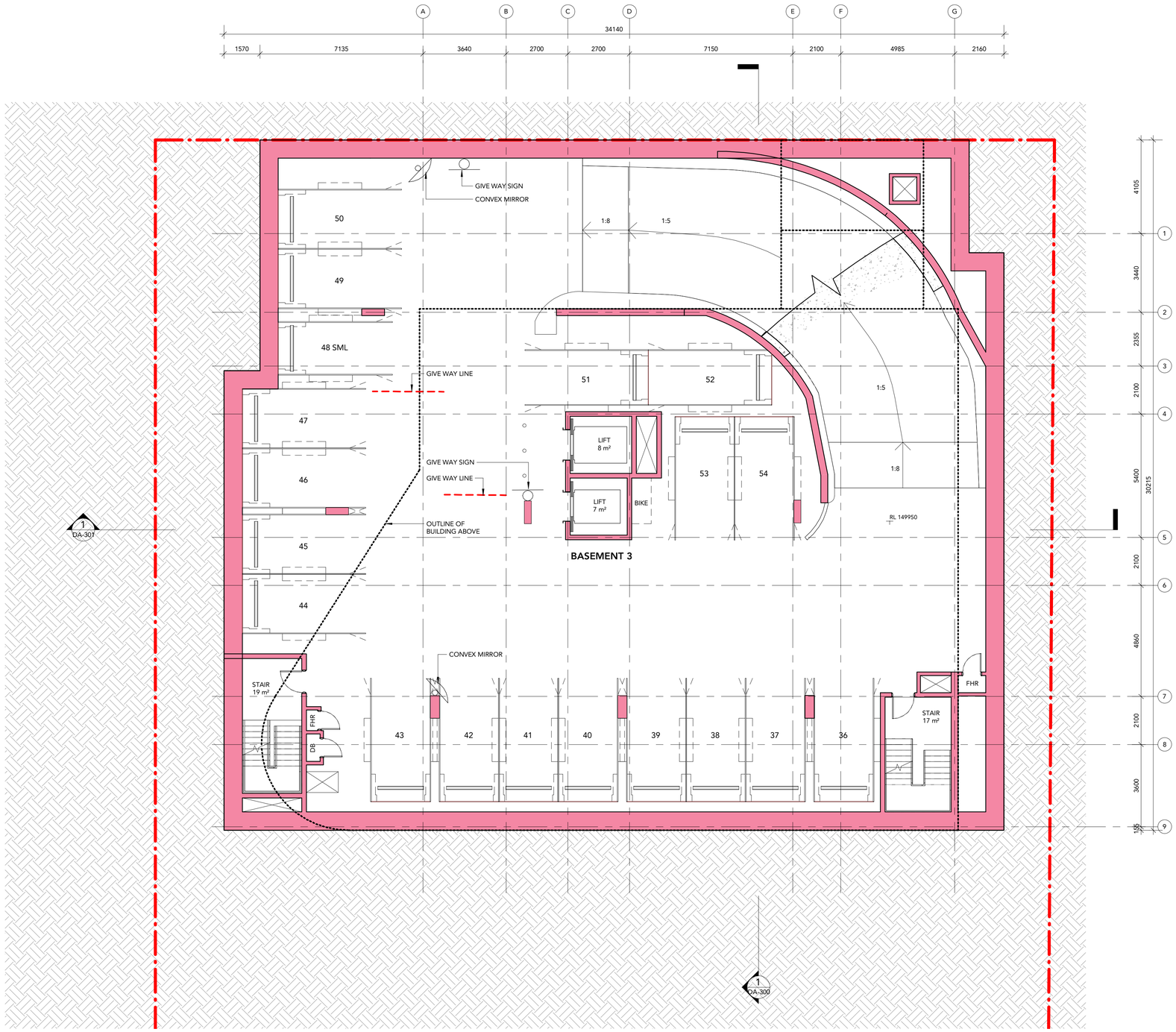
Reg Vic: 19340

Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
FLOOR PLAN - BASEMENT 4

Project #:	Scale:	Drw:	Ckd:
856	As indicated @A1	Author	Checker

Drawing #: DA-099
Rev: 1



1 Floor Plan - Basement 3
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Issue for Information	28.08.19
3	Draft DA Issue	30.08.19
4	ISSUE FOR DA	05.09.19
5	REISSUE FOR DA	27.11.19
6	ISSUE FOR DA	04.12.19

DRAWING LEGEND:

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LEGENDS:

- PROPOSED WALLS & FLOORS
- NEIGHBOURING EXISTING BUILDINGS
- EXISTING PLANTING
- PROPOSED PLANTING
- DEMOLITION/EXCAVATION AREA

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client
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11/41-43 Bourke Rd
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Builder
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0 1 2 3 4 5
SCALE 1:100

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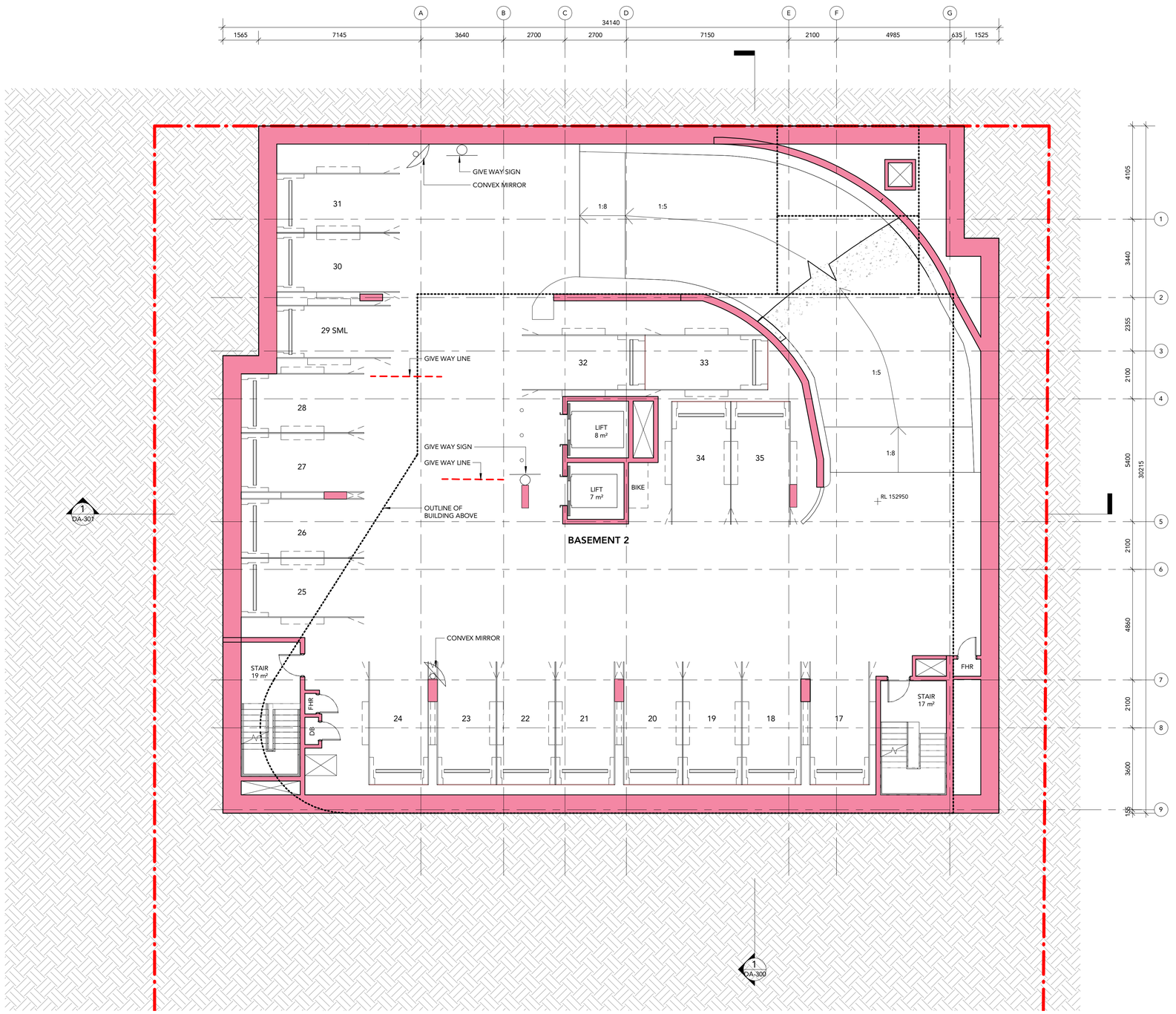
Reg Vic: 19340

Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
FLOOR PLAN - BASEMENT 3

Project #:	Scale:	Drw:	Chd:
856	As indicated @A1	Author	Checker

Drawing #: DA-100
Rev: 6



1 Floor Plan - Basement 2
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Issue for Information	28.08.19
3	Draft DA Issue	30.08.19
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6	ISSUE FOR DA	04.12.19

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LEGENDS:

- PROPOSED WALLS & FLOORS
- NEIGHBOURING EXISTING BUILDINGS
- EXISTING PLANTING
- PROPOSED PLANTING
- DEMOLITION/EXCAVATION AREA

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client
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Alexandria NSW 2015

Builder
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SCALE 1:100

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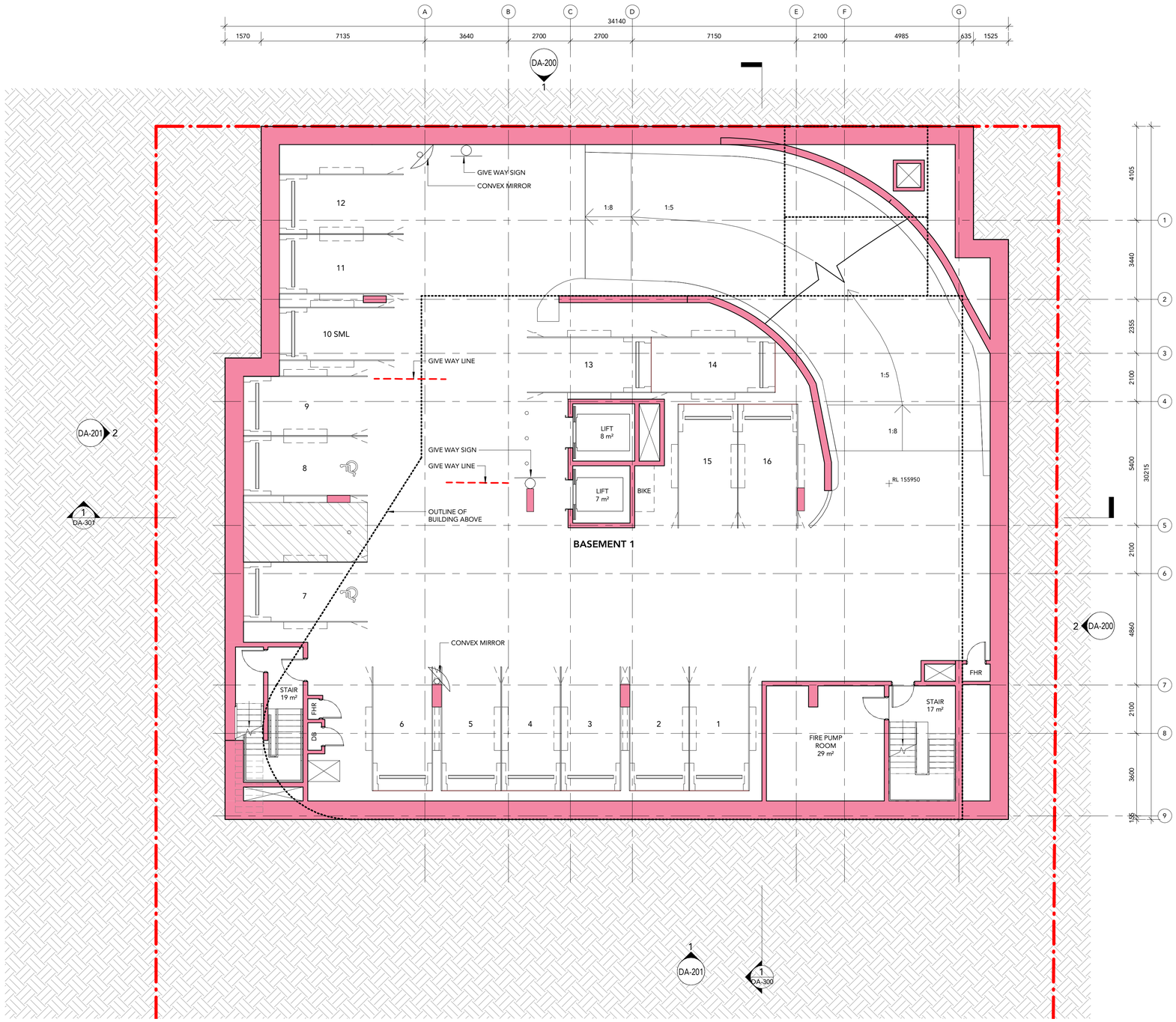
Reg Vic: 19340

Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
FLOOR PLAN - BASEMENT 2

Project #:	Scale:	Drw:	Ckd:
856	As indicated @A1	Author	Checker

Drawing #: DA-101
Rev: 6



1 Floor Plan - Basement 1
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Issue for Information	28.08.19
3	Draft DA Issue	30.08.19
4	ISSUE FOR DA	05.09.19
5	REISSUE FOR DA	27.11.19
6	ISSUE FOR DA	04.12.19

DRAWING LEGEND:

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LEGENDS:

- PROPOSED WALLS & FLOORS
- NEIGHBOURING EXISTING BUILDINGS
- EXISTING PLANTING
- PROPOSED PLANTING
- DEMOLITION/EXCAVATION AREA

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client
GenesisCare
11/41-43 Bourke Rd
Alexandria NSW 2015

Builder
Erilyan
1/27 Hotham Parade
Artarmon NSW 2064

0 1 2 3 4 5
SCALE 1:100

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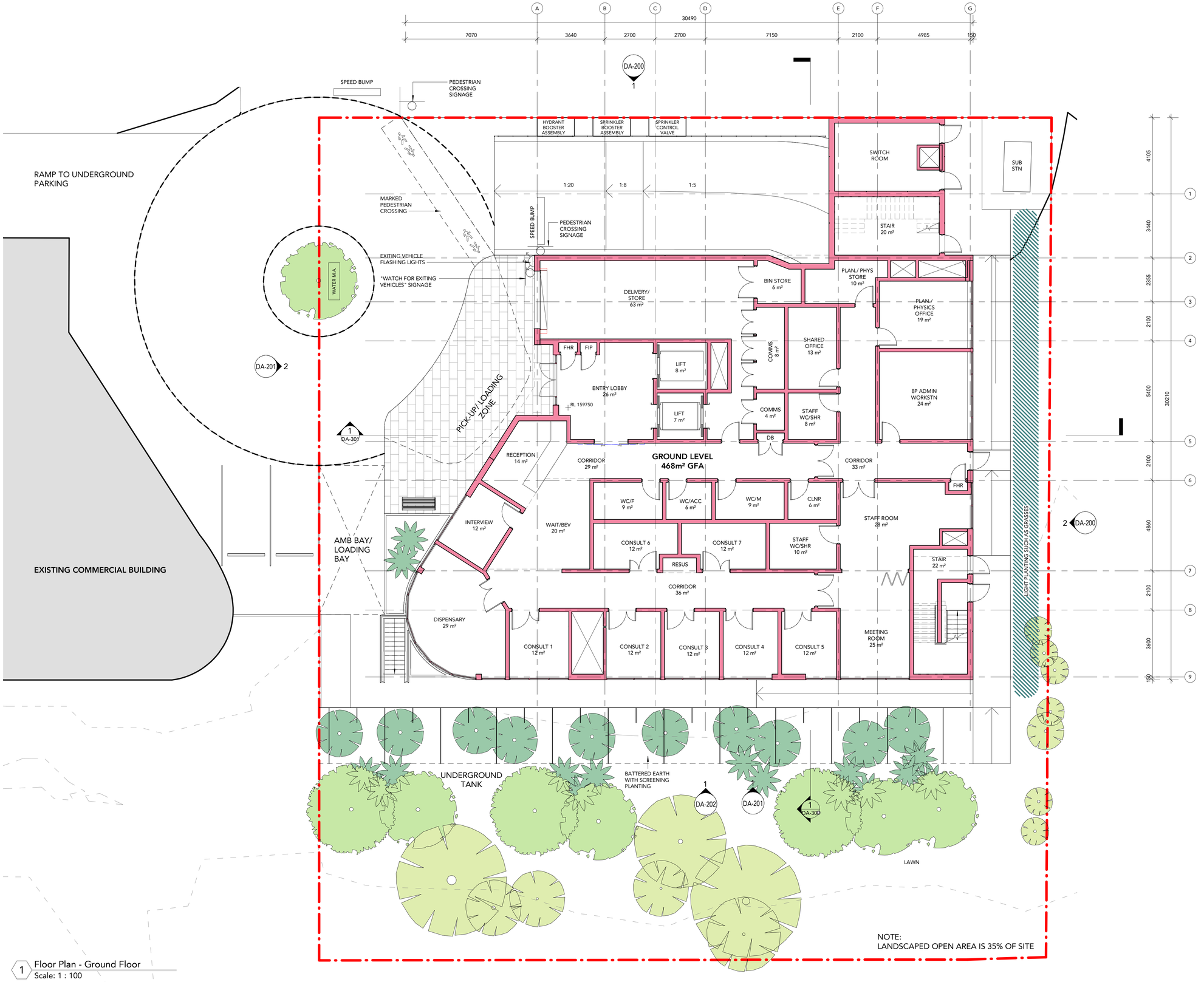
Reg Vic: 19340

Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
FLOOR PLAN - BASEMENT 1

Project #:	Scale:	Dwg:	Chd:
856	As indicated @A1	Author	Checker

Drawing #: DA-102 Rev: 6



1 Floor Plan - Ground Floor
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
2	Issue for Information	28.08.19
3	Draft DA Issue	30.08.19
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NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

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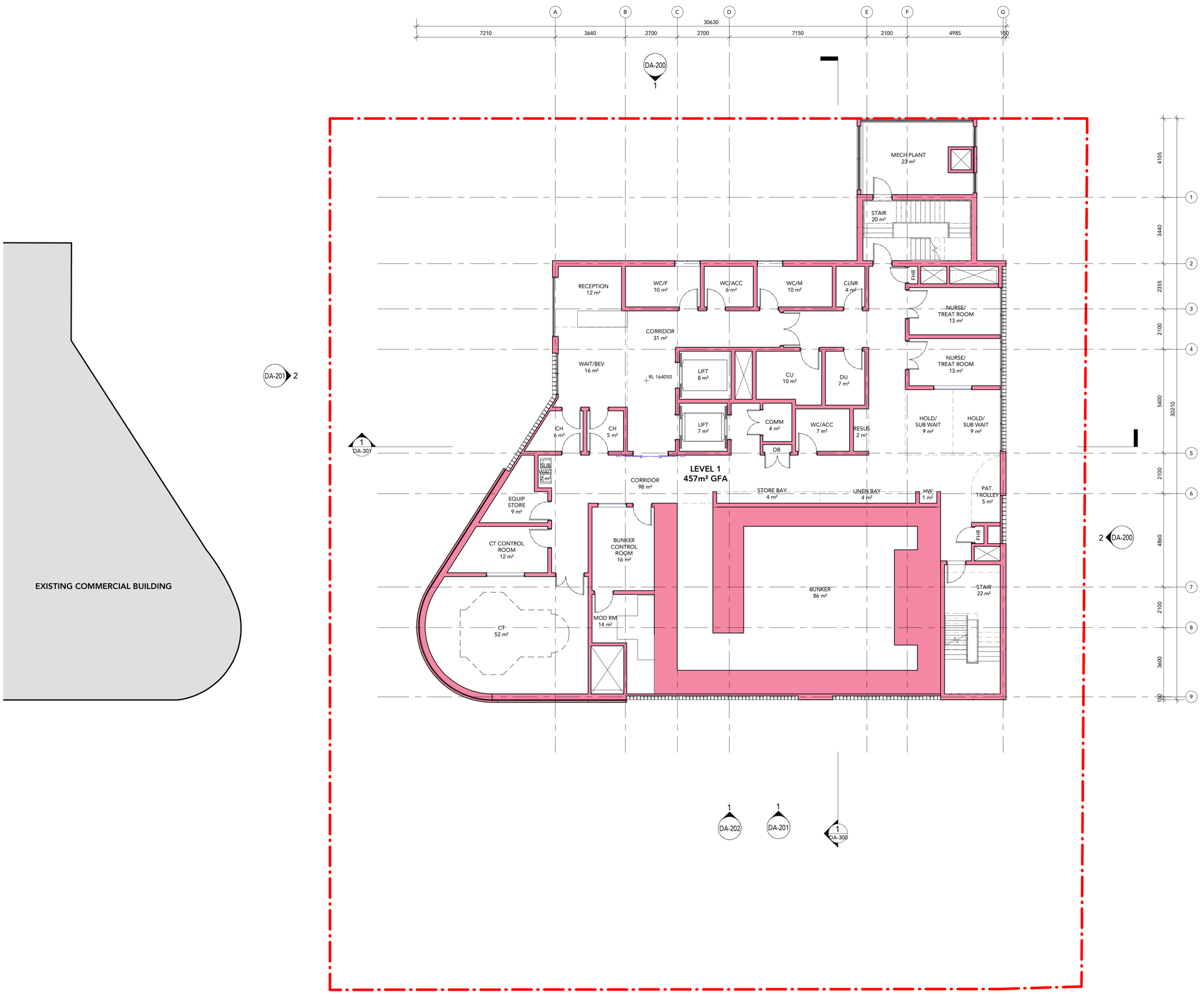
Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
FLOOR PLAN - GROUND

Project #:	Scale:	Drw:	Chk:
856	As indicated @A1	Author	Checker

Drawing #: DA-103
Rev: 6



1 Floor Plan - Level 1
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

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NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

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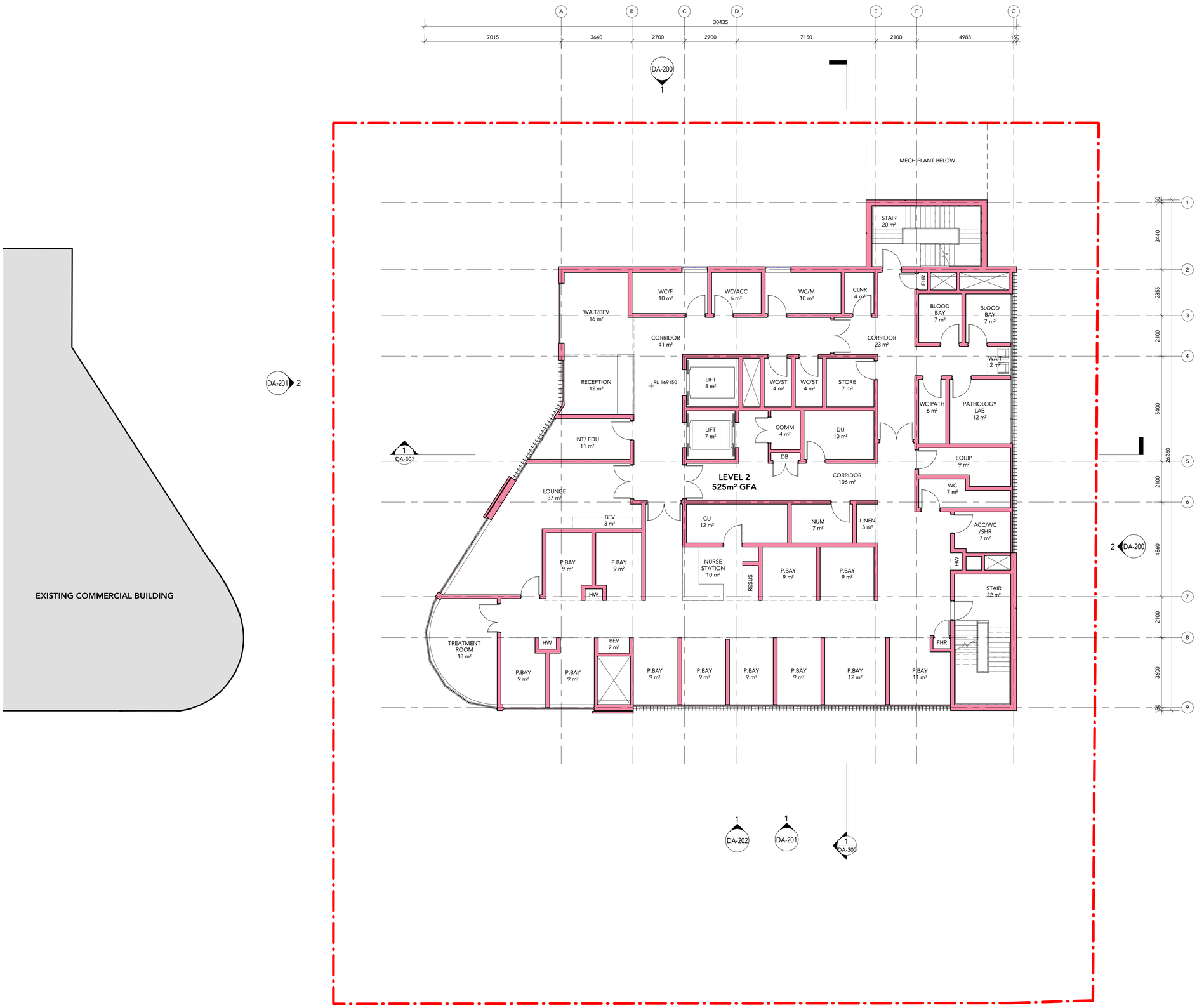
Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
FLOOR PLAN - LEVEL 1

Project #:	Scale:	Drw:	Chd:
856	As indicated @A1	Author	Checker

Drawing #: DA-104
Rev: 4



1 Floor Plan - Level 2
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
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LEGENDS:

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- NEIGHBOURING EXISTING BUILDINGS
- EXISTING PLANTING
- PROPOSED PLANTING
- DEMOLITION/EXCAVATION AREA

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client
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Project:
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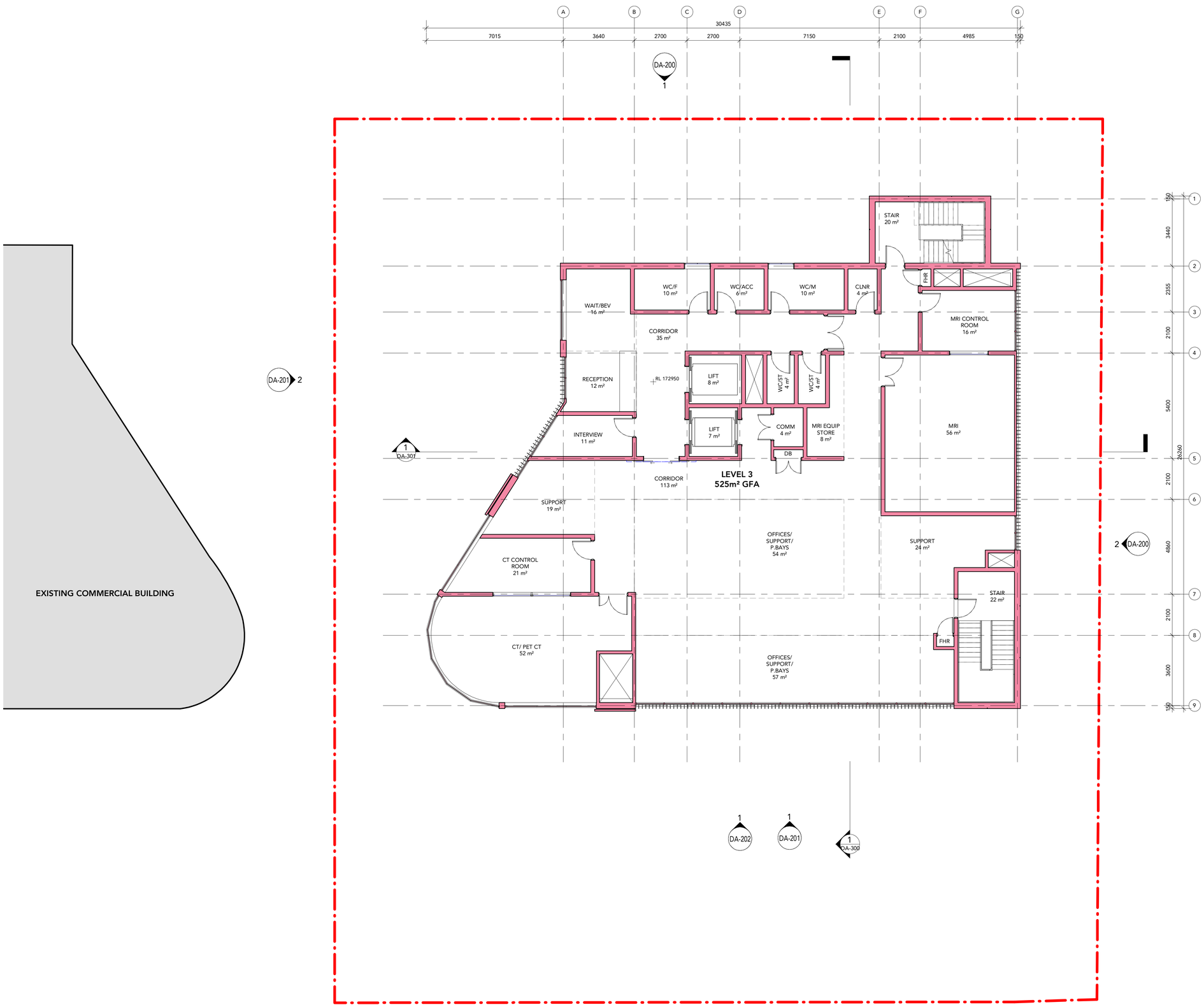
Warringah Road & Wakehurst Parkway

Title:
FLOOR PLAN - LEVEL 2

Project #:	Scale:	Drw:	Chd:
856	As indicated @A1	Author	Checker

Drawing #: DA-105
Rev: 4



1 Floor Plan - Level 3
Scale: 1 : 100

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Preliminary DA Issue	23.08.19
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LEGENDS:

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- NEIGHBOURING EXISTING BUILDINGS
- EXISTING PLANTING
- PROPOSED PLANTING
- DEMOLITION/EXCAVATION AREA

NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

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Project:
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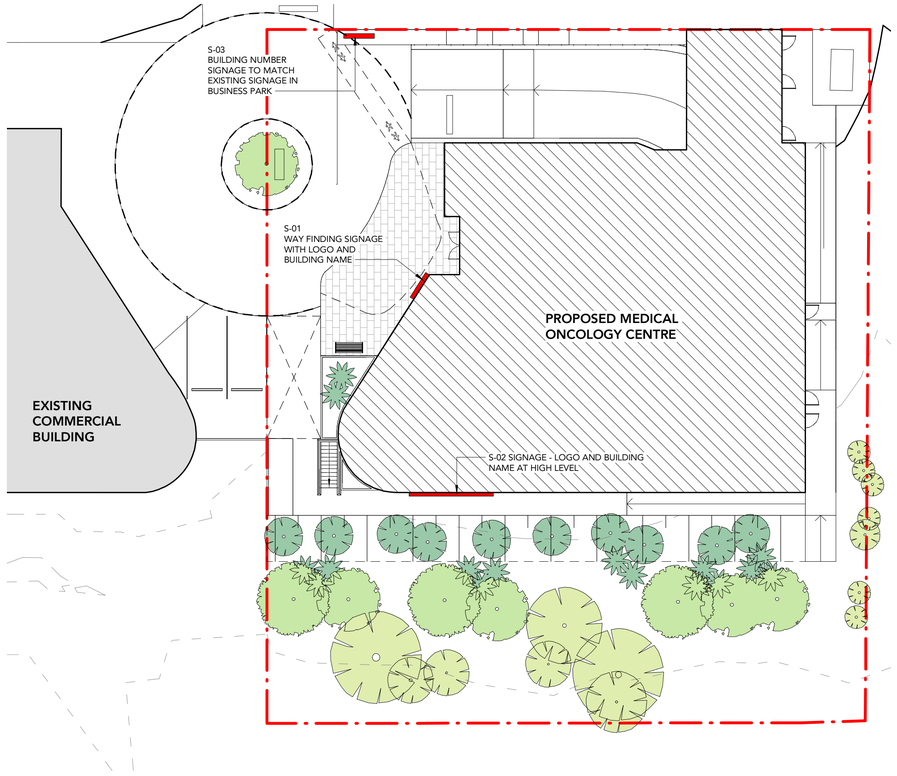
Warringah Road & Wakehurst Parkway

Title:
FLOOR PLAN - LEVEL 3

Project #:	Scale:	Drw:	Chd:
856	As indicated @A1	Author	Checker

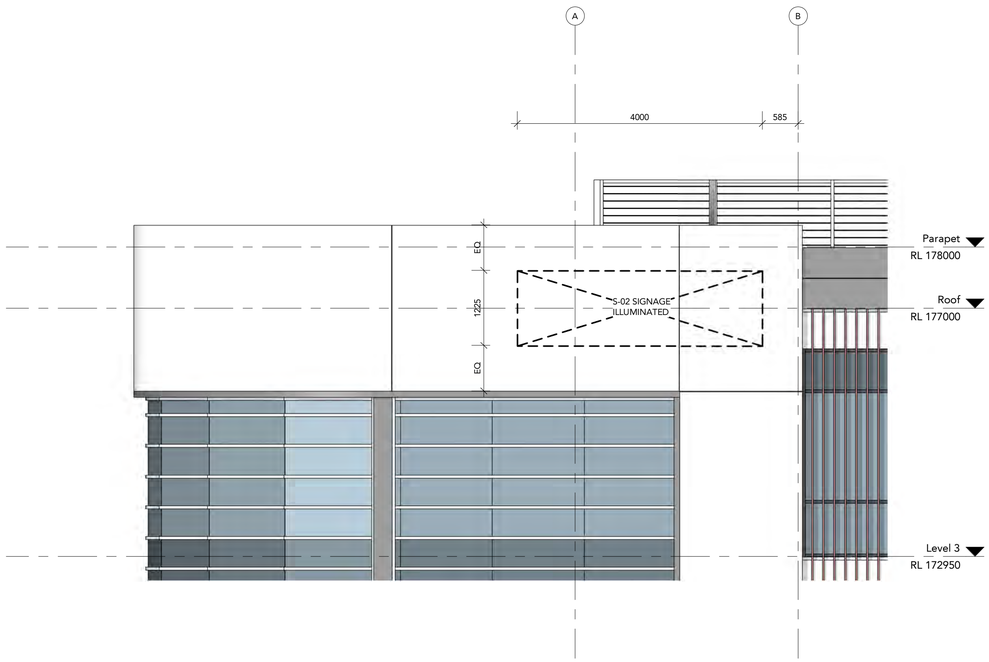
Drawing #: DA-106
Rev: 4



1 Floor Plan - Signage
Scale: 1 : 200

S-01 SIGNAGE - ILLUMINATED LOGO, IN WHITE 1500Wx460Hmm
S-02 SIGNAGE - ILLUMINATED LOGO, IN WHITE 4000Wx1225Hmm

S-03 SIGNAGE - BUSINESS PARK
BUILDING NUMBER



2 South Elevation - Signage
Scale: 1 : 50

3 West Elevation - Signage
Scale: 1 : 50

DRAWING STATUS:

DEVELOPMENT APPLICATION

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0 1 2 3 4 5 10
SCALE 1:200

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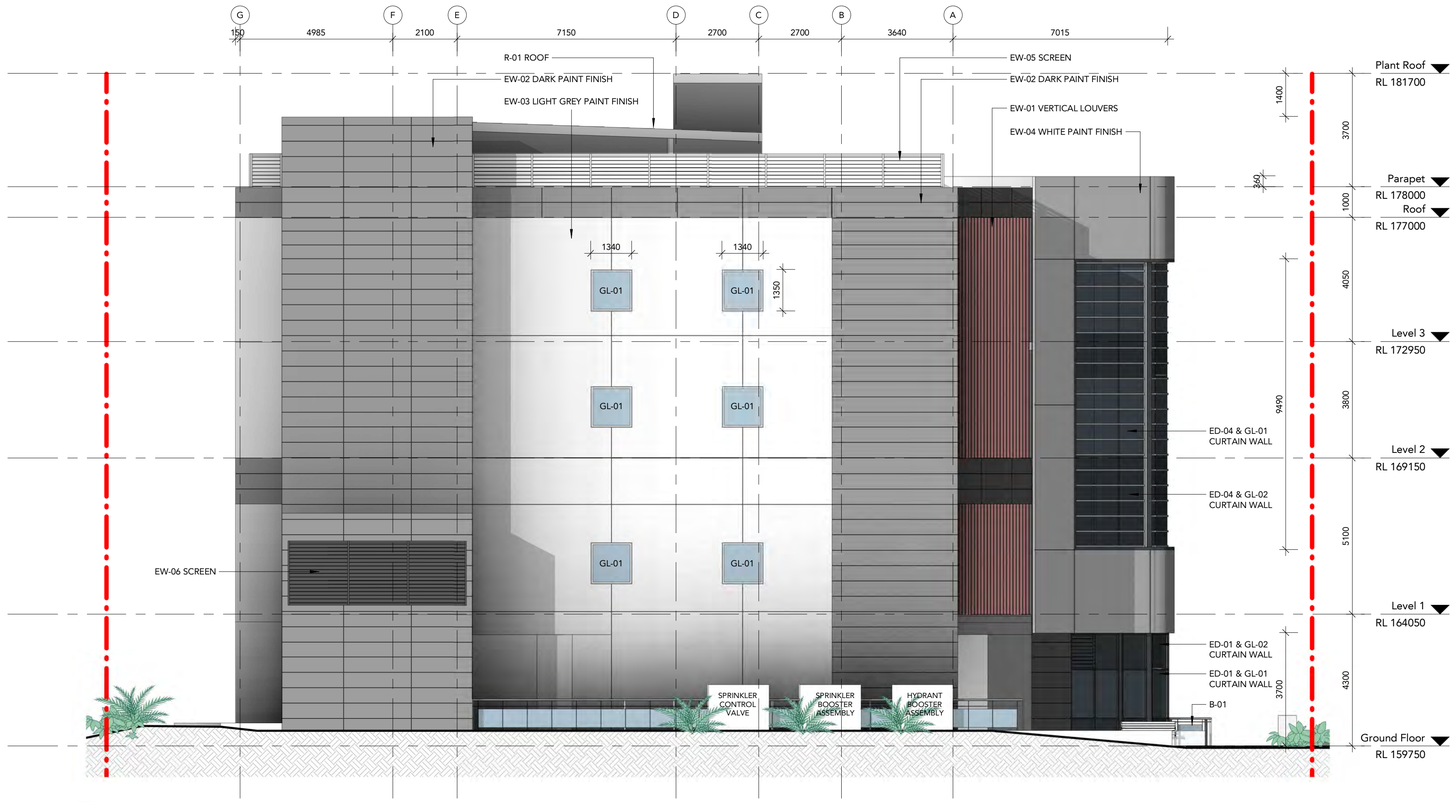
Project:
Project Maui Oncology
Warringah Road & Wakehurst
Parkway

Title:
FLOOR PLAN - SIGNAGE

Project #:	Scale:	Drn:	Chk:
856	As indicated @A1	Author	Checker

Drawing #: DA-120
Rev: 4



1 North Elevation
Scale: 1 : 100

2 East Elevation
Scale: 1 : 100

DRAWING STATUS:

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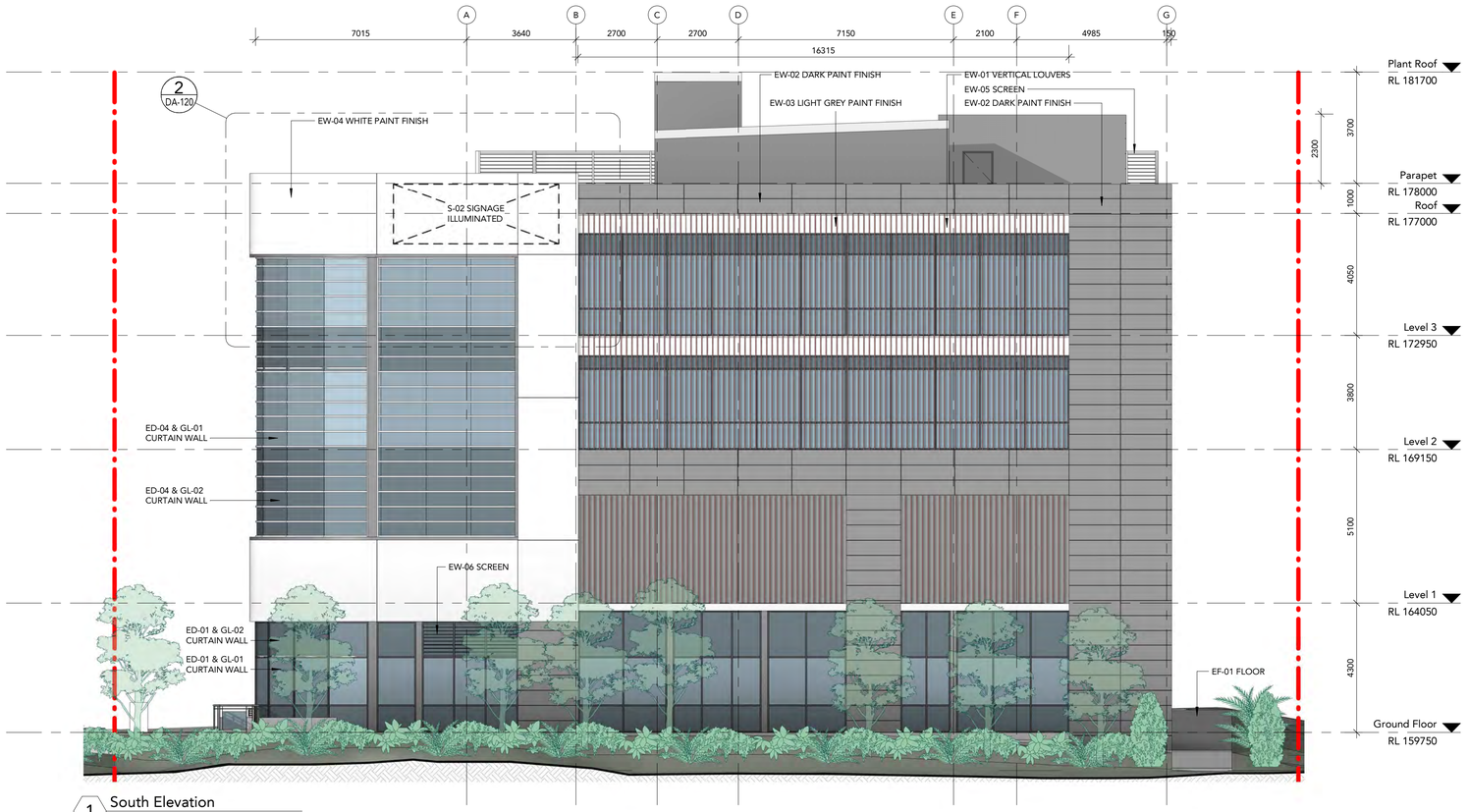
Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

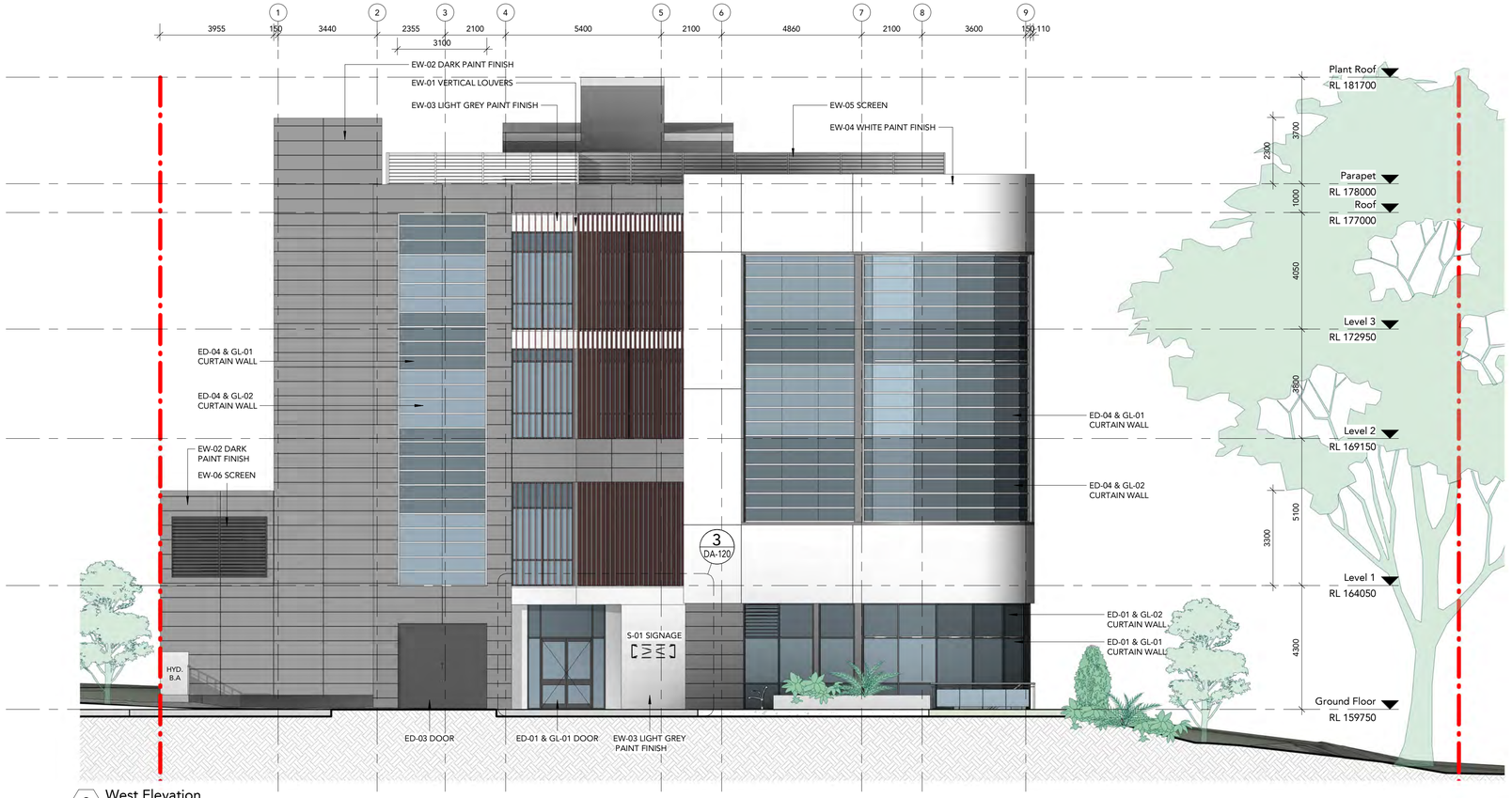
Title:
ELEVATIONS - SHEET 1

Project #:	Scale:	Drw:	Chk:
856	1 : 100 @A1	Author	Checker

Drawing #: DA-200
Rev: 4



1 South Elevation
Scale: 1 : 100



2 West Elevation
Scale: 1 : 100

DRAWING STATUS:

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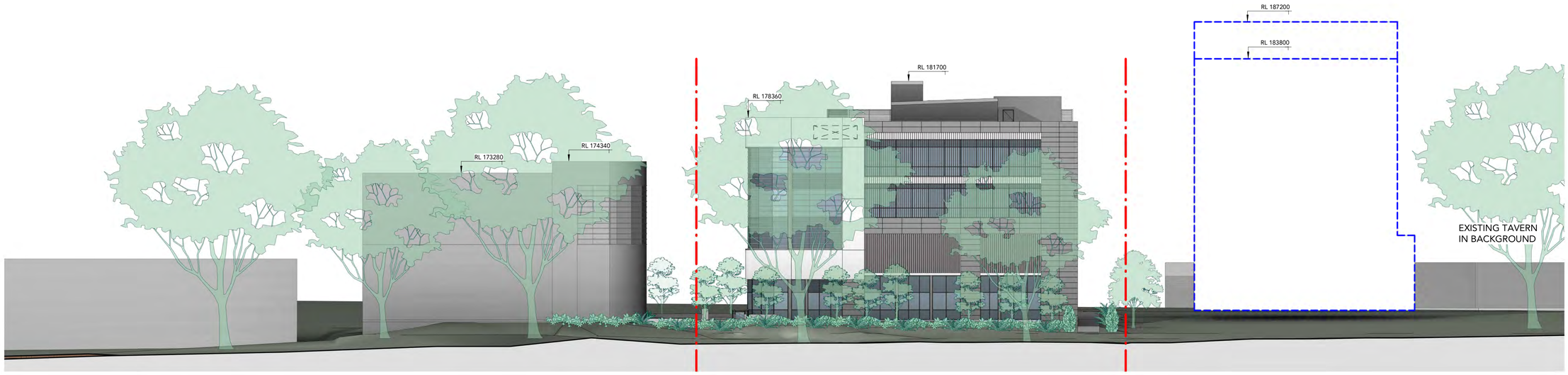
Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
ELEVATIONS - SHEET 2

Project #:	Scale:	Drw:	Chk:
856	1 : 100 @A1	Author	Checker

Drawing #: DA-201
Rev: 4



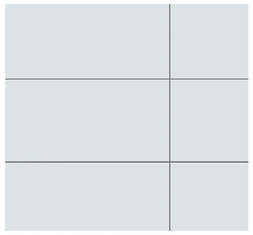
1 South Elevation - Warringah Road Streetscape
Scale: 1 : 200

EXTERNAL FINISHES


EW-01 VERTICAL LOUVERED GLADDING - TIMBER LOOK


EW-02 DARK GREY PAINT FINISH

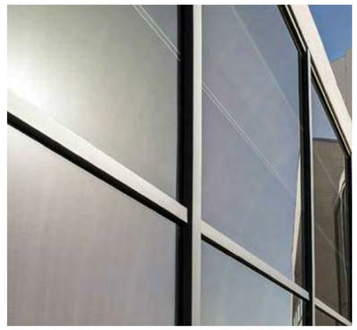

EW-03 LIGHT GREY PAINT FINISH

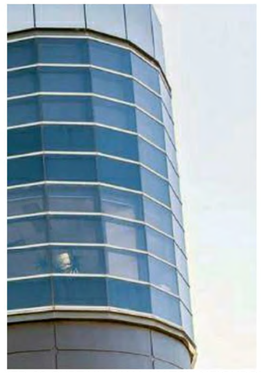

EW-04 WHITE PAINT FINISH


EW-05 DARK GREY LOUVERED SCREEN/ PANELS


EW-06 LIGHT GREY LOUVERED SCREEN


R-01 LIGHT GREY METAL ROOF


ED-01 CURTAIN WALL WITH A MIXTURE OF DARK TINTED GLASS PANELS (GL-01) AND OPAQUE PANELS (GL-02)


ED-02 CURTAIN WALL MATCH NEIGHBOURING BUILDING WITH A MIXTURE OF DARK TINTED GLASS PANELS (GL-01) AND OPAQUE PANELS (GL-02)

DRAWING STATUS:

DEVELOPMENT APPLICATION

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Project:
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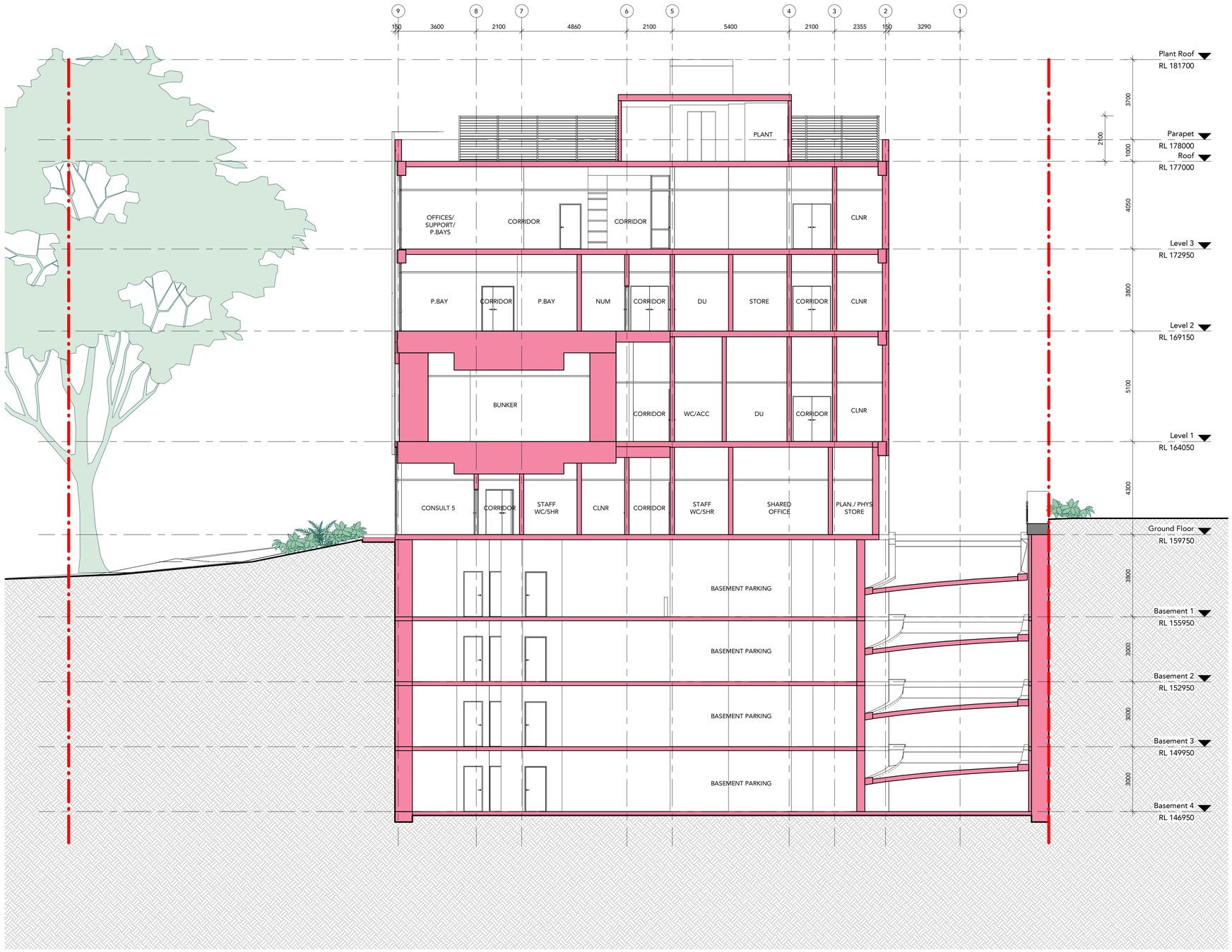
Warringah Road & Wakehurst Parkway

Title:
ELEVATIONS - SHEET 3

Project #:	Scale:	Drw:	Chd:
856	1 : 200 @A1	Author	Checker

Drawing #: DA-202
Rev: 3



1 Section 1
Scale: 1 : 100

NOTE:
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DRAWING STATUS:

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Project:
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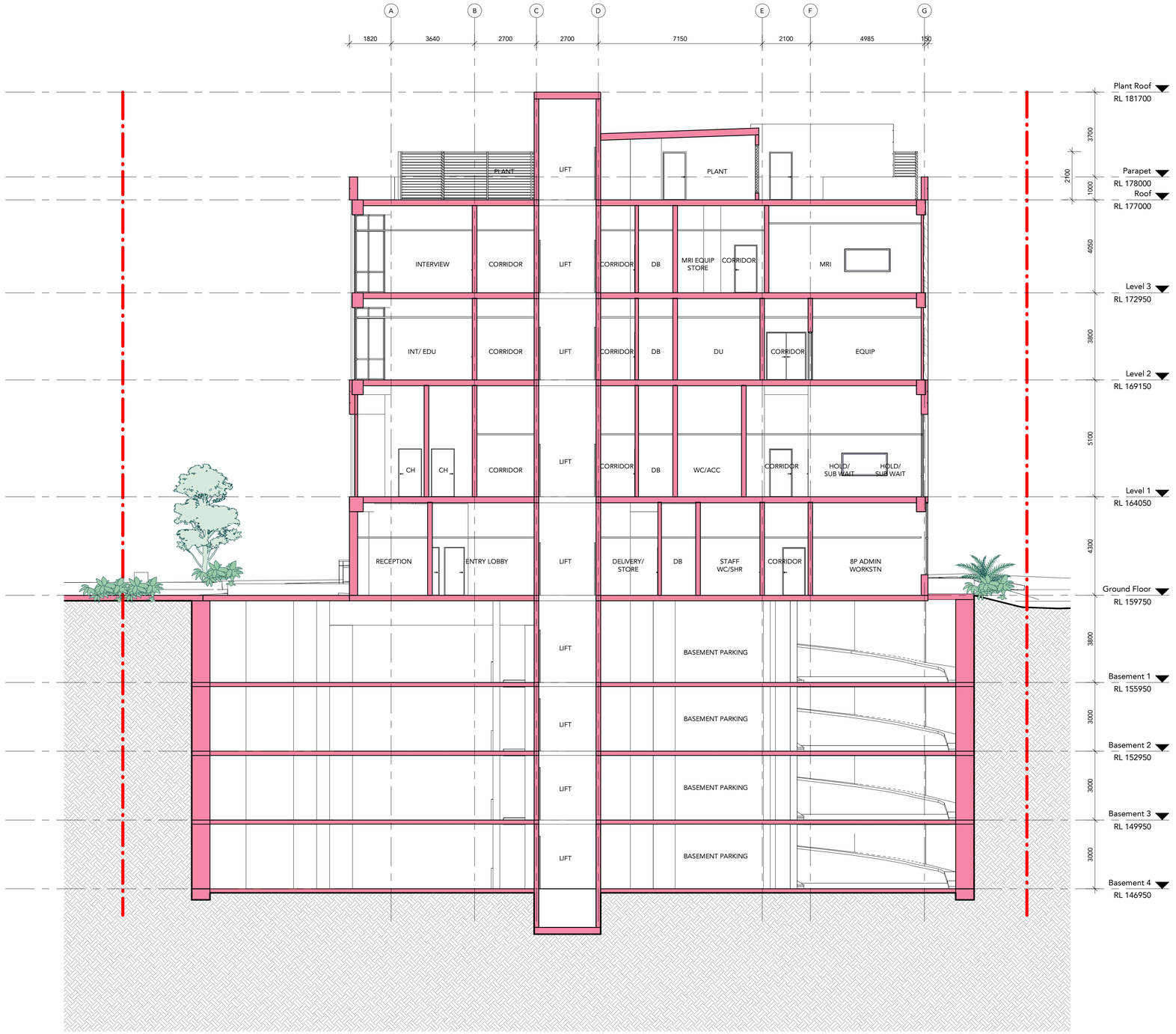
Title:
SECTIONS - SHEET 1

Project #:	Scale:	Drw:	Ckd:
856	1 : 100 @A1	Author	Checker

Drawing #: DA-300
Rev: 5



1 Section 2
Scale: 1 : 100

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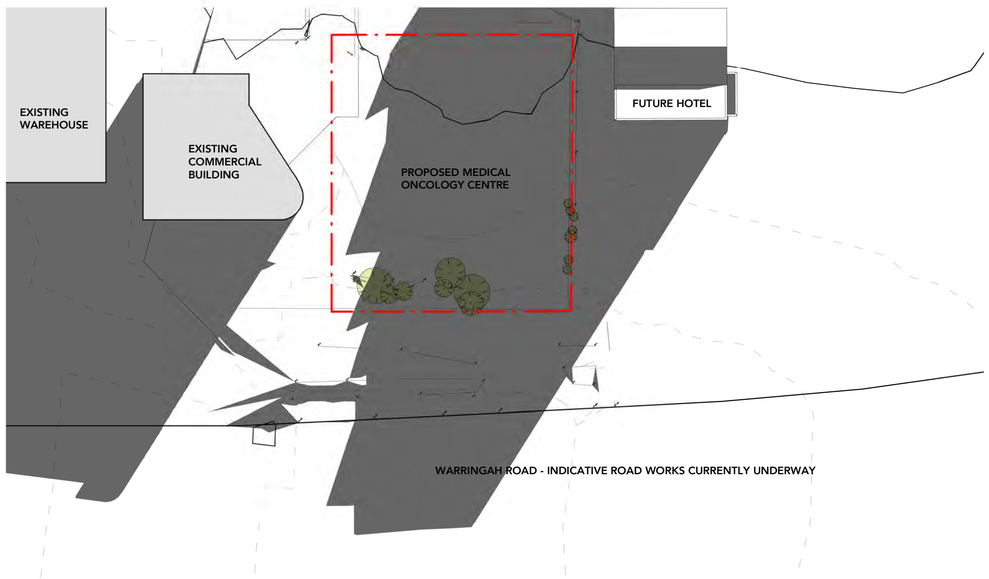
Project
Project Maui Oncology
Warringah Road & Wakehurst Parkway

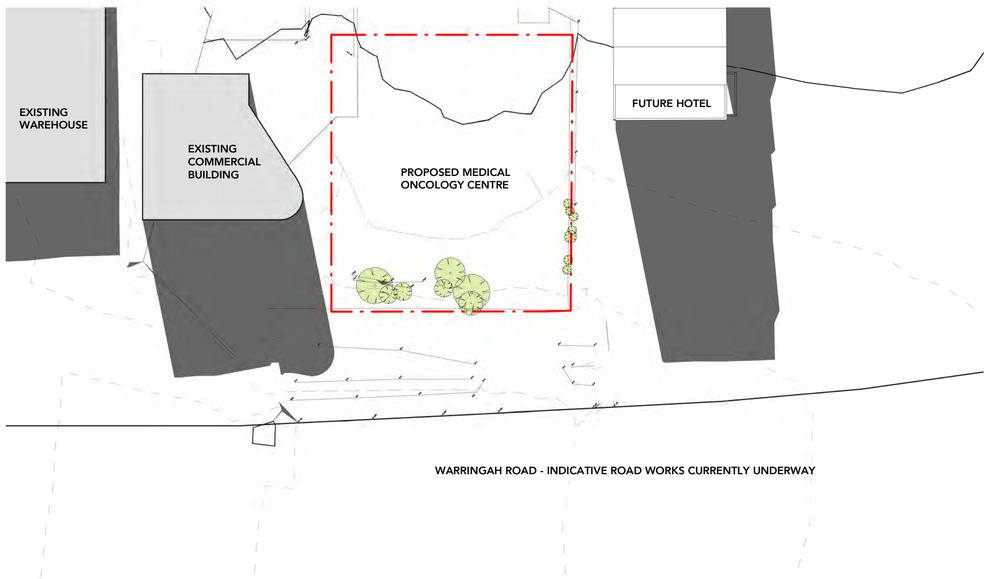
Title
SECTIONS - SHEET 2

Project #:	Scale:	Drw:	Chd:
856	1 : 100 @A1	Author	Checker

Drawing #: DA-301
Rev: 5



1 Shadow Diagram - 21st June 9am Existing
N.T.S



2 Shadow Diagram - 21st June 12pm Existing
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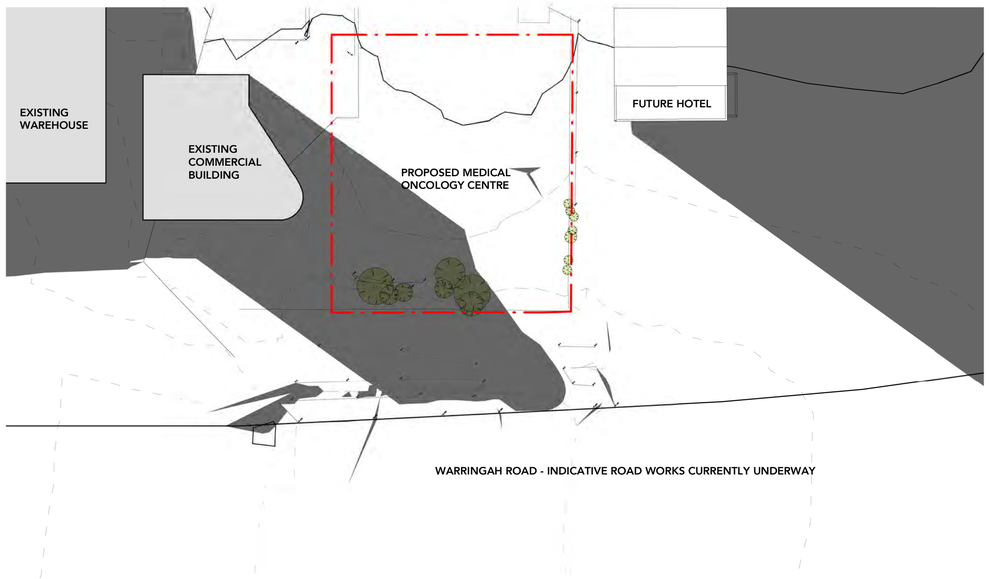

3 Shadow Diagram - 21st June 3pm Existing
N.T.S

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Draft DA Issue	30.08.19
2	ISSUE FOR DA	05.09.19
3	ISSUE FOR DA	04.12.19

DRAWING LEGEND:

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NOTE: EASEMENTS SUBJECT TO FINAL SURVEY

Client
GenesisCare
11/41-43 Bourke Rd
Alexandria NSW 2015

Builder
Erilyan
1/27 Hotham Parade
Artarmon NSW 2064

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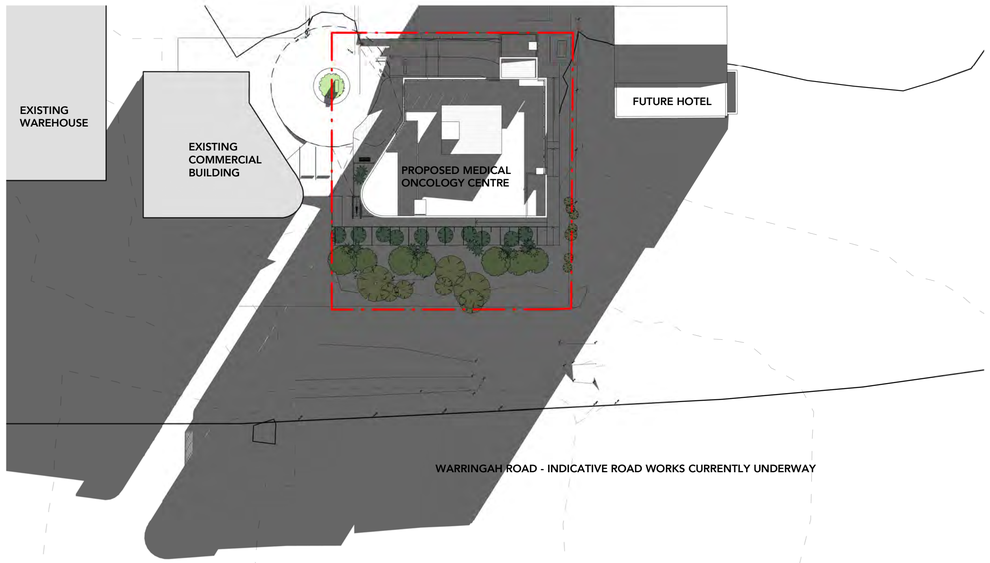
ABN: 72 104 833 507
Reg Vic: 19340

Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
SHADOW STUDIES - SHEET 1

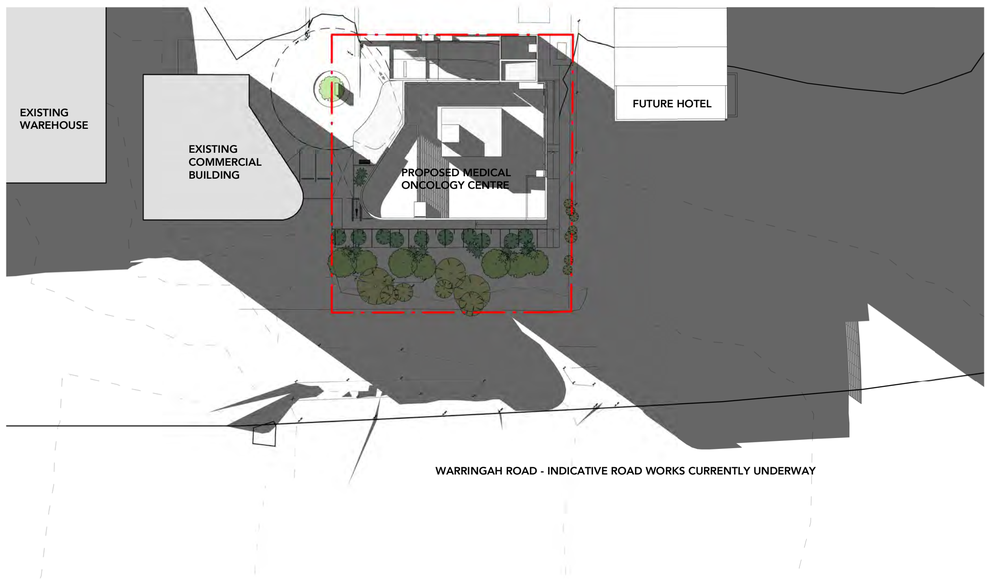
Project #:	Scale:	Org:	Chk:
856	1 : 500 @A1	Author	Checker

Drawing #: DA-800
Rev: 3



1 Shadow Diagram - 21st June 9am with Future Hotel
N.T.S

2 Shadow Diagram - 21st June 12pm with Future Hotel
N.T.S



3 Shadow Diagram - 21st June 3pm with Future Hotel
N.T.S

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Draft DA Issue	30.08.19
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0 1 2 3 4 5
SCALE 1:100

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Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
SHADOW STUDIES - SHEET 2

Project #	Scale	Orig.	Chkd.
856	1 : 500 @A1	Author	Checker

Drawing #: DA-801
Rev: 4

IMAGE 1 - VIEW FROM WARRINGAH ROAD
NOTE: EXISTING AND FUTURE BUILDINGS AND FINISHES ARE INDICATIVE BASED ON INFORMATION AVAILABLE

IMAGE 2 - VIEW FROM BUSINESS PARK
NOTE: EXISTING AND FUTURE BUILDINGS AND FINISHES ARE INDICATIVE BASED ON INFORMATION AVAILABLE

DRAWING STATUS:

DEVELOPMENT APPLICATION

Rev	Revision Description	Date
1	Draft DA Issue	30.08.19
2	ISSUE FOR DA	05.09.19
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4	ISSUE FOR DA	04.12.19

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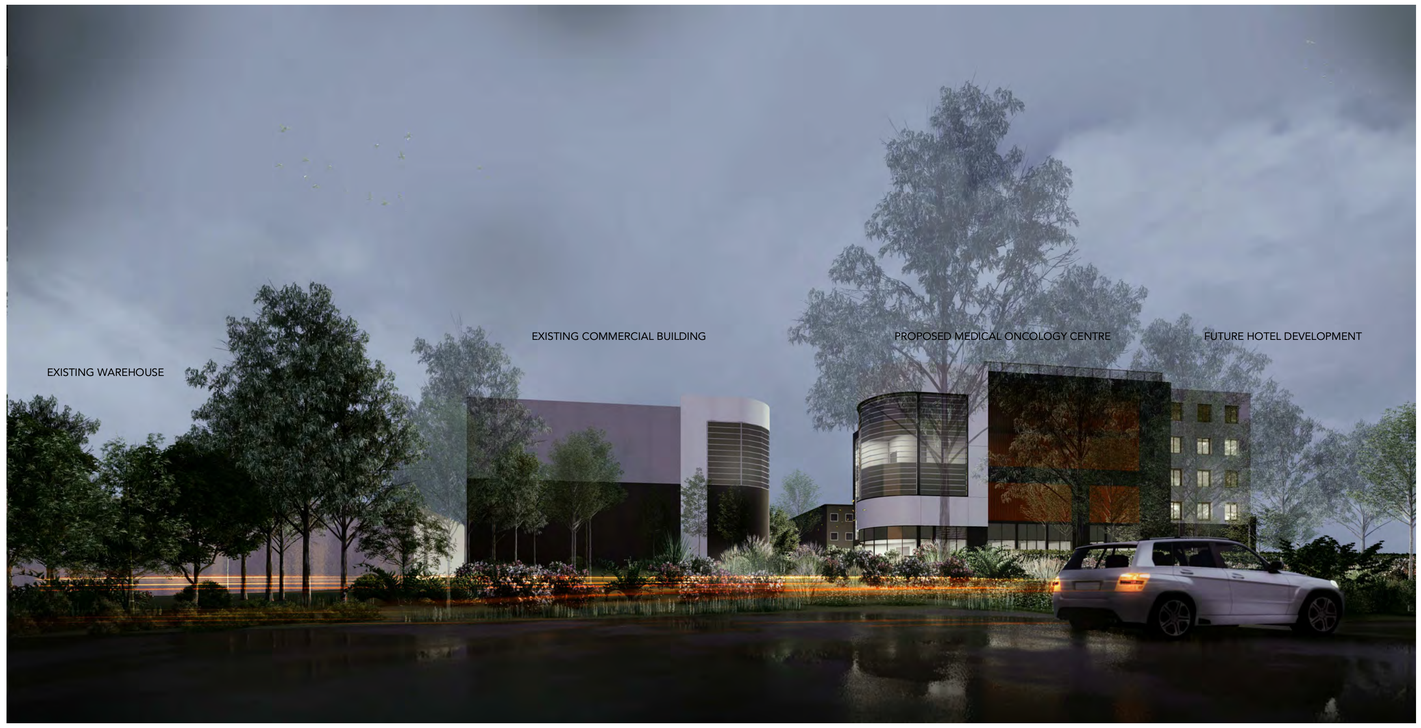
Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
3D VIEWS

Project #:	Scale:	Drw:	Chk:
856	@A1	Author	Checker

Drawing #: DA-900
Rev: 4



PHOTOMONTAGE - VIEW 1 FROM WARRINGAH ROAD
NOTE: EXISTING AND FUTURE BUILDINGS AND FINISHES ARE INDICATIVE BASED ON INFORMATION AVAILABLE

PHOTOMONTAGE - VIEW 2 FROM WARRINGAH ROAD
NOTE: EXISTING AND FUTURE BUILDINGS AND FINISHES ARE INDICATIVE BASED ON INFORMATION AVAILABLE

DRAWING STATUS:

DEVELOPMENT APPLICATION

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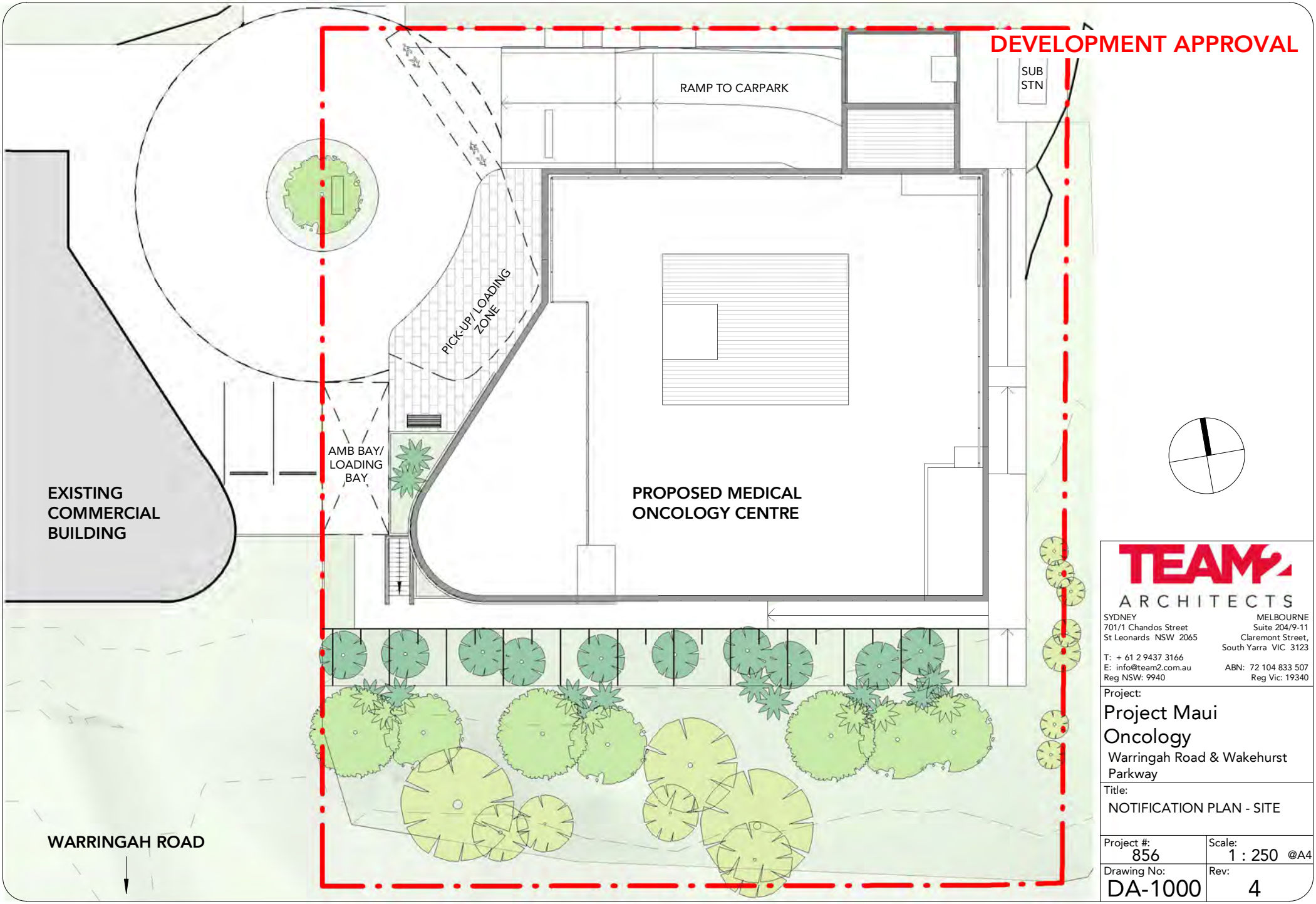
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
PHOTOMONTAGE

Project #:	Scale:	Drw:	Chd:
856	@A1	Author	Checker

Drawing #: DA-901
Rev: 4

DEVELOPMENT APPROVAL



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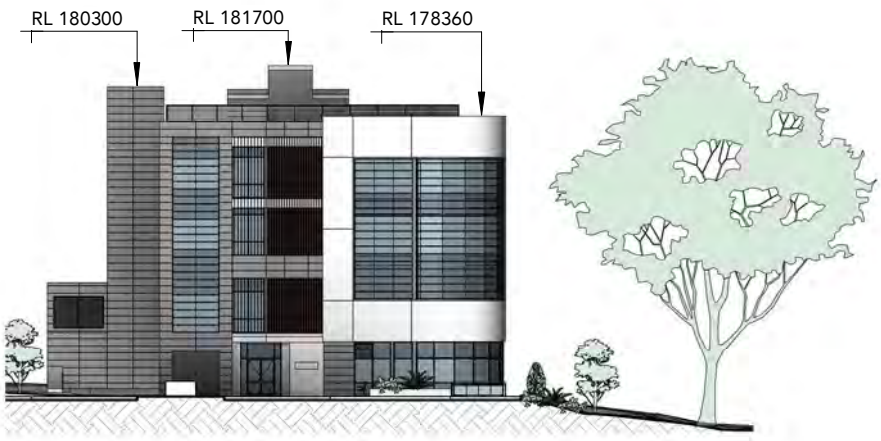
ABN: 72 104 833 507
Reg Vic: 19340

Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
NOTIFICATION PLAN - SITE

Project #:	Scale:
856	1 : 250 @A4
Drawing No:	Rev:
DA-1000	4

DEVELOPMENT APPROVAL



1 Notification - West Elevation
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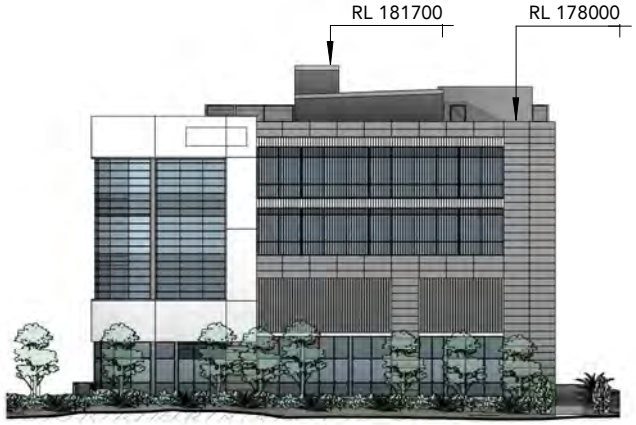

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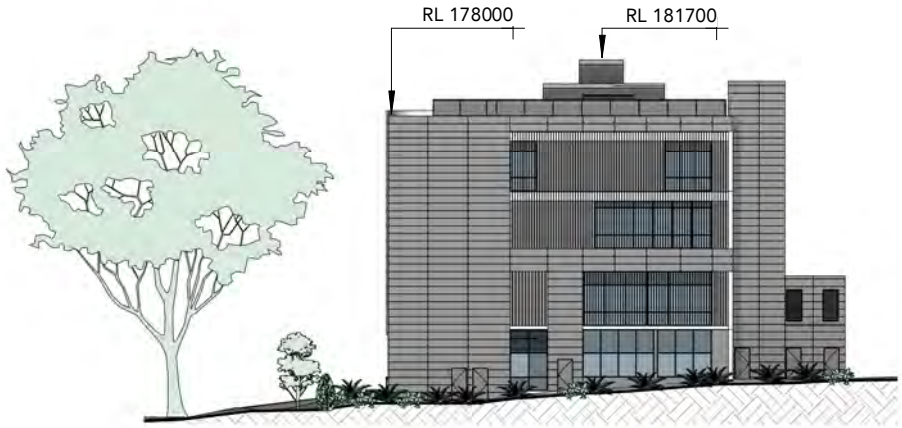

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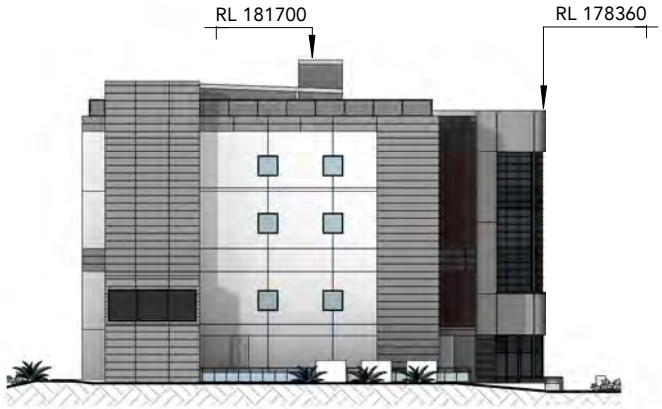

4 Notification - North Elevation
Scale: 1 : 500

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Reg Vic: 19340

Project:
Project Maui Oncology
Warringah Road & Wakehurst Parkway

Title:
NOTIFICATION PLAN - ELEVATIONS

Project #:	Scale:
856	1 : 500 @A4
Drawing No:	Rev:
DA-1001	3

Document Transmittal

Project: Project Maui Oncology

Project No.: 856

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DATE OF ISSUE

Day	23	28	28	30	30	3	5	6	6	27	4	9								
Month	8	8	8	8	8	9	9	9	9	11	12	12								
Year	19	19	19	19	19	19	19	19	19	19	19	19								
Initials	VM	VM	VM	VM	VM	VM	VM	VM	VM	VM	VM	VM								

DOCUMENTATION LIST

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DA-011	SITE PLAN - PROPOSED	A1	1:50, 1:100	1			2	3	4	5			6	7	8							
DA-012	SITE ANALYSIS PLAN	A1	NTS					1		2				3	3							
DA-015	SURVEY PLAN	A1	1:200	1				2		3				4	5							
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DA-021	EXCAVATION PLAN	A1	1:50, 1:100					1		2				3	4							
DA-030	LANDSCAPE PLAN	A1	NTS					1														
DA-050	ROOF PLAN	A1	1:50, 1:100	1				2		3				4	4							
DA-099	FLOOR PLAN - BASEMENT 4	A1	1:50, 1:100											1	1							
DA-100	FLOOR PLAN - BASEMENT 3	A1	1:50, 1:100	1		2		3		4			5	6	6							
DA-101	FLOOR PLAN - BASEMENT 2	A1	1:50, 1:100	1		2		3		4			5	6	6							
DA-102	FLOOR PLAN - BASEMENT 1	A1	1:50, 1:100	1		2		3		4			5	6	6							
DA-103	FLOOR PLAN - GROUND	A1	1:50, 1:100	1		2		3		4			5	6	6							
DA-104	FLOOR PLAN - LEVEL 1	A1	1:50, 1:100	1				2		3				4	4							

Sheet No.	Sheet Title	Size	Scale	Revision																			
DA-105	FLOOR PLAN - LEVEL 2	A1	1:50, 1:100	1				2		3				4	4								
DA-106	FLOOR PLAN - LEVEL 3	A1	1:50, 1:100	1				2		3				4	4								
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DA-200	ELEVATIONS - SHEET 1	A1	1:100	1				2		3				4	4								
DA-201	ELEVATIONS - SHEET 2	A1	1:100	1				2		3				4	4								
DA-202	ELEVATIONS - SHEET 3	A1	1:200					1		2				3	3								
DA-300	SECTIONS - SHEET 1	A1	1:100		1			2		3				4	5								
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DA-800	SHADOW STUDIES - SHEET 1	A1	1:500					1		2				3	3								
DA-801	SHADOW STUDIES - SHEET 2	A1	1:500					1							1								
DA-801	SHADOW STUDIES - SHEET 2	A1	1:500					1		2			3	4									
DA-900	3D VIEWS	A1	NTS					1		2	3	3		4	4								
DA-901	PHOTOMONTAGE	A1	NTS					1		2	3	3		4	4								
DA-1000	NOTIFICATION PLAN - SITE	A4	1:250					1		2			3	4	4								
DA-1001	NOTIFICATION PLAN - ELEVATIONS	A4	1:500					1		2				3	3								

REASON FOR ISSUE

P=prelim T=tender C=construction I=information AB=as builts CI=check in BA=building application DA=development application SO=sign off	P	P	P	P	P	P	DA	DA	DA	DA	DA	DA											

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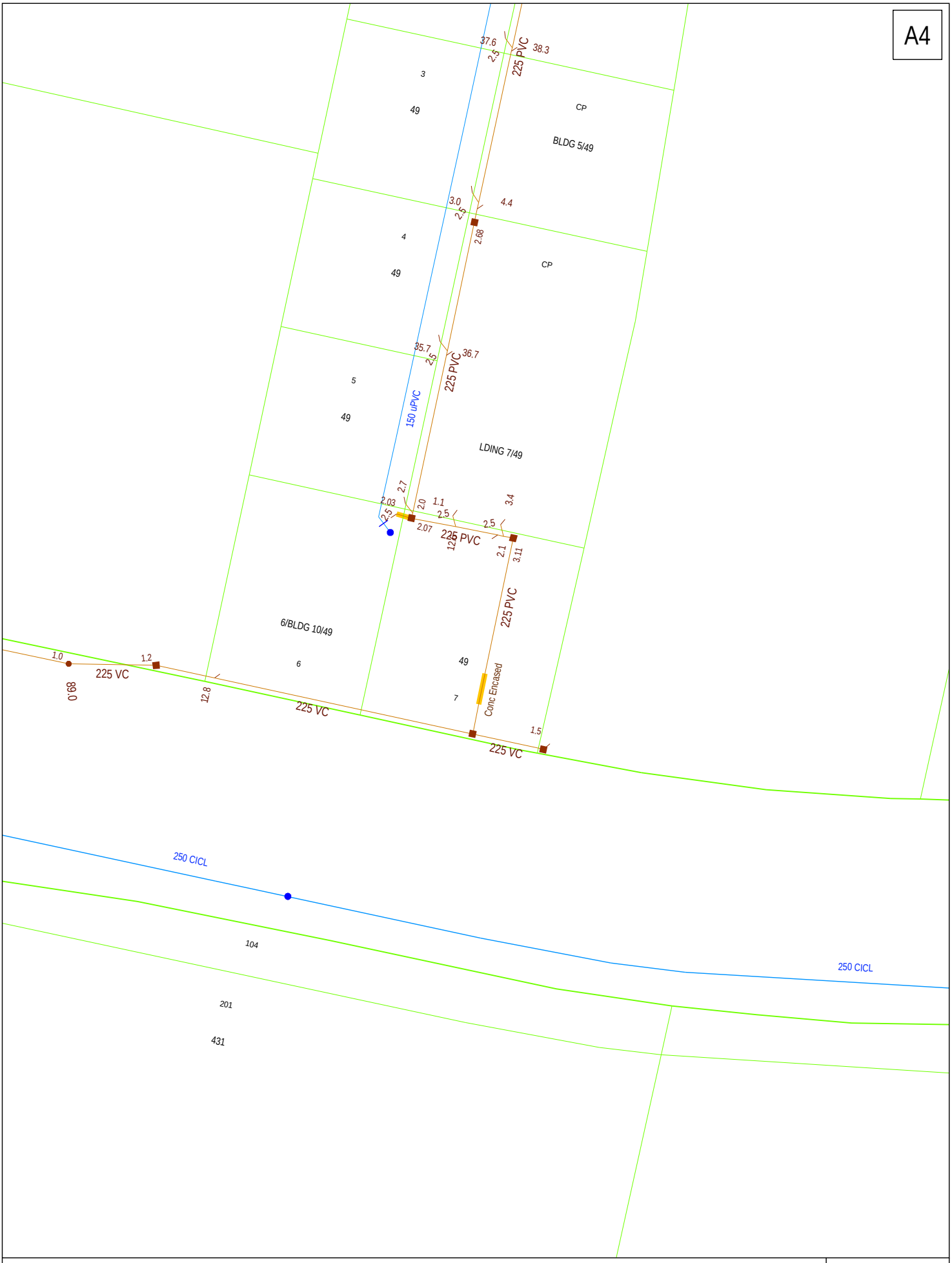
Underground Services Plan (Sewer)



DBYD Address:
n/a 49 Frenchs Forest road e
Frenchs Forest NSW 2086

DBYD Job No: 18002582
DBYD Sequence No: 88385135

No warranty is given that the information shown is complete or accurate.

SYDNEY WATER CORPORATION

Scale: 1:1000

Date of Production: 28/08/2019

Plan 1 of 1

Section 10.7 Certificates

Northern Beaches Council Planning Certificate – Part 2&5

Applicant: Eis & Jk Group
115 Wicks Road
MACQUARIE PARK NSW 2113

Reference: E32505BT
Date: 08/07/2019
Certificate No. ePLC2019/3648

Address of Property: 49 Frenchs Forest Road East FRENCHS FOREST NSW 2086
Description of Property: Lot 7 DP 1020015

Planning Certificate – Part 2

The following certificate is issued under the provisions of Section 10.7(2) of the *Environmental Planning and Assessment Act 1979* (as amended – formerly Section 149). The information applicable to the land is accurate as at the above date.

1. Relevant planning instruments and Development Control Plans

1.1 The name of each environmental planning instrument that applies to the carrying out of development on the land:

1.1a) Local Environmental Plan

Warringah Local Environmental Plan 2011

1.1b) State Environmental Planning Policies and Regional Environmental Plans

State Environmental Planning Policy 1—Development Standards
State Environmental Planning Policy 19 – Bushland in Urban Areas
State Environmental Planning Policy 21 – Caravan Parks
State Environmental Planning Policy 30 – Intensive Agriculture
State Environmental Planning Policy 33 – Hazardous and Offensive Development
State Environmental Planning Policy 50 – Canal Estate Development
State Environmental Planning Policy 55 – Remediation of Land
State Environmental Planning Policy 62—Sustainable Aquaculture
State Environmental Planning Policy 64 – Advertising and Signage
State Environmental Planning Policy 65 – Design Quality of Residential Apartment Development
State Environmental Planning Policy No 70—Affordable Housing (Revised Schemes)
State Environmental Planning Policy (Affordable Rental Housing) 2009
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004
State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004
State Environmental Planning Policy (Infrastructure) 2007
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007
State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007
State Environmental Planning Policy (State and Regional Development) 2011
State Environmental Planning Policy (State Significant Precincts) 2005
State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017
Sydney Regional Environmental Plan No 20-Hawkesbury-Nepean River (No 2-1997)
State Environmental Planning Policy No 44-Koala Habitat Protection
Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
Sydney Regional Environmental Plan No 9-Extractive Industry (No 2-1995)

1.2 Draft Environmental Planning Instruments

The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been subject of community consultation or on public exhibition under the Act (unless the Secretary has notified the Council that the making of the proposed instrument has been deferred indefinitely or has not been approved):

1.2 a) Draft State Environmental Planning Policies

Review of State Environmental Planning Policy 44 – Koala Habitat Protection
State Environmental Planning Policy No 64— Advertising and Signage (Amendment No 3)
Draft State Environmental Planning Policy (Environment)
Draft State Environmental Planning Policy (Primary Production and Rural Development)
Draft Amendment to State Environmental Planning Policy (Affordable Rental Housing) 2009

1.2 b) Draft Local Environmental Plans

Planning Proposal - Ralston Avenue (Belrose) (PEX2013/0003)

Applies to land: Lot 1 DP 1139826, Ralston Avenue, Belrose

Outline: Amends WLEP 2000 and WLEP 2011 to:

- Rezone land on Ralston Avenue Belrose from Locality C8 - Belrose North to part R2 Low Density Residential, part RE1 Public Recreation and part E3 Environmental Conservation.
- Introduce subdivision lot size and height of building controls to land proposed to be zoned R2 Low Density Residential.

Council resolution: 25 November 2014

Gateway Determination: 28 January 2015

Planning Proposal - Dee Why Town Centre Planning Controls (PEX2018/0002)

Applies to land: Dee Why Town Centre (boundaries identified within the Planning Proposal)

Outline: Amends WLEP 2011 to:

- Increase maximum permissible building heights
- Introduce floor space ratio controls
- Provide development standards in relation to car parking, building setbacks and building proportion
- Identify additional “Key Sites”
- Implement a delivery mechanism for key infrastructure and public domain improvements

Council resolution: 23 September 2014

Gateway Determination: 1 April 2015 amended 22 September 2016

1.3 Development Control Plans

The name of each development control plan that applies to the carrying out of development on the land:

Warringah Development Control Plan 2011

2. Zoning and land use under relevant Local Environmental Plans

For each environmental planning instrument or proposed instrument referred to in Clause 1 (other than a SEPP or proposed SEPP) that includes the land in any zone (however described):

2.1 Zoning and land use under relevant Local Environmental Plans

2.1 (a), (b), (c) & (d)

The following information identifies the purposes for which development may be carried out with or without development consent and the purposes for which the carrying out of development is prohibited, for all zones (however described) affecting the land to which the relevant Local Environmental Plan applies.

EXTRACT FROM WARRINGAH LOCAL ENVIRONMENTAL PLAN 2011

Zone B7 Business Park

1 Objectives of zone

- To provide a range of office and light industrial uses.
- To encourage employment opportunities.
- To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area.
- To create business park employment environments of high visual quality that relate favourably in architectural and landscape treatment to neighbouring land uses and to the natural environment.
- To minimise conflict between land uses in the zone and adjoining zones and ensure the amenity of adjoining or nearby residential land uses.

2 Permitted without consent

Nil

3 Permitted with consent

Centre-based child care facilities; Garden centres; Hardware and building supplies; Light industries; Neighbourhood shops; Office premises; Passenger transport facilities; Respite day care centres; Roads; Self-storage units; Take away food and drink premises; Warehouse or distribution centres; Any other development not specified in item 2 or 4

4 Prohibited

Advertising structures; Agriculture; Air transport facilities; Amusement centres; Animal boarding or training establishments; Boat building and repair facilities; Boat sheds; Business premises; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Correctional centres; Crematoria; Depots; Eco-tourist facilities; Entertainment facilities; Environmental facilities; Exhibition homes; Exhibition villages; Extractive industries; Forestry; Freight transport facilities; Function centres; Heavy industrial storage establishments; Highway service centres; Home-based

child care; Home businesses; Home occupations; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Information and education facilities; Marinas; Mooring pens; Moorings; Open cut mining; Places of public worship; Port facilities; Recreation facilities (major); Registered clubs; Research stations; Residential accommodation; Restricted premises; Retail premises; Rural industries; Service stations; Sex services premises; Storage premises; Tourist and visitor accommodation; Transport depots; Vehicle body repair workshops; Vehicle repair stations; Veterinary hospitals; Waste or resource management facilities; Water recreation structures; Wharf or boating facilities; Wholesale supplies

Additional permitted uses

Additional permitted uses, if any, for which development is permissible with development consent pursuant to Clause 2.5 and Schedule 1 of the relevant Local Environmental Plan:

Nil

(e) Minimum land dimensions

The *Warringah Local Environmental Plan 2011* contains no development standard that fixes minimum land dimensions for the erection of a dwelling house on the land.

(f) Critical habitat

The land does not include or comprise critical habitat.

(g) Conservation areas

The land is not in a heritage conservation area.

(h) Item of environmental heritage

The land does not contain an item of environmental heritage.

2.2 Draft Local Environmental Plan - if any

For any proposed changes to zoning and land use, see Part 1.2 b)
Please contact Council's Strategic and Place Planning unit with enquiries on 1300 434 434.

2A. Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006

The *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* does not apply to the land.

3. Complying Development

The extent to which the land is land on which complying development may or may not be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

a) Housing Code

Complying Development under the Housing Code may be carried out on all of the land.

b) Rural Housing Code

Complying Development under the Rural Housing Code may be carried out on all of the land.

c) Low Rise Medium Density Code

Complying Development under the Low Rise Medium Density Code may not be carried out on all the land.

Note: Pursuant to clause 3B.63 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*, all land in Northern Beaches Council is a 'deferred area' meaning that the Low Rise Medium Density Code does not apply until 1 July 2019.

d) Greenfield Housing Code

Complying Development under the Greenfield Housing Code may not be carried out on all of the land.

e) Housing Alterations Code

Complying Development under the Housing Alterations Code may be carried out on all of the land.

f) General Development Code

Complying Development under the General Development Code may be carried out on all of the land.

g) Commercial and Industrial Alterations Code

Complying Development under the Commercial and Industrial Alterations Code may be carried out on all of the land.

h) Commercial and Industrial (New Buildings and Additions) Code

Complying Development under the Commercial and Industrial (New Buildings and Additions) Code may be carried out on all of the land.

i) Container Recycling Facilities Code

Complying Development under the Container Recycling Facilities Code may be carried out on all of the land.

j) Subdivisions Code

Complying Development under the Subdivisions Code may be carried out on all of the land.

k) Demolition Code

Complying Development under the Demolition Code may be carried out on all of the land.

l) Fire Safety Code

Complying Development under the Fire Safety Code may be carried out on all of the land.

4, 4A (Repealed)

4B. Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

The owner of the land (or any previous owner) has not consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act).

5. Mine Subsidence

The land has not been proclaimed to be a mine Subsidence (Mine Subsidence) district within the meaning of section 15 of the *Mine Subsidence (Mine Subsidence) Compensation Act, 1961*.

6. Road widening and road realignment

(a) The land is not affected by a road widening or re-alignment proposal under Division 2 of Part 3 of the *Roads Act 1993*.

(b) The land is not affected by a road widening or re-alignment proposal under an environmental planning instrument.

(c) The land is not affected by a road widening or re-alignment proposal under a resolution of Council.

7. Council and other public authority policies on hazard risk restriction

(a) Council has adopted a number of policies with regard to various hazards or risks which may restrict development on this land. The identified hazard or risk and the respective Council policies which affect the property, if any, are listed below (other than flooding – see 7A):

Nil

(b) The following information applies to any policy as adopted by any other public authority and notified to the Council for the express purpose of its adoption by that authority being referred to in a planning certificate issued by the Council. The identified hazard or risk and the respective Policy which affect the property, if any, are listed below:

Nil

7A. Flood related development control Information

(1) Development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is not subject to flood related development controls.

(2) Development on the land or part of the land for any other purpose is not subject to flood related development controls.

8. Land reserved for acquisition

Environmental planning instrument referred to in Clause 1 does not make provision in relation to the acquisition of the land by a public authority, as referred to in section 27 of the Act.

9. Contribution plans

The following applies to the land:

Northern Beaches Contributions Plan 2018

9A. Biodiversity certified land

The land is not biodiversity certified land under Part 8 of the *Biodiversity Conservation Act 2016* (includes land certified under Part 7AA of the repealed *Threatened Species Conservation Act 1995*).

10. Biodiversity Stewardship Sites

The Council has not been notified by the Chief Executive of the Office of Environment and Heritage that the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the *Biodiversity Conservation Act 2016* (includes land to which a biobanking agreement under Part 7A of the repealed *Threatened Species Conservation Act 1995* relates).

10A. Native vegetation clearing set asides

Council has not been notified by Local Land Services of the existence of a set aside area under section 60ZC of the *Local Land Services Act 2013*.

11. Bush fire prone land

Bush Fire Prone Land
The land is not bush fire prone land.

Draft Northern Beaches Bush Fire Prone Land Map 2018
The land is not bush fire prone land.

12. Property vegetation plans

The Council has not been notified that the land is land to which a vegetation plan under the *Native Vegetation Act 2003* applies.

13. Orders under Trees (Disputes Between Neighbours) Act 2006

Council has not been notified of the existence of an order made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land.

14. Directions under Part 3A

There is not a direction by the Minister in force under section 75P(2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect.

15. Site compatibility certificates and conditions for seniors housing

(a) There is not a current site compatibility certificate (seniors housing), of which the council is aware, in respect of proposed development on the land.

(b) No condition of consent applies to the property that limits the kind of people who may occupy the premises/ development. This refers only to consents granted after 11 October 2007 with

conditions made in accordance with clause 18(2) of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*.

16. Site compatibility certificates for infrastructure, schools or TAFE establishments

There is not a valid site compatibility certificate (infrastructure) or site compatibility certificate (schools or TAFE establishments), of which the council is aware, in respect of proposed development on the land.

17. Site compatibility certificate and conditions for affordable rental housing

(a) There is not a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land.

(b) There are not terms of a kind referred to in clause 17 (1) or 38 (1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009* that have been imposed as a condition of consent to a development application in respect of the land.

18. Paper subdivision information

There is no current paper subdivision, of which council is aware, in respect of this land according to Part 16C of the *Environmental Planning and Assessment Regulation 2000*.

19. Site verification certificates

There is no current site verification certificate, of which council is aware, in respect of the land according to Part 4AA of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*.

20. Loose-fill asbestos insulation

The residential dwelling erected on this land has not been identified in the Loose-Fill Asbestos Insulation Register as containing loose-fill asbestos ceiling insulation.

This clause applies to residential premises (within the meaning of Division 1A of part 8 of the Home Building Act 1989) that are listed in the register that is required to be maintained under that Division.

Contact NSW Fair Trading for more information.

21 Affected building notices and building product rectification orders

(1) There is not an affected building notice of which the council is aware that is in force in respect of the land.
(2) There is not a building product rectification order of which the council is aware that is in force in respect of the land and has

not been fully complied with, and

(3) There is not a notice of intention to make a building product rectification order of which the council is aware has been given in respect of the land and is outstanding.

In this clause:

affected building notice has the same meaning as in Part 4 of the *Building Products (Safety) Act 2017*.
building product rectification order has the same meaning as in the *Building Products (Safety) Act 2017*.

Additional matters under the Contaminated Land Management Act 1997

Note. The following matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

(a) the land to which the certificate relates is not significantly contaminated land within the meaning of that Act

(b) the land to which the certificate relates is not subject to a management order within the meaning of that Act

(c) the land to which the certificate relates is not the subject of an approved voluntary management proposal within the meaning of that Act

(d) the land to which the certificate relates is not subject to an ongoing maintenance order within the meaning of that Act

(e) the land to which the certificate relates is not the subject of a site audit statement

If contamination is identified above please contact the Environmental Protection Authority (EPA) for further information.

Planning Certificate – Part 5

ePLC2019/3648

The following is information provided in good faith under the provisions of Section 10.7(5) of the *Environmental Planning and Assessment Act 1979* (as amended – formerly Section 149) and lists relevant matters affecting the land of which Council is aware. The Council shall not incur any liability in respect of any such advice.

Persons relying on this certificate should read the environmental planning instruments referred to in this certificate.

Company Title Subdivision

Clause 4.1 of the *Pittwater Local Environmental Plan 2014*, *Warringah Local Environmental Plan 2011* or *Manly Local Environmental Plan 2013* provides that land may not be subdivided except

with the consent of the Council. This includes subdivision by way of company title schemes. Persons considering purchasing property in the Northern Beaches local government area the subject of a company title scheme are advised to check that the land has been subdivided with the consent of the Council.

District Planning

Under the Greater Sydney Regional Plan – A Metropolis of Three Cities 2018, the Greater Sydney Commission sets a planning framework for a metropolis of three cities across Greater Sydney which reach across five Districts. Northern Beaches is located within the 'Eastern Harbour City' area and is in the North District which forms a large part of the Eastern Harbour City. The North District Plan sets out planning priorities and actions for the growth of the North District, including Northern Beaches. Northern Beaches Council is preparing a Local Strategic Planning Statement which will give effect to the District Plan based on local characteristics and opportunities and Council's own priorities in the community.

Council Resolution To Amend Environmental Planning Instrument

The following instrument or resolution of Council proposes to vary the provisions of an environmental planning instrument, other than as referred to in the Planning Certificate – Part 2:

Planning Proposal - Response to Low Rise Medium Density Code
Applies to land: Certain land in the Pittwater Local Environmental Plan 2014 (PLEP 2014) and Manly Local Environmental Plan 2013 (MLEP 2013)
Outline: Seeks to amend the PLEP 2014 and MLEP 2013 in response to issues arising from the future implementation of the NSW Governments' SEPP (Exempt and Complying Development) Amendment (Low Rise Medium Density Code). The intent of the Planning Proposal is to prohibit:

- manor houses and multi-dwelling housing (including terraces) in zone R2 Low Density Residential zone under the Manly LEP 2013
- dual occupancy in zone R2 Low Density Residential zone under the Manly LEP 2013 and Pittwater LEP 2014
- multi-dwelling housing and dual occupancies in the R3 Zone in the Warriewood Valley under Pittwater LEP 2014

Council resolution: 26 June 2018

Planning Proposal - rezone deferred land within the Oxford Falls Valley & Belrose North area
Applies to land: Land within the B2 Oxford Falls Valley and C8 Belrose North localities of WLEP 2000 and land zoned E4 Environmental Living under WLEP 2011 at Cottage Point (Boundaries identified within the Planning Proposal)
Outline: Amends WLEP 2000 and WLEP 2011 to:

- Transfer the planning controls for land within the B2 Oxford Falls Valley and C8 Belrose North localities of WLEP 2000 into the best fit zones and land use controls under WLEP 2011
- Rezone the majority of the subject land to E3 Environmental Management under WLEP 2011
- Rezone smaller parcels of land to E4 Environmental Living, RU4 Primary Production Small Lots, SP2 Infrastructure, SP1 Special Activities, R5 Large Lot Residential and R2 Low Density Residential under WLEP 2011
- Include various parcels of land as having additional permitted uses under Schedule 1 of WLEP 2011

Council resolution: 24 February 2015

Planning Proposal - 28 Lockwood Avenue, Belrose
Applies to land: 28 Lockwood Avenue, Belrose
Outline: Amends WLEP 2011 to:

- Permit additional land uses of 'residential flat building' and 'multi dwelling housing' on that part of the land fronting Lockwood Avenue only
- Prohibit the granting of development consent for a residential flat building or multi-dwelling housing on the land unless a minimum Floor Space Ratio of 0:5:1 is provided on the site for commercial premises.

Council resolution: 28 November 2017

Planning Proposal - Freshwater Village Carpark Reclassification
Applies to land: Oliver Street carpark and Lawrence Street carpark, Freshwater
Outline: Amends WLEP 2011 to:

- Amend Schedule 4 Part 1 to include reference to the land
- Amend LZN_010 map to change the zoning from RE1 - Public Recreation to SP2 - Infrastructure
- Amend HOB_010 map to implement a maximum height of building of 3 metres.

Council resolution: 27 November 2018

Additional Information Applying To The Land

Additional information, if any, relating to the land the subject of this certificate:

Nil

General Information

Threatened Species
Many threatened species identified under the *Biodiversity Conservation Act 2016* (NSW) and Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) are found within the former Local Government Area of Warringah (now part of Northern Beaches). Council's Natural Environment unit can be contacted to determine whether any site specific information is available for this property. Records of threatened flora and fauna are also available from the NSW Office of Environment and Heritage's Atlas of NSW Wildlife database: <http://www.bionet.nsw.gov.au>

Potential threatened species could include:

(a) threatened species as described in the final determination of the scientific committee to list endangered and vulnerable species under Schedule 1 of the *Biodiversity Conservation Act 2016*, and/or

(b) one or more of the following threatened ecological communities as described in the final determination of the scientific committee to list the ecological communities under Schedule 2 of the *Biodiversity Conservation Act 2016*:

- Duffys Forest Ecological Community in the Sydney Basin Bioregion
- Swamp Sclerophyll Forest on Coastal Floodplain
- Coastal Saltmarsh of the Sydney Basin Bioregion
- Swamp Oak Floodplain Forest
- Bangalay Sand Forest of the Sydney Basin Bioregion
- Themeda grasslands on Seacliffs and Coastal Headlands
- Sydney Freshwater Wetlands in the Sydney Basin Bioregion
- Coastal Upland Swamp in the Sydney Basin Bioregion

- River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

Bush fire
Certain development may require further consideration under section 79BA or section 91 of the Environmental Planning and Assessment Act 1979, and section 100B of the Rural Fires Act, 1997 with respect to bush fire matters. Contact NSW Rural Fire Service.

Aboriginal Heritage
Many Aboriginal objects are found within the Local Government Area. It is prudent for the purchaser of land to make an enquiry with the Office of Environment and Heritage as to whether any known Aboriginal objects are located on the subject land or whether the land has been declared as an Aboriginal place under the *National Parks and Wildlife Act 1974* (NSW). The carrying out of works may be prevented on land which is likely to significantly affect an Aboriginal object or Aboriginal place. For information relating to Aboriginal sites and objects across NSW, contact: Aboriginal Heritage Information Management System (AHIMS) on (02) 9585 6345 or email **AHIMS@environment.nsw.gov.au**. Alternatively visit http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm.

Coastal Erosion
Information available to Council indicates coastal erosion may affect a greater number of properties and may present an increased risk to properties than that shown on published hazard maps of the Warringah coastline. Council's Natural Environment Unit can be contacted for further information.

Ray Brownlee PSM
Chief Executive Officer
08/07/2019

Lotsearch Environmental Risk and Planning Report

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 09 Jul 2019 13:09:54

Reference: LS007298 EP

Address: 49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Table of Contents

Location Confidences

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

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

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Finance, Services & Innovation	09/07/2019	09/07/2019	Daily	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	11/04/2019	10/04/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	21/06/2019	19/06/2019	Monthly	1000	0	0	2
Contaminated Land Records of Notice	Environment Protection Authority	11/06/2019	11/06/2019	Monthly	1000	0	0	0
Former Gasworks	Environment Protection Authority	01/07/2019	11/10/2017	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	07/05/2019	07/03/2017	Quarterly	1000	0	0	1
EPA PFAS Investigation Program	Environment Protection Authority	01/07/2019	01/07/2019	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program	Department of Defence	01/07/2019	01/07/2019	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	01/07/2019	01/07/2019	Monthly	2000	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	01/07/2019	01/07/2019	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	13/12/2018	13/12/2018	Annually	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	27/06/2019	27/06/2019	Monthly	1000	0	1	1
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	27/06/2019	27/06/2019	Monthly	1000	0	0	1
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	27/06/2019	27/06/2019	Monthly	1000	0	1	5
UPSS Environmentally Sensitive Zones	Environment Protection Authority	14/04/2015	12/01/2010	As required	1000	0	0	1
UBD Business to Business Directory 1991 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	7	10
UBD Business to Business Directory 1991 (Road & Area Matches)	Hardie Grant			Not required	150	-	3	3
UBD Business to Business Directory 1986 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	5	5
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	6	6
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	3	3
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	6	6
UBD Business Directory 1978 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	2	2
UBD Business Directory 1978 (Road & Area Matches)	Hardie Grant			Not required	150	-	5	5
UBD Business Directory 1975 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	3	3
UBD Business Directory 1975 (Road & Area Matches)	Hardie Grant			Not required	150	-	11	11
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	3	3
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	8	8
UBD Business Directory 1965 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1965 (Road & Area Matches)	Hardie Grant			Not required	150	-	4	4
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	2	2

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	3	3
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	0	0
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	9	15
Points of Interest	NSW Department of Finance, Services & Innovation	11/04/2019	10/04/2019	Quarterly	1000	0	0	22
Tanks (Areas)	NSW Department of Finance, Services & Innovation	11/04/2019	11/04/2019	Quarterly	1000	0	0	1
Tanks (Points)	NSW Department of Finance, Services & Innovation	11/04/2019	10/04/2019	Quarterly	1000	0	0	1
Major Easements	NSW Department of Finance, Services & Innovation	11/04/2019	11/04/2019	Quarterly	1000	0	0	27
State Forest	NSW Department of Finance, Services & Innovation	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	16/01/2019	14/11/2018	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Botany Groundwater Management Zones	NSW Department of Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	0	28
Geological Units 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	1	-	2
Geological Structures 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	0	-	1
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	1	-	5
Atlas of Australian Soils	CSIRO	19/05/2017	17/02/2011	As required	1000	1	1	1
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning and Environment	05/07/2019	28/06/2019	Weekly	500	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	1	1
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Office of Environment & Heritage	12/05/2017	01/01/2002	None planned	1000	-	-	-
Mining Subsidence Districts	NSW Department of Finance, Services & Innovation	11/04/2019	11/04/2019	Quarterly	1000	0	0	0
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning and Environment	05/07/2019	07/12/2018	Weekly	1000	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning and Environment	05/07/2019	28/06/2019	Weekly	1000	1	4	46
Commonwealth Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	31/07/2018	Unknown	1000	0	0	0
National Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	28/09/2018	Unknown	1000	0	0	0
State Heritage Register - Curtilages	NSW Office of Environment & Heritage	15/04/2019	09/11/2018	Quarterly	1000	0	0	0
Environmental Planning Instrument Heritage	NSW Department of Planning and Environment	05/07/2019	28/06/2019	Weekly	1000	0	0	6
Bush Fire Prone Land	NSW Rural Fire Service	28/05/2019	05/04/2019	Quarterly	1000	0	0	3

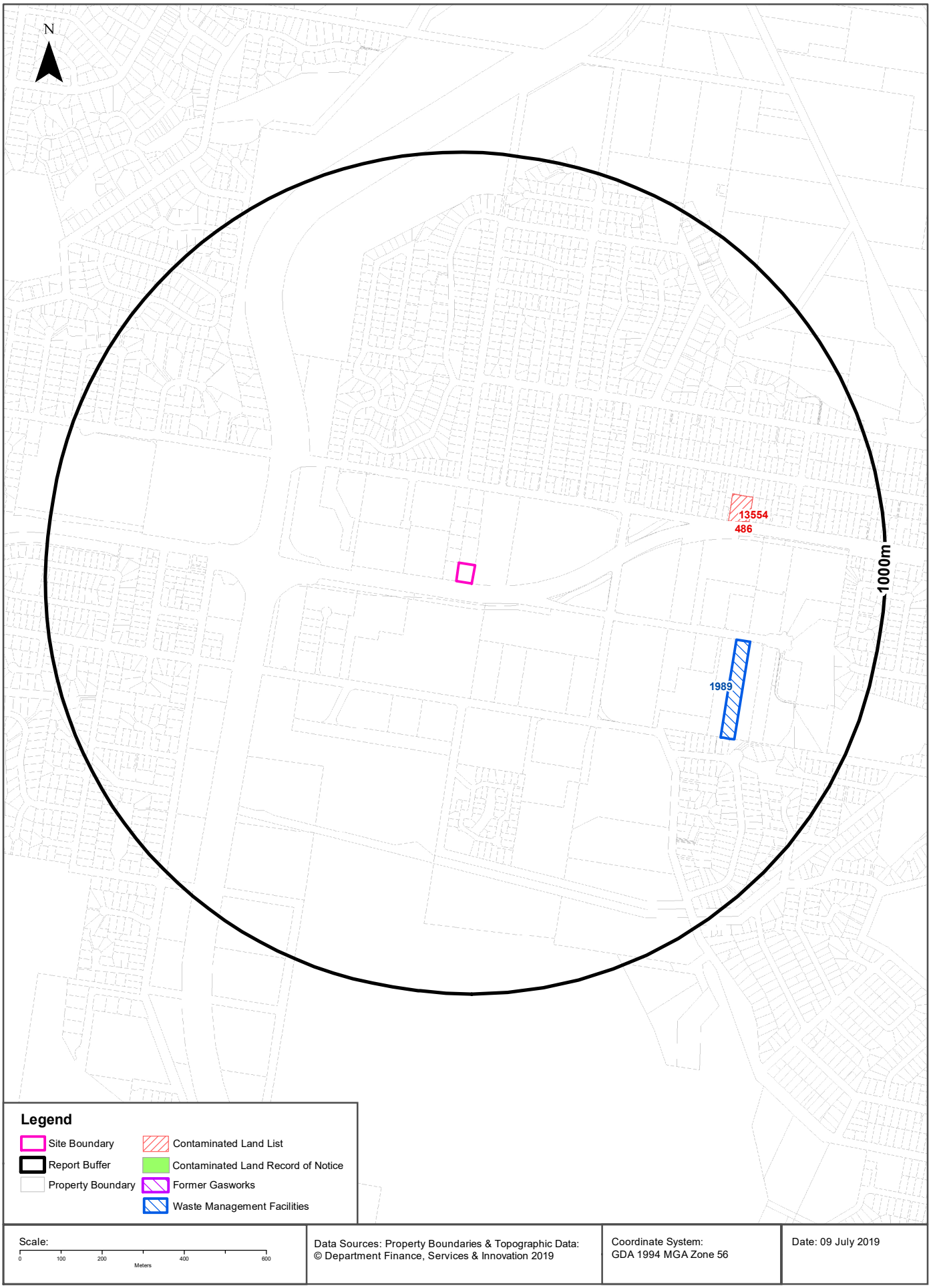
Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000	1	2	8
Ramsar Wetlands of Australia	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	0
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	0
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	09/07/2019	09/07/2019	Weekly	10000	-	-	-

Aerial Imagery 2018

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Contaminated Land & Waste Management Facilities

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Contaminated Land & Waste Management Facilities

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

List of NSW contaminated sites notified to EPA

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

Map Id	Site	Address	Suburb	Activity	Management Class	Status	Location Confidence	Dist (m)	Direction
486	Former 7-Eleven / Mobil Beacon Hill Service Station, Frenchs Forest	312 Warringah Road	Frenchs Forest	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	626m	East
13554	Former 7 - Eleven Service Station, Beacon Hill	312 Warringah Road	BEACON HILL	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	626m	East

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

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

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

Contaminated Land & Waste Management Facilities

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

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

Contaminated Land Records of Notice Data Source: Environment Protection Authority

Former Gasworks

Former Gasworks within the dataset buffer:

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

Former Gasworks Data Source: Environment Protection Authority

National Waste Management Site Database

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

Site Id	Owner	Name	Address	Suburb	Class	Landfill	Reprocess	Transfer	Comments	Loc Conf	Dist (m)	Direction
1989	Siltech Pty Ltd	Siltech Pty Ltd	6/15 Rodborough Road	Frenchs Forest	Multi-Purpose		Operational	Operational		Premise Match	658 m	South East

Waste Management Facilities Data Source: Geoscience Australia

PFAS Investigation Sites

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

EPA PFAS Investigation Program

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

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

EPA PFAS Investigation Program: Environment Protection Authority

Defence PFAS Investigation & Management Program

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

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

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

Airservices Australia National PFAS Management Program

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

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

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Defence 3 Year Regional Contamination Investigation Program

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

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

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

EPA Other Sites with Contamination Issues

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

EPA Other Sites with Contamination Issues

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

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

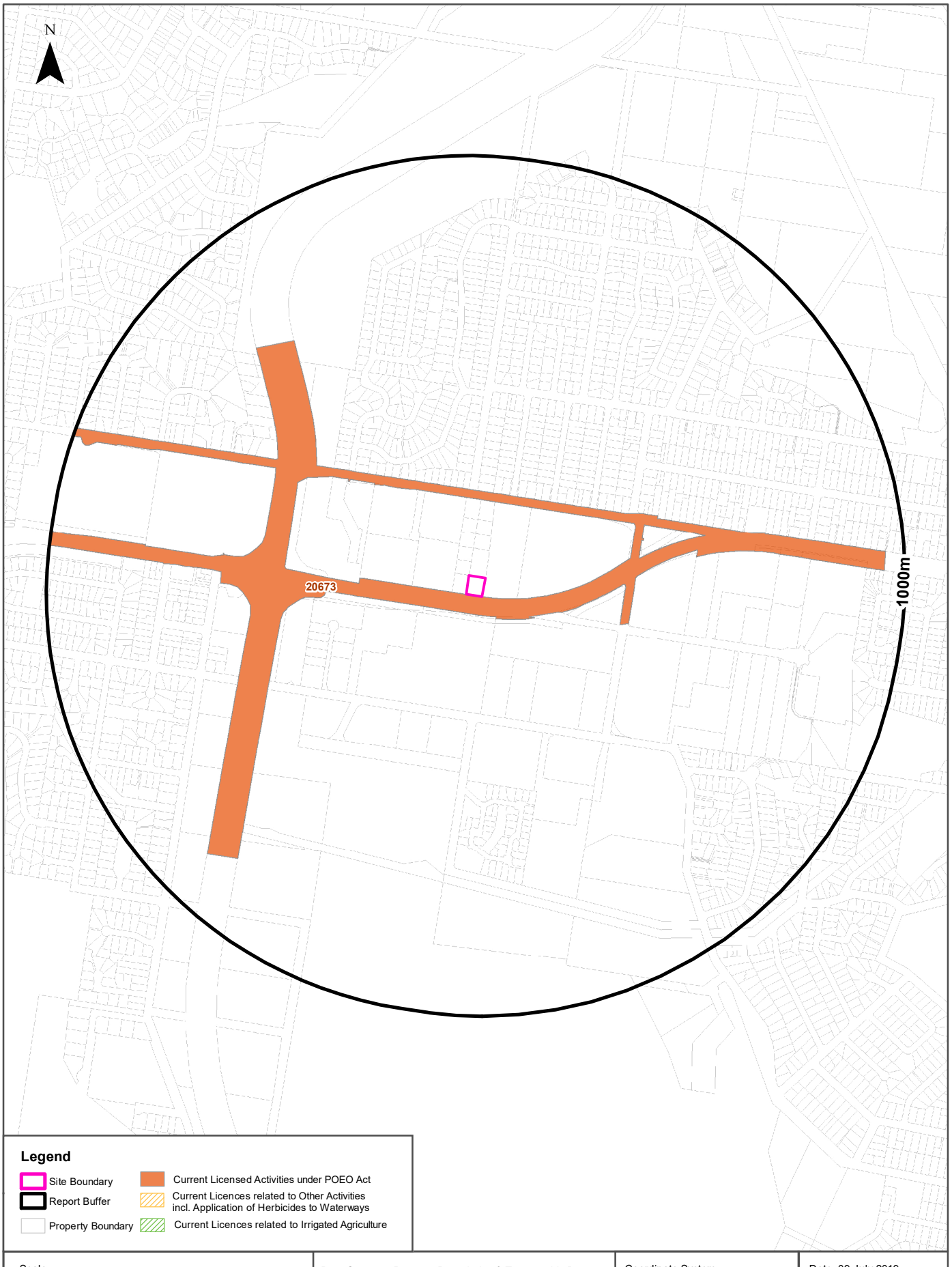
Sites within the dataset buffer:

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

EPA Other Sites with Contamination Issues: Environment Protection Authority

Current EPA Licensed Activities

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



EPA Activities

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Licensed Activities under the POEO Act 1997

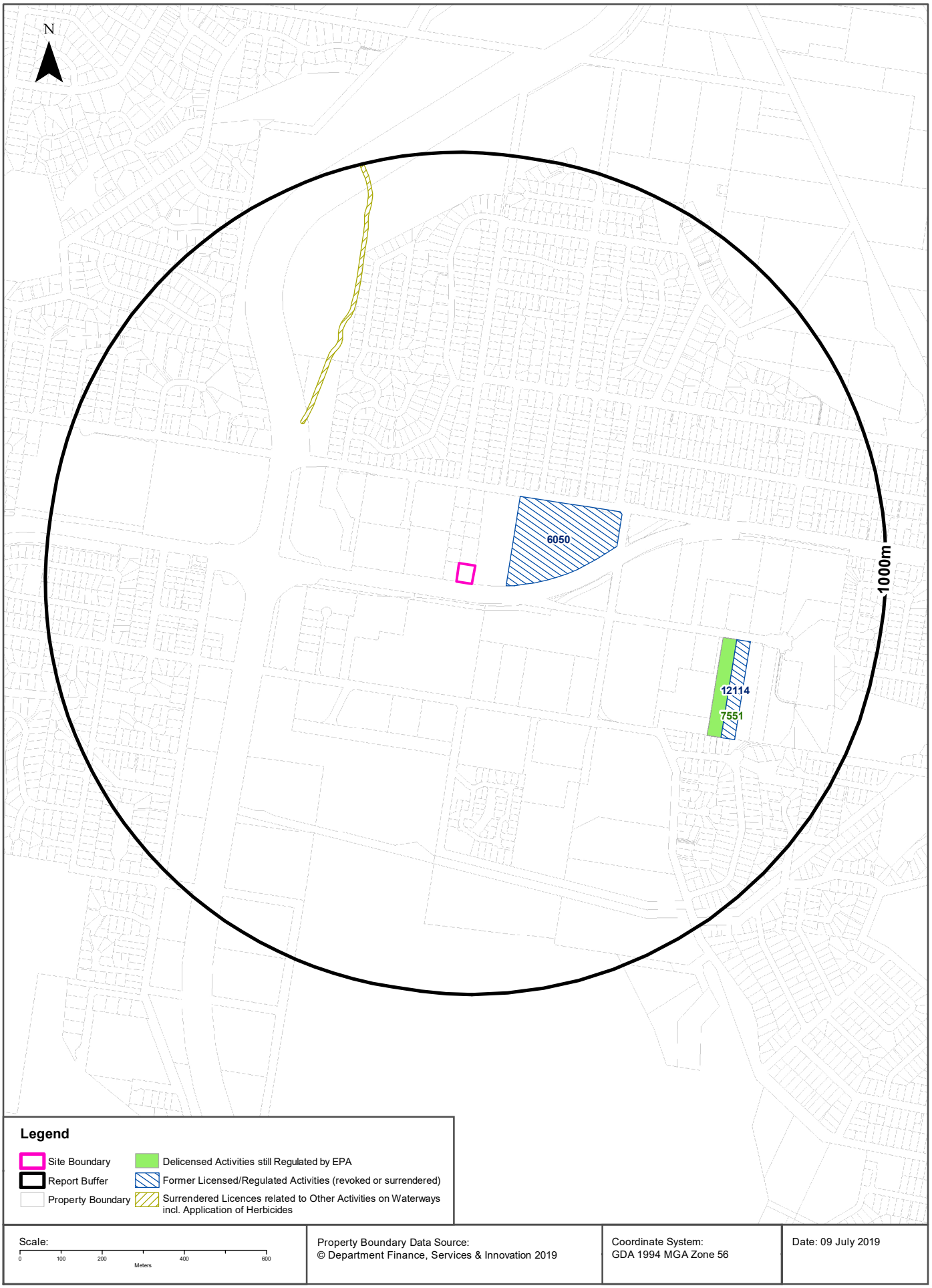
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
20673	FERROVIAL AGROMAN (AUSTRALIA) PTY. LTD.	Northern Beaches Hospital Stage 1 and Stage 2	Northern Beaches Hospital Connectivity and Network Enhancements Project, FRENCHS FOREST, NSW 2086		Road construction; Land-based extractive activity	Road Match	0m	West

POEO Licence Data Source: Environment Protection Authority

Delicensed & Former Licensed EPA Activities

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



EPA Activities

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Delicensed Activities still regulated by the EPA

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

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
7551	3M AUSTRALIA PTY LTD	3M AUSTRALIA	13 RODBOROUGH ROAD	FRENCHS FOREST	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	624m	South East

Delicensed Activities Data Source: Environment Protection Authority

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

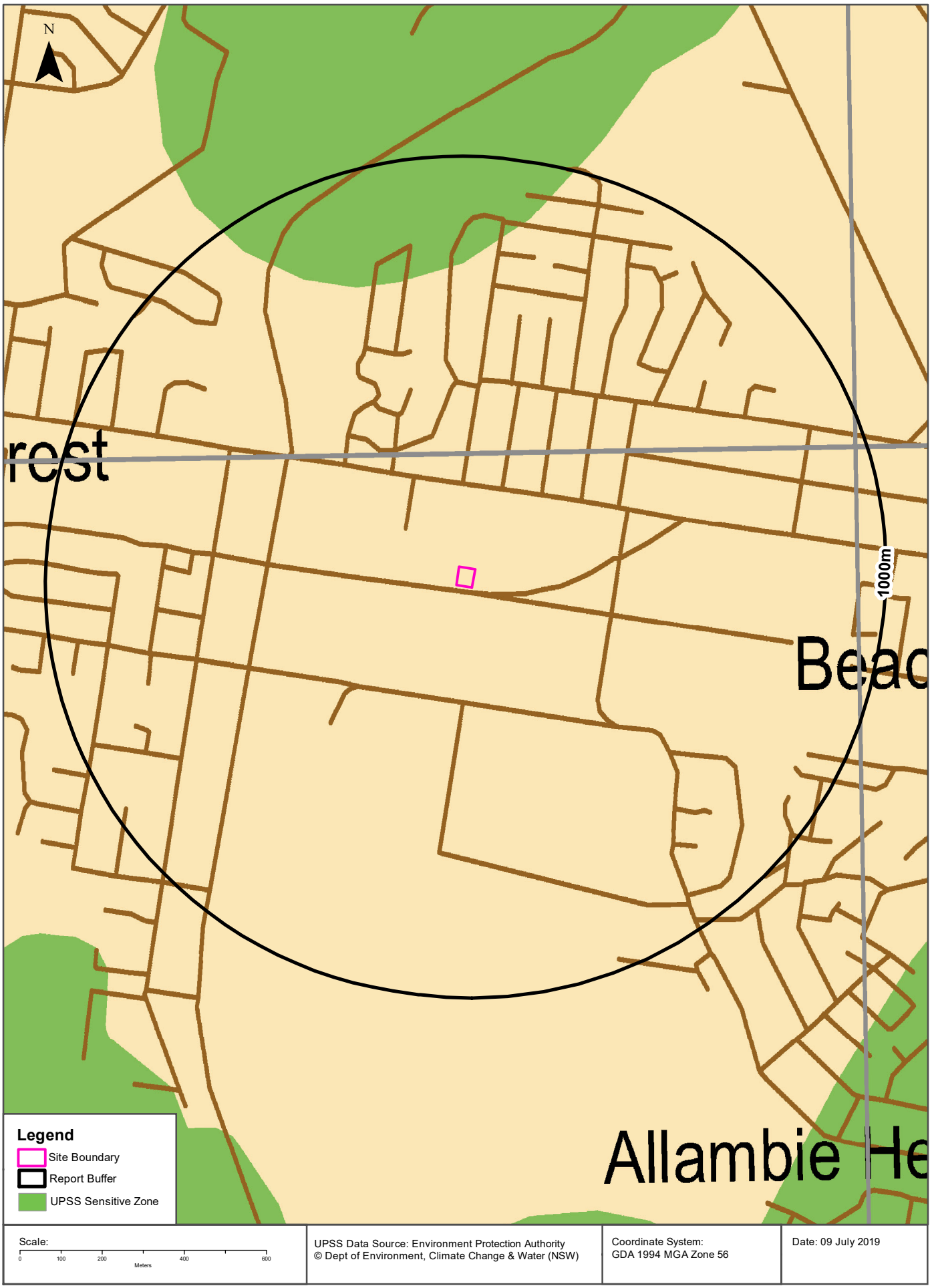
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
6050	ALCON LABORATORIES (AUSTRALIA) PTY LTD	10 & 11/25 FRENCHS FOREST ROAD EAST, FRENCHS FOREST, NSW 2086	Surrendered	03/04/2000	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	82m	East
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	508m	-
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	508m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	508m	-
12114	SILTECH PTY LTD	SILTECH PTY LTD, 15 Rodborough Road, FRENCHS FOREST	Surrendered	13/10/2005	Non-thermal treatment of hazardous and other waste	Premise Match	658m	South East

Former Licensed Activities Data Source: Environment Protection Authority

UPSS Sensitive Zones

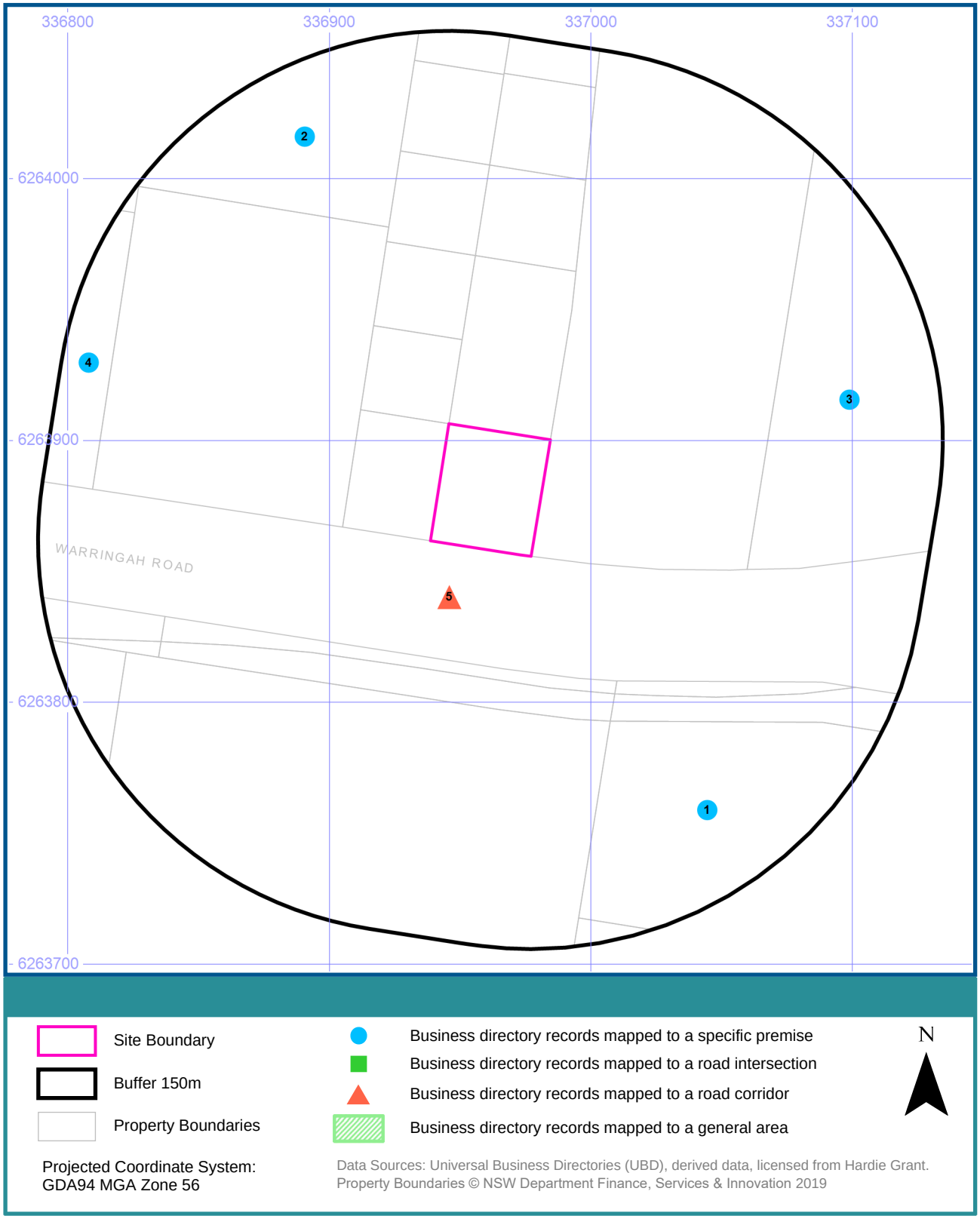
49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1991 Business to Business Directory Records



Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1991 Business to Business Directory Records Premise or Road Intersection Matches

Records from the 1991 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	Video Cassette Mfrs &/or Dists	Konika-Konshiroko, Unit B4 Forest View Estate 1-3 Rodborough Rd Frenchs Forest 2086	65747	Premise Match	70m	South East
	Computer Hardware Mfrs &/or Imps &/or Dists	Mitsui Computer Ltd, 3 Rodborough Rd., Frenchs Forest 2086	40075	Premise Match	70m	South East
	Oil Additives	Wynn's Australia Pty. Ltd., 1 Rodborough Rd., Frenchs Forest. 2086	56056	Premise Match	70m	South East
2	Computer Software	Microsoft Pty. Ltd., Unit 2/1 Skyline Rd., Frenchs Forest 2086	40342	Premise Match	79m	North West
	Surgical Supplies	Zimmer Australia Pty Ltd, Unit 1/1 Skyline Pl Frenchs Forest 2086	63690	Premise Match	79m	North West
	Surgical Instrument &/or Equipment Mfrs &/or Specialists	Zimmer Australia Pty Ltd, Unit 1/1 Skyline Pl Frenchs Forest 2086	63687	Premise Match	79m	North West
3	Laboratories	Alcon Laboratories (Australia) Pty. Ltd., Unit 10, Allambie Grove Park., 25 Frenchs Forest Rd., Brookvale. 2100	50462	Premise Match	82m	East
4	Video Cassette &/or Disc (prerecorded) Distributors	CIC Video Cinema International Corporation, 2/4 Skyline Pl., Frenchs Forest 2086	96848	Premise Match	131m	West
	Office Equipment &/or Supplies Mfrs &/or Imps &/or W/salers	Letraset, 5/4 Skyline Pl., Frenchs Forest. 2086	55991	Premise Match	131m	West
	Cleaners General	Tempo Services., Unit 4/4 Skyline Pl, Frenchs Forest 2086	39056	Premise Match	131m	West

1991 Business to Business Directory Records Road or Area Matches

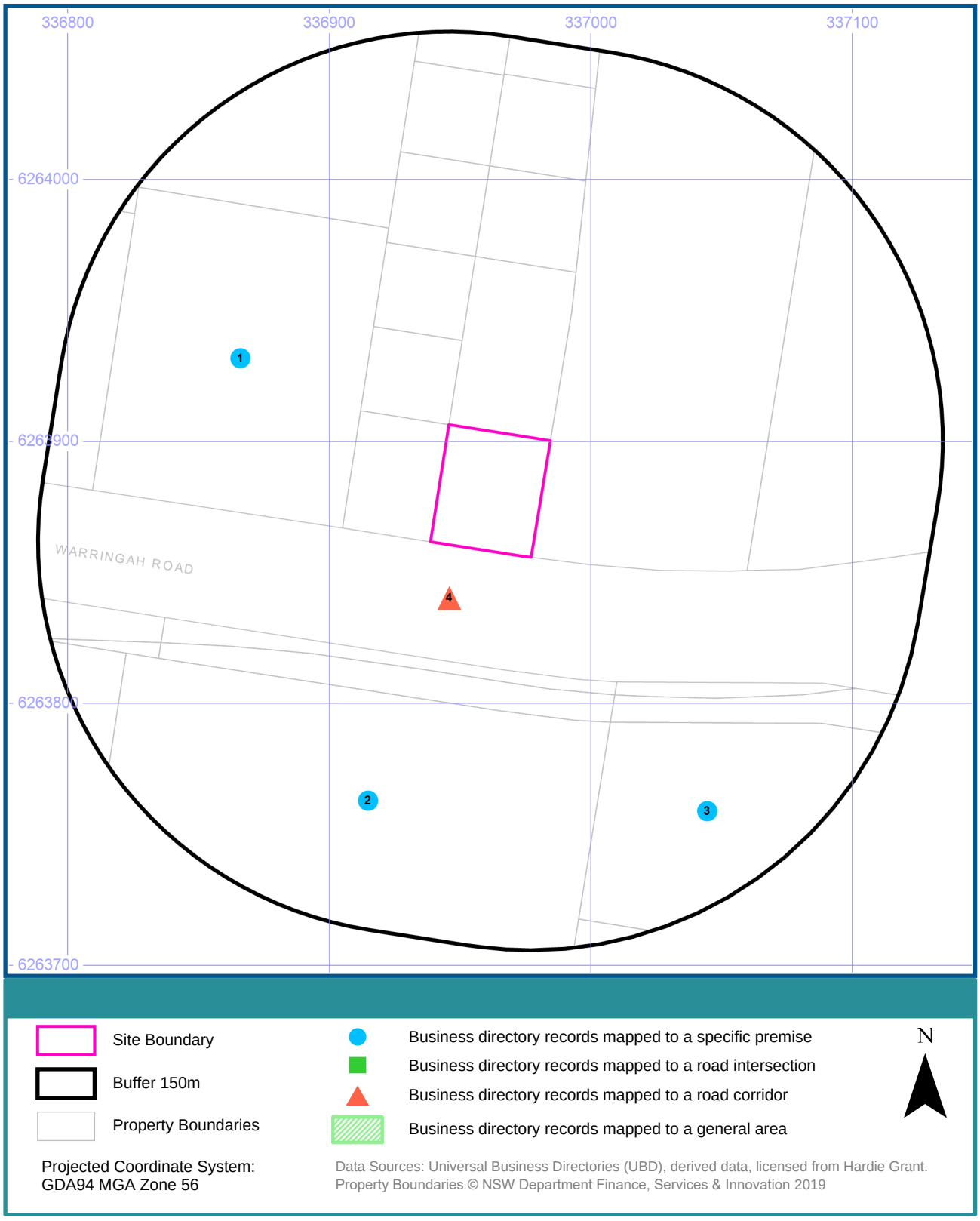
Records from the 1991 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
5	Motor Garages & Service Stations	Esso Frenchs Forest Service Station, Warringah Rd., Frenchs Forest 2086	53720	Road Match	0m
	Tyre Dealers &/or Retreaders &/or Vulcanisers	Owen Tyres, Warringah Rd Frenchs Forest 2086	65324	Road Match	0m
	Property Management	Stewart Upton Frenchs Forest Forestworld, Warringah Rd, Frenchs Forest 2086	59716	Road Match	0m

Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1986 Business to Business Directory Records



Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1986 Business to Business Directory Records Premise or Road Intersection Matches

Records from the 1986 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	PICTURE THEATRES.	Skyline Drive-In Theatre, Warringah Rd., Frenchs Forest. 2086	73795	Premise Match	34m	North West
2	COSMETIC MFRS. &/OR W/SALERS.	Avon Products Pty. Ltd., 431 Warringah Rd., Frenchs Forest. 2086	20507	Premise Match	60m	South
3	VIDEO CASSETTE & DISC DISTRIBUTORS.	Konika-Konishiroko, Unit 84, Forest View Estate, 1-3 Rodborough Rd. Frenchs Forest. 2086	97906	Premise Match	70m	South East
	COMPUTER MFRS. &/OR IMPS. &/OR DISTS.	Mitsui Computer Ltd. 1 Rodborough Rd, Frenchs Forest. 2086	19487	Premise Match	70m	South East
	FACSIMILE BUREAUX.	Mitsui Computer Ltd., 1 Rodborough Rd., Frenchs Forest. 2086	31853	Premise Match	70m	South East

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1986 Business to Business Directory Records Road or Area Matches

Records from the 1986 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
4	MOTOR GARAGES & SERVICE STATIONS.	Esso Frenchs Forest Service Station, Warringah Rd., Frenchs Forest. 2086	64627	Road Match	0m
	CHEMICAL MFRS. &/OR IMPS. &/OR DISTS.	Smith, Kline & French Laboratories (Aust.) Ltd., Warringah Rd., Frenchs Forest. 2086	13734	Road Match	0m
	CHEMISTS-PHARMACEUTICAL -MFRS. &/OR IMPS. &/OR W/SALERS.	Smith, Kline & French Laboratories (Aust.) Ltd., Warringah Rd., Frenchs Forest. 2086	13854	Road Match	0m
	REAL ESTATE AGENTS.	Stewart Upton Pty, Ltd., Warringah Rd., Frenchs Forest. 2086	80226	Road Match	0m
	PROPERTY MANAGEMENT.	Stewart Upton Pty. Ltd., Warringah Rd., Frenchs Forest. 2086	77983	Road Match	0m
	AUCTIONEERS REAL ESTATE	Stewart Upton Pty. Ltd., Warringah Rd., Frenchs Forest.2086	4619	Road Match	0m

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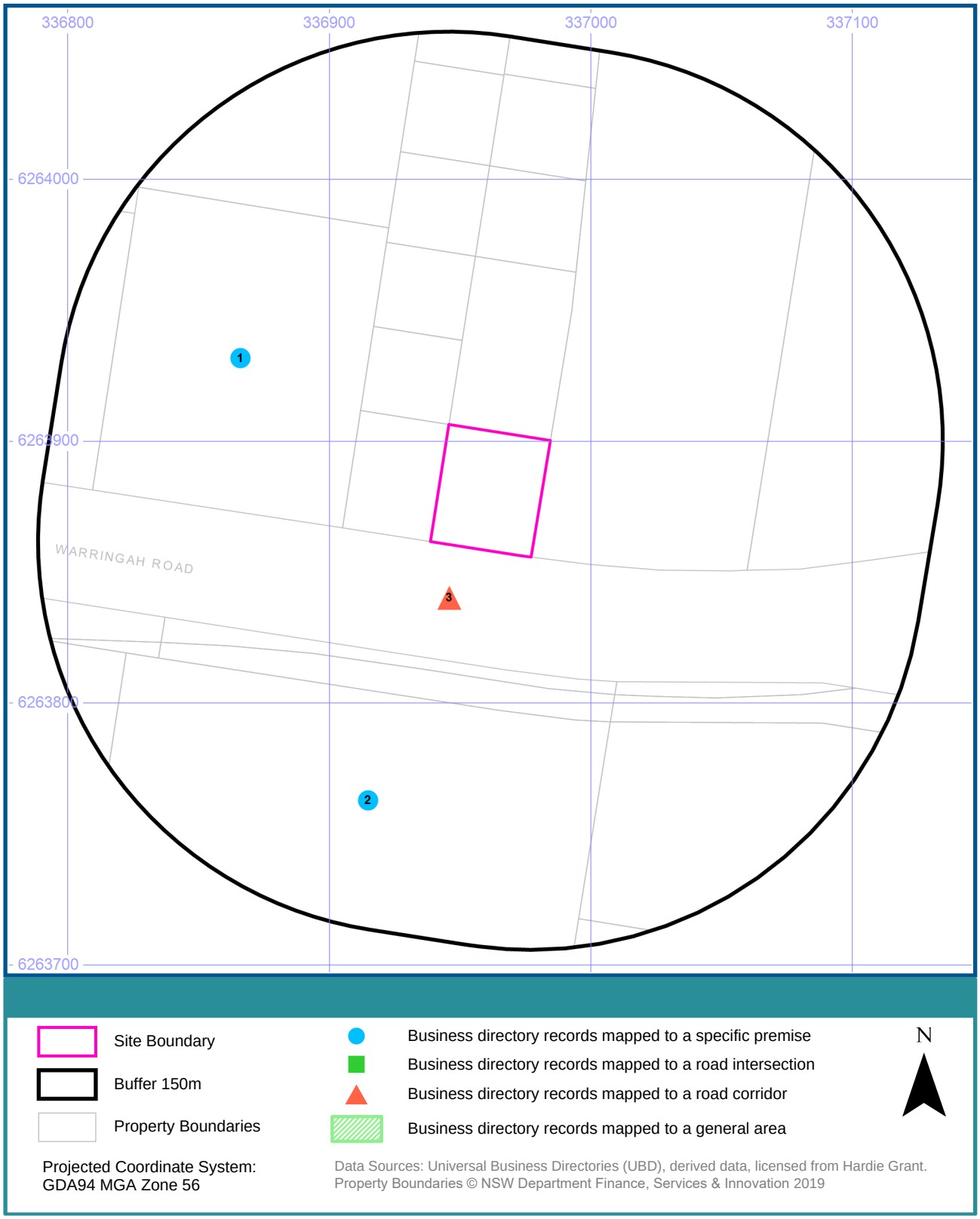
Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1982 Business Directory Records



Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1982 Business Directory Records
Premise or Road Intersection Matches

Records from the 1982 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	THEATRES - DRIVE-IN. (T3600)	Frenchs Forest Skyline Drive-In (Hoyts), Frenchs Forest Rd., Frenchs Forest. 2086.	79953	Premise Match	34m	North West
	PICTURE THEATRES. (P4420)	Skyline Drive-In Theatre, Warringah Rd., Frenchs Forest. 2086.	64195	Premise Match	34m	North West
2	COSMETIC MFRS. &/OR W/SALERS. (C8415)	Avon Products Pty. Ltd., 431 Warringah Rd., Frenchs Forest. 2086.	18208	Premise Match	60m	South

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1982 Business Directory Records
Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
3	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Esso Frenchs Forest Service Station, Warringah Rd., Frenchs Forest. 2086.	56695	Road Match	0m
	RESTAURANTS. (R5180)	Forest Fire Kettle, 3 Warringah Rd., Frenchs Forest. 2086.	70849	Road Match	0m
	CHEMISTS MFRG.&/OR W/SALERS. (C4095)	Menley & James Laboratories, Warringah Rd., Frenchs Forest. 2086.	14631	Road Match	0m
	CHEMICAL MFRS. &/OR IMPS.&/OR DISTS. (C3855)	Smith, Kline & French Laboratories (Aust.) Ltd., Warringah Rd., Frenchs Forest. 2086.	14515	Road Match	0m
	CHEMISTS MFRG.&/OR W/SALERS. (C4095)	Smith, Kline & French Laboratories (Aust.) Ltd., Warringah Rd., Frenchs Forest. 2086.	14661	Road Match	0m
	REAL ESTATE AGENTS. (R2555)	Stewart Upton Pty. Ltd., Warringah Rd., Frenchs Forest. 2086.	69754	Road Match	0m

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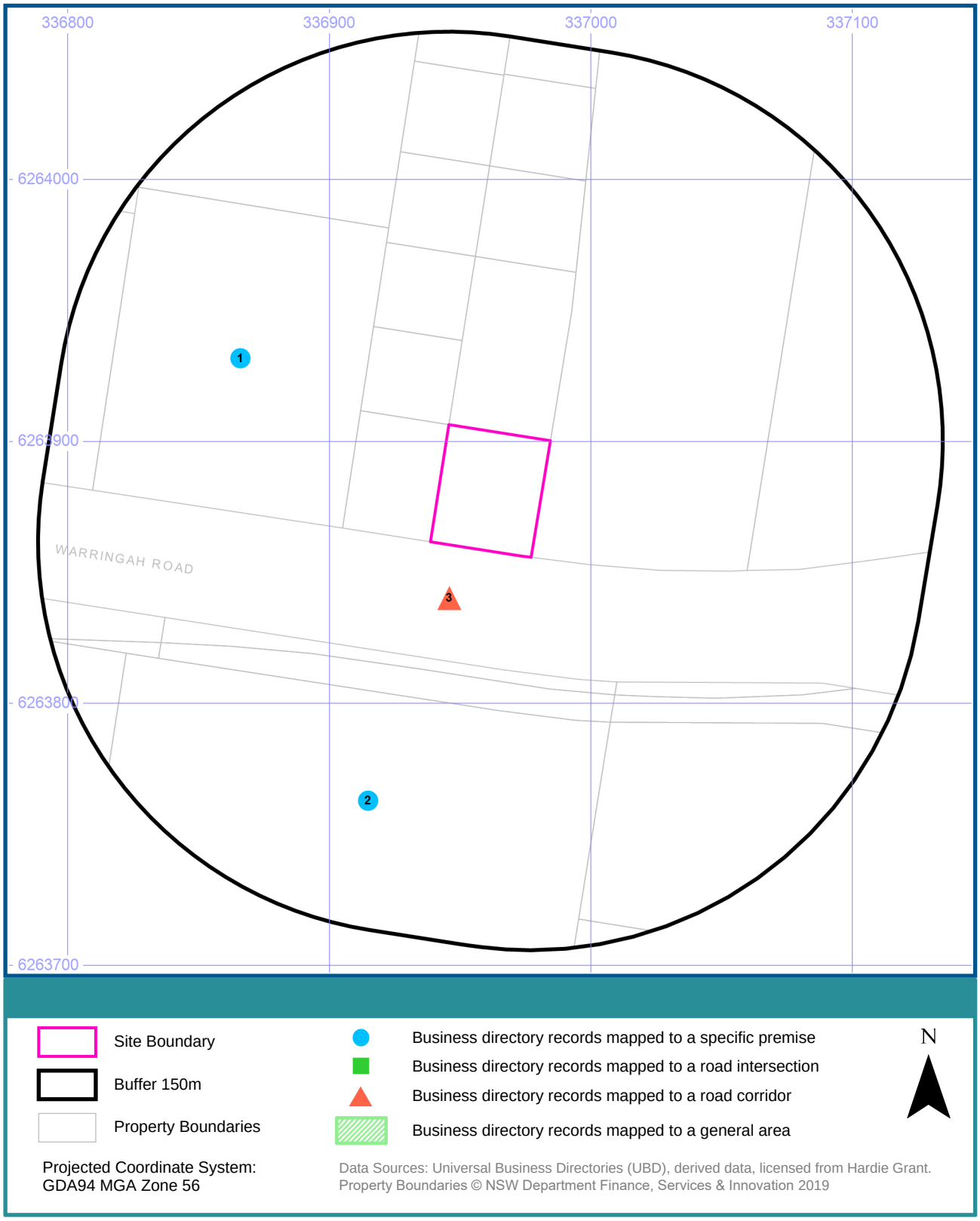
Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1978 Business Directory Records



Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1978 Business Directory Records
Premise or Road Intersection Matches

Records from the 1978 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	PICTURE THEATRES.	Skyline Drive-In, Warringah Rd., Frenchs Forest. 2086	57122	Premise Match	34m	North West
2	COSMETIC MFRS. &/OR W/SALERS.	Avon Products Pty. Ltd., 431 Warringah Rd., Frenchs Forest. 2086	16459	Premise Match	60m	South

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1978 Business Directory Records
Road or Area Matches

Records from the 1978 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
3	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Esso Servicenter, Warringah Rd., Frenchs Forest. 2086	49989	Road Match	0m
	CHEMISTS MFRG. &/OR W/SALERS.	Menley & James Laboratories. Warringah Rd., Frenchs Forest. 2086	12823	Road Match	0m
	CHEMICAL MFRS. &/OR DISTS. &/OR IMPS.	Smith, Kline & French Laboratories (Aust.) Ltd., Warringah Rd., Frenchs Forest. 2086	12654	Road Match	0m
	CHEMISTS MFRG. &/OR W/SALERS.	Smith. Kline & French Laboratories (Aust.) Ltd., Warringah Rd., Frenchs Forest. 2086	12857	Road Match	0m
	REAL ESTATE AGENTS &/OR VALUERS.	Stewart, Upton Pty. Ltd, Warringah Rd, Frenchs Forest. 2086	62277	Road Match	0m

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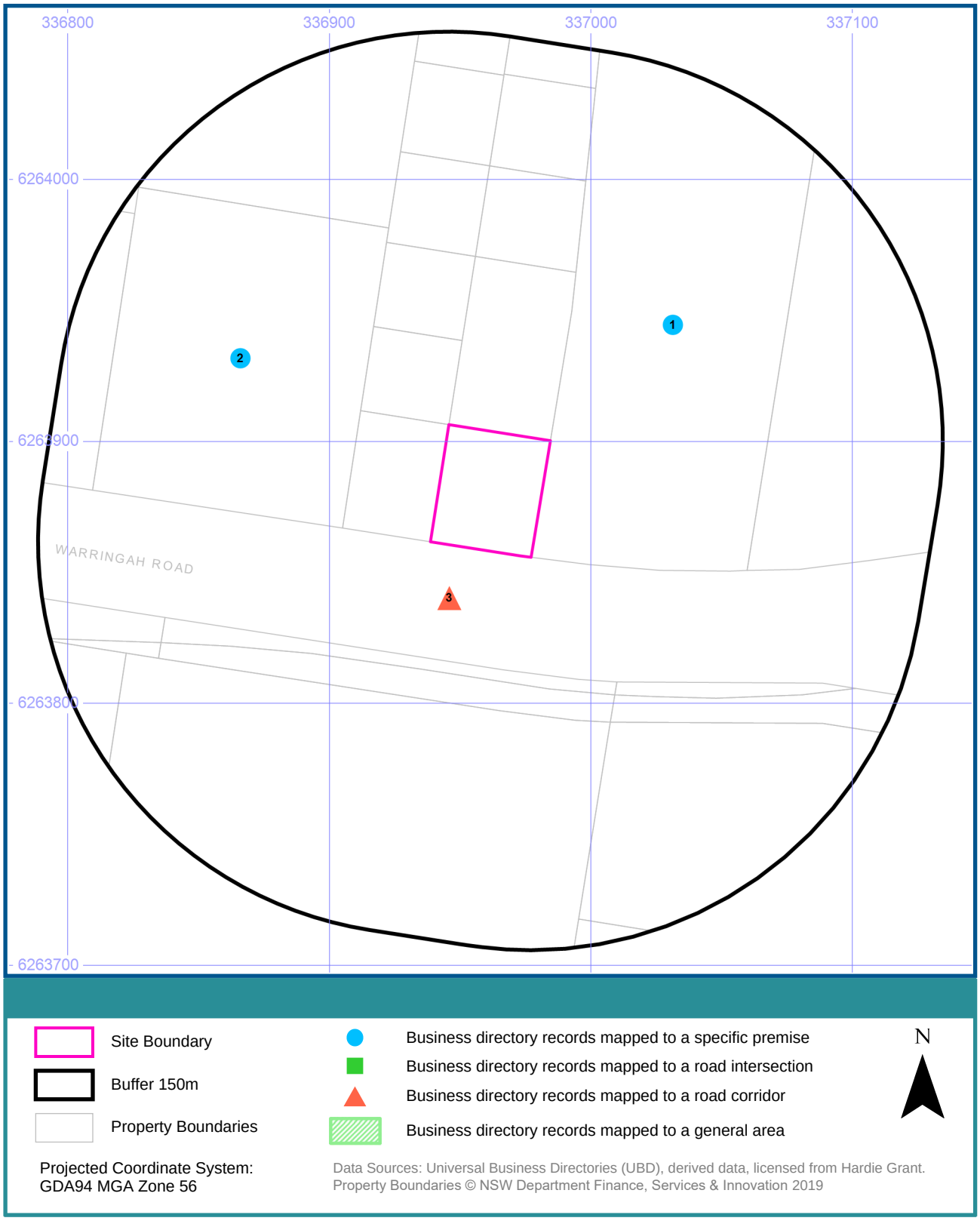
Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1975 Business Directory Records



Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1975 Business Directory Records
Premise or Road Intersection Matches

Records from the 1975 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	HOTELS-LICENCED	Antler Parkway Hotel-Motel., Frenchs Forest Rd., Frenchs Forest. 2086	42698	Premise Match	0m	North East
	MOTELS	Antler Parkway Hotel-Motel., Frenchs Forest Rd., Frenchs Forest. 2086	55986	Premise Match	0m	North East
2	PICTURE THEATRES.	Skyline Drive-In., Warringah Rd., Frenchs Forest.2086	67276	Premise Match	34m	North West

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1975 Business Directory Records
Road or Area Matches

Records from the 1975 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
3	BUTCHERS-RETAIL	Elvy's Pty. Ltd., Warringah Rd., Frenchs Forest. 2086	10325	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Esso Servicenter., Warringah Rd., Frenchs Forest.2086	58827	Road Match	0m
	FRUIT VEGETABLE, POTATO &/OR PRODUCE AGENTS &/OR WSALERS.	Frenchs Forest Fruit Market, Warringah Rd., Frenchs Forest. 2086	34702	Road Match	0m
	FRUITERERS &/OR GREENGROCERS.	Frenchs Forest Fruit Market, Warringah Rd., Frenchs Forest. 2086	35232	Road Match	0m
	MIXED BUSINESSES.	Frenchs Forest Fruit Market., Warringah Rd., Frenchs Forest.2086	54869	Road Match	0m
	NEWSAGENTS-GENERAL	Frenchs Forest Fruit Market., Warringah Rd., Frenchs Forest.2086	63559	Road Match	0m
	RESTAURANTS.	Maxs Haystack., Warringah Rd., Frenchs Forest.2086	73959	Road Match	0m
	CHEMISTS MFRG. &/OR W/SALERS.	Menley & James Laboratories, Warringah Rd., Frenchs Forest. 2086	14837	Road Match	0m
	CHEMICAL MFRS. &/OR DISTS. &/OR IMPS	Smith, Kline & French Laboratories (Aust.) Ltd., Warringah Rd., Frenchs Forest 2086	14633	Road Match	0m
	CHEMISTS MFRG. &/OR W/SALERS.	Smith, Kline & French Laboratories (Aust.) Ltd., Warringah Rd., Frenchs Forest. 2086	14878	Road Match	0m
	REAL ESTATE AGENTS &/OR VALUERS.	Stewart, Upton Pty. Ltd., Warringah Rd., Frenchs Forest.2086	72998	Road Match	0m

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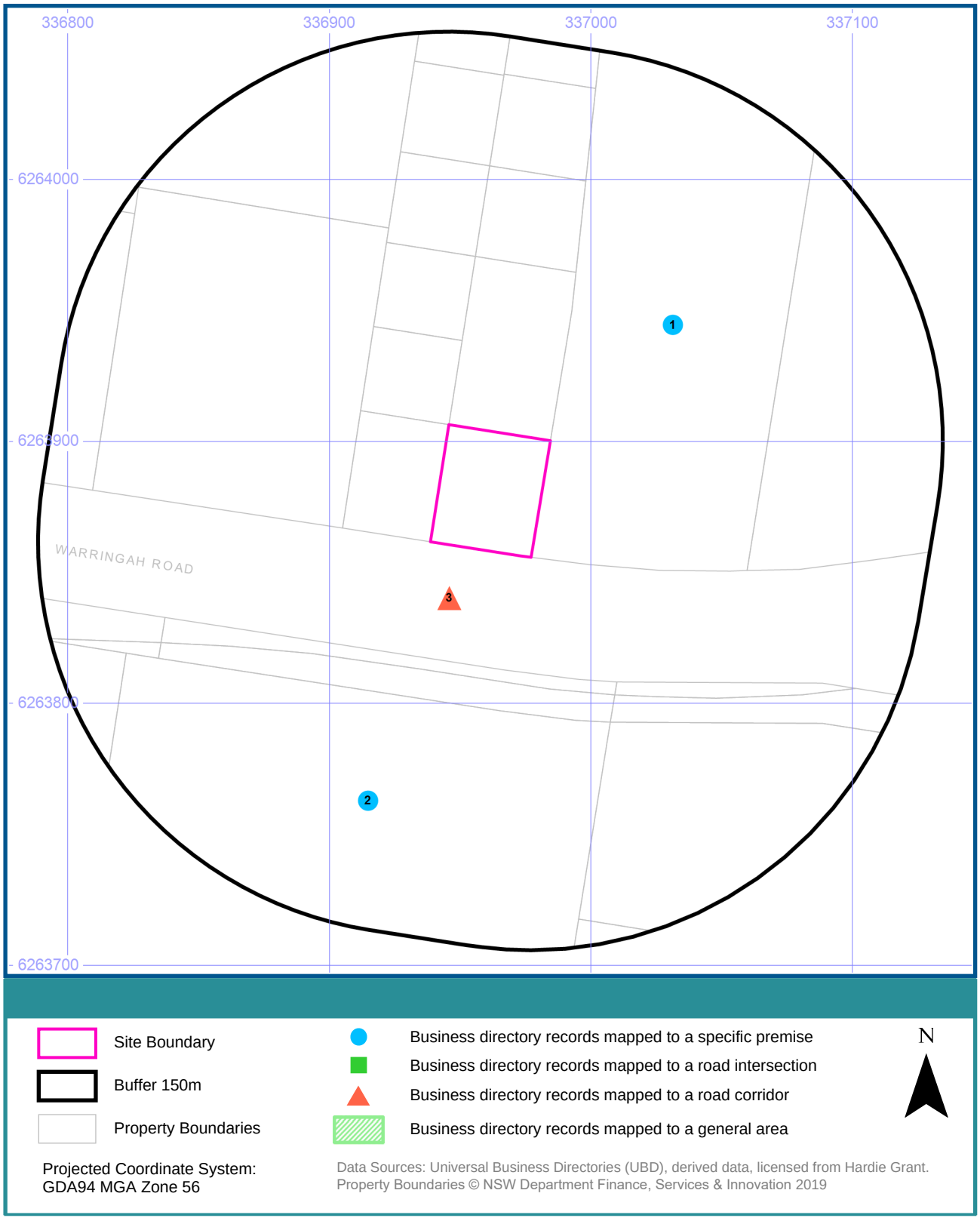
Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1970 Business Directory Records



Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1970 Business Directory Records
Premise or Road Intersection Matches

Records from the 1970 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MOTELS (M442)	Antler Parkway Hotel-Motel., Frenchs Forest Rd., Frenchs Forest	334380	Premise Match	0m	North East
	HOTELS-LICENSED (H690)	Antler Parkway., Frenchs Forest Rd., French's Forest	317072	Premise Match	0m	North East
2	COSMETIC MFRS. &/OR W'SALERS (C692)	Avon Products Pty. Ltd., 431 Warringah Rd., Frenchs Forest, 2086	285981	Premise Match	60m	South

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

1970 Business Directory Records
Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
3	FIRE BRICK MANUFACTURERS (F182)	Booth Bricks & Refractories Pty. Ltd., Rodborough Rd.,Frenchs Forest.	303093	Road Match	0m
	REFRACTORY MATERIALS MFRS &/OR SUPPLIERS (R240)	Booth's Brick & Refractories Pty. Ltd., Rodborough Rd., Frenchs Forest	356401	Road Match	0m
	MOTOR GARAGES & ENGINEERS(M6S6)	Esso Servicenter., Warringah Rd., FRENCH'S FOREST	337772	Road Match	0m
	FRUIT, VEGETABLE, POTATO & PRODUCE AGENTS &/OR W'SALERS (F637)	Frenchs Forest Fruit Market., Warringah Rd., Frenchs Forest	306388	Road Match	0m
	FRUITERERS/GREENGROCERS (F640)	Frenchs Forest Fruit Market., Warringah Rd., Frenchs Forest	307086	Road Match	0m
	CAFES, COFFEE LOUNGES, Etc. (C030)	Haystack (The), No. 5 Shopping Centre., Warringah Rd.,Frenchs Forest	275683	Road Match	0m
	CHEMISTS-MANUFACTURING &/OR WHOLESALE	Menley & James Laboratories, Warringah Rd., French's Forest.	279900	Road Match	0m
	SOLICITORS (S413)	Wade, F. J., Warringah Rd., Frenchs Forest	363125	Road Match	0m

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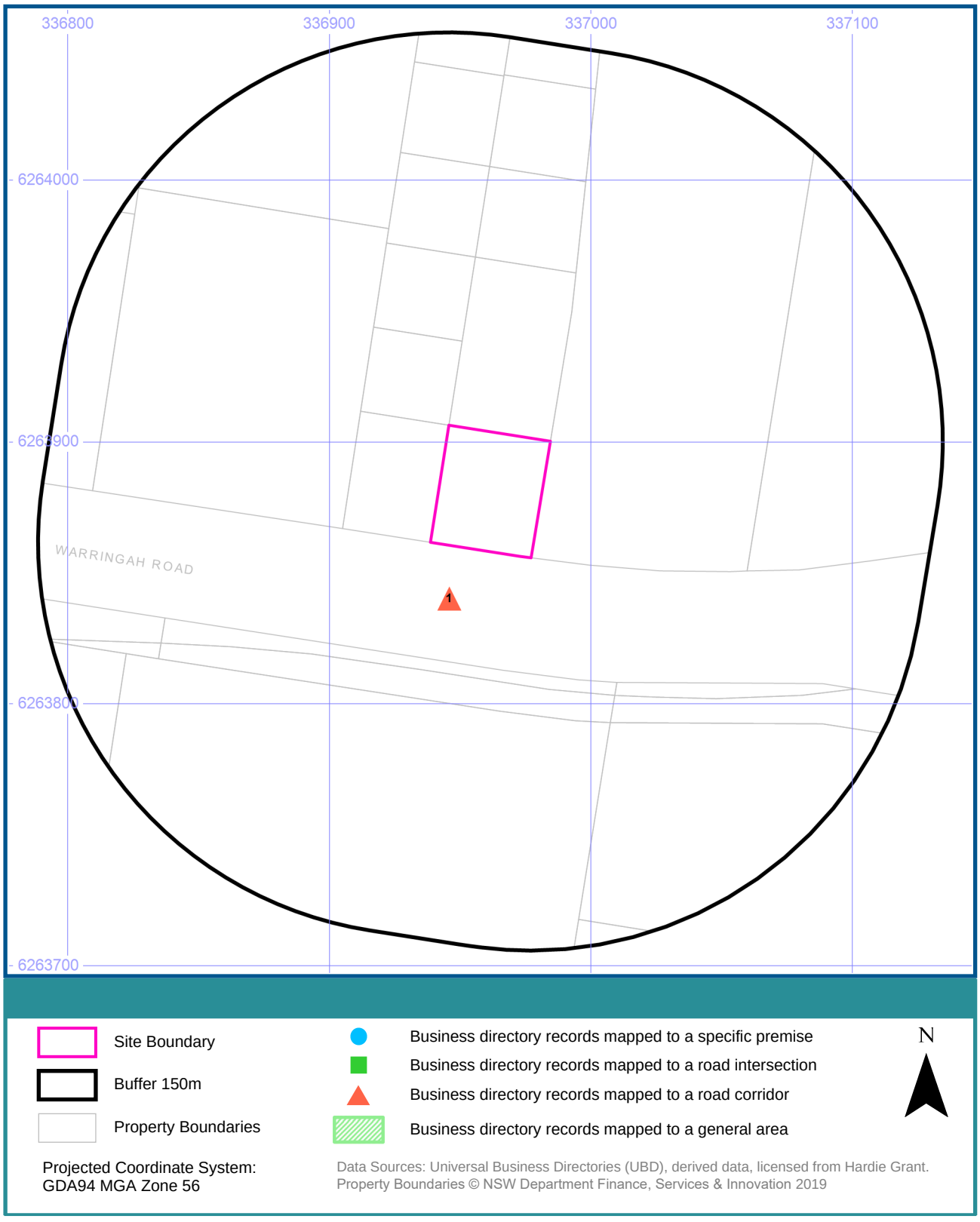
Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1965 Business Directory Records



Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1965 Business Directory Records
Premise or Road Intersection Matches

Records from the 1965 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

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

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

1965 Business Directory Records
Road or Area Matches

Records from the 1965 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

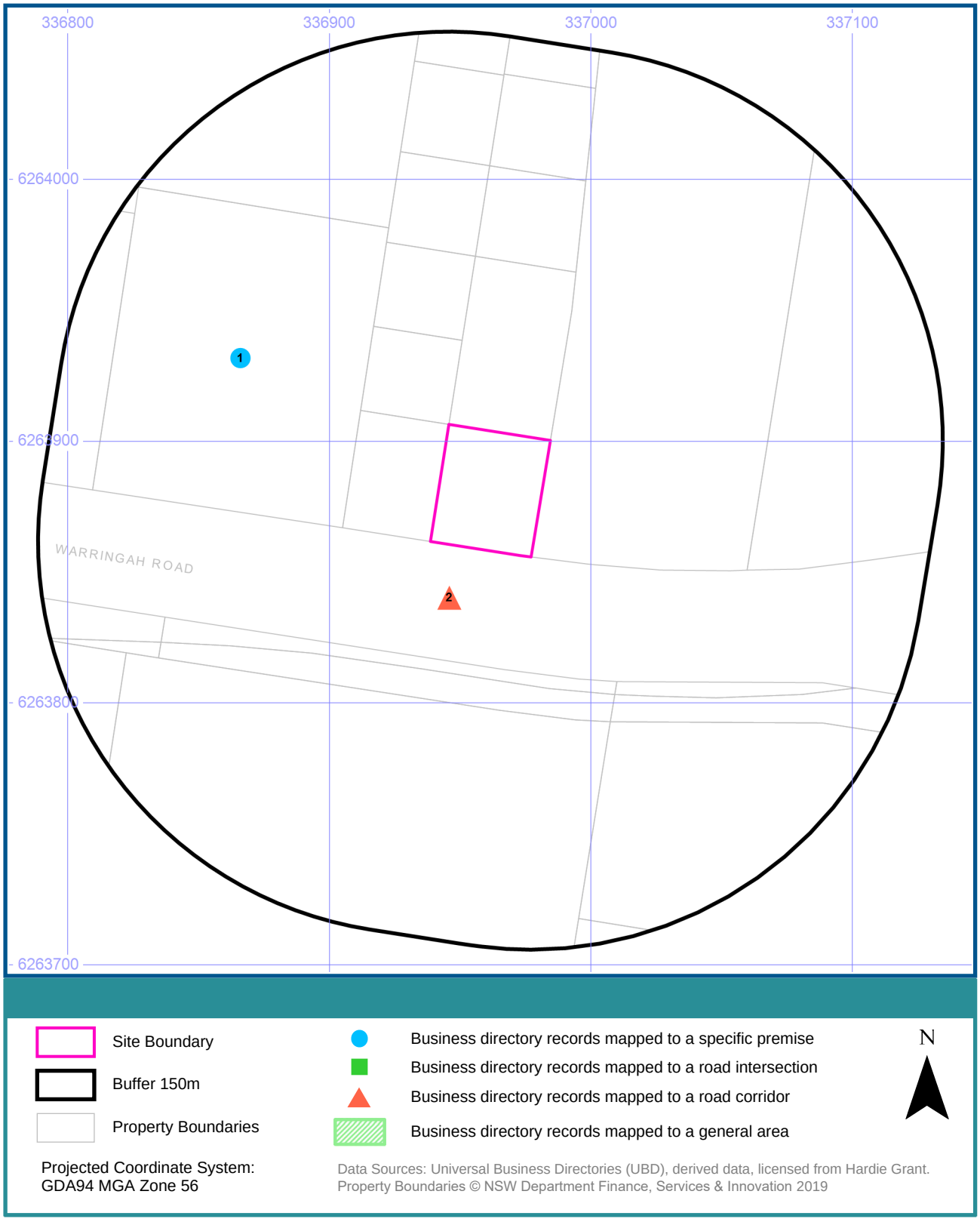
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	Refractory Materials Mfrs. &/or Suppliers	Booth Bricks & Refractories Pty. Ltd., Rodborough Rd., Frenchs Forest	139893	Road Match	0m
	Fire Brick Manufacturers	Booth Bricks Refractories Pty. Ltd., Rodborough Rd., Frenchs Forest	86463	Road Match	0m
	Fireclay Manufacturers	Booth Bricks Refractories Pty. Ltd., Rodborough Rd., Frenchs Forest	86471	Road Match	0m
	Cafes, Tea Rooms, Coffee Lounges, Etc.	Haystack (The), No. 5 Shopping Centre, Warringah Rd., Frenchs Forest	60427	Road Match	0m

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

Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1961 Business Directory Records



Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1961 Business Directory Records
Premise or Road Intersection Matches

Records from the 1961 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	PICTURE THEATRES	French's Forest Skyline Drive-In, Warringah Rd., Frenchs Forest	358440	Premise Match	34m	North West
	PICTURE THEATRES	Skyline Drive In, Warringah Rd., Frenchs Forest	358546	Premise Match	34m	North West

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1961 Business Directory Records
Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	FRUITERERS/GREENGROCERS	Frenchs Forest Market, 4 Shopping Centre, Warringah Rd., Frenchs Forest	315398	Road Match	0m
	CAFES, TEA ROOMS, COFFEE LOUNGES, Etc.	Haystack (The), No. 5 Shopping Centre, Warringah Rd., Frenchs Forest	282222	Road Match	0m
	MOTOR GARAGES & ENGINEERS	Sheppard's Service Station, Warringah Rd. FRENCH'S FOREST	348125	Road Match	0m

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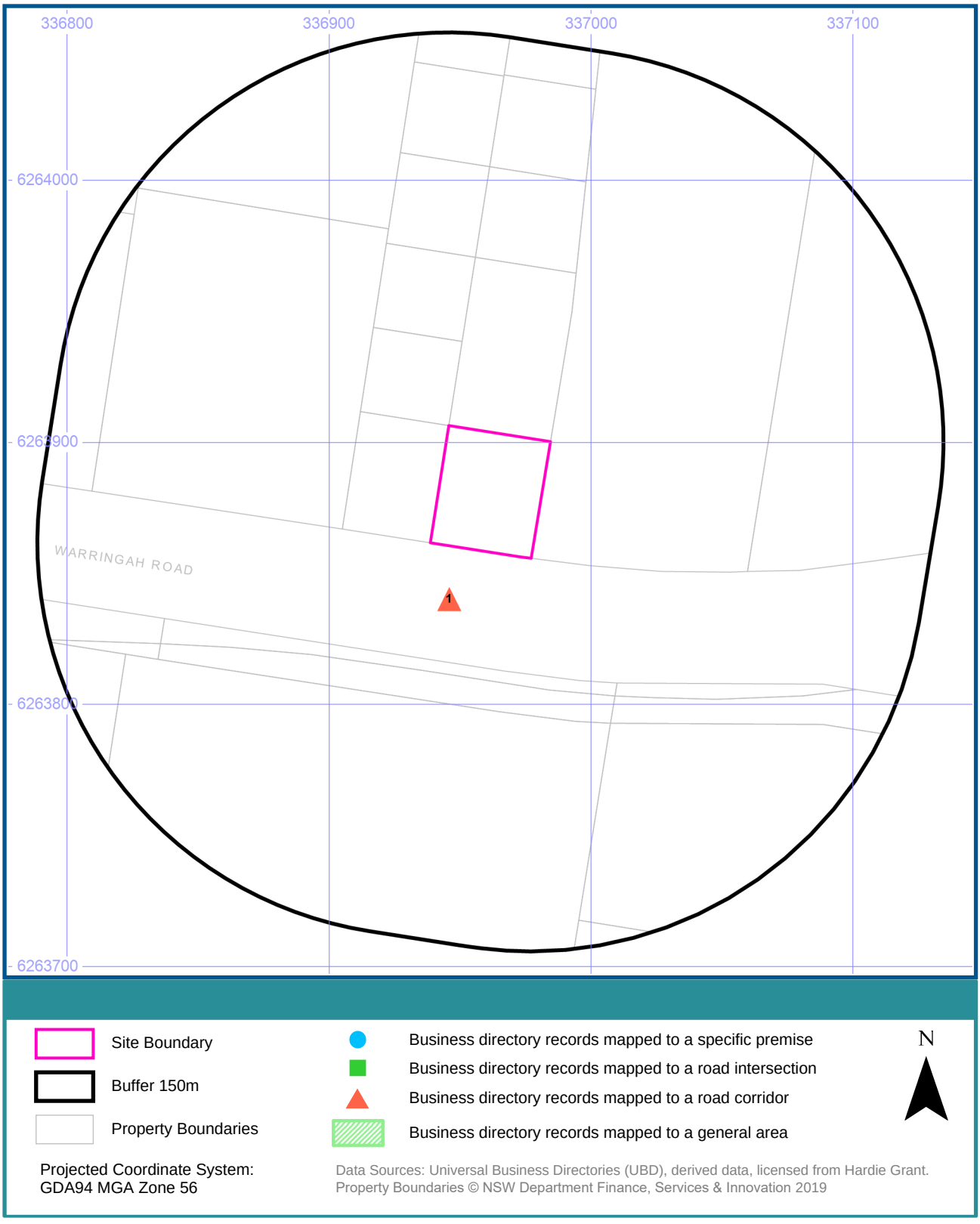
Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1950 Business Directory Records



Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

1950 Business Directory Records
Premise or Road Intersection Matches

Records from the 1950 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

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

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

1950 Business Directory Records
Road or Area Matches

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

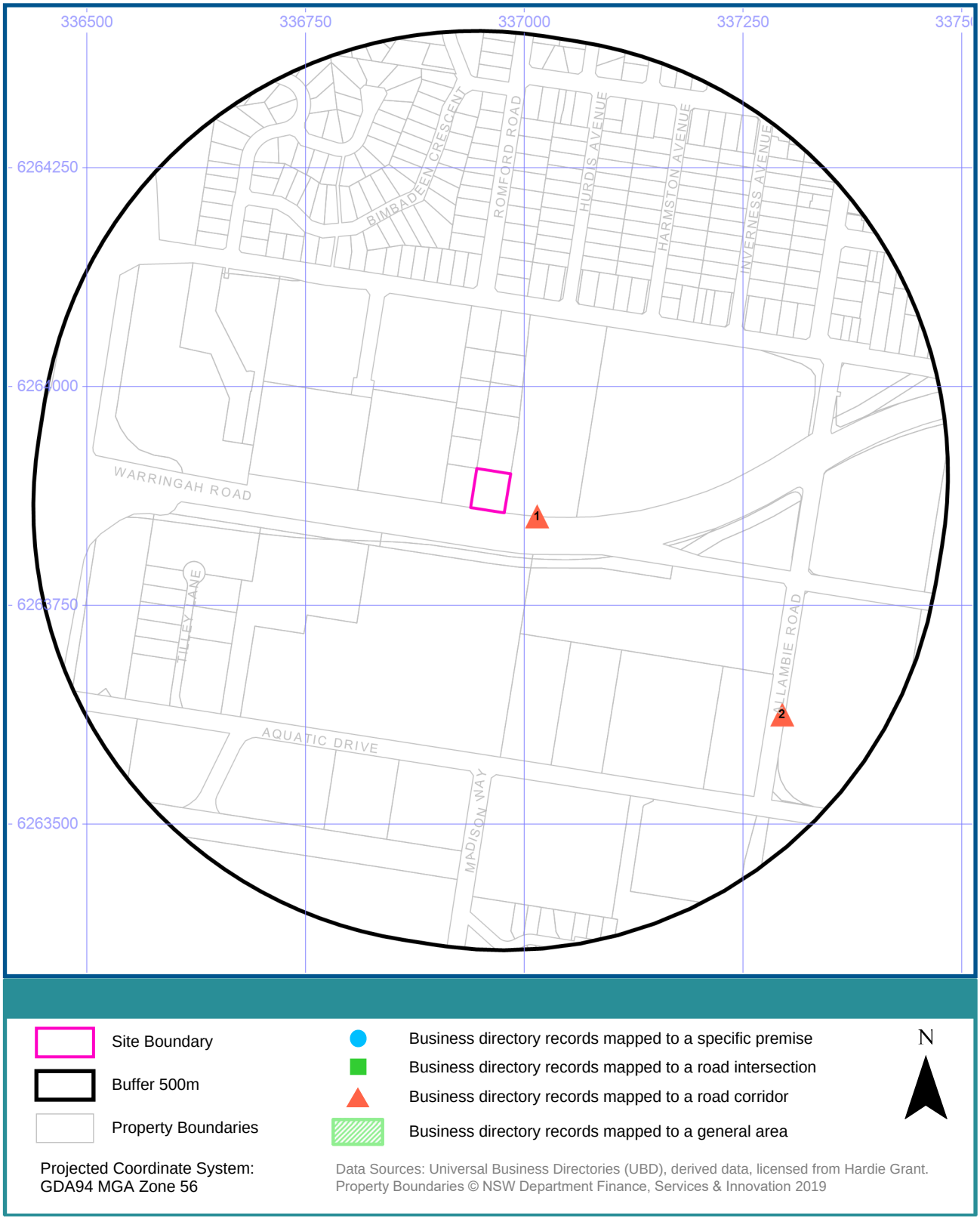
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	MIXED BUSINESSES & GENERAL STORES	McKay, J., Cnr. Warringah and Pymble Rds., Frenchs Forest	80531	Road Match	0m
	GROCERS-RETAIL	McKay, John, Cnr Pymble and Warringah Rds., Frenchs Forest	58299	Road Match	0m

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

Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Dry Cleaners, Motor Garages & Service Stations (1948-1993)



Historical Business Directories

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Matches (1948-1993)

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

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

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

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

Dry Cleaners, Motor Garages & Service Stations Road or Area Matches (1948-1993)

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

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
1	Motor Garages & Service Stations	Esso Frenchs Forest Service Station, Warringah Rd., Frenchs Forest 2086	53720	1991	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Esso Frenchs Forest Service Station, Warringah Rd., Frenchs Forest. 2086	64627	1986	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Esso Frenchs Forest Service Station, Warringah Rd., Frenchs Forest. 2086	28206	1984	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Esso Frenchs Forest Service Station, Warringah Rd., Frenchs Forest. 2086.	56695	1982	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Esso Servicenter, Warringah Rd., Frenchs Forest. 2086	49989	1978	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Esso Servicenter., Warringah Rd., Frenchs Forest 2086	29946	1976	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Esso Servicenter., Warringah Rd., Frenchs Forest.2086	58827	1975	Road Match	0m
	MOTOR GARAGES & ENGINEERS(M6S6)	Esso Servicenter., Warringah Rd., FRENCH'S FOREST	337772	1970	Road Match	0m
	MOTOR GARAGES & ENGINEERS	Sheppard's Service Station, Warringah Rd. FRENCH'S FOREST	348125	1961	Road Match	0m
2	DRY CLEANERS & PRESSERS.	Allambie Dry Cleaners, Shopping Center, Allambie Rd., Allambie Heights. 2100	52983	1988	Road Match	334m
	MOTOR SERVICE STATIONS-PETROL,OIL,Etc.	BP Allambie Heights Service Station., Allambie Rd., ALLAMBIE HEIGHTS	340867	1970	Road Match	334m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	BP Allambie Heights Service Station., Allambie Rd., Allambie Heights	47419	1969	Road Match	334m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	BP Allambie Heights Service Station., Allambie Rd., Allambie Heights	30844	1968	Road Match	334m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	BP Allambie Heights Service Station., Allambie Rd Alexandria	15323	1967	Road Match	334m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	BP Allambie Heights Service Station., Allambie Rd Alexandria	60989	1966	Road Match	334m

Aerial Imagery 2009

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Scale:
0 25 50 100
Meters

Data Source Aerial Imagery: © 2019 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 08 July 2019

Aerial Imagery 2005

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Scale: 0 25 50 100 Meters	Data Source Aerial Imagery: © 2019 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 08 July 2019

Aerial Imagery 1991

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Scale: 0 25 50 Metres	Data Sources: Aerial Imagery © Department of Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 July 2019

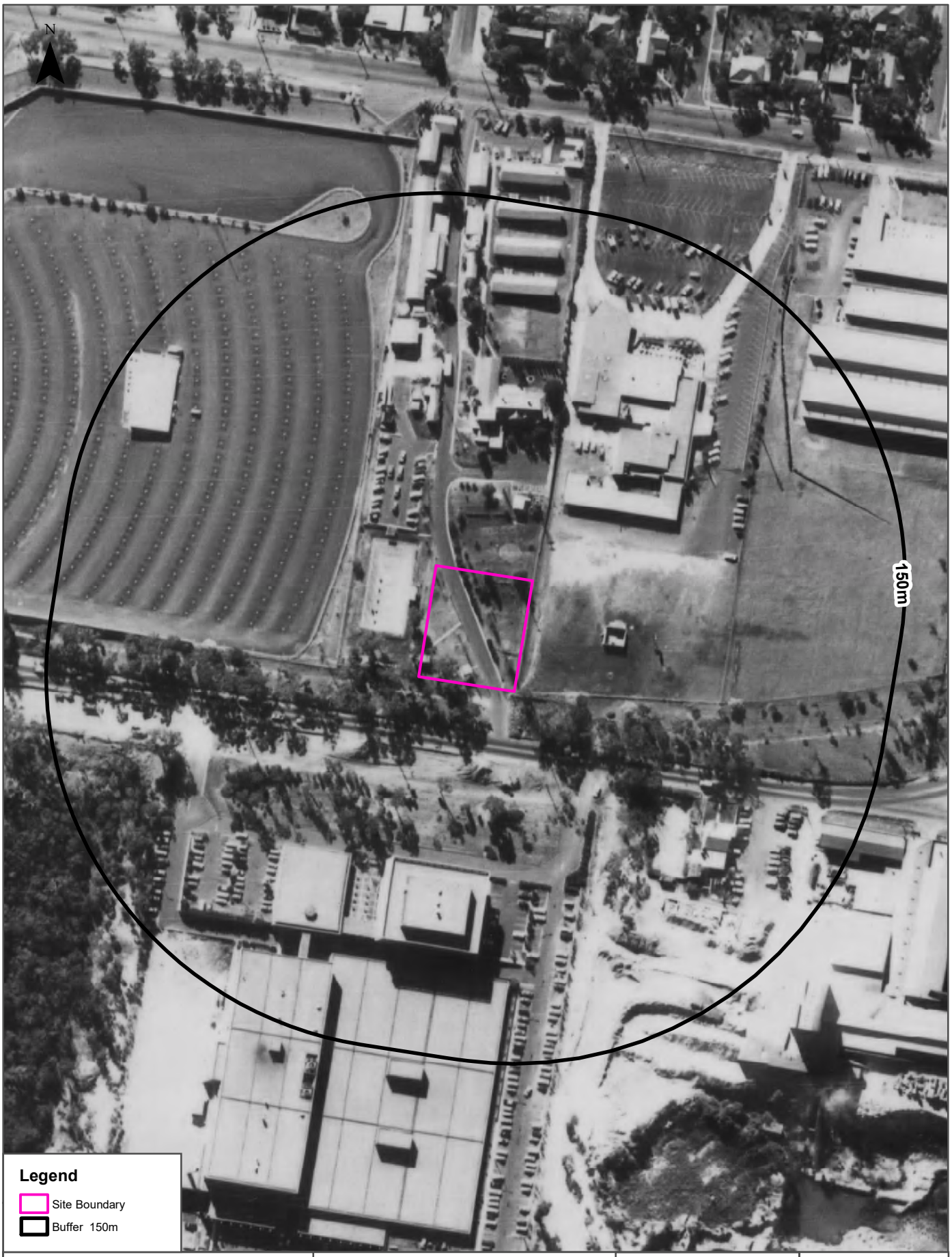
Aerial Imagery 1982

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Scale: 0 25 50 Metres	Data Sources: Aerial Imagery © Department of Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 July 2019

Aerial Imagery 1970

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



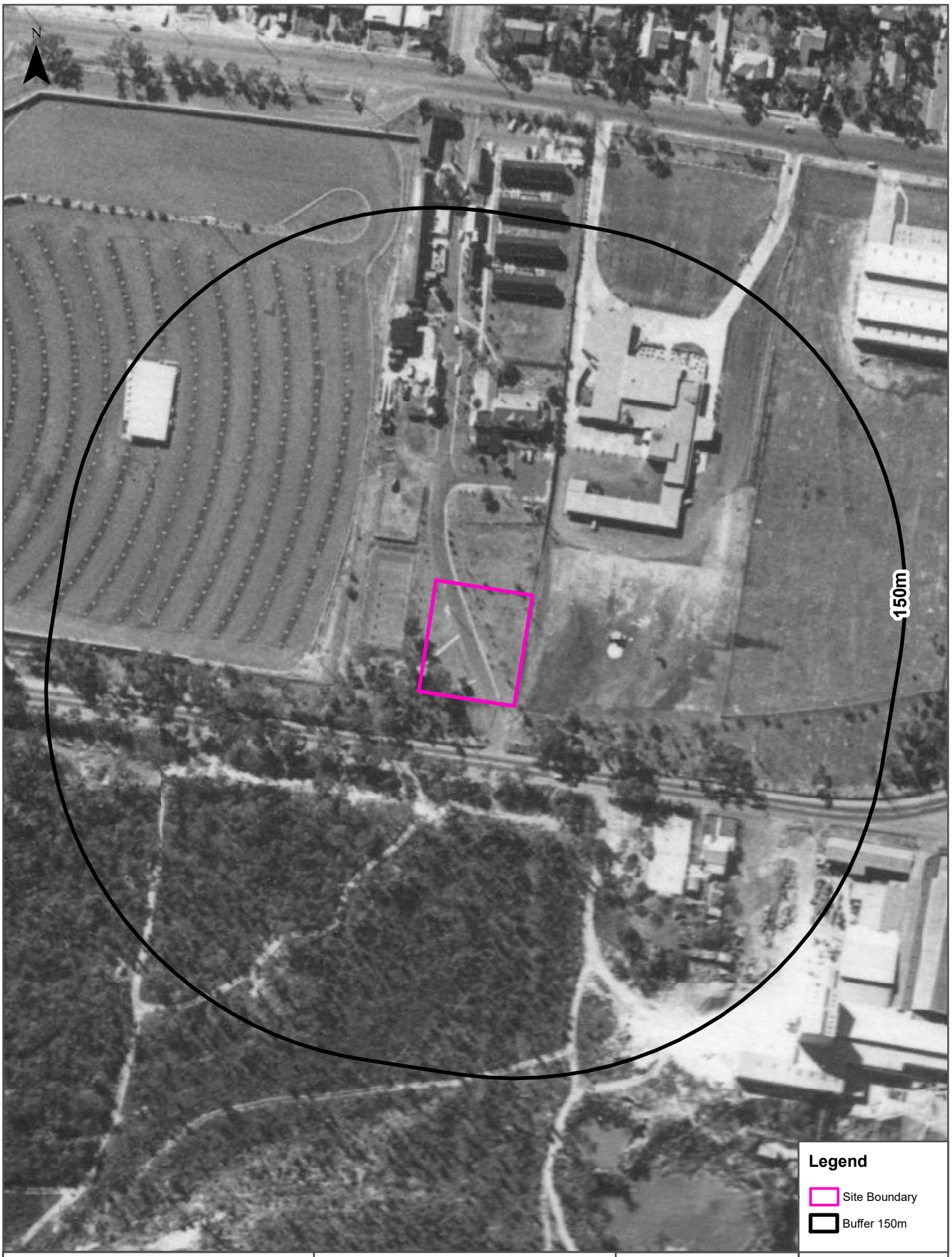
Data Sources: Aerial Imagery © Department of Finance, Services & Innovation

Coordinate System: GDA 1994 MGA Zone 56

Date: 09 July 2019

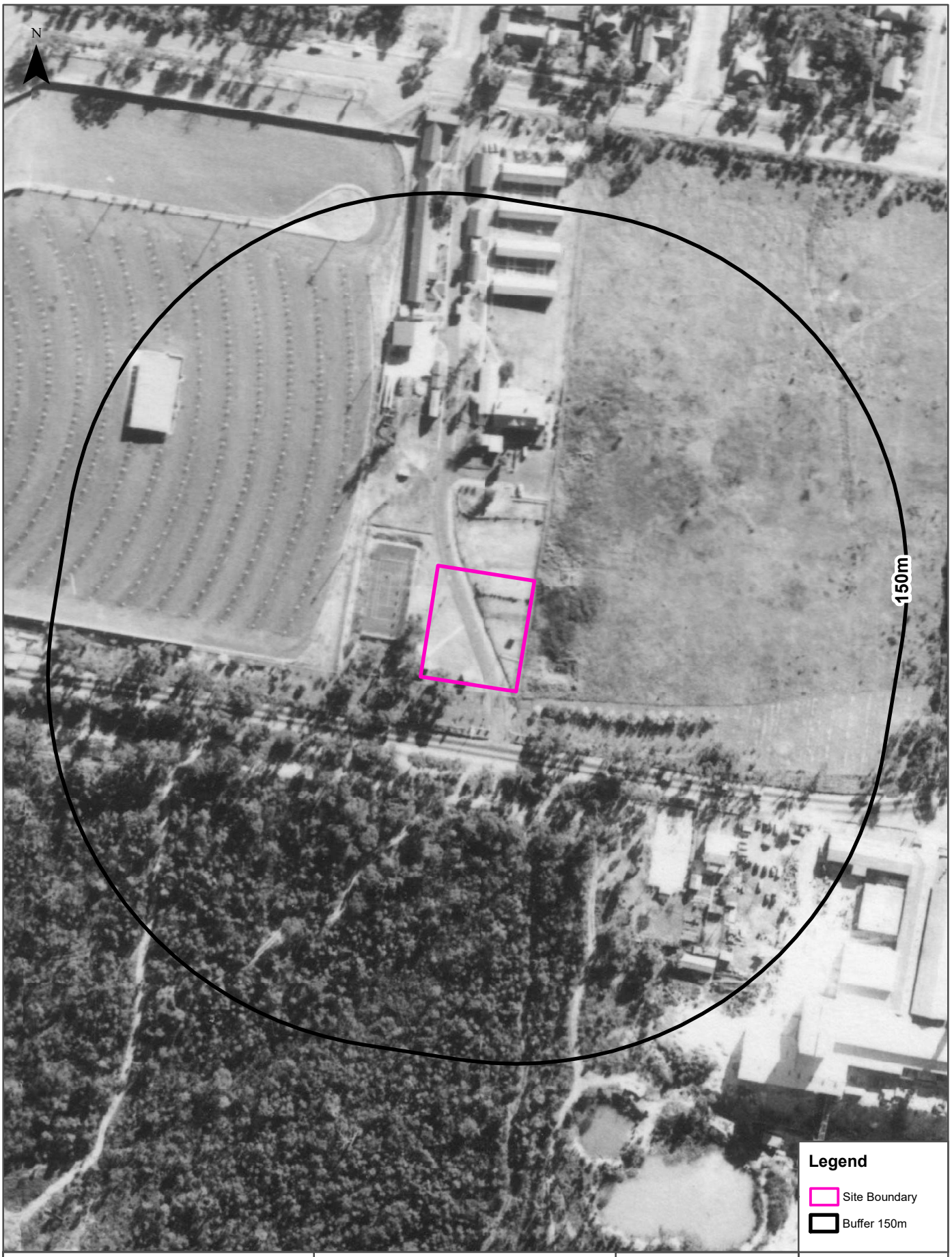
Aerial Imagery 1965

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



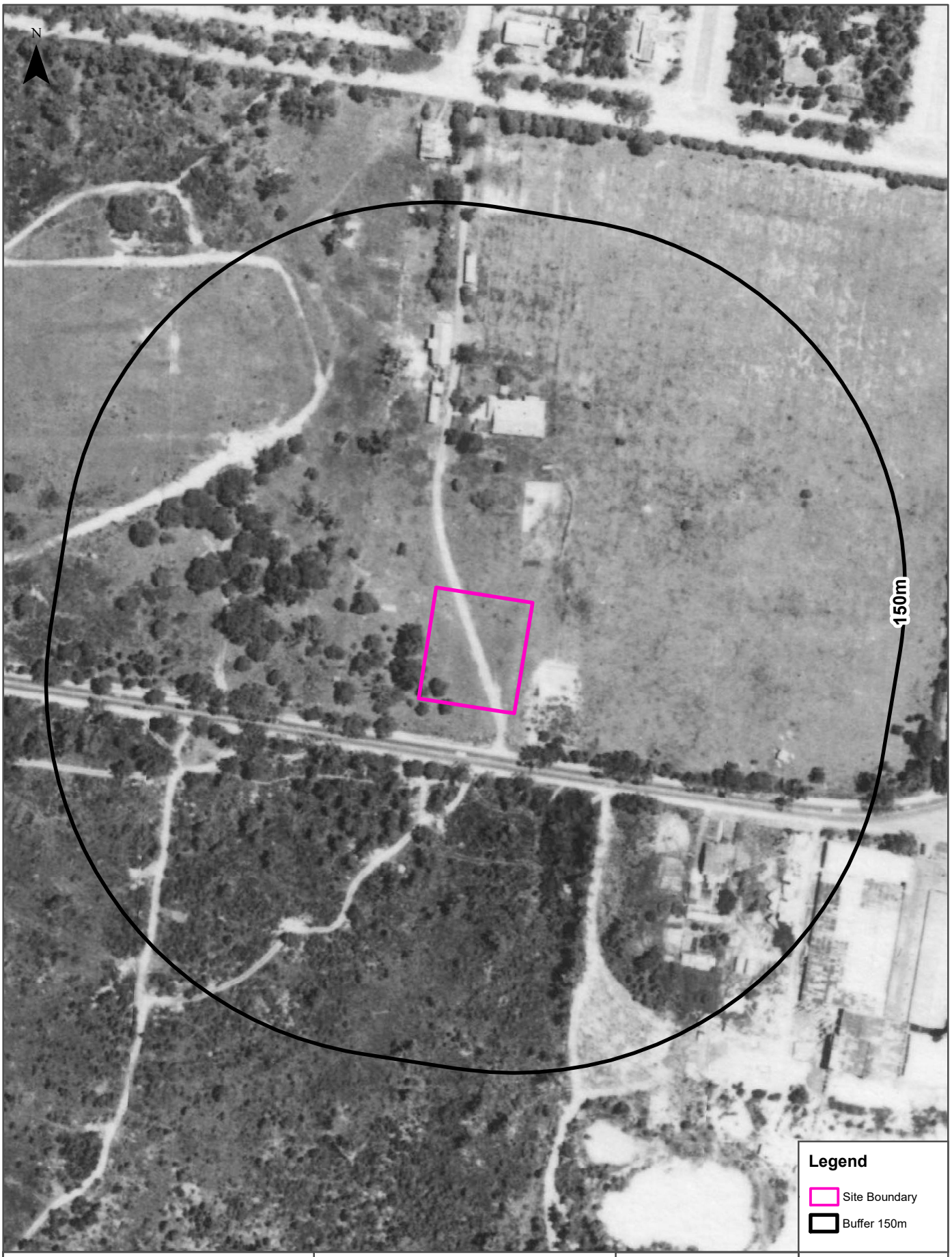
Aerial Imagery 1961

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



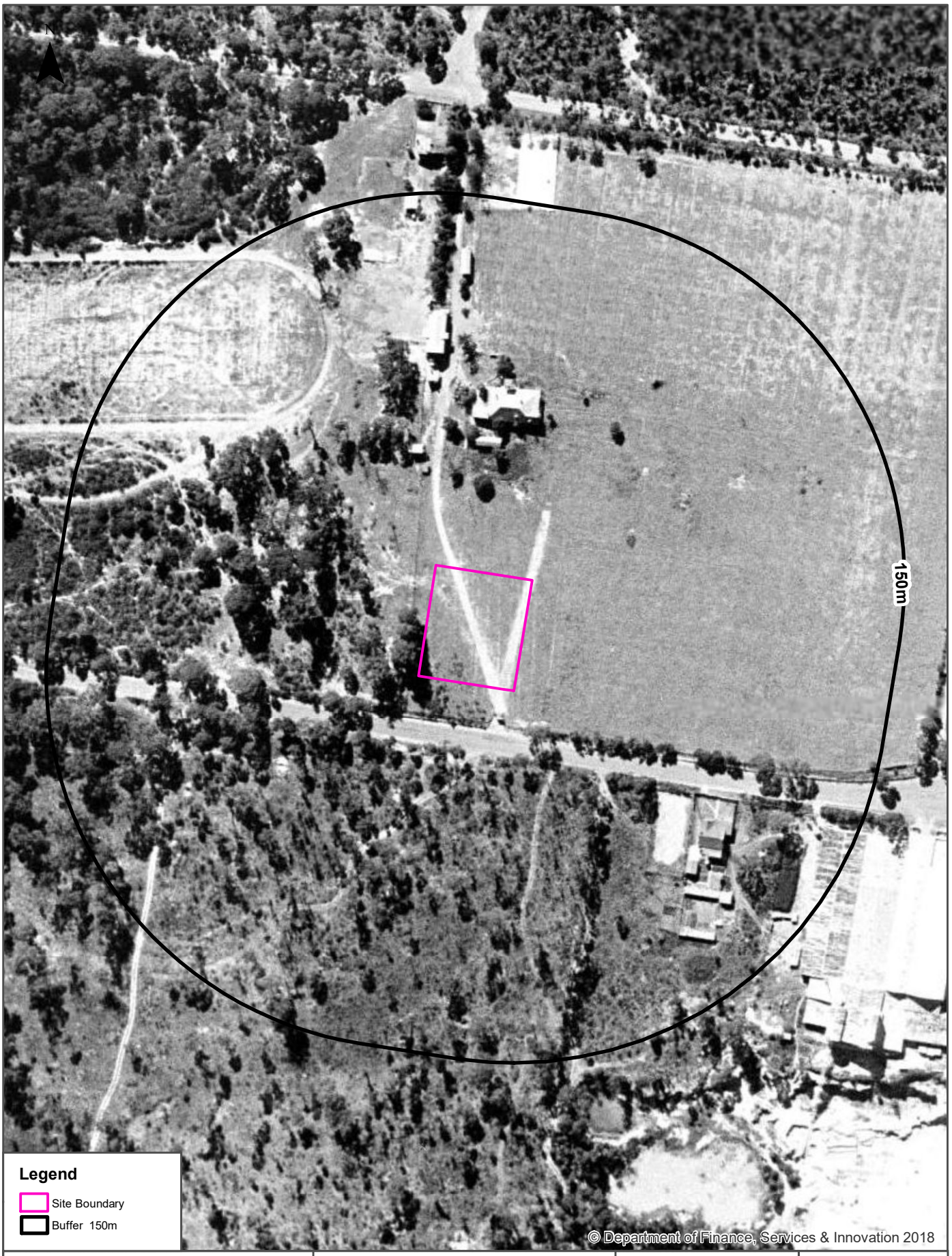
Aerial Imagery 1956

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Aerial Imagery 1943

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Scale: 0 25 50 Metres	Data Sources: Aerial Imagery © Department of Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 July 2019

Topographic Map 2015

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Legend

- Site Boundary
- Buffer 1000m

Scale: 0 100 200 400 600 Meters	Data Sources: Topographic Map Data © NSW Land and Property Information	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 July 2019

Historical Map 1975

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Scale: 0 125 250 500 750 1,000 1,250 Meters

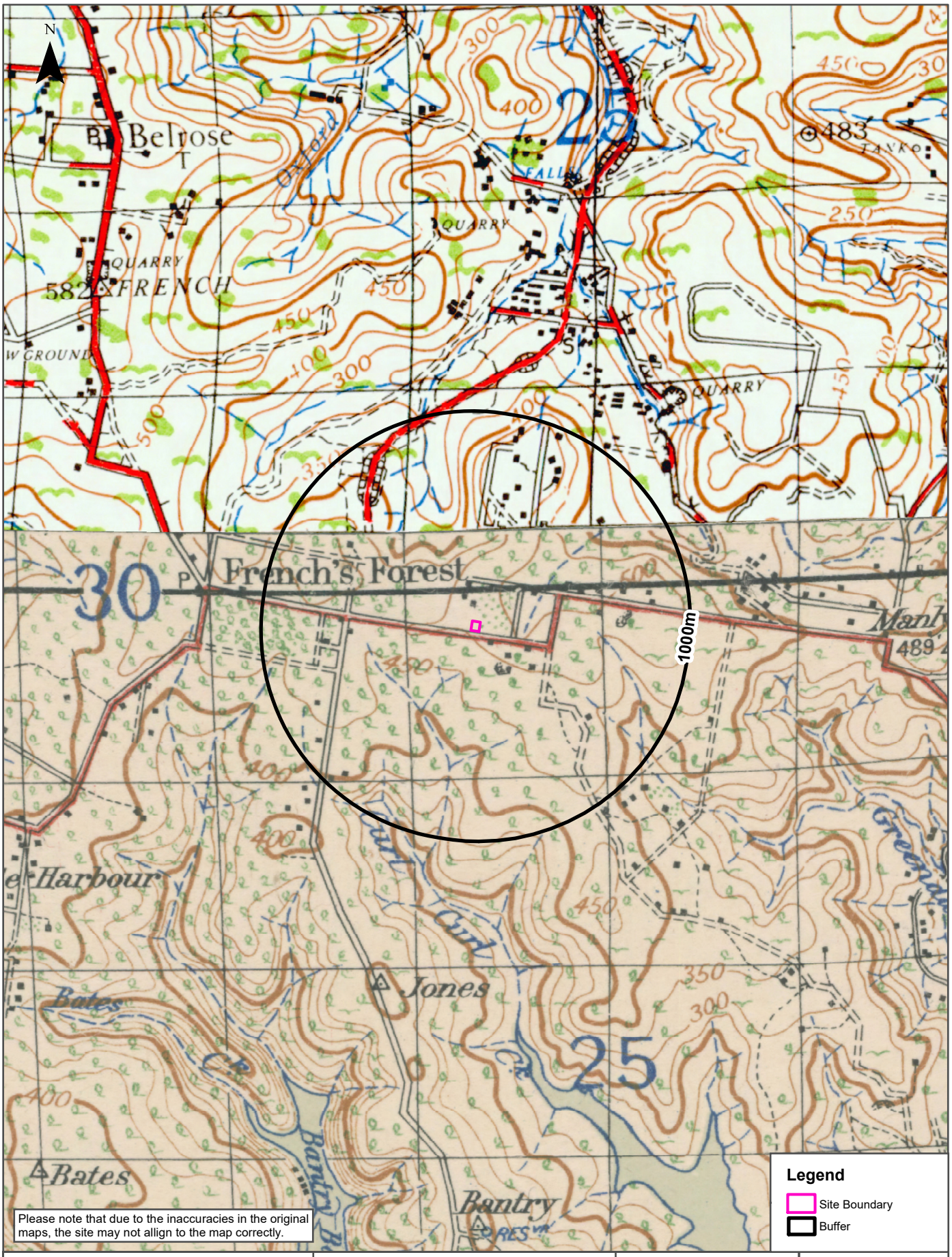
Data Sources: NATMAP 1:100,000
Topographic Maps Geoscience Australia

Coordinate System:
GDA 1994 MGA Zone 56

Date: 09 July 2019

Historical Map c.1936 - 1942

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Scale: 0 125 250 500 750 1,000 1,250 Meters

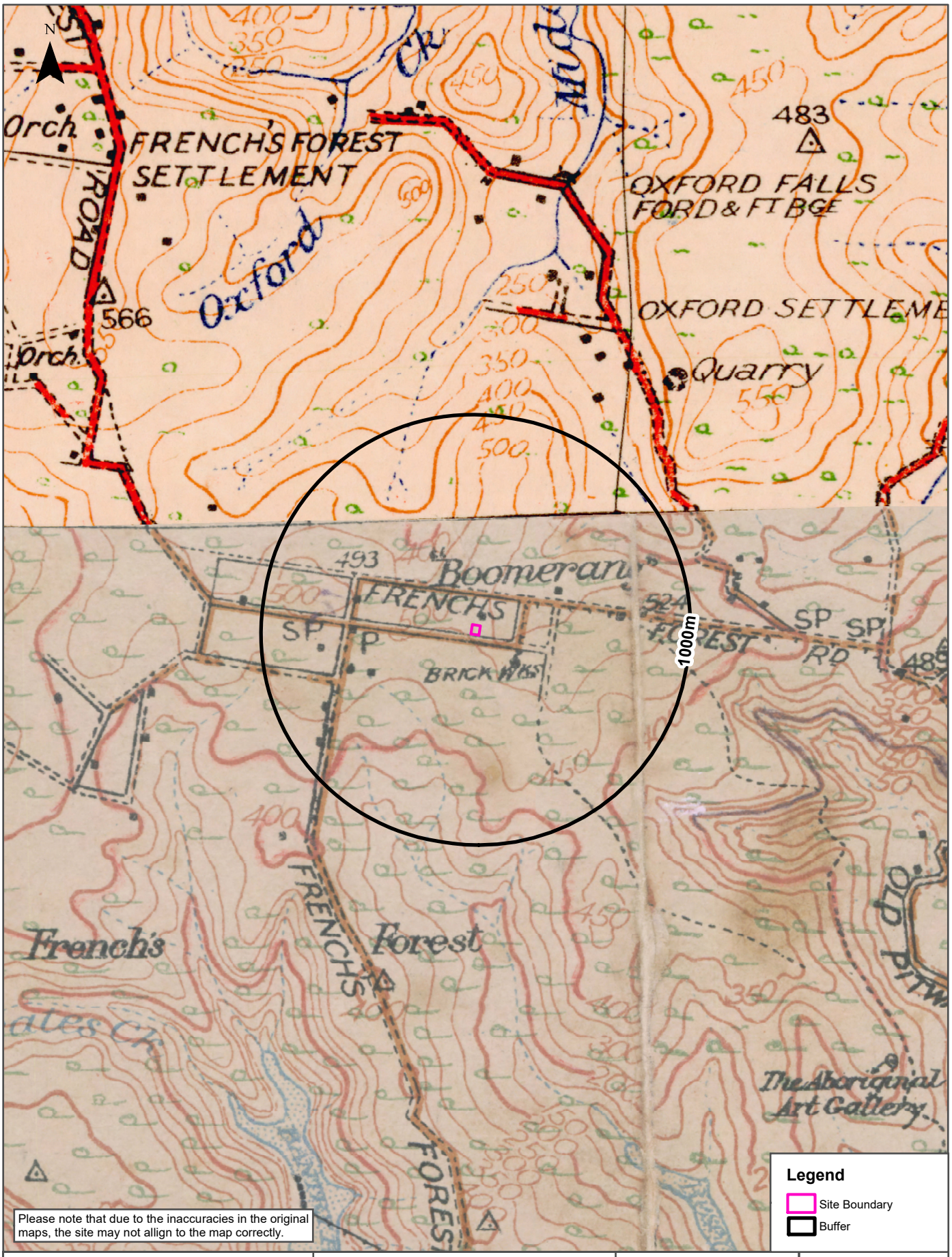
Data Sources: Australia 1:63360, Produced by Australian Section Imperial General Staff

Coordinate System: GDA 1994 MGA Zone 56

Date: 09 July 2019

Historical Map c.1917 - 1920

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

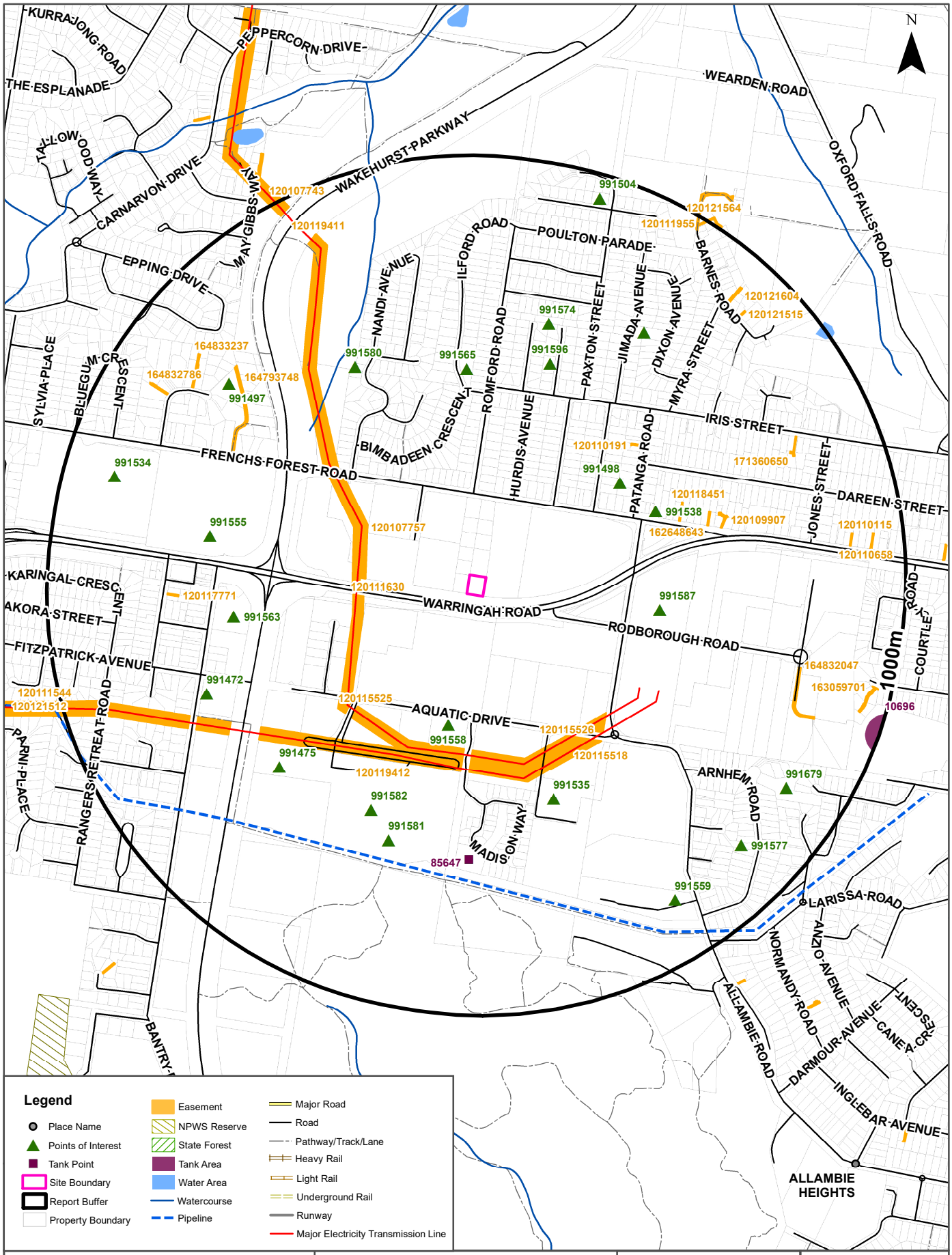


Scale:	Data Sources: Australia 1:63360, Produced by Australian Section Imperial General Staff	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 July 2019

0 125 250 500 750 1,000 1,250 Meters

Topographic Features

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Scale: 0 100 200 400 600 Meters	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2019	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 July 2019

Topographic Features

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
991558	Retirement Village	EUROBODALLA HOMES FRENCHS FOREST	316m	South
991498	Park	PATANGA PARK	390m	North East
991587	Post Office	FRENCHS FOREST POST BUSINESS CENTRE	420m	East
991538	Post Office	FRENCHS FOREST EAST POST OFFICE	433m	North East
991565	Park	ILFORD RESERVE	491m	North
991535	Special School	ARRANOUNBAI SCHOOL	511m	South
991596	Child Care Centre	FRENCHS FOREST KINDERGARTEN	532m	North
991563	Park	BRICK PIT RESERVE	558m	West
991582	Sports Field	AQUATIC RESERVE	563m	South West
991580	Park	NANDI RESERVE	567m	North West
991475	Swimming Pool	WARRINGAH AQUATIC CENTRE	608m	South West
991581	Sports Court	AQUATIC RESERVE SKATE PARK	616m	South
991574	Park	COSTER RESERVE	623m	North
991555	Medical Centre	FRENCHS FOREST COMMUNITY HEALTH CENTRE	625m	West
991472	Place Of Worship	ANGLICAN CHURCH	663m	West
991573	Park	JIMADA RESERVE	694m	North East
991497	Park	Park	733m	North West
991577	Park	ARNHEM ROAD RESERVE	854m	South East
991679	Park	LAE RESERVE	854m	South East
991559	Retirement Village	FRED HUTLEY VILLAGE	856m	South East
991534	High School	THE FOREST HIGH SCHOOL	877m	West
991504	Park	BRENTWOOD RESERVE	943m	North

Topographic Features

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
10696	Water	Operational	BEACON HILL RESERVOIR	01/01/2009	965m	East

Tanks (Points)

What are the Tank Points located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
85647	Water	Operational		01/01/2009	627m	South

Major Easements

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

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120107757	Primary	Undefined		244m	North West
120111630	Primary	Undefined		246m	South West
120115525	Primary	Undefined		366m	South West
120115518	Primary	Undefined		368m	South
120115526	Primary	Undefined		389m	South
120119412	Primary	Undefined		389m	South West
120119411	Primary	Undefined		402m	North West
120110191	Primary	Undefined		467m	North East
120118451	Primary	Undefined		478m	East
162648643	Primary	Right of way	3.5m	540m	East
120109907	Primary	Undefined		570m	East
164793748	Primary	Right of way	6.096m	633m	North West
120117771	Primary	Undefined		685m	West

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
164832047	Primary	Right of way	variable	769m	East
171360650	Primary	Right of way	Variable width	781m	North East
164833237	Primary	Right of way	variable	795m	North West
164832786	Primary	Right of way	variable	839m	North West
120121515	Primary	Undefined		867m	North East
120110658	Primary	Undefined		868m	East
120121604	Primary	Undefined		871m	North East
120111544	Primary	Undefined		910m	West
120110115	Primary	Undefined		916m	East
163059701	Primary	Right of way	Variable	934m	East
120107743	Primary	Undefined		966m	North West
120121564	Primary	Undefined		966m	North East
120121512	Primary	Undefined		976m	West
120111955	Primary	Undefined		977m	North East

Topographic Features

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

State Forest

What State Forest exist within the dataset buffer?

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

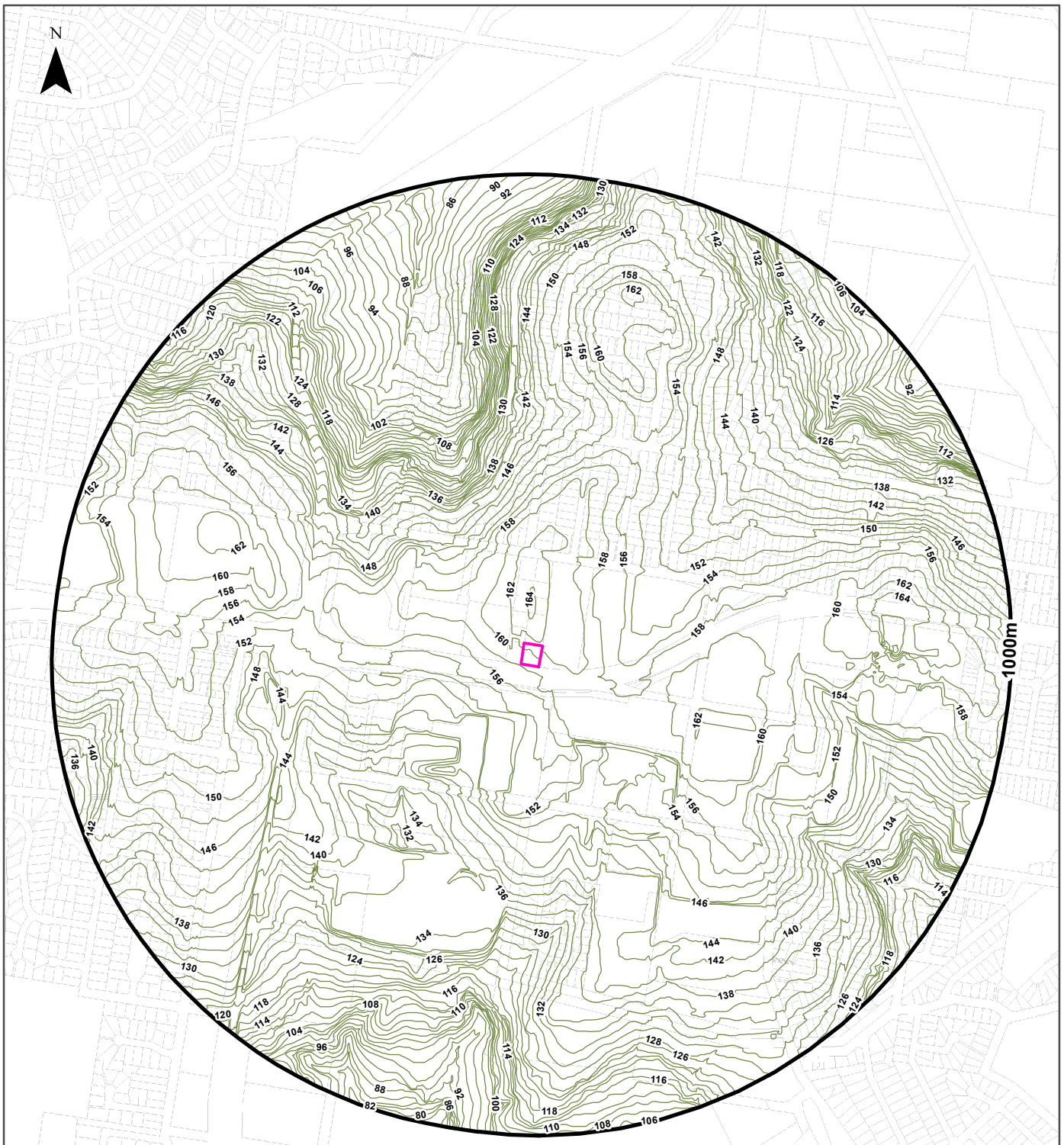
National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

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

Elevation Contours (m AHD)

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Legend

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

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

Scale:	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2019	Coordinate System: GDA 1994 MGA Zone 56	Date: 09 July 2019

0 100 200 400 Meters

Hydrogeology & Groundwater

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the dataset buffer:

Description
Porous, extensive aquifers of low to moderate productivity

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

Botany Groundwater Management Zones

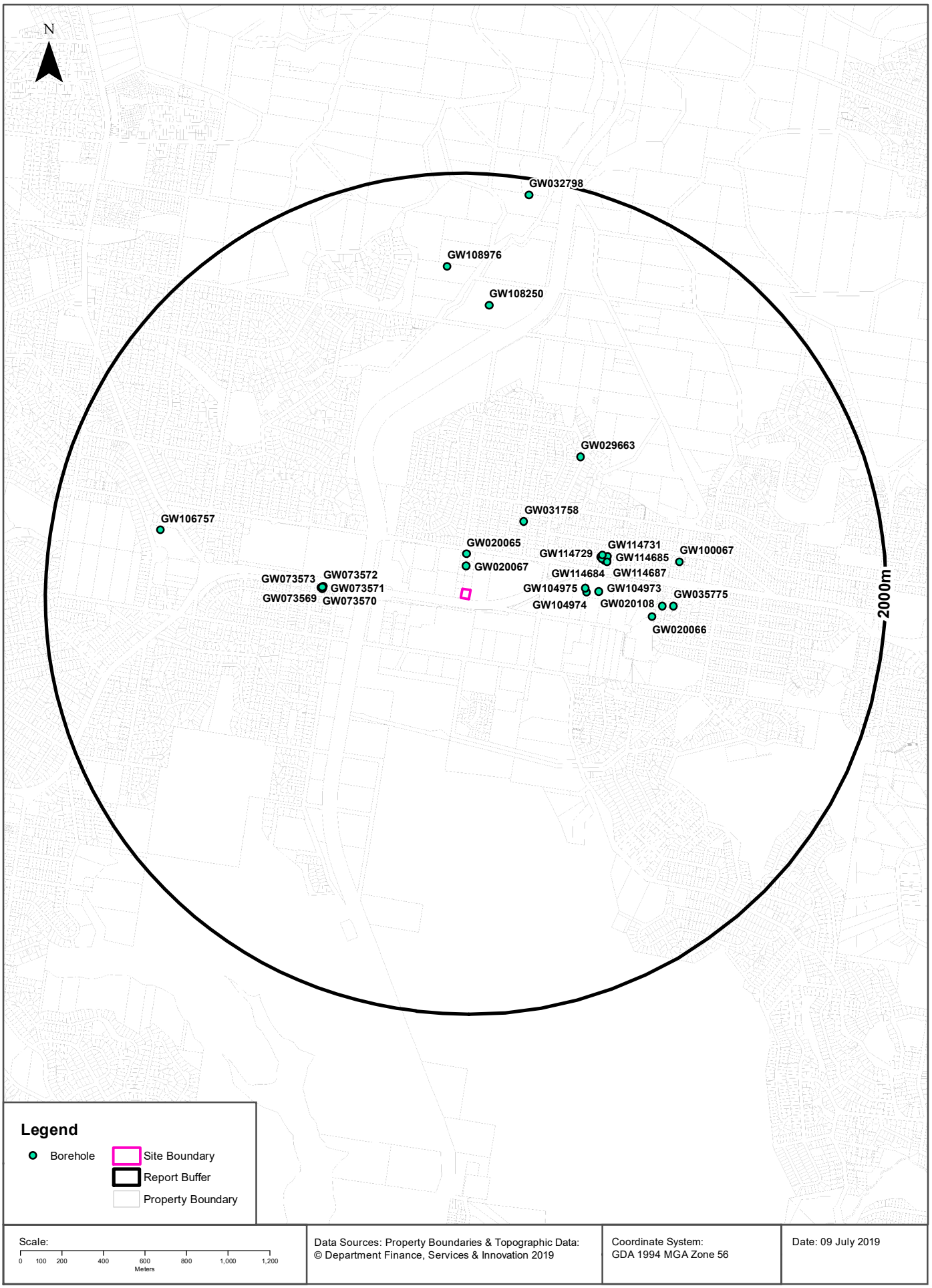
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

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

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

Groundwater Boreholes

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Hydrogeology & Groundwater

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW020067	10BL012920	Bore open thru rock	Federal Govt	Waste Disposal	Waste Disposal		01/10/1962	137.10	137.20					110m	North
GW020065	10BL012713	Bore open thru rock	Federal Govt	Waste Disposal	Waste Disposal		01/05/1962	114.90	114.90					167m	North
GW031758	10BL024603, 10WA108155	Bore open thru rock	Private	Stock	Stock		01/05/1969	58.50	58.50					418m	North East
GW104975	10BL156923	Bore		Monitoring Bore	Monitoring Bore		11/09/1995	6.00	6.00					555m	East
GW104974	10BL156923	Bore		Monitoring Bore	Monitoring Bore		11/09/1995	5.00	5.00					560m	East
GW104973	10BL156923	Bore		Monitoring Bore	Monitoring Bore		11/09/1995	4.10	4.10					619m	East
GW114729	10BL605659	Bore	Private	Monitoring Bore	Monitoring Bore	CONVENIENCE PROPERTIES (OPS)	01/12/2014	4.70	4.70					648m	East
GW114686	10BL604389	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2010	7.00	7.00					652m	East
GW114730	10BL605659	Bore	Private	Monitoring Bore	Monitoring Bore	CONVENIENCE PROPERTIES (OPS)	01/12/2014	4.20	4.20					659m	East
GW114684	10BL604389	Bore	Private	Monitoring Bore	Monitoring Bore		03/12/2010	7.00	0.00					661m	East
GW073572	10BL156569	Bore	Private	Monitoring Bore	Monitoring Bore		02/12/1991	4.00	4.00					664m	West
GW073570		Bore	Private		G/water Xplore		04/06/1991	4.90	4.90					668m	West
GW072997		Bore	Private		G/water Xplore		04/06/1991	4.20	4.20					668m	West
GW073569		Bore	Private		G/water Xplore		04/06/1991	4.50	4.70					668m	West
GW073571		Bore	Private		G/water Xplore		04/06/1991	4.50	4.50					668m	West
GW114687	10BL604389	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2010	5.00	5.00					673m	East
GW073573	10BL601836	Bore	Private	Monitoring Bore	Monitoring Bore		02/12/1991	3.50	3.50					674m	West
GW114685	10BL604389	Bore	Private	Monitoring Bore	Monitoring Bore		06/12/2010	5.00	5.00					675m	East
GW114731	10BL605659	Bore	Private	Monitoring Bore	Monitoring Bore	CONVENIENCE PROPERTIES (OPS)	01/12/2014	5.00	5.00					680m	East
GW029663	10BL023529, 10WA108153	(Unknown)	Private	Stock	Stock		07/08/1974					0.400		832m	North East
GW020066	10BL012712	Bore open thru rock	Federal Govt	Waste Disposal	Waste Disposal		01/05/1962	106.60	106.70					887m	East

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW020108		Bore open thru rock	Private		Waste Disposal		01/03/1963	134.10	134.10					928m	East
GW035775	10BL013059	Bore open thru rock	Private	Waste Disposal	Waste Disposal		01/03/1963	146.30	146.30					983m	East
GW100067	10BL156730	Bore		Monitoring Bore	Monitoring Bore		22/06/1995	5.10						1017m	East
GW108250	10BL601185, 10BL601714, 10WA109487	Bore		Recreation (groundwater), Test Bore	Recreation (groundwater)		29/01/2007	90.00	90.00	370	21.00	4.450		1369m	North
GW106757	10BL164320, 10WA108866	Bore		Domestic	Domestic		25/11/2004	7.00	7.00	Good	2.00	0.500		1478m	West
GW108976	10BL602109, 10WA109224	Bore	Private	Domestic, Stock	Domestic, Stock		27/06/2008	150.00		315	30.00	0.350		1551m	North
GW032798	10BL025754, 10WA108157	Bore open thru rock	Private	Domestic	Domestic		01/09/1970	32.00	32.00					1921m	North

Hydrogeology & Groundwater

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Driller's Logs

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

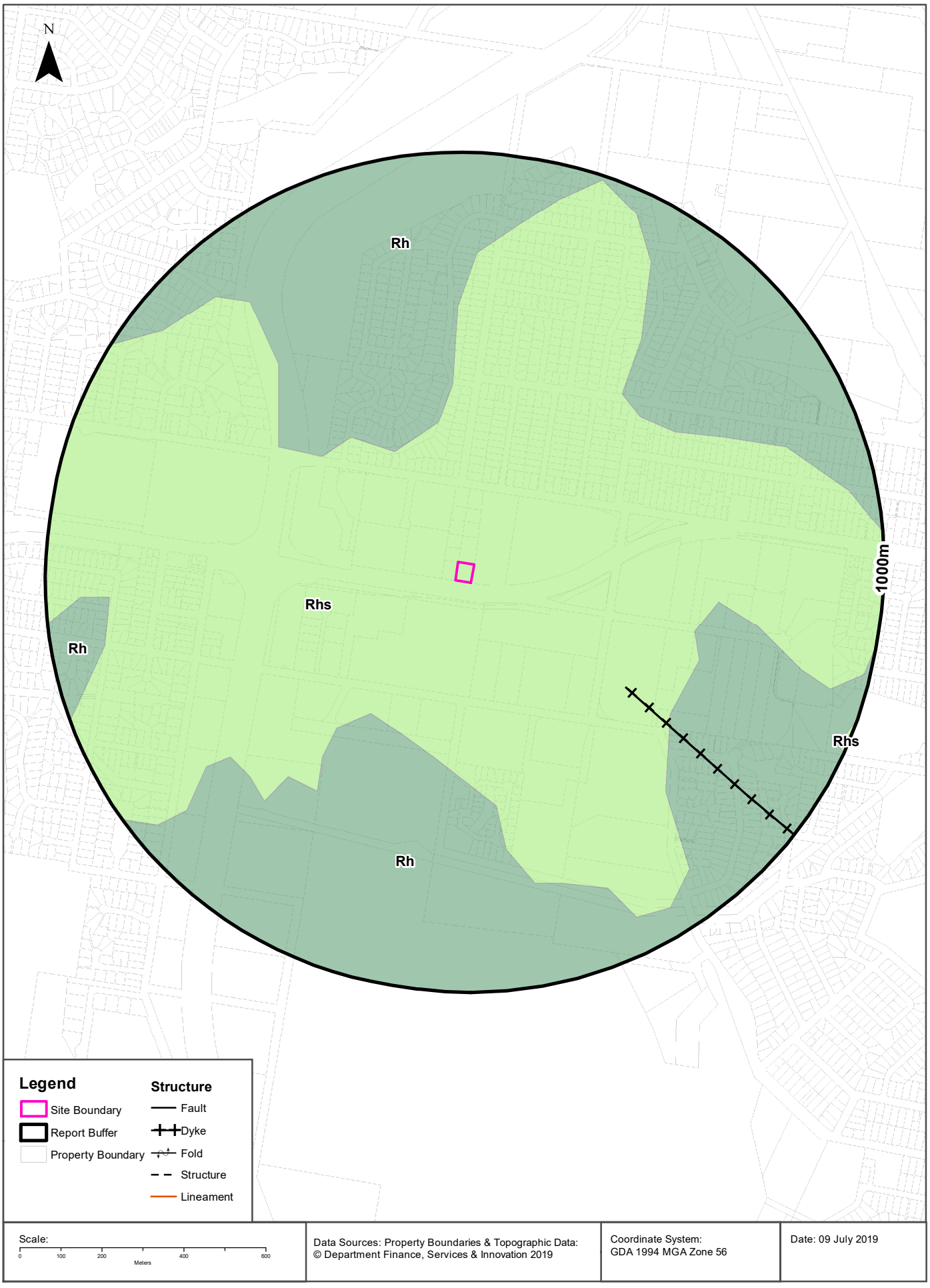
Groundwater No	Drillers Log	Distance	Direction
GW020067	0.00m-0.30m Topsoil 0.30m-1.52m Clay Red Sandstone 1.52m-5.48m Pipe Clay White 5.48m-6.40m Clay Grey 6.40m-7.62m Clay Yellow 7.62m-7.92m Driller 7.92m-8.22m Clay Grey 8.22m-9.14m Driller 9.14m-20.11m Sandstone 20.11m-21.64m Driller 21.64m-33.22m Sandstone 33.22m-34.44m Clay White 34.44m-38.70m Sandstone 38.70m-39.31m Clay White 39.31m-59.74m Sandstone 59.74m-60.96m Shale 60.96m-62.48m Sandstone Clay Seams 62.48m-73.15m Clay White Grey Seams Sandstone 73.15m-88.39m Sandstone 88.39m-89.61m Shale 89.61m-93.26m Sandstone 93.26m-93.57m Clay White 93.57m-101.80m Sandstone Water Supply 101.80m-102.71m Shale Clay 102.71m-137.16m Sandstone	110m	North
GW020065	0.00m-0.30m Topsoil 0.30m-4.87m Clay 4.87m-8.22m Pipe Clay White 8.22m-10.66m Driller 10.66m-33.22m Sandstone 33.22m-34.13m Sandstone 34.13m-35.96m Shale Clay 35.96m-56.38m Sandstone 56.38m-56.99m Mudstone Clay 56.99m-61.87m Shale 61.87m-110.94m Sandstone Water Supply 110.94m-114.90m Shale	167m	North
GW031758	0.00m-0.30m Topsoil 0.30m-12.19m Sandstone Yellow 12.19m-13.71m Sandstone Shale Water Supply 13.71m-15.24m Sandstone Yellow 15.24m-27.43m Sandstone White 27.43m-28.95m Sandstone Grey 28.95m-56.38m Sandstone White Water Supply 56.38m-58.52m Shale Some Sandstone	418m	North East
GW104975	0.00m-1.80m SANDY CLAY 1.80m-6.00m SANDSTONE	555m	East
GW104974	0.00m-2.00m SANDY CLAY 2.00m-3.00m SAND/SILTY CLAY 3.00m-5.00m SANDSTONE	560m	East
GW104973	0.00m-2.20m SANDY CLAY/D/BROWN/BLACK 2.20m-4.10m SILTY CLAY/SANDSTONE	619m	East
GW114729	0.00m-1.90m CLAY GREY 1.90m-4.70m SANDSTONE RED GREY	648m	East
GW114730	0.00m-1.60m CLAY GREY WHITE M/GRAINED SOFT 1.60m-4.20m SANDSTONE GREY WHITE M/GRAINED WEATHERED	659m	East

Groundwater No	Drillers Log	Distance	Direction
GW114684	0.00m-0.20m CONCRETE 0.20m-0.30m SAND MINOR GRAVEL,M/GRAINED SAND 0.30m-0.60m CLAY, MINOR SAND M/GRAINED,SOFT,MOIST 0.60m-1.30m CLAYEY SAND M/GRAINED 1.30m-1.50m SAND MED. GRAINED 1.50m-2.50m SILTY CLAY VERY SOFT,MOIST, DARK BROWN 2.50m-3.20m SILY CLAY,FIRM, MOIST 3.20m-3.80m SANDY CLAY FINE GRAINED,SOFT,MOIST 3.80m-4.50m SANDSTONE WEATHERED,MOIST,GREY 4.50m-7.00m SANDY CLAY,FINE GRAINED	661m	East
GW073572	0.00m-0.10m Sand Fill- Grey, Medium Grind, Saturated With Hydrocarbon 0.10m-0.40m Silty Clay- Grey-mottled With Red. 0.40m-4.00m Hole Terminated @ 4m.	664m	West
GW072997	0.00m-0.10m Sandy Clays & Gravels 0.10m-1.00m Residual Soil- Sandy Clay-grey, Mottled W/ Red >10%, Moist. Med. Plasticity 1.00m-2.50m Weathered Bedrock- Sandy Clay, Grey Brown, Dry 2.50m-4.20m Bedrock- Hole Terminated @ 4.2	668m	West
GW073569	0.00m-0.10m Fill Mat'l. & Residual Soil-sandy Clay, Grey W/ Mottles/streaks Of Red Moist, Ironstone Fragments 0.10m-1.00m Residual Soil- Sandy/silty Clay,yb Staining On Surface Giving Black Colour, Moist Med. Plasticity, Hydrocarbon Odour Prs 1.00m-1.50m Weathered Bedrock & Residual Soil-dry Red Brown Silty Clay)silty Clay Yb Moist, Shle Fragments Present In Sample. 1.50m-3.00m Weathered Bedrock-silty Clay, Red Brown, Dry Med To Strong Plasticity. Fragments Of Shle Present. 3.00m-4.50m Hole Terminated @ 4.7m	668m	West
GW073570	0.00m-0.05m Fill Material 0.05m-0.10m Residual Soil & Clay- Grey Mottled W/ Red, Moist, Med Plasticity, Irsn Fragments Presents W/ Diam. Approx. 1cm 0.10m-1.00m Texture Change Silty Clay- Yellow Brown, Some Hydrocarbon Staining, Moist, Shle Fragments Approx. 5mm Present 1.00m-2.00m Colour Change- Yellow Brown & Grey-red Clay 50/50. 2.00m-3.00m Weathered Bedrock & Residual Soil- Silty Clay, Grey Streaks Of Red, Dry. 3.00m-4.00m Weathered Bedrock- Silty Clay, Brown, Dry 4.00m-4.90m Hole Terminated @ 4.9m.	668m	West
GW073571	0.00m-0.10m Fill & Residual Soil- Silty Clay, Grey And Red 0.10m-1.00m Residual Soil- Silty Clay,brown-black, Moist, Med-high Plasticity; Colour Change Yellow-brown. 1.00m-2.00m Weathered Bedrock- Silty Clay;grey, Mottles Of Red,dry,yellow. 2.00m-4.50m Hole Terminated @ 4.5m	668m	West
GW073573	0.00m-0.10m Silt-clay, Grey-mottled 10% With Red, Moist - Wet. 0.10m-1.00m Silt-clay, Grey-mottled 10% With Red, Moist- Wet. 1.00m-3.50m Hole Terminated @ 3.5m.	674m	West
GW114685	0.00m-0.20m SILTY CLAY SOFT,MOIST,DARK BROWN 0.20m-1.00m SILTY CLAY WITH MINOR GRAVEL AND SAND 1.00m-1.60m SILTY CLAY, SOFT,FIRM, MOIST YELLOW BROWN 1.60m-2.00m SILTSTONE HARD DRY,RED BROWN 2.00m-5.00m SILTY CLAY,SOFT,MOIST,LOW PLASYICITY	675m	East
GW114731	0.00m-1.50m CLAY WHITE/RED MG.SOFT 1.50m-5.00m SANDSTONE RED/GREY MG WEATHERED	680m	East
GW020066	0.00m-0.30m Topsoil 0.30m-5.18m Clay 5.18m-9.44m Clay Shale 9.44m-11.27m Pipe Clay White 11.27m-11.88m Driller 11.88m-14.02m Pipe Clay White 14.02m-14.63m Sandstone Clay 14.63m-33.83m Sandstone 33.83m-34.44m Clay White Sandstone Decomposed 34.44m-54.86m Sandstone Grey 54.86m-60.96m Sandstone White 60.96m-62.17m Sandstone Shale 62.17m-64.00m Sandstone 64.00m-67.05m Shale 67.05m-104.54m Sandstone 104.54m-106.68m Shale Grey Water Supply	887m	East

Groundwater No	Drillers Log	Distance	Direction
GW020108	0.00m-0.30m Topsoil 0.30m-2.74m Clay Red 2.74m-3.35m Pipe Clay White 3.35m-4.26m Driller 4.26m-6.09m Sandstone 6.09m-7.62m Clay 7.62m-12.80m Sandstone Clay 12.80m-33.52m Sandstone 33.52m-37.79m Clay Grey Shale 37.79m-51.51m Sandstone 51.51m-53.64m Clay White 53.64m-57.91m Clay Grey Shale 57.91m-61.56m Sandstone Hard 61.56m-67.97m Sandstone Clay Seams 67.97m-102.10m Sandstone 102.10m-103.63m Shale 103.63m-134.11m Sandstone	928m	East
GW035775	0.00m-0.30m Topsoil 0.30m-4.26m Clay Red 4.26m-5.18m Driller 5.18m-7.62m Clay White 7.62m-8.22m Clay Grey 8.22m-16.15m Sandstone Clay 16.15m-35.05m Sandstone 35.05m-39.92m Shale Clay 39.92m-55.77m Sandstone 55.77m-56.69m Clay 56.69m-57.60m Shale Clay 57.60m-62.78m Sandstone 62.78m-76.20m Sandstone Clay Seams 76.20m-113.38m Sandstone 113.38m-116.43m Shale 116.43m-129.84m Sandstone 129.84m-133.50m Sandstone Shale 133.50m-137.46m Sandstone 137.46m-137.76m Shale 137.76m-146.30m Sandstone Clay Seams	983m	East
GW108250	0.00m-0.50m CLAY 0.50m-2.50m SANDSTONE WEATHEREAD 2.50m-4.00m SANDY CLAY 4.00m-8.00m SANDSTONE WEATHEREAD 8.00m-9.00m SHALE 9.00m-28.00m SANDSTONE GREY 28.00m-31.00m SANDSTONE BROWN QUARTZ 31.00m-34.00m SANDSTONE GREY 34.00m-34.20m SANDSTONE FRACTURED 34.20m-42.00m SANDSTONE GREY 42.00m-44.00m SANDSTONE QUARTZ 44.00m-44.50m SANDSTONE FRACTURED 44.50m-53.00m SILTSTONE 53.00m-57.00m SANDSTONE GREY 57.00m-59.00m SANDSTONE QUARTZ 59.00m-63.00m SANDSTONE GREY 63.00m-65.50m SANDSTONE QUARTZ 65.50m-81.00m SANDSTONE GREY 81.00m-83.00m SANDSTONE QUARTZ 83.00m-90.00m SANDSTONE GREY	1369m	North
GW106757	0.00m-0.30m TOPSOIL 0.30m-2.50m BROWN SAND 2.50m-3.00m BLACK SAND 3.00m-5.00m DARK BROWN SILTY SAND 5.00m-7.00m BROWN SAND	1478m	West
GW032798	0.00m-0.60m Topsoil Black 0.60m-1.82m Sand White 1.82m-6.40m Sandstone Red 6.40m-9.75m Sandstone White Water Supply 9.75m-16.45m Sandstone 16.45m-18.89m Sandstone Dark Brown 18.89m-19.81m Sandstone White 19.81m-20.42m Sandstone Grey 20.42m-32.00m Sandstone White Water Supply	1921m	North

Geology 1:100,000

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Geology

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Rhs	Shale. Laminate				Triassic		Sydney	1:100,000

What are the Geological Units within the dataset buffer?

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

Geological Structures

What are the Geological Structures onsite?

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

What are the Geological Structures within the dataset buffer?

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

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

Naturally Occurring Asbestos Potential

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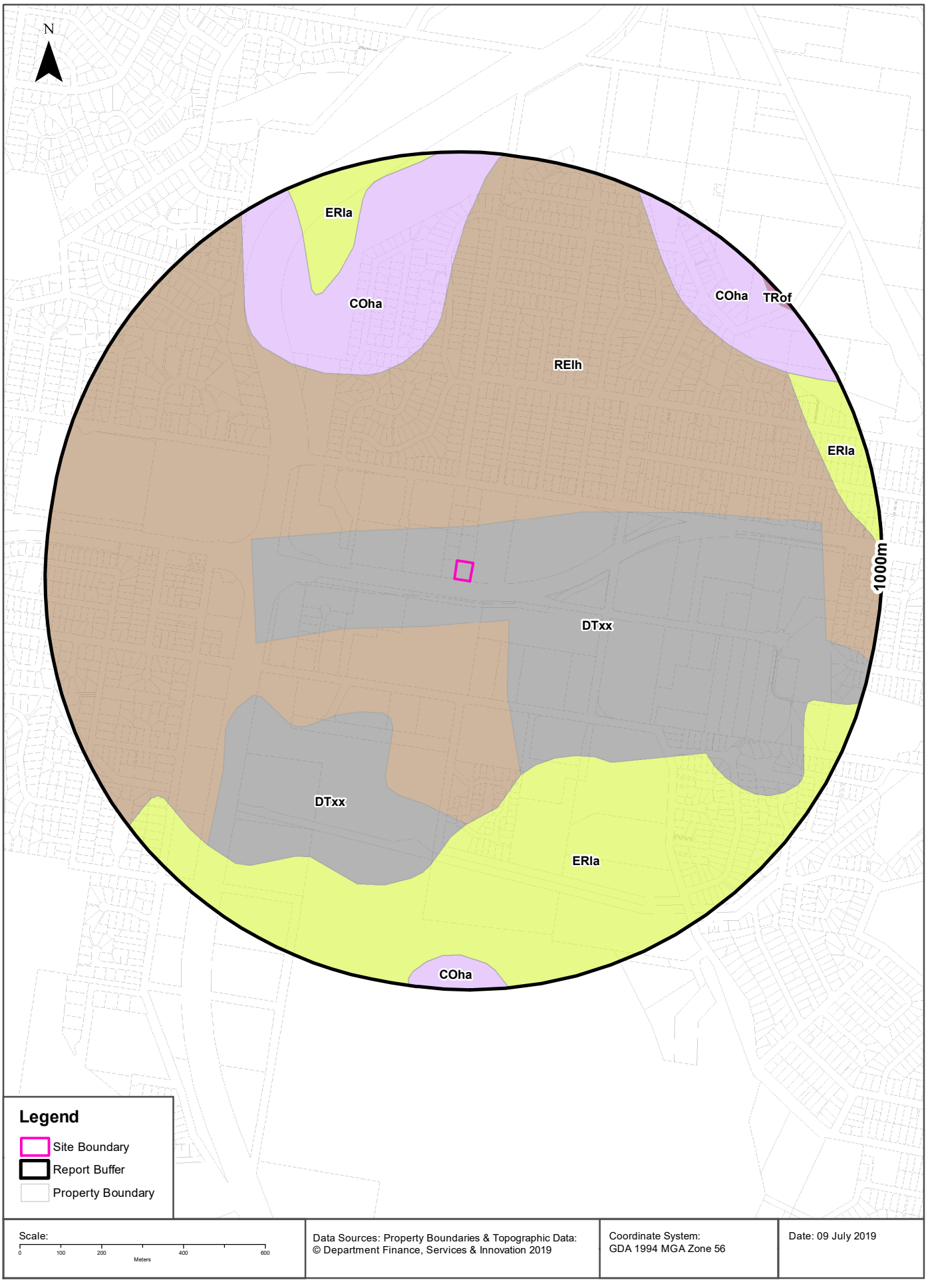
Naturally Occurring Asbestos Potential

Naturally Occurring Asbestos Potential within the dataset buffer:

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

Soil Landscapes

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Soils

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Sydney	1:100,000

What are the Soil Landscapes within the dataset 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
ERla	LAMBERT		EROSIONAL	Sydney	1:100,000
RElh	LUCAS HEIGHTS		RESIDUAL	Sydney	1:100,000
TRof	OXFORD FALLS		TRANSFERRAL	Sydney	1:100,000

Atlas of Australian Soils

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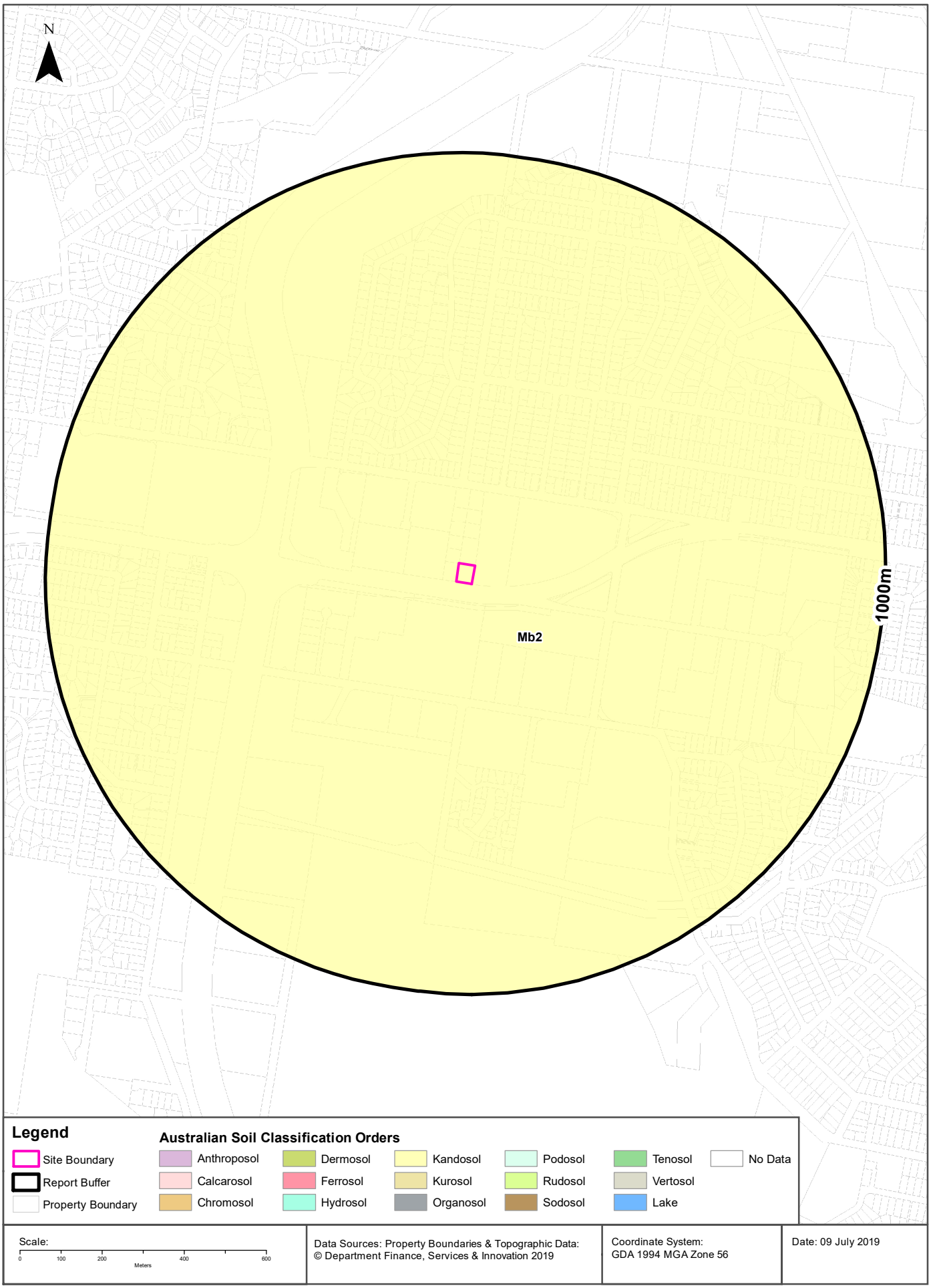

Soils

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Atlas of Australian Soils

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

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

Acid Sulfate Soils

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Environmental Planning Instrument - Acid Sulfate Soils

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

Soil Class	Description	EPI Name
N/A		

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

Soil Class	Description	EPI Name	Distance	Direction
N/A				

Atlas of Australian Acid Sulfate Soils

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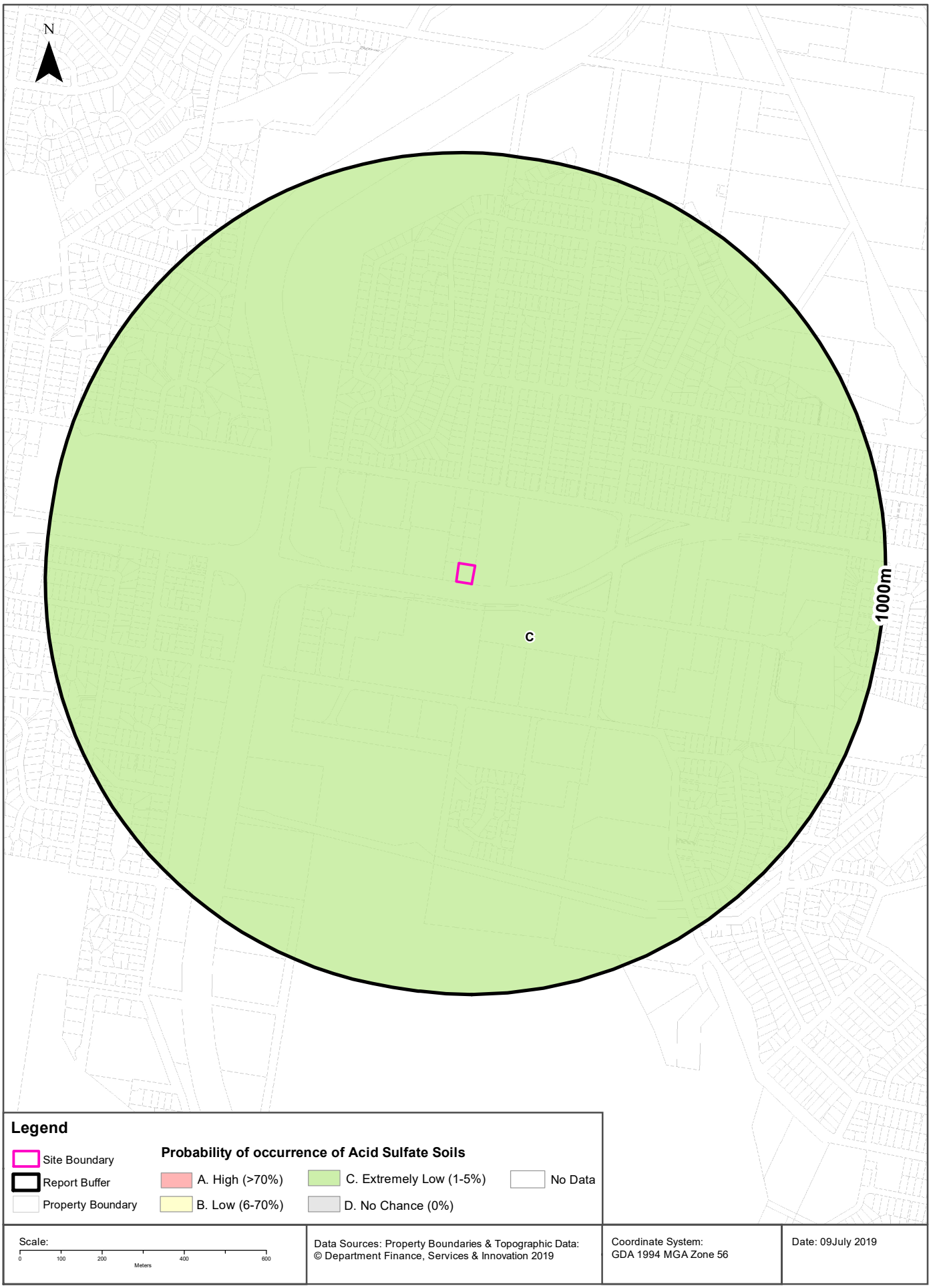


Acid Sulfate Soils

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Atlas of Australian Acid Sulfate Soils

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

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

Dryland Salinity

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

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

No

What Dryland Salinity assessments are given?

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

Dryland Salinity Data Source : National Land and Water Resources Audit
The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.
In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

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

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

Mining Subsidence Districts

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

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

State Environmental Planning Policy

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

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

EPI Planning Zones

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Environmental Planning Instrument

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Land Zoning

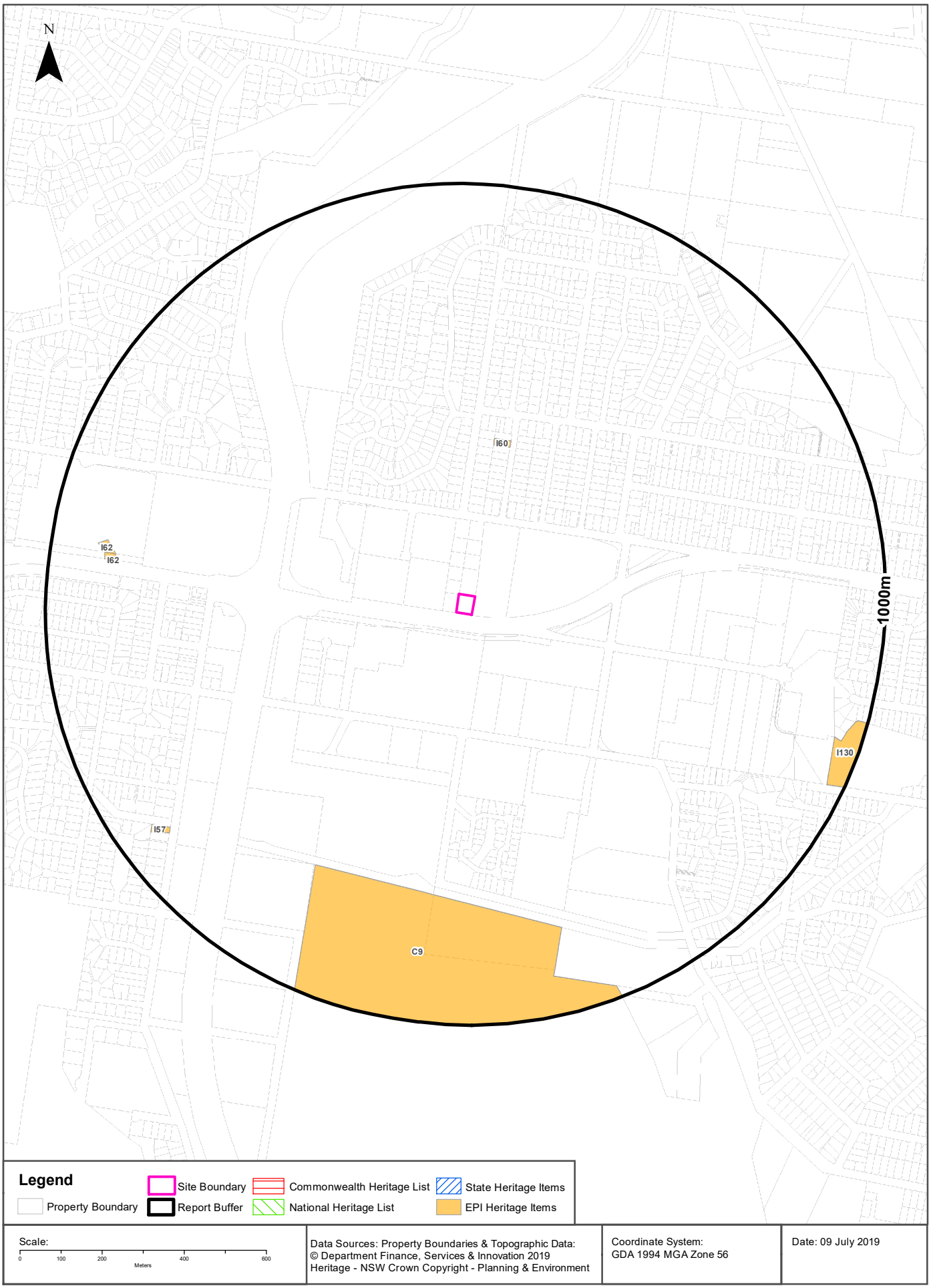
What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
B7	Business Park		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		0m	Onsite
SP2	Infrastructure	Classified Road	Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		0m	North
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		44m	South West
B7	Business Park		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		60m	South East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		185m	East
R2	Low Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		203m	North East
R2	Low Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		297m	South
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		298m	South
E2	Environmental Conservation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		299m	South
E2	Environmental Conservation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		300m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		338m	North East
SP1	Special Activities	Health Services Facilities	Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		354m	South East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		355m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		371m	East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		387m	South West
B1	Neighbourhood Centre		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		396m	North East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		411m	North
R2	Low Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		446m	South
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		447m	North
R2	Low Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		457m	South
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		495m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		515m	West
R2	Low Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		527m	North West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		559m	North West
R2	Low Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		561m	South East
R2	Low Density Residential		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		582m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		591m	North

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
B1	Neighbourhood Centre		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		607m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		607m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		632m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		644m	East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		646m	North East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		659m	North West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		678m	North
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		718m	North East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		725m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		765m	North
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		768m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		783m	South East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		803m	South East
DM	Deferred Matter		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		810m	North East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		824m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		917m	North West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		926m	North
E3	Environmental Management		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		948m	North
RE1	Public Recreation		Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017		997m	West

Heritage Items

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Heritage

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Commonwealth Heritage List

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

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

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

National Heritage List

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

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

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

State Heritage Register - Curtilages

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

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

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

Environmental Planning Instrument - Heritage

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

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I60	Betty Moloney Garden	Item - Landscape	Local	Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017	372m	North
C9	Manly Dam and Surrounds	Conservation Area - Landscape	Local	Warringah Local Environmental Plan 2011	30/06/2017	30/06/2017	30/06/2017	680m	South
I62	Former Holland's Orchard Trees	Item - Landscape	Local	Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017	840m	West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I62	Former Holland's Orchard Trees	Item - Landscape	Local	Warringah Local Environmental Plan 2011	30/05/2014	30/05/2014	30/06/2017	840m	West
I57	House	Item - General	Local	Warringah Local Environmental Plan 2011	09/12/2011	09/12/2011	30/06/2017	870m	South West
I130	Warringah Reservoir (WE 0131) and attached Valve House	Item - General	Local	Warringah Local Environmental Plan 2011	30/05/2014	30/05/2014	30/06/2017	931m	East

Natural Hazards - Bush Fire Prone Land

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Data Sources: Bush Fire Prone Land: © NSW Rural Fire Service 2019. Property Boundaries: © Department Finance, Services & Innovation 2019

Coordinate System: GDA 1994 MGA Zone 56

Date: 09 July 2019

Natural Hazards

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

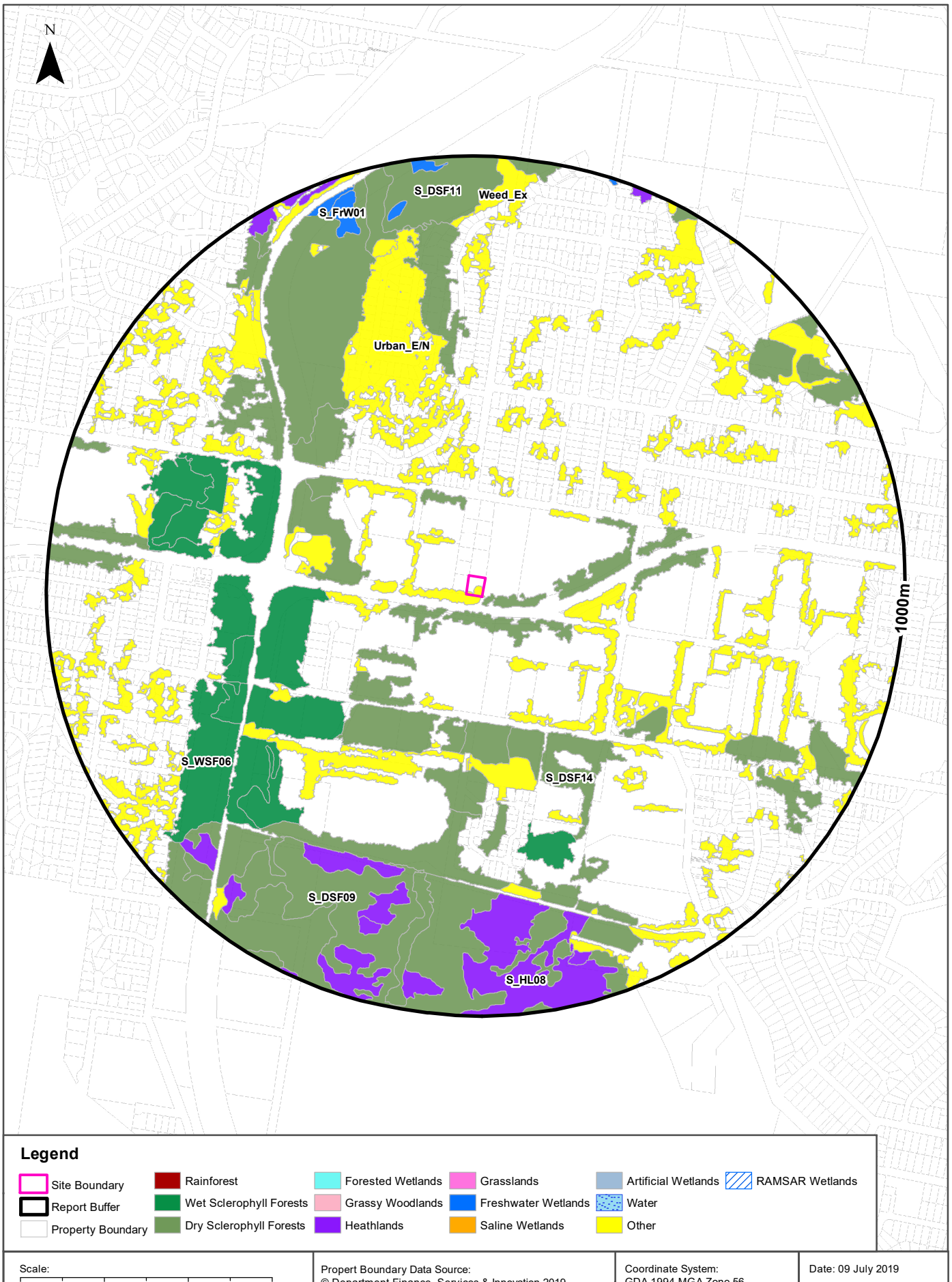
Bush Fire Prone Land

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

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	158m	North West
Vegetation Category 1	258m	West
Vegetation Category 2	451m	South

Ecological Constraints - Native Vegetation & RAMSAR Wetlands

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086



Ecological Constraints

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Direction
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/Native	0m	Onsite
S_DSF14	S_DSF14: Sydney Ironstone Bloodwood-Silvertop Ash Forest	Duffys Forest Ecological Community		15: Grassy natives and exotics	13: Weeds	3: High	E.sieberi/E.resinifera/A.costata/E.umbra/E.globoidea	6m	East
S_WSF06	S_WSF06: Coastal Shale-Sandstone Forest			15: Grassy natives and exotics	13: Weeds	3: High	E.sieberi/E.resinifera/A.costata/E.umbra/E.globoidea	325m	West
S_DSF09	S_DSF09: Coastal Sandstone Gully Forest			12: Dry xeric shrubs	13: Weeds	2: Moderate	A.costata/E.sieberi/E.piperita/C.gummiferaE.resinifera/E.umbra	368m	North West
S_HL08	S_HL08: Coastal Sandstone Heath-Mallee			19: Dense heath	25: Edge disturbances only	1: Low	A.distyla/B.ericifolia/Leptospermum spp/A.hispida	667m	South West
Weed_Ex	Weed_Ex: Weeds and Exotics			00: Not assessed	00: Not assessed	0: Not assessed	Exotic Species >90%cover	690m	North West
S_DSF11	S_DSF11: Sydney North Exposed Sandstone Woodland			12: Dry xeric shrubs	99: No visible disturbance	5: No visible disturbance	E.haemastoma/B.serrata	755m	South
S_FrW01	S_FrW01: Coastal Upland Damp Heath Swamp	Coastal Upland Swamp		19: Dense heath	13: Weeds	1: Low	B.ericifolia/Hakea spp/sedges	852m	North

Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

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

Ecological Constraints

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
N/A	No records within buffer				

Ecological Constraints

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
N/A	No records within buffer				

Ecological Constraints

49 Frenchs Forest Road East, Frenchs Forest, NSW 2086

NSW BioNet Atlas

Species on the NSW BioNet Atlas that have a NSW or federal conservation status, a NSW sensitivity status, or are listed under a migratory species agreement, and are within 10km of the site?

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

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

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius madagascariensis	Eastern Curlew	Not Listed	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Numenius phaeopus	Whimbrel	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Onychoprion fuscata	Sooty Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pachycephala olivacea	Olive Whistler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Philomachus pugnax	Ruff	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Plegadis falcinellus	Glossy Ibis	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Pluvialis fulva	Pacific Golden Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Polytelis anthopeplus monarchoides	Regent Parrot (eastern subspecies)	Endangered	Category 3	Vulnerable	
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	Pterodroma leucoptera leucoptera	Gould's Petrel	Vulnerable	Not Sensitive	Endangered	
Animalia	Aves	Pterodroma solandri	Providence Petrel	Vulnerable	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ptilinopus magnificus	Wompoo Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus regina	Rose-crowned Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus superbus	Superb Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Puffinus assimilis	Little Shearwater	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Stercorarius longicaudus	Long-tailed Jaeger	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Stercorarius parasiticus	Arctic Jaeger	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Stercorarius pomarinus	Pomarine Jaeger	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Sterna hirundo	Common Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sternula albifrons	Little Tern	Endangered	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sula dactylatra	Masked Booby	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Thalassarche cauta	Shy Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalassarche melanophris	Black-browed Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thinornis rubricollis	Hooded Plover	Critically Endangered	Not Sensitive	Vulnerable	
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa incana	Wandering Tattler	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Tringa nebularia	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa stagnatilis	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Xenus cinereus	Terek Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Mammalia	Arctocephalus forsteri	New Zealand Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus pusillus doriferus	Australian Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Dugong dugon	Dugong	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Eubalaena australis	Southern Right Whale	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Macropus parma	Parma Wallaby	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Macrotis lagotis	Bilby	Presumed Extinct	Not Sensitive	Vulnerable	
Animalia	Mammalia	Megaptera novaeangliae	Humpback Whale	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Miniopterus australis	Little Bentwing-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Mormopterus norfolkensis	Eastern Freetail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Perameles nasuta	Long-nosed Bandicoot	Endangered Population	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Endangered Population, Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Physeter macrocephalus	Sperm Whale	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Pseudomys novaehollandiae	New Holland Mouse	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Vespadelus troughtoni	Eastern Cave Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Antaresia stimsoni	Stimson's Python	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Caretta caretta	Loggerhead Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Reptilia	Dermochelys coriacea	Leatherback Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Eretmochelys imbricata	Hawksbill Turtle	Not Listed	Not Sensitive	Vulnerable	
Animalia	Reptilia	Myuchelys bellii	Western Sawshelled Turtle, Bell's Turtle	Endangered	Not Sensitive	Vulnerable	
Animalia	Reptilia	Suta flagellum	Little Whip Snake	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Tiliqua occipitalis	Western Blue-tongued Lizard	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Varanus rosenbergi	Rosenberg's Goanna	Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Camarophyllopsis kearneyi		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe anomala var. ianthinomarginata		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe aurantipes		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe austropratensis		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe collucera		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe griseoramosa		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe lanecovensis		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe reesiae		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe rubronivea		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia bynoeana	Bynoe's Wattle	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia terminalis subsp. terminalis	Sunshine Wattle	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Allocasuarina portuensis	Nielsen Park She-oak	Endangered	Category 3	Endangered	
Plantae	Flora	Baeckea kandos		Endangered	Category 3	Endangered	
Plantae	Flora	Caladenia tessellata	Thick Lip Spider Orchid	Endangered	Category 2	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Chamaesyce psammogeton	Sand Spurge	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Cheilanthes sieberi subsp. pseudovellea		Endangered	Category 3	Not Listed	
Plantae	Flora	Cryptostylis hunteriana	Leafless Tongue Orchid	Vulnerable	Category 2	Vulnerable	
Plantae	Flora	Darwinia biflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Darwinia peduncularis		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Deyeuxia appressa		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Epacris purpurascens var. purpurascens		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus camfieldii	Camfield's Stringybark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Euphrasia collina subsp. muelleri	Mueller's Eyebright	Endangered	Not Sensitive	Endangered	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Genoplesium baueri	Bauer's Midge Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Grammitis stenophylla	Narrow-leaf Finger Fern	Endangered	Category 3	Not Listed	
Plantae	Flora	Grevillea caleyi	Caley's Grevillea	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Grevillea hilliana	White Yiel Yiel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Haloragodendron lucasii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Hibbertia puberula		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Hibbertia superans		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Kunzea rupestris		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Lasiopetalum joyceae		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Leptospermum deanei		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia integrifolia	Macadamia Nut	Not Listed	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca biconvexa	Biconvex Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Microtis angusii	Angus's Onion Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Persoonia laxa		Presumed Extinct	Not Sensitive	Extinct	
Plantae	Flora	Persoonia pauciflora	North Rothbury Persoonia	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Pimelea curviflora var. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Prostanthera densa	Villous Mint-bush	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Prostanthera junonis	Somersby Mintbush	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Prostanthera marifolia	Seaforth Mintbush	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Rhodamnia rubescens	Scrub Turpentine	Critically Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Sarcochilus hartmannii	Hartman's Sarcochilus	Vulnerable	Category 2	Vulnerable	
Plantae	Flora	Senecio spathulatus	Coast Groundsel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetratheca glandulosa		Vulnerable	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

Data obtained 09/07/2019

USE OF REPORT - APPLICABLE TERMS

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

Land Title Records

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)
ABN 82 147 943 842

18/36 Osborne Road,
Manly NSW 2095

Telephone: +612 9977 6713
Mobile: 0412 169 809
Email: search@alsearchers.com.au

09th July 2019

ENVIRONMENTAL INVESTIGATION SERVICES
PO BOX 976,
NORTH RYDE BC NSW 1670

Attention: Katrina Taylor,

RE: **Forest Central Business Park**
Frenchs Forest
Reference E32505BT

Current Search

Folio Identifier 7/1020015 (title attached)
DP 1020015 (plan attached)
Dated 09th July 2019
Registered Proprietor:
FOREST CENTRAL BUSINESS PARK PTY LIMITED

Title Tree
Lot 7 DP 1020015

Folio Identifier 7/1020015

Folio Identifier 1/108202

Certificate of Title Volume 7181 Folio 169

Certificate of Title Volume 7038 Folio 178

(a) **(b)**

Certificate of Title Volume 4501 Folio 232 Certificate of Title Volume 4668 Folio 105

\ Certificate of Title Volume 4501 Folio 233

Certificate of Title Volume 3589 Folio's 172 & 173

Certificate of Title Volume 1232 Folio 213

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Summary of proprietor(s)
Lot 7 DP 1020015

Year	Proprietor(s)
	(Lot 7 DP 1020015)
2002 – todate	Forest Central Business Park Pty Limited
(2004 – todate)	*(current lease to Telstra Corporation Limited shown on Folio Identifier 7/1020015)*
2001 – 2002	Australian Telecommunications Commission
	(Lot 1 DP 108202)
1999 – 2001	Australian Telecommunications Commission
	(Lot 1 DP 108202 – Area 4 Acres 1 Rood 11 ¼ Perches – CTVol 7181 Fol 169)
1987 – 1999	Australian Telecommunications Commission
(1988 – 1989)	*(lease to The Sydney County Council of part being substation no. 15368)*
1956 – 1987	The Commonwealth of Australia
	(Part Lots 14 & 15 DP 3392 – Area 14 Acres 2 Roods 4 ¾ Perches – CTVol 7038 Fol 178)
1955 – 1956	Charles William Hopkins, retired grazier Elsie Mabel Hopkins, his wife Joyce Anderson, wife of Alexander Anderson, builder

See Notes (a) & (b)

Note (a)

	(Part Lot 16 DP 3392 – Area 3 Roods 34 ¾ Perches – CTVol 4501 Fol 232)
1955 – 1955	Charles William Hopkins, retired grazier Elsie Mabel Hopkins, his wife Joyce Anderson, wife of Alexander Anderson, builder
1954 – 1955	Northern Forests Development Company Pty Limited
1931 – 1954	Sidney Arthur Walsh, manufacturer
	(Lots 14, 15 & 16 DP 3392 – Area 27 Acres 3 Roods 33 Perches – CTVol 3589 Fol's 172 & 173)
1924 – 1931	Charlotte Helen Macintyre, widow Sidney Arthur Walsh, manufacturer
	(Lots 14, 15 & 16 DP 3392 – Area 27 Acres 3 Roods 33 Perches – CTVol 1232 Fol 213)
1915 – 1924	James Watt, farmer and grazier
(1919 – 1920)	*(lease to William Henry Whitworth, fruiterer and George Honaton Cox, fruiterer*
1914 – 1915	George Alderton James Alderton Josiah Metcalf
(1911 – 1914)	*(lease to Charles Warren Alderton)*
1897 – 1914	George Alderton, gentleman

****

Note (b)

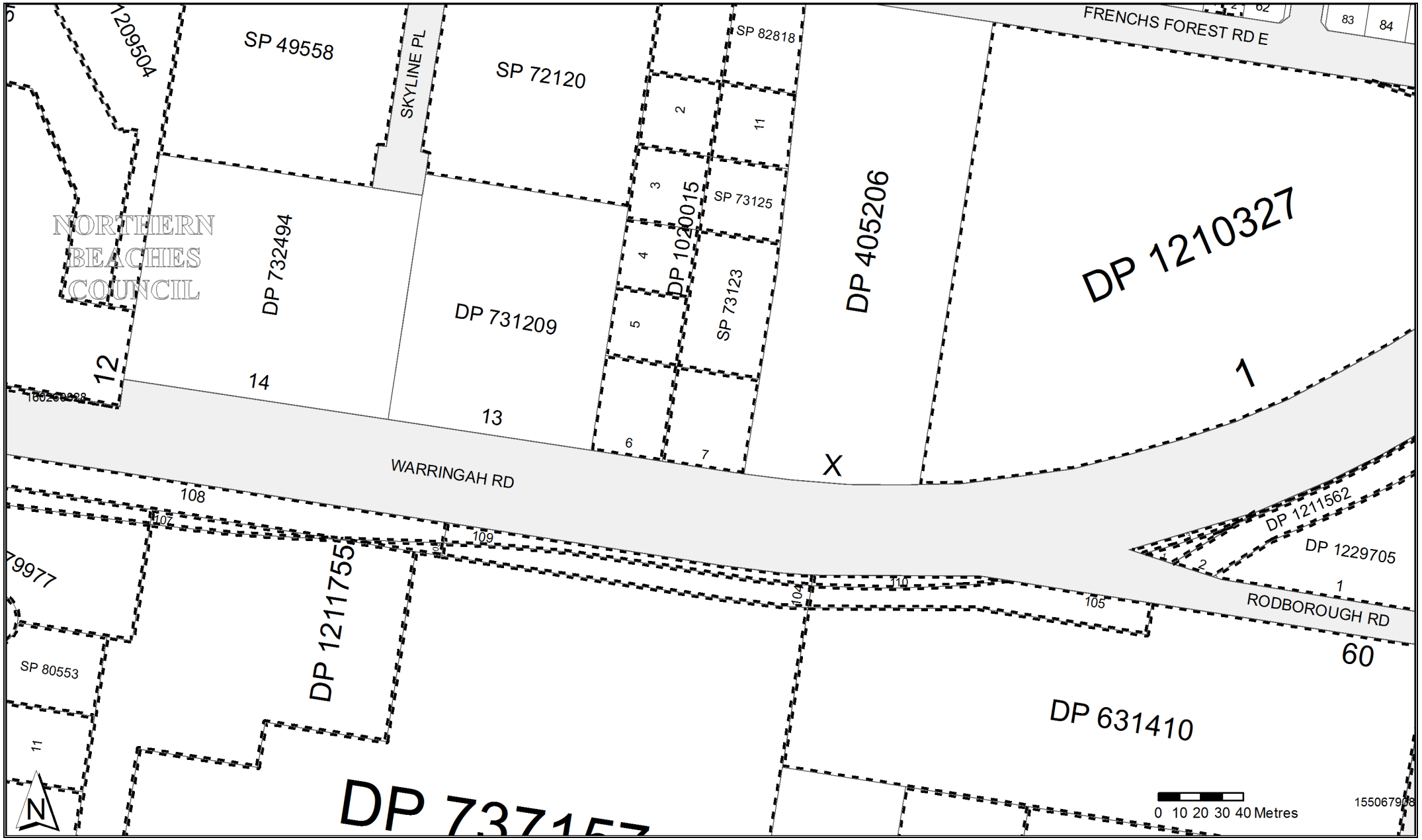
	(Part Lots 14, 15 & 16 DP 3392 – Area 25 Acres 3 Roods 24 Perches – CTVol 4668 Fol 105)
1955 – 1955	Charles William Hopkins, retired grazier Elsie Mabel Hopkins, his wife Joyce Anderson, wife of Alexander Anderson, builder
1954 – 1955	Northern Forests Development Company Pty Limited
1951 – 1954	Charles William Hopkins, grazier Elsie Mabel Hopkins, his wife Joyce Anderson, wife of Alexander Anderson, builder
1935 – 1951	Charlotte Helen Macintyre, widow
	(Part Lots 14, 15 & 16 DP 3392 – Area 25 Acres 3 Roods 33 Perches – CTVol 4501 Fol 233)
1931 – 1935	Charlotte Helen Macintyre, widow
	(Lots 14, 15 & 16 DP 3392 – Area 27 Acres 3 Roods 33 Perches – CTVol 3589 Fol's 172 & 173)
1924 – 1931	Charlotte Helen Macintyre, widow Sidney Arthur Walsh, manufacturer
	(Lots 14, 15 & 16 DP 3392 – Area 27 Acres 3 Roods 33 Perches – CTVol 1232 Fol 213)
1915 – 1924	James Watt, farmer and grazier
(1919 – 1920)	*(lease to William Henry Whitworth, fruiterer and George Honaton Cox, fruiterer*
1914 – 1915	George Alderton James Alderton Josiah Metcalf
(1911 – 1914)	*(lease to Charles Warren Alderton)*
1897 – 1914	George Alderton, gentleman

****

Cadastral Records Enquiry Report : Lot 7 DP 1020015

Ref : NOUSER

Locality : FRENCHS FOREST
Parish : MANLY COVE
LGA : NORTHERN BEACHES
County : CUMBERLAND



This information is provided as a searching aid only.Whilst every endeavour is made to ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For ALL ACTIVITY PRIOR TO SEPTEMBER 2002 you must refer to the RGs Charting and Reference Maps

	Status	Surv/Comp	Purpose
DP241708			
Lot(s): 2			
SP78786	PRE-EXAM	COMPILATION	STRATA PLAN
DP270323			
Lot(s): 1, 11			
DP614427	HISTORICAL	COMPILATION	SUBDIVISION
Lot(s): 1			
DP270323	REGISTERED	SURVEY	COMMUNITY CONSOLIDATION PLAN
SP72845	REGISTERED	COMPILATION	STRATA PLAN
SP78237	REGISTERED	COMPILATION	STRATA PLAN
SP79977	REGISTERED	COMPILATION	STRATA PLAN
SP80553	REGISTERED	COMPILATION	STRATA PLAN
DP631410			
Lot(s): 60			
DP1143201	REGISTERED	SURVEY	LEASE
DP737157			
Lot(s): 201			
DP1160721	REGISTERED	SURVEY	EASEMENT
DP1020015			
Lot(s): 1			
DP1235289	REGISTERED	SURVEY	RESUMPTION OR ACQUISITION
Lot(s): 2, 3			
DP1077867	REGISTERED	SURVEY	EASEMENT
Lot(s): 1, 2, 3, 4, 5, 6, 7, 11			
DP108202	HISTORICAL	SURVEY	UNRESEARCHED
DP1022985	REGISTERED	SURVEY	EASEMENT
DP1022987	REGISTERED	SURVEY	EASEMENT
DP1076458	WITHDRAWN	SURVEY	EASEMENT
DP1065395			
Lot(s): 1, 2			
DP20077	HISTORICAL	SURVEY	UNRESEARCHED
DP1092595			
Lot(s): 12			
DP774755	HISTORICAL	SURVEY	SUBDIVISION
DP1209504			
Lot(s): 102			
DP730473	HISTORICAL	SURVEY	SUBDIVISION
DP1210327			
Lot(s): 1, 13			
DP785104	HISTORICAL	SURVEY	SUBDIVISION
Lot(s): 13			
NSW GAZ. 27-11-2015 Folio : 3808 ACQUIRED FOR THE PURPOSES OF THE ROADS ACT, 1993 LOT 13 DP1210327			
DP1211562			
Lot(s): 2, 4			
DP558009	HISTORICAL	COMPILATION	SUBDIVISION
Lot(s): 1, 3			
DP245508	HISTORICAL	SURVEY	ROAD OR MOTORWAY
Lot(s): 3			
NSW GAZ. 24-12-2015 Folio : 4269 ACQUIRED FOR THE PURPOSES OF THE ROADS ACT, 1993 LOT 3 DP1211562 - SEE AK135171			
Lot(s): 4			
NSW GAZ. 24-12-2015 Folio : 4269 ACQUIRED FOR THE PURPOSES OF THE ROADS ACT, 1993 LOT 4 DP1211562 - SEE AK135171			
DP1211755			
Lot(s): 102, 107			
DP737157	HISTORICAL	SURVEY	SUBDIVISION

	Status	Surv/Comp	Purpose
Lot(s): 105, 110			
DP631410	HISTORICAL	COMPILATION	SUBDIVISION
Lot(s): 103, 108			
DP580560	HISTORICAL	COMPILATION	SUBDIVISION
Lot(s): 106			
DP270323	HISTORICAL	SURVEY	COMMUNITY CONSOLIDATION PLAN
DP270323	HISTORICAL	SURVEY	COMMUNITY PLAN
DP614427	HISTORICAL	COMPILATION	SUBDIVISION
NSW GAZ. 27-11-2015 Folio : 3808 ACQUIRED FOR THE PURPOSES OF THE ROADS ACT, 1993 LOT 106 DP1211755			
Lot(s): 104, 109			
DP225569	HISTORICAL	SURVEY	SUBDIVISION
Lot(s): 107			
NSW GAZ. 27-11-2015 Folio : 3808 ACQUIRED FOR THE PURPOSES OF THE ROADS ACT, 1993 LOT 107 DP1211755			
Lot(s): 108, 109, 110			
NSW GAZ. 24-12-2015 Folio : 4269 ACQUIRED FOR THE PURPOSES OF THE ROADS ACT, 1993 LOTS 108-110 DP1211755 - SEE AK135171			
DP1229705			
Lot(s): 1			
DP558009	HISTORICAL	COMPILATION	SUBDIVISION
Road			
Polygon Id(s): 160260828			
NSW GAZ. 28-03-2008 Folio : 2549 DEDICATED PUBLIC ROAD LOTS 6-7 DP774755			
SP18976			
DP1106239	REGISTERED	SURVEY	EASEMENT
SP70007	REGISTERED	COMPILATION	STRATA SUBDIVISION PLAN
SP31111			
DP1209505	REGISTERED	SURVEY	ROADS ACT, 1993
DP1240174	REGISTERED	SURVEY	ROADS ACT, 1993
SP49558			
DP1174210	REGISTERED	SURVEY	LEASE
DP1209504	REGISTERED	SURVEY	ROADS ACT, 1993
SP72120			
DP740892	HISTORICAL	COMPILATION	CONSOLIDATION
DP1179058	REGISTERED	SURVEY	LEASE
SP73123			
DP108202	HISTORICAL	SURVEY	UNRESEARCHED
DP1020015	HISTORICAL	SURVEY	SUBDIVISION
DP1070774	HISTORICAL	SURVEY	CONSOLIDATION
DP1076458	WITHDRAWN	SURVEY	EASEMENT
SP76739	REGISTERED	COMPILATION	STRATA SUBDIVISION PLAN
SP73125			
DP108202	HISTORICAL	SURVEY	UNRESEARCHED
DP1020015	HISTORICAL	SURVEY	SUBDIVISION
DP1076458	WITHDRAWN	SURVEY	EASEMENT
SP78237			
DP270323	HISTORICAL	SURVEY	COMMUNITY CONSOLIDATION PLAN
DP270323	HISTORICAL	SURVEY	COMMUNITY PLAN
DP614427	HISTORICAL	COMPILATION	SUBDIVISION

	Status	Surv/Comp	Purpose
SP79977			
DP270323	HISTORICAL	SURVEY	COMMUNITY CONSOLIDATION PLAN
DP270323	HISTORICAL	SURVEY	COMMUNITY PLAN
DP614427	HISTORICAL	COMPILATION	SUBDIVISION
DP1211755	REGISTERED	SURVEY	ROADS ACT, 1993
SP80553			
DP270323	HISTORICAL	SURVEY	COMMUNITY PLAN
DP614427	HISTORICAL	COMPILATION	SUBDIVISION
SP82818			
DP108202	HISTORICAL	SURVEY	UNRESEARCHED
DP1020015	HISTORICAL	SURVEY	SUBDIVISION
DP1076458	WITHDRAWN	SURVEY	EASEMENT
Road			
Polygon Id(s): 155067908			
EX-SUR 82/35 DP985019			
Polygon Id(s): 105396036, 106710647, 106731492, 155067905, 155067908, 155289218, 155289225, 155289226, 160260828			
DP1253999	REGISTERED	SURVEY	SURVEY INFORMATION ONLY
Polygon Id(s): 105010446, 105248736, 105308612, 105390287, 105396036, 105430386, 106710647, 106731492, 155289218, 155289225, 155289226			
DP1253978	REGISTERED	SURVEY	SURVEY INFORMATION ONLY

Plan	Surv/Comp	Purpose
DP20077	SURVEY	UNRESEARCHED
DP25964	SURVEY	UNRESEARCHED
DP241708	SURVEY	SUBDIVISION
DP270323	SURVEY	COMMUNITY PLAN
DP270323	SURVEY	COMMUNITY CONSOLIDATION PLAN
DP405206	SURVEY	UNRESEARCHED
DP631410	COMPILATION	SUBDIVISION
DP731209	COMPILATION	SUBDIVISION
DP732494	COMPILATION	SUBDIVISION
DP737157	SURVEY	SUBDIVISION
DP1020015	SURVEY	SUBDIVISION
DP1065395	SURVEY	SUBDIVISION
DP1092595	SURVEY	ROADS ACT, 1993
DP1209504	SURVEY	ROADS ACT, 1993
DP1210327	SURVEY	ROADS ACT, 1993
DP1211562	SURVEY	ROADS ACT, 1993
DP1211755	SURVEY	ROADS ACT, 1993
DP1229705	SURVEY	ROADS ACT, 1993
SP18976	COMPILATION	STRATA PLAN
SP31111	COMPILATION	STRATA PLAN
SP49558	COMPILATION	STRATA PLAN
SP72120	COMPILATION	STRATA PLAN
SP73123	COMPILATION	STRATA PLAN
SP73125	COMPILATION	STRATA PLAN
SP78237	COMPILATION	STRATA PLAN
SP79977	COMPILATION	STRATA PLAN
SP80553	COMPILATION	STRATA PLAN
SP82818	COMPILATION	STRATA PLAN

PLAN FORM 2

Plan Drawing only to appear in this space

SIGNATURES, SEALS AND STATEMENTS of intention to dedicate public roads or to create reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

Signed for SYDNEY WATER CORPORATION by its Attorneys

STEPHEN RAYMOND COX

JEFFREY FRANCIS COLENSO

who hereby state at the time of executing this instrument have no notice of the revocation of the Power of Attorney Registered No. 116 Book 4211 under the Authority of which this instrument has been executed.

WITNESS

C/- SYDNEY WATER.

CAPITAL ASSET MANAGEMENT SERVICES PTY LIMITED Common Seal A.C.N. 083 082 839

Joseph Re DIRECTOR

Director.

SUNC[illegible]WAY Ltd A.C.N. 010[illegible] IS ATTORNEY

GLENN ANTHONY CHENEY

WHO C[illegible] THAT THEY ARE A LEVEL[illegible] Y PURSUANT TO POWE[illegible] RNEY BOOK 3859 NO. 372 OF[illegible] CH THEY HAVE RECEIVED NO NO[illegible]CE OF REVOCATION SIGNED IN MY PRESENCE BY THE SAID ATTORNEY WHO IS PERSONALLY KNOWN TO ME

WITNESS

Crown Lands Office Approval

PLAN APPROVED .....
Authorised Officer

Land District .....

Paper No. .....

Field Book ..... pages .....

Subdivision Certificate

I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to the proposed SUBDIVISION set out herein (insert subdivision or new road)

† Authorised Person / General Manager / Accredited Certifier

Consent Authority: WARRINGAH COUNCIL

Date of endorsement: 11.1.2001

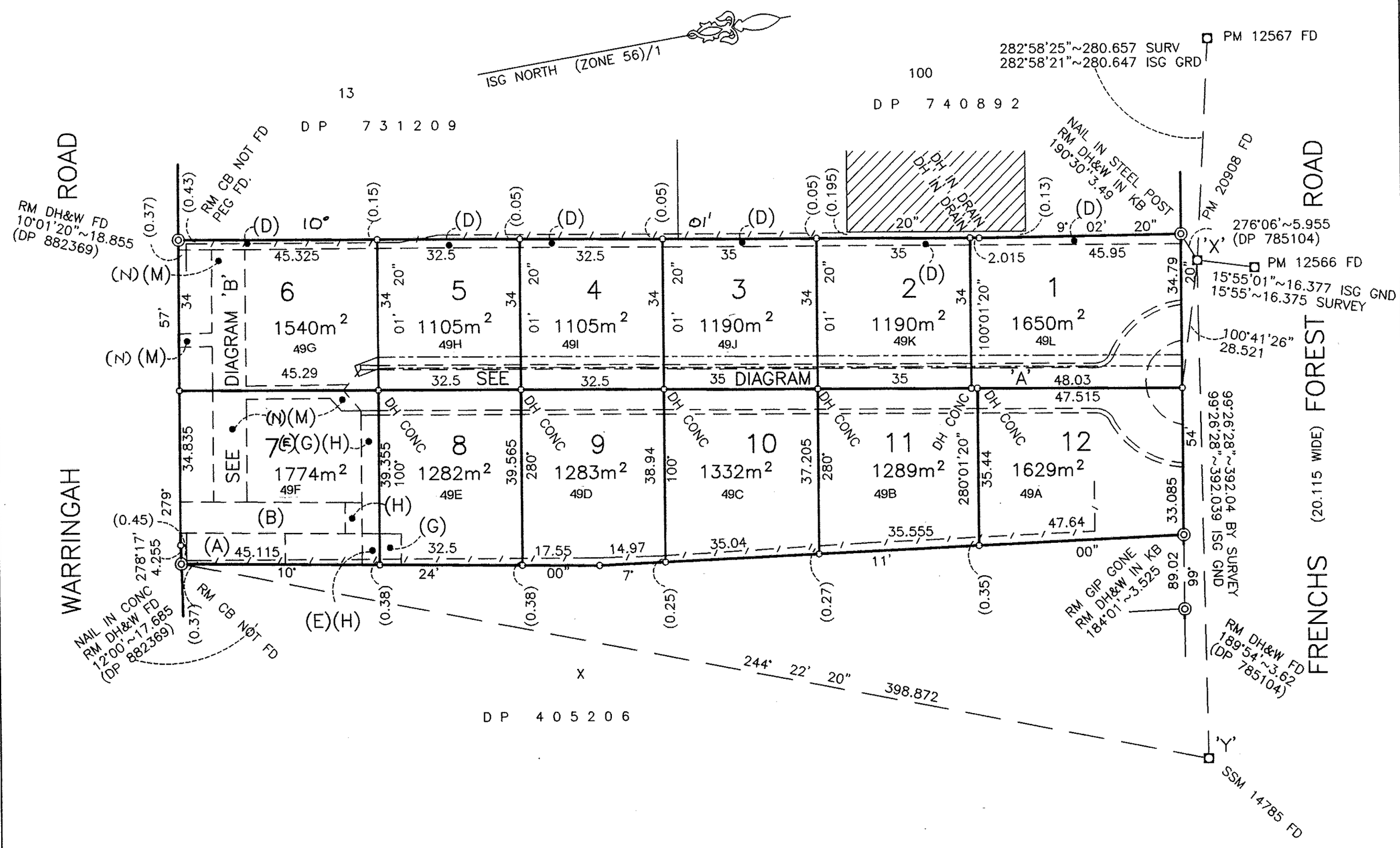
Accreditation No.: .....

Subdivision Certificate No.: 10332

File No.: SB 9303

Note: When the plan is to be lodged electronically in the Land Titles Office, it should include a signature in an electronic or digital format approved by the Registrar-General.

† Delete if inapplicable



(A) LOCATION OF UNDERGROUND TELECOMMUNICATIONS CABLES 7 WIDE (DP 882369) (PROPOSED)
(B) TELECOMMUNICATION SITE 7 WIDE (DP 882369)
(D) TELECOMMUNICATION FACILITIES 2.2 WIDE (DP 882369) (PROPOSED)
(E) RIGHT OF WAY 4.6. WIDE & VARIABLE
(F) EASEMENT FOR SERVICES 5.6 WIDE & VARIABLE
(G) EASEMENT FOR ELECTRICITY SERVICES 4, 5.6, 7 WIDE & VARIABLE
(H) RIGHT OF ACCESS 4 & 7 WIDE
(J) EASEMENT FOR SIGNAGE VARIABLE WIDTH
(K) EASEMENT FOR WATER SUPPLY PURPOSES 2.5 WIDE
(L) EASEMENT FOR ACCESS & DRAINAGE PURPOSES 11.97 WIDE AND VARIABLE
(M) DRAINAGE EASEMENT 3, 7.5 & VARIABLE WIDTH.
(N) EASEMENT TO DRAIN WATER 3, 4.6, 7.5 & VARIABLE

SURVEYORS (PRACTICE) REGULATIONS 1996: CLAUSE 32(2)

I.S.G. MARKS	CO-ORDINATES EASTINGS	NORTHINGS	ZONE 56/1 ACC
PM 12566	322094.006	1264015.750	2
PM 12567	321816.047	1264062.999	2
PM 20908	322089.515	1264000.002	2
SSM 14785	322476.220	1263935.698	2

SOURCE: I.S.G. CO.ORDINATES ADOPTED FROM SCIMS AT 21ST MARCH 2000
COMBINED MEAN SEA LEVEL SCALE FACTOR 0.99994

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 Table of mm 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390

SURVEYOR'S REFERENCE: 60022N – CHECKLIST J.H.M.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

DP1020015

Registered 8B 19.4.2001

CA: SEE CERTIFICATE

Title System: TORRENS

Purpose: SUBDIVISION

Ref Map: U 1860-5

Last Plan: DP108202

PLAN OF SUBDIVISION OF LOT 1 IN DP 108202

Lengths are in metres. Reduction Ratio 1: 800

L.G.A. WARRINGAH

Suburb/Locality: FRENCHS FOREST

Parish: MANLY COVE

County: CUMBERLAND

This is sheet 1 of my plan in 2 sheets (Delete if inapplicable)

Survey Certificate
Surveyors (Practice) Regulation 1996

I, GREGORY K OXLEY

of LOVEGROVE OXLEY CONSULTANTS DX 8152 BLACKTOWN

a surveyor registered under the Surveyors Act 1929 hereby certify that the survey represented in this plan is accurate, has been made in accordance with the Surveyors (Practice) Regulations 1996 and was completed on 21ST MARCH 2000

The survey relates to

Datum Line:
Zone: Suburban/~~Country~~

Surveyor registered under the Surveyors Act 1929

Plans used in preparation of survey/~~compilation~~.

DP 108202
DP 785104
DP 882369
DP 405206
DP 740892
DP 731209

PANEL FOR USE ONLY for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants

PURSUANT TO SECTION 88B OF THE CONVEYANCING ACT 1919, AS AMENDED IT IS INTENDED TO CREATE:

1. RESTRICTION ON USE.
2. RESTRICTION ON USE
3. POSITIVE COVENANT
4. RESTRICTION ON USE.
5. EASEMENT FOR SERVICES 5.6 WIDE & VARIABLE
6. RIGHT OF WAY 4.6 WIDE & VARIABLE
7. ~~POSITIVE COVENANT~~ 60.
8. EASEMENT FOR ELECTRICITY SERVICES 4, 5.6, 7 WIDE & VARIABLE
9. RIGHT OF ACCESS 4 & 7 WIDE
10. RESTRICTION ON USE.
11. EASEMENT FOR SIGNAGE VARIABLE WIDTH.
12. EASEMENT FOR WATER SUPPLY PURPOSES 2.5 WIDE.
13. EASEMENT FOR ACCESS & DRAINAGE PURPOSES 11.97 WIDE & VARIABLE
14. DRAINAGE EASEMENT 3, 7.5 & VARIABLE WIDTH.

ADDITIONS & AMENDMENTS MADE BY SURVEYOR IN LPI NSW

PLAN FORM 3

To be used in conjunction with Plan Form 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

DP1020015

Registered SB 19.4.2001

This is sheet 2 of my plan in 2 sheets dated 21ST MARCH 2000

Surveyor registered under Surveyors Act 1929

This is sheet 2 of the plan of 2 sheets covered by my Certificate No. 10332 of 11.1.2001

General Manager/Authorised Person

For use where space is insufficient in any panel on Plan Form 2.

PURSUANT TO SECTION 88B OF THE CONVEYANCING ACT 1919, AS AMENDED

IT IS INTENDED TO CREATE:

15. POSITIVE COVENANT

16 EASEMENT TO DRAIN WATER 3,4,6, 7.5 ℄ VARIABLE

*** and as set out in the accompanying instrument signed by the Authorised Person"**

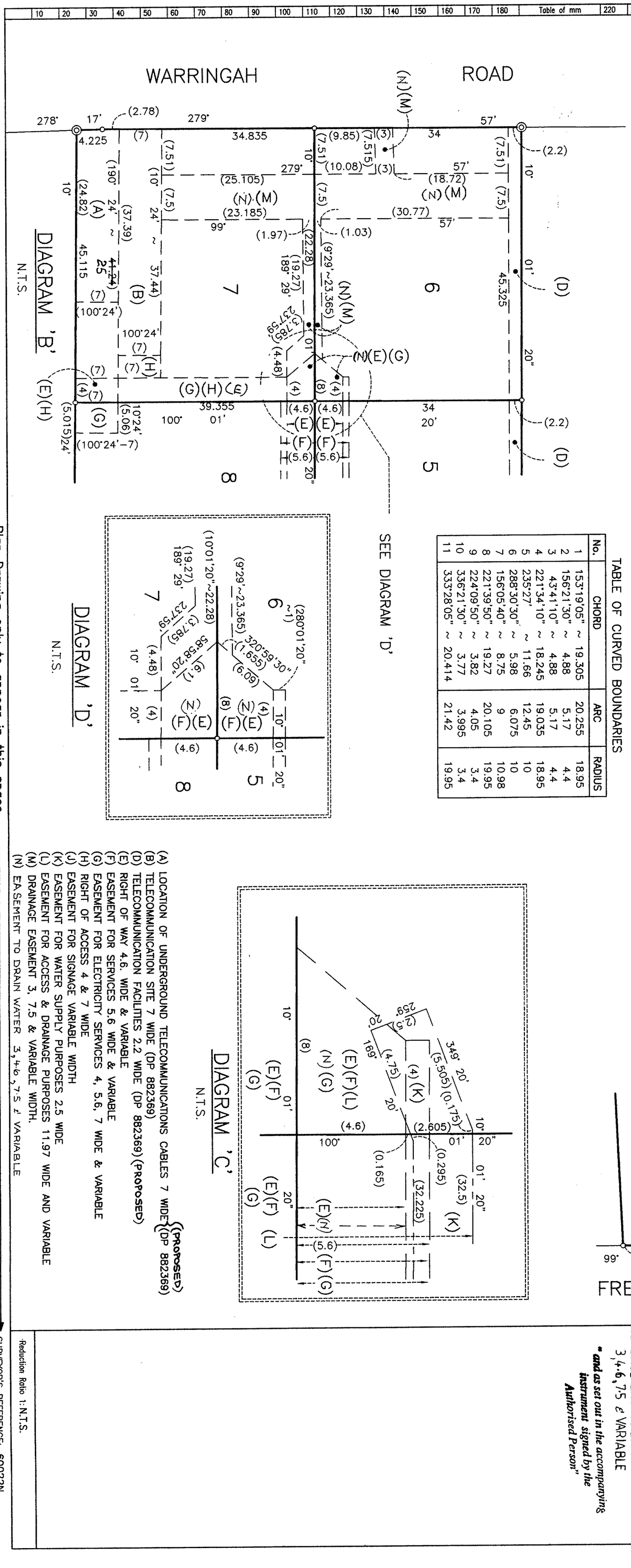


TABLE OF CURVED BOUNDARIES

No.	CHORD	ARC	RADIUS
1	153°19'05" ~ 19.305	20.255	18.95
2	156°21'30" ~ 4.88	5.17	4.4
3	43°41'10" ~ 4.88	5.17	4.4
4	221°34'10" ~ 18.245	19.035	18.95
5	235°27' ~ 11.66	12.45	10
6	288°30'30" ~ 5.98	6.075	10
7	156°05'40" ~ 8.75	9	10.98
8	221°39'50" ~ 19.27	20.105	19.95
9	224°09'50" ~ 3.82	4.05	3.4
10	336°21'30" ~ 3.77	3.995	3.4
11	333°28'05" ~ 20.414	21.42	19.95

(A) LOCATION OF UNDERGROUND TELECOMMUNICATIONS CABLES 7 WIDE (PROPOSED)
(B) TELECOMMUNICATION SITE 7 WIDE (DP 882369)
(D) TELECOMMUNICATION FACILITIES 2.2 WIDE (DP 882369) (PROPOSED)
(E) RIGHT OF WAY 4.6. WIDE & VARIABLE
(F) EASEMENT FOR SERVICES 5.6 WIDE & VARIABLE
(G) EASEMENT FOR ELECTRICITY SERVICES 4, 5.6, 7 WIDE & VARIABLE
(H) RIGHT OF ACCESS 4 & 7 WIDE
(J) EASEMENT FOR SIGNAGE VARIABLE WIDTH
(K) EASEMENT FOR WATER SUPPLY PURPOSES 2.5 WIDE
(L) EASEMENT FOR ACCESS & DRAINAGE PURPOSES 11.97 WIDE AND VARIABLE
(M) DRAINAGE EASEMENT 3, 7.5 & VARIABLE WIDTH.
(N) EASEMENT TO DRAIN WATER 3,4.6,7.5 ℄ VARIABLE

Plan Drawing only to appear in this space

Reduction Ratio 1: N.T.S.

SURVEYOR'S REFERENCE: 60022N

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
9/7/2019 8:14AM

FOLIO: 7/1020015

First Title(s): OLD SYSTEM
Prior Title(s): 1/108202

Recorded	Number	Type of Instrument	C.T. Issue
19/4/2001	DP1020015	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
19/4/2001	DP1022985	DEPOSITED PLAN	
19/4/2001	DP1022987	DEPOSITED PLAN	
19/4/2001	7379862	VARIATION OF LEASE	EDITION 1
7/5/2001	7578069	REQUEST	
21/2/2002	8375660	DISCHARGE OF MORTGAGE	
21/2/2002	8375661	TRANSFER	EDITION 2
16/4/2018	DP1076458	WITHDRAWN - PRE-EXAMINATION PLAN	

*** END OF SEARCH ***

advlegs PRINTED ON 9/7/2019

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 7/1020015

SEARCH DATE	TIME	EDITION NO	DATE
9/7/2019	8:13 AM	2	21/2/2002

LAND

LOT 7 IN DEPOSITED PLAN 1020015
AT FRENCHS FOREST
LOCAL GOVERNMENT AREA NORTHERN BEACHES
PARISH OF MANLY COVE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1020015

FIRST SCHEDULE

FOREST CENTRAL BUSINESS PARK PTY LIMITED (T 8375661)

SECOND SCHEDULE (23 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 5737241 LEASE TO TELSTRA CORPORATION LIMITED OF THE SITE SHOWN DESIGNATED (B) ON DP882369. EXPIRES: 31/3/2004. OPTION OF RENEWAL: 5 YEARS.
7379862 VARIATION OF LEASE 5737241
3 DP1020015 RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND NUMBERED (1) IN THE S.88B INSTRUMENT
4 DP1020015 RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND NUMBERED (2) IN THE S.88B INSTRUMENT
5 DP1020015 POSITIVE COVENANT REFERRED TO AND NUMBERED (3) IN THE S.88B INSTRUMENT
6 DP1020015 RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND NUMBERED (4) IN THE S.88B INSTRUMENT
7 DP1020015 EASEMENT FOR SERVICES 5.6 METRE(S) WIDE AND VARIABLE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
8 DP1020015 EASEMENT FOR SERVICES 5.6 METRE(S) WIDE AND VARIABLE APPURTENANT TO THE LAND ABOVE DESCRIBED
9 DP1020015 RIGHT OF WAY 4.6 METRE(S) WIDE AND VARIABLE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
10 DP1020015 RIGHT OF WAY 4.6 METRE(S) WIDE AND VARIABLE APPURTENANT TO THE LAND ABOVE DESCRIBED
11 DP1020015 EASEMENT FOR ELECTRICITY SERVICES 4, 5.6, 7 WIDE AND VARIABLE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
12 DP1020015 RIGHT OF ACCESS 4 & 7 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
13 DP1020015 RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND NUMBERED (10) IN THE S.88B INSTRUMENT

END OF PAGE 1 - CONTINUED OVER

SECOND SCHEDULE (23 NOTIFICATIONS) (CONTINUED)

14	DP1020015	EASEMENT FOR SIGNAGE VARIABLE WIDTH APPURTENANT TO THE LAND ABOVE DESCRIBED
15	DP1020015	EASEMENT FOR ACCESS & DRAINAGE PURPOSES 11.97 WIDE AND VARIABLE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
16	DP1020015	DRAINAGE EASEMENT 3, 7.5 & VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
17	DP1020015	POSITIVE COVENANT REFERRED TO AND NUMBERED (15) IN THE S.88B INSTRUMENT
18	DP1020015	EASEMENT TO DRAIN WATER 3, 4.6, 7.5 METRE(S) WIDE AND VARIABLE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
19	DP1020015	EASEMENT TO DRAIN WATER 3, 4.6, 7.5 METRE(S) WIDE AND VARIABLE APPURTENANT TO THE LAND ABOVE DESCRIBED
20	DP1022985	RIGHT OF CARRIAGEWAY 4, 4.6 METRE(S) WIDE AND VARIABLE AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1022985
21	DP1022985	EASEMENT FOR ELECTRICITY PURPOSES 2 & 7 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1022985
22	DP1022987	RIGHT OF ACCESS 4, 4.6 METRE(S) WIDE AND VARIABLE AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1022987
23	DP1022987	EASEMENT FOR TELECOMMUNICATIONS PURPOSES 7 WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1022987

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO.

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

SafeWork NSW Records

NSW GOVERNMENT | SafeWork NSW

Locked Bag 2906, Lisarow NSW 2252
Customer Experience 13 10 50
ABN 81 913 830 179 | www.safework.nsw.gov.au

Our Ref: D19/168368

1 August 2019

JK Environments
Ms Katrina Taylor
PO Box 976
NORTH RYDE NSW 1670

Dear Ms Taylor

RE SITE: 49 Frenchs Forest Rd East, Frenchs Forest NSW 2086

I refer to your site search request received by SafeWork NSW on 19 July 2019 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above-mentioned premises.

For further information or if you have any questions, please call us on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely

Customer Service Officer
Customer Experience - Operations
SafeWork NSW

Appendix D: Borehole Logs

JKGeotechnics

BOREHOLE LOG

Borehole No. 1

1 / 1

Client: ERILYAN

Project: PROPOSED MEDICAL CENTRE

Location: FOREST CENTRAL BUSINESS PARK, FRENCHS FOREST, NSW

Job No.: 32505S **Method:** SPIRAL AUGER **R.L. Surface:** 158.72 m

Date: 1/8/19 **Datum:** AHD

Plant Type: JK250 **Logged/Checked By:** W.S./P.S.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION					N = 7 3,4,3	158	1			FILL: Silty gravelly clay, medium plasticity, dark grey and red brown, fine to medium grained igneous gravel.	w>PL			GRASS COVER APPEARS MODERATELY COMPACTED
					N = 18 11,9,9	157	2		CH	Silty CLAY: high plasticity, orange brown mottled red brown.	w>PL	St		RESIDUAL
						156	3			as above, but light grey.	w~PL	VSt - Hd	350 450 480	
						155	4			END OF BOREHOLE AT 3.00 m				
						154	5							
						153	6							
						152								

JK 9.02.4 LIB:GLB Log JK AUGERHOLE - MASTER 32505S FRENCHSFOREST.GPJ <<DrawingFile>> 23/08/2019 15:08 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

JKGeotechnics

BOREHOLE LOG

Borehole No. 2

1 / 1

Client: ERILYAN

Project: PROPOSED MEDICAL CENTRE

Location: FOREST CENTRAL BUSINESS PARK, FRENCHS FOREST, NSW

Job No.: 32505S **Method:** SPIRAL AUGER **R.L. Surface:** 159.3 m

Date: 1/8/19 **Datum:** AHD

Plant Type: JK250 **Logged/Checked By:** W.S./P.S.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION						159				FILL: Silty clay, medium plasticity, dark brown, trace of fine to medium grained igneous gravel and ash.	w>PL			GRAVEL COVER
					N = 9 7,4,5				CH	SILTY CLAY: high plasticity, red brown mottled orange brown, trace of fine to medium grained ironstone gravel.	w>PL	VSt - Hd	450 550 540	RESIDUAL
						158	1			SILTY CLAY: high plasticity, yellow brown.				
					N = 12 5,6,6					as above, but light grey.	w~PL		520 550 600	
						157	2			as above, but light grey and red brown.				
							3			END OF BOREHOLE AT 3.00 m				
						156	4							
						155	5							
						154	6							
						153								

JKGeotechnics

BOREHOLE LOG

Borehole No. 3
1 / 1

Client: ERILYAN
Project: PROPOSED MEDICAL CENTRE
Location: FOREST CENTRAL BUSINESS PARK, FRENCHS FOREST, NSW

Job No.: 32505S **Method:** SPIRAL AUGER **R.L. Surface:** 160.01 m
Date: 1/8/19 **Datum:** AHD
Plant Type: JK250 **Logged/Checked By:** W.S./P.S.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■			■						FILL: Silty clay, medium plasticity, dark grey and brown, with fine to coarse grained igneous gravel.	w>PL			GRAVEL COVER
	■			■	N = 7 4,4,3				CH	Silty CLAY: high plasticity, light grey and red brown, trace of fine to medium grained ironstone gravel.	w>PL	St	300 350 510	RESIDUAL
						159	1							
				■	N = 3 1,2,1					Silty CLAY: high plasticity, pale grey.	w~PL	F - St	100 150 160	
						158	2							
						157	3			END OF BOREHOLE AT 3.00 m				
						156	4							
						155	5							
						154	6							

JKGeotechnics

BOREHOLE LOG

Borehole No. 4

1 / 1

Client: ERILYAN

Project: PROPOSED MEDICAL CENTRE

Location: FOREST CENTRAL BUSINESS PARK, FRENCHS FOREST, NSW

Job No.: 32505S **Method:** SPIRAL AUGER **R.L. Surface:** 160.0 m

Date: 1/8/19 **Datum:** AHD

Plant Type: JK250 **Logged/Checked By:** W.S./P.S.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■									FILL: Silty clay, dark brown, medium plasticity, treace of fine to medium grained igneous gravel.	w>PL			
									CH	Silty CLAY: high plasticity, light grey mottled orange brown and red brown.	w>PL	VSt - Hd		REFUSAL
	■			■	N = 8 4,4,4								450 500 550	
						159	1							
										as above, but mottled light grey and orange brown.	w~PL	Hd		
				■	N = 14 5,6,8								500 560 >600	
						158	2							
						157	3			END OF BOREHOLE AT 3.00 m				
						156	4							
						155	5							
						154	6							

JKGeotechnics

BOREHOLE LOG

Borehole No. 5

1 / 1

Client: ERILYAN

Project: PROPOSED MEDICAL CENTRE

Location: FOREST CENTRAL BUSINESS PARK, FRENCHS FOREST, NSW

Job No.: 32505S **Method:** SPIRAL AUGER **R.L. Surface:** 159.9 m

Date: 1/8/19 **Datum:** AHD

Plant Type: JK250 **Logged/Checked By:** W.S./P.S.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION										FILL: Silty clay, medium plasticity, dark brown, trace of fine to medium grained igneous gravel and ash.				
					N = 16 19,10,6	159	1		CH	SILTY CLAY: high plasticity, light grey mottled orange brown.	w~PL	Hd	>600 >600 >600	RESIDUAL
										as above, but light grey and orange brown.		VSt		
					N = 11 5,5,6	158	2						480 520 530	
										as above, but light grey.				
						157	3							
										END OF BOREHOLE AT 3.00 m				
						156	4							
						155	5							
						154	6							
						153								

JKGeotechnics

BOREHOLE LOG

Borehole No. 6

1 / 1

Client: ERILYAN

Project: PROPOSED MEDICAL CENTRE

Location: FOREST CENTRAL BUSINESS PARK, FRENCHS FOREST, NSW

Job No.: 32505S **Method:** SPIRAL AUGER **R.L. Surface:** 159.3 m

Date: 1/8/19 **Datum:** AHD

Plant Type: JK250 **Logged/Checked By:** W.S./P.S.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION						159				FILL: Silty clay, medium plasticity, dark brown, with fine to medium grained igneous gravel.	w>PL			
					N = 11 11,6,5		1		CH	Silty CLAY: high plasticity, light grey mottled orange brown and red brown, trace of root fibres.	w~PL	VSt	400 350	RESIDUAL
					N = 10 4,4,6	158						Hd	>600 >600 >600	
						157	2							
							3			END OF BOREHOLE AT 3.00 m				
						156	4							
						155	5							
						154	6							
						153								

JKGeotechnics

BOREHOLE LOG

Borehole No. 8 **1 / 2**

Client: ERILYAN

Project: PROPOSED MEDICAL CENTRE

Location: FOREST CENTRAL BUSINESS PARK, FRENCHS FOREST, NSW

Job No.: 32505S **Method:** SPIRAL AUGER **R.L. Surface:** 160.25 m

Date: 2/8/19 **Datum:** AHD

Plant Type: JK250 **Logged/Checked By:** W.S./P.S.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING						160				FILL: Silty clayey gravel, fine to medium grained sub-angular igneous gravel, trace of fine to medium grained sand.	M			GRAVEL COVER
					N = 4 3,2,2		1		CL	Silty CLAY: high plasticity, red brown and orange brown, trace of fine to medium grained ironstone gravel and root fibres.	w>PL	St - VSt	150 350 450	RESIDUAL
						159				Silty CLAY: high plasticity, light grey.	w~PL	VSt - Hd		
					N = 19 6,8,11		2						420 550 >600	
						158			-	Extremely Weathered siltstone: silty CLAY, high plasticity, light grey.	XW	Hd		HAWKESBURY SANDSTONE
						157	3							
						156	4							
							5			SILTSTONE: dark grey.	HW	L		LOW RESISTANCE
						155				REFER TO CORED BOREHOLE LOG				MODERATE RESISTANCE
						154	6							

JKGeotechnics

CORED BOREHOLE LOG

Borehole No. 8 **2 / 2**

Client: ERILYAN

Project: PROPOSED MEDICAL CENTRE

Location: FOREST CENTRAL BUSINESS PARK, FRENCHS FOREST, NSW

Job No.: 32505S **Core Size:** NMLC **R.L. Surface:** 160.25 m

Date: 2/8/19 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK250 **Bearing:** N/A **Logged/Checked By:** W.S./P.S.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION (Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components)	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness)	Formation
					START CORING AT 5.12m			VL -0.1, L -0.3, M -1, H -3, VH -10, EH	600, 200, 60, 20	Specific / General	
100% RETURN		155			SANDSTONE: fine to medium grained, light grey, red brown and orange brown, bedded at 0-20°.	MW	L - M	0.40			Hawkesbury Sandstone
			6					0.060			
		154						0.50		(6.19m) Jh, 18°, Cn	
								0.10		(6.26-6.48m) XWS, 10°	
			7							(6.90-7.03m) XWS, 6°	
		153			SANDSTONE: fine to medium grained, red brown and light grey, bedded at 0-20°.	HW	M	0.80		(7.12m) Be, 8°, P, R, Fe Sn	
										(7.47m) Be, 6°, P, R, Clay Ct	
								0.30		(7.57m) Be, 12°, P, R, Clay Vn	
										(7.58m) Be, 12°, P, R, Clay Vn	
										(7.82m) Be, 20°, P, R, Clay Vn	
			8				VL	0.080			
		152			as above, but light grey.						
								0.070		(8.63m) Jh, 41°, Ir, R, Cn	
										(8.74m) J, 44°, Ir, R, Cn	
			9							(9.00-9.20m) FRACTURED ZONE	
		151						0.040		(9.33m) J, 55°, Ir, R, Cn	
										(9.45m) J, 57°, Ir, R, Cn	
								0.060			
			10				VL - L	0.060			
		150						0.10			
			11		SANDSTONE: fine to medium grained, light grey.						
		149						0.020			
								0.10			
										(11.80m) Be, 4°, P, S, Clay Ct	
			12							(12.04m) J, 78°, Ir, R, Cn	

END OF BOREHOLE AT 12.10 m

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

ENVIRONMENTAL LOGS EXPLANATION NOTES

INTRODUCTION

These notes have been provided to amplify the environmental report in regard to classification methods, field procedures and certain matters relating to the logging of soil and rock. Not all notes are necessarily relevant to all reports.

Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies include gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726:2017 *'Geotechnical Site Investigations'*. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geoenvironmental practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached soil classification table qualified by the grading of other particles present (eg. sandy clay) as set out below:

Soil Classification	Particle Size
Clay	< 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2.36mm
Gravel	2.36 to 63mm
Cobbles	63 to 200mm
Boulders	> 200mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose (VL)	< 4
Loose (L)	4 to 10
Medium dense (MD)	10 to 30
Dense (D)	30 to 50
Very Dense (VD)	> 50

Cohesive soils are classified on the basis of strength (consistency) either by use of a hand penetrometer, vane shear, laboratory testing and/or tactile engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength (kPa)	Indicative Undrained Shear Strength (kPa)
Very Soft (VS)	≤ 25	≤ 12
Soft (S)	> 25 and ≤ 50	> 12 and ≤ 25
Firm (F)	> 50 and ≤ 100	> 25 and ≤ 50
Stiff (St)	> 100 and ≤ 200	> 50 and ≤ 100
Very Stiff (VSt)	> 200 and ≤ 400	> 100 and ≤ 200
Hard (Hd)	> 400	> 200
Friable (Fr)	Strength not attainable – soil crumbles	

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'shale' is used to describe fissile mudstone, with a weakness parallel to bedding. Rocks with alternating inter-laminations of different grain size (eg. siltstone/claystone and siltstone/fine grained sandstone) are referred to as 'laminite'.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All methods except test pits, hand auger drilling and portable Dynamic Cone Penetrometers require the use of a mechanical rig which is commonly mounted on a truck chassis or track base.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils and 'weaker' bedrock if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for a large excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the

structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Refusal of the hand auger can occur on a variety of materials such as obstructions within any fill, tree roots, hard clay, gravel or ironstone, cobbles and boulders, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of limited reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock cuttings. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be assessed from the cuttings, together with some information from "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, NMLC or HQ triple tube core barrels, which give a core of about 50mm and 61mm diameter, respectively, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as NO CORE. The location of NO CORE recovery is determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the bottom of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils, as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289.6.3.1–2004 (R2016) *'Methods of Testing Soils for Engineering Purposes, Soil Strength and Consolidation Tests – Determination of the Penetration Resistance of a Soil – Standard Penetration Test (SPT)'*.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63.5kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In the case where full penetration is obtained with successive blow counts for each 150mm of, say, 4, 6 and 7 blows, as

  N = 13
  4, 6, 7

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as

  N > 30
  15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

A modification to the SPT is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as 'N_c' on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

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

The terms and symbols used in preparation of the logs are defined in the following pages.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than 'straight line' variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

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

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it is left open.
- A localised perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes and may not be the same at the time of construction.
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole or 'reverted' chemically if reliable water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after the groundwater level has stabilised at intervals ranging from several days to perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably assess the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse environmental characteristics or behaviour. If the volume and nature of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classification and rock strengths indicated on the environmental logs unless noted in the report.

SYMBOL LEGENDS

SOIL


FILL


TOPSOIL


CLAY (CL, CI, CH)


SILT (ML, MH)


SAND (SP, SW)


GRAVEL (GP, GW)


SANDY CLAY (CL, CI, CH)


SILTY CLAY (CL, CI, CH)


CLAYEY SAND (SC)


SILTY SAND (SM)


GRAVELLY CLAY (CL, CI, CH)


CLAYEY GRAVEL (GC)


SANDY SILT (ML, MH)


PEAT AND HIGHLY ORGANIC SOILS (Pt)

ROCK


CONGLOMERATE


SANDSTONE


SHALE/MUDSTONE


SILTSTONE


CLAYSTONE


COAL


LAMINITE


LIMESTONE


PHYLLITE, SCHIST


TUFF


GRANITE, GABBRO


DOLERITE, DIORITE


BASALT, ANDESITE


QUARTZITE

OTHER MATERIALS


BRICKS OR PAVERS


CONCRETE


ASPHALTIC CONCRETE

CLASSIFICATION OF COARSE AND FINE GRAINED SOILS

Major Divisions		Group Symbol	Typical Names	Field Classification of Sand and Gravel	Laboratory Classification	
Coarse grained soil (more than 65% of soil excluding oversize fraction is greater than 0.075mm)	GRAVEL (more than half of coarse fraction is larger than 2.36mm	GW	Gravel and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 4$ $1 < C_c < 3$
		GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		GM	Gravel-silt mixtures and gravel-sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	Fines behave as silt
		GC	Gravel-clay mixtures and gravel-sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	Fines behave as clay
	SAND (more than half of coarse fraction is smaller than 2.36mm)	SW	Sand and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 6$ $1 < C_c < 3$
		SP	Sand and gravel-sand mixtures, little or no fines	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		SM	Sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	N/A
		SC	Sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	

Major Divisions		Group Symbol	Typical Names	Field Classification of Silt and Clay			Laboratory Classification
				Dry Strength	Dilatancy	Toughness	% < 0.075mm
Fine grained soils (more than 35% of soil excluding oversize fraction is less than 0.075mm)	SILT and CLAY (low to medium plasticity)	ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity	None to low	Slow to rapid	Low	Below A line
		CL, CI	Inorganic clay of low to medium plasticity, gravelly clay, sandy clay	Medium to high	None to slow	Medium	Above A line
		OL	Organic silt	Low to medium	Slow	Low	Below A line
	SILT and CLAY (high plasticity)	MH	Inorganic silt	Low to medium	None to slow	Low to medium	Below A line
		CH	Inorganic clay of high plasticity	High to very high	None	High	Above A line
		OH	Organic clay of medium to high plasticity, organic silt	Medium to high	None to very slow	Low to medium	Below A line
	Highly organic soil	Pt	Peat, highly organic soil	–	–	–	–

Laboratory Classification Criteria

A well graded coarse grained soil is one for which the coefficient of uniformity $Cu > 4$ and the coefficient of curvature $1 < C_c < 3$. Otherwise, the soil is poorly graded. These coefficients are given by:

$$C_U = \frac{D_{60}}{D_{10}} \qquad and \qquad C_C = \frac{(D_{30})^2}{D_{10}\, D_{60}}$$

Where D_{10}, D_{30} and D_{60} are those grain sizes for which 10%, 30% and 60% of the soil grains, respectively, are smaller.

NOTES:

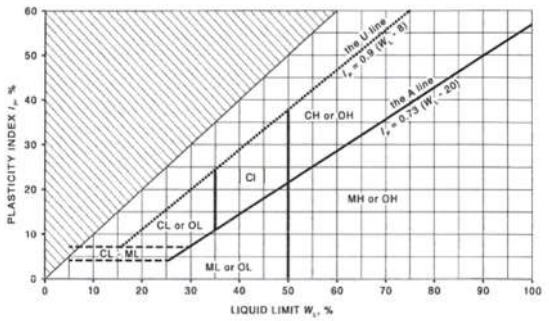
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

2 Where the grading is determined from laboratory tests, it is defined by coefficients of curvature (C_c) and uniformity (C_u) derived from the particle size distribution curve.

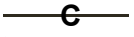
3 Clay soils with liquid limits > 35% and ≤ 50% may be classified as being of medium plasticity.

4 The U line on the Modified Casagrande Chart is an approximate upper bound for most natural soils.

Modified Casagrande Chart for Classifying Silts and Clays according to their Behaviour



LOG SYMBOLS

Log Column	Symbol	Definition
Groundwater Record		Standing water level. Time delay following completion of drilling/excavation may be shown.
		Extent of borehole/test pit collapse shortly after drilling/excavation.
		Groundwater seepage into borehole or test pit noted during drilling or excavation.
Samples	ES	Sample taken over depth indicated, for environmental analysis.
	U50	Undisturbed 50mm diameter tube sample taken over depth indicated.
	DB	Bulk disturbed sample taken over depth indicated.
	DS	Small disturbed bag sample taken over depth indicated.
	ASB	Soil sample taken over depth indicated, for asbestos analysis.
	ASS	Soil sample taken over depth indicated, for acid sulfate soil analysis.
	SAL	Soil sample taken over depth indicated, for salinity analysis.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'Refusal' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	N_c = 5 7 3R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60° solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25 PID = 100	Vane shear reading in kPa of undrained shear strength. Photoionisation detector reading in ppm (soil sample headspace test).
Moisture Condition (Fine Grained Soils)	w > PL $w \approx$ PL w < PL $w \approx$ LL w > LL	Moisture content estimated to be greater than plastic limit. Moisture content estimated to be approximately equal to plastic limit. Moisture content estimated to be less than plastic limit. Moisture content estimated to be near liquid limit. Moisture content estimated to be wet of liquid limit.
(Coarse Grained Soils)	D M W	DRY – runs freely through fingers. MOIST – does not run freely but no free water visible on soil surface. WET – free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS S F St VSt Hd Fr ( )	VERY SOFT – unconfined compressive strength ≤ 25kPa. SOFT – unconfined compressive strength > 25kPa and ≤ 50kPa. FIRM – unconfined compressive strength > 50kPa and ≤ 100kPa. STIFF – unconfined compressive strength > 100kPa and ≤ 200kPa. VERY STIFF – unconfined compressive strength > 200kPa and ≤ 400kPa. HARD – unconfined compressive strength > 400kPa. FRIABLE – strength not attainable, soil crumbles. Bracketed symbol indicates estimated consistency based on tactile examination or other assessment.
Density Index/ Relative Density (Cohesionless Soils)	VL L MD D VD ( )	**Density Index (I_D) Range (%)** / **SPT 'N' Value Range (Blows/300mm)** VERY LOOSE ≤ 15 / 0 – 4 LOOSE > 15 and ≤ 35 / 4 – 10 MEDIUM DENSE > 35 and ≤ 65 / 10 – 30 DENSE > 65 and ≤ 85 / 30 – 50 VERY DENSE > 85 / > 50 Bracketed symbol indicates estimated density based on ease of drilling or other assessment.
Hand Penetrometer Readings	300 250	Measures reading in kPa of unconfined compressive strength. Numbers indicate individual test results on representative undisturbed material unless noted otherwise.

Log Column	Symbol	Definition
Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Twin pronged tungsten carbide bit.
	T_{60}	Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.
	Soil Origin	The geological origin of the soil can generally be described as: RESIDUAL – soil formed directly from insitu weathering of the underlying rock. No visible structure or fabric of the parent rock. EXTREMELY WEATHERED – soil formed directly from insitu weathering of the underlying rock. Material is of soil strength but retains the structure and/or fabric of the parent rock. ALLUVIAL – soil deposited by creeks and rivers. ESTUARINE – soil deposited in coastal estuaries, including sediments caused by inflowing creeks and rivers, and tidal currents. MARINE – soil deposited in a marine environment. AEOLIAN – soil carried and deposited by wind. COLLUVIAL – soil and rock debris transported downslope by gravity, with or without the assistance of flowing water. Colluvium is usually a thick deposit formed from a landslide. The description 'slopewash' is used for thinner surficial deposits. LITTORAL – beach deposited soil.

Classification of Material Weathering

Term		Abbreviation		Definition
Residual Soil		RS		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely Weathered		XW		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
Highly Weathered	Distinctly Weathered (Note 1)	HW	DW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately Weathered		MW		The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly Weathered		SW		Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh		FR		Rock shows no sign of decomposition of individual minerals or colour changes.

NOTE 1: The term 'Distinctly Weathered' is used where it is not practicable to distinguish between 'Highly Weathered' and 'Moderately Weathered' rock. 'Distinctly Weathered' is defined as follows: *'Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores'*. There is some change in rock strength.

Rock Material Strength Classification

Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Guide to Strength	
			Point Load Strength Index $Is_{(50)}$ (MPa)	Field Assessment
Very Low Strength	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low Strength	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium Strength	M	6 to 20	0.3 to 1	Scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High Strength	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High Strength	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High Strength	EH	> 200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Appendix E: Laboratory Reports & COC Documents

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CERTIFICATE OF ANALYSIS 223166

Client Details

Client	Environmental Investigation Services
Attention	Katrina Taylor
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32505BT, Frenchs Forest**
Number of Samples	21 SOIL
Date samples received	05/08/2019
Date completed instructions received	05/08/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	12/08/2019
Date of Issue	12/08/2019

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Asbestos Approved By
Analysed by Asbestos Approved Identifier: Aida Marner
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Jeremy Faircloth, Operations Manager, Sydney
Lucy Zhu, Senior Asbestos Analyst
Steven Luong, Organics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		223166-1	223166-2	223166-5	223166-6	223166-7
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.0-0.2	0.5-0.7	0.0-0.2	0.5-0.7	0.0-0.3
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019	08/08/2019	08/08/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	91	90	86	84	93

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		223166-8	223166-9	223166-11	223166-14	223166-15
Your Reference	UNITS	BH3	BH4	BH5	BH6	BH6
Depth		0.7-0.9	0.0-0.3	0.0-0.3	0.0-0.3	0.6-0.8
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019	08/08/2019	08/08/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	94	97	94	96	90

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		223166-18	223166-19	223166-20	223166-21
Your Reference	UNITS	BH8	BH8	TB	DUP1
Depth		0.0-0.1	0.5-0.7	-	-
Date Sampled		02/08/2019	02/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019	08/08/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	99	94	103	90

svTRH (C10-C40) in Soil						
Our Reference		223166-1	223166-2	223166-5	223166-6	223166-7
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.0-0.2	0.5-0.7	0.0-0.2	0.5-0.7	0.0-0.3
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	7/08/2019
Date analysed	-	09/08/2019	07/08/2019	07/08/2019	07/08/2019	09/08/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	110	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	240	<100	<100	<100	220
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	260	<100	<100	<100	210
TRH >C_{34} -C_{40}	mg/kg	220	<100	<100	<100	250
Total +ve TRH (>C10-C40)	mg/kg	480	<50	<50	<50	460
Surrogate o-Terphenyl	%	90	86	86	85	88

svTRH (C10-C40) in Soil						
Our Reference		223166-8	223166-9	223166-11	223166-14	223166-15
Your Reference	UNITS	BH3	BH4	BH5	BH6	BH6
Depth		0.7-0.9	0.0-0.3	0.0-0.3	0.0-0.3	0.6-0.8
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	07/08/2019	07/08/2019	07/08/2019	09/08/2019	08/08/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	250	440	340	<100
TRH C_{29} - C_{36}	mg/kg	<100	660	1,300	1,100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	650	1,300	1,000	<100
TRH >C_{34} -C_{40}	mg/kg	<100	870	1,600	1,200	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	1,500	2,900	2,300	<50
Surrogate o-Terphenyl	%	87	93	103	90	77

svTRH (C10-C40) in Soil				
Our Reference		223166-18	223166-19	223166-21
Your Reference	UNITS	BH8	BH8	DUP1
Depth		0.0-0.1	0.5-0.7	-
Date Sampled		02/08/2019	02/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	09/08/2019	08/08/2019	08/08/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	160	280	300
TRH C_{29} - C_{36}	mg/kg	810	2,800	810
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	650	2,400	860
TRH >C_{34} -C_{40}	mg/kg	1,200	1,100	1,100
Total +ve TRH (>C10-C40)	mg/kg	1,800	3,500	2,000
Surrogate o-Terphenyl	%	79	89	102

PAHs in Soil						
Our Reference		223166-1	223166-2	223166-5	223166-6	223166-7
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.0-0.2	0.5-0.7	0.0-0.2	0.5-0.7	0.0-0.3
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019	08/08/2019	08/08/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.2	<0.1	<0.1	<0.1	0.1
Pyrene	mg/kg	0.3	<0.1	<0.1	<0.1	0.2
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.2	<0.05	<0.05	<0.05	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	1.4	<0.05	<0.05	<0.05	0.5
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	92	91	85	87	94

PAHs in Soil						
Our Reference		223166-8	223166-9	223166-11	223166-14	223166-15
Your Reference	UNITS	BH3	BH4	BH5	BH6	BH6
Depth		0.7-0.9	0.0-0.3	0.0-0.3	0.0-0.3	0.6-0.8
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019	08/08/2019	08/08/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	0.2	0.3	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.6	0.6	0.8	<0.1
Pyrene	mg/kg	<0.1	0.7	1	1.2	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.2	0.3	0.4	<0.1
Chrysene	mg/kg	<0.1	0.3	0.4	0.5	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.5	0.7	0.9	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.3	0.4	0.56	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	0.2	0.3	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.2	0.4	0.4	<0.1
Total +ve PAH's	mg/kg	<0.05	3.2	4.1	5.6	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	0.5	0.7	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	0.6	0.8	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	0.6	0.8	<0.5
Surrogate p-Terphenyl-d14	%	89	95	94	88	88

PAHs in Soil				
Our Reference		223166-18	223166-19	223166-21
Your Reference	UNITS	BH8	BH8	DUP1
Depth		0.0-0.1	0.5-0.7	-
Date Sampled		02/08/2019	02/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	0.2
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.2	<0.1	0.6
Pyrene	mg/kg	0.3	<0.1	0.9
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.3
Chrysene	mg/kg	0.1	<0.1	0.4
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.6
Benzo(a)pyrene	mg/kg	0.1	<0.05	0.3
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.4	<0.1	0.3
Total +ve PAH's	mg/kg	1.1	0.2	3.8
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	0.6
Surrogate p-Terphenyl-d14	%	92	88	93

Organochlorine Pesticides in soil						
Our Reference		223166-1	223166-5	223166-7	223166-9	223166-14
Your Reference	UNITS	BH1	BH2	BH3	BH4	BH6
Depth		0.0-0.2	0.0-0.2	0.0-0.3	0.0-0.3	0.0-0.3
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019	08/08/2019	08/08/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	110	108	107	110	107

Organochlorine Pesticides in soil		
Our Reference		223166-18
Your Reference	UNITS	BH8
Depth		0.0-0.1
Date Sampled		02/08/2019
Type of sample		SOIL
Date extracted	-	07/08/2019
Date analysed	-	08/08/2019
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	107

Organophosphorus Pesticides						
Our Reference		223166-1	223166-5	223166-7	223166-9	223166-14
Your Reference	UNITS	BH1	BH2	BH3	BH4	BH6
Depth		0.0-0.2	0.0-0.2	0.0-0.3	0.0-0.3	0.0-0.3
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019	08/08/2019	08/08/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	110	108	107	110	107

Organophosphorus Pesticides		
Our Reference		223166-18
Your Reference	UNITS	BH8
Depth		0.0-0.1
Date Sampled		02/08/2019
Type of sample		SOIL
Date extracted	-	07/08/2019
Date analysed	-	08/08/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Dichlorvos	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Ethion	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Parathion	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Surrogate TCMX	%	107

PCBs in Soil						
Our Reference		223166-1	223166-5	223166-7	223166-9	223166-14
Your Reference	UNITS	BH1	BH2	BH3	BH4	BH6
Depth		0.0-0.2	0.0-0.2	0.0-0.3	0.0-0.3	0.0-0.3
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019	08/08/2019	08/08/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	110	108	107	110	107

PCBs in Soil		
Our Reference		223166-18
Your Reference	UNITS	BH8
Depth		0.0-0.1
Date Sampled		02/08/2019
Type of sample		SOIL
Date extracted	-	07/08/2019
Date analysed	-	08/08/2019
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	107

Acid Extractable metals in soil						
Our Reference		223166-1	223166-2	223166-5	223166-6	223166-7
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.0-0.2	0.5-0.7	0.0-0.2	0.5-0.7	0.0-0.3
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Arsenic	mg/kg	5	<4	<4	12	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	31	19	29	40	25
Copper	mg/kg	16	3	31	6	13
Lead	mg/kg	22	12	6	31	12
Mercury	mg/kg	0.4	<0.1	0.1	0.1	<0.1
Nickel	mg/kg	14	3	50	5	9
Zinc	mg/kg	56	10	86	24	35

Acid Extractable metals in soil						
Our Reference		223166-8	223166-9	223166-11	223166-14	223166-15
Your Reference	UNITS	BH3	BH4	BH5	BH6	BH6
Depth		0.7-0.9	0.0-0.3	0.0-0.3	0.0-0.3	0.6-0.8
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Arsenic	mg/kg	7	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	33	51	16	16
Copper	mg/kg	5	23	23	38	2
Lead	mg/kg	14	12	14	21	9
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	11	17	14	3
Zinc	mg/kg	160	26	21	35	3

Acid Extractable metals in soil						
Our Reference		223166-18	223166-19	223166-21	223166-22	223166-23
Your Reference	UNITS	BH8	BH8	DUP1	BH1 - [TRIPLICATE]	BH8 - [TRIPLICATE]
Depth		0.0-0.1	0.5-0.7	-	0.0-0.2	0.0-0.1
Date Sampled		02/08/2019	02/08/2019	01/08/2019	01/08/2019	02/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Arsenic	mg/kg	<4	10	<4	5	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	11	36	27	31	16
Copper	mg/kg	96	<1	23	26	43
Lead	mg/kg	7	92	17	16	4
Mercury	mg/kg	<0.1	0.1	<0.1	0.1	<0.1
Nickel	mg/kg	7	<1	23	12	5
Zinc	mg/kg	26	12	30	53	23

Moisture						
Our Reference		223166-1	223166-2	223166-5	223166-6	223166-7
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.0-0.2	0.5-0.7	0.0-0.2	0.5-0.7	0.0-0.3
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019	08/08/2019	08/08/2019
Moisture	%	19	14	9.3	16	13

Moisture						
Our Reference		223166-8	223166-9	223166-11	223166-14	223166-15
Your Reference	UNITS	BH3	BH4	BH5	BH6	BH6
Depth		0.7-0.9	0.0-0.3	0.0-0.3	0.0-0.3	0.6-0.8
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019	08/08/2019	08/08/2019
Moisture	%	18	8.0	3.8	7.3	15

Moisture				
Our Reference		223166-18	223166-19	223166-21
Your Reference	UNITS	BH8	BH8	DUP1
Depth		0.0-0.1	0.5-0.7	-
Date Sampled		02/08/2019	02/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	07/08/2019	07/08/2019	07/08/2019
Date analysed	-	08/08/2019	08/08/2019	08/08/2019
Moisture	%	3.5	16	7.4

Asbestos ID - soils						
Our Reference		223166-1	223166-5	223166-7	223166-9	223166-14
Your Reference	UNITS	BH1	BH2	BH3	BH4	BH6
Depth		0.0-0.2	0.0-0.2	0.0-0.3	0.0-0.3	0.0-0.3
Date Sampled		01/08/2019	01/08/2019	01/08/2019	01/08/2019	01/08/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	07/08/2019	07/08/2019	07/08/2019	07/08/2019	07/08/2019
Sample mass tested	g	Approx. 35g	Approx. 40g	Approx. 40g	Approx. 60g	Approx. 35g
Sample Description	-	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils		
Our Reference		223166-18
Your Reference	UNITS	BH8
Depth		0.0-0.1
Date Sampled		02/08/2019
Type of sample		SOIL
Date analysed	-	07/08/2019
Sample mass tested	g	Approx. 60g
Sample Description	-	Brown clayey soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	223166-5
Date extracted	-			07/08/2019	1	07/08/2019	07/08/2019		07/08/2019	07/08/2019
Date analysed	-			08/08/2019	1	08/08/2019	08/08/2019		08/08/2019	08/08/2019
TRH C_6 - C_9	mg/kg	25	Org-016	<25	1	<25	<25	0	87	89
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	1	<25	<25	0	87	89
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	97	101
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	85	88
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	83	84
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	84	86
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	82	85
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	98	1	91	90	1	86	89

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	07/08/2019	07/08/2019		[NT]	[NT]
Date analysed	-			[NT]	18	08/08/2019	08/08/2019		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	[NT]	18	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	[NT]	18	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	18	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	18	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	18	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	18	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	18	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	18	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	18	99	95	4	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	223166-5
Date extracted	-			07/08/2019	1	07/08/2019	07/08/2019		07/08/2019	07/08/2019
Date analysed	-			07/08/2019	1	09/08/2019	09/08/2019		07/08/2019	07/08/2019
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	1	<50	<50	0	109	114
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	1	110	140	24	105	118
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	1	240	260	8	113	130
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	1	<50	<50	0	109	114
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	1	260	300	14	105	118
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	1	220	250	13	113	130
Surrogate o-Terphenyl	%		Org-003	83	1	90	91	1	111	86

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	07/08/2019	07/08/2019		[NT]	[NT]
Date analysed	-			[NT]	18	09/08/2019	09/08/2019		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	[NT]	18	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	[NT]	18	160	140	13	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	[NT]	18	810	810	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	[NT]	18	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	[NT]	18	650	650	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	[NT]	18	1200	1200	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	18	79	78	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	223166-5
Date extracted	-			07/08/2019	1	07/08/2019	07/08/2019		07/08/2019	07/08/2019
Date analysed	-			08/08/2019	1	08/08/2019	08/08/2019		08/08/2019	08/08/2019
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	120	109
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	118	104
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.5	133	105	92
Anthracene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.6	143	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	0.2	1.0	133	110	93
Pyrene	mg/kg	0.1	Org-012	<0.1	1	0.3	1.0	108	112	94
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.5	133	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.4	120	107	96
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	0.2	0.7	111	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	0.2	0.5	86	109	84
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	0.2	67	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.3	100	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	92	1	92	98	6	106	91

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	07/08/2019	07/08/2019		[NT]	[NT]
Date analysed	-			[NT]	18	08/08/2019	08/08/2019		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	18	0.2	0.2	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	18	0.3	0.3	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	18	0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	18	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	18	0.1	0.1	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	18	0.4	0.4	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	18	92	90	2	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	223166-5
Date extracted	-			07/08/2019	1	07/08/2019	07/08/2019		07/08/2019	07/08/2019
Date analysed	-			08/08/2019	1	08/08/2019	08/08/2019		08/08/2019	08/08/2019
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	106
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	91	88
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	80	100
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	101	110
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	100	100
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	107	107
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	120	121
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	100
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	100	99
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	82	81
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	110	1	110	109	1	100	118

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	07/08/2019	07/08/2019		[NT]	[NT]
Date analysed	-			[NT]	18	08/08/2019	08/08/2019		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	18	107	104	3	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	223166-5
Date extracted	-			07/08/2019	1	07/08/2019	07/08/2019		07/08/2019	07/08/2019
Date analysed	-			08/08/2019	1	08/08/2019	08/08/2019		08/08/2019	08/08/2019
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	112	130
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	114	70
Dimethoate	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	104	106
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	118	74
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	116	85
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	112	84
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	112	116
Surrogate TCMX	%		Org-008	110	1	110	109	1	100	118

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	07/08/2019	07/08/2019		[NT]	[NT]
Date analysed	-			[NT]	18	08/08/2019	08/08/2019		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	18	107	104	3	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	223166-5
Date extracted	-			07/08/2019	1	07/08/2019	07/08/2019		07/08/2019	07/08/2019
Date analysed	-			08/08/2019	1	08/08/2019	08/08/2019		08/08/2019	08/08/2019
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	111	109
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-006	110	1	110	109	1	100	118

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	07/08/2019	07/08/2019		[NT]	[NT]
Date analysed	-			[NT]	18	08/08/2019	08/08/2019		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-006	[NT]	18	107	104	3	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	223166-5
Date prepared	-			07/08/2019	1	07/08/2019	07/08/2019		07/08/2019	07/08/2019
Date analysed	-			07/08/2019	1	07/08/2019	07/08/2019		07/08/2019	07/08/2019
Arsenic	mg/kg	4	Metals-020	<4	1	5	6	18	104	80
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	101	74
Chromium	mg/kg	1	Metals-020	<1	1	31	41	28	104	97
Copper	mg/kg	1	Metals-020	<1	1	16	23	36	99	84
Lead	mg/kg	1	Metals-020	<1	1	22	15	38	105	76
Mercury	mg/kg	0.1	Metals-021	<0.1	1	0.4	0.3	29	98	96
Nickel	mg/kg	1	Metals-020	<1	1	14	8	55	101	71
Zinc	mg/kg	1	Metals-020	<1	1	56	39	36	103	89

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	18	07/08/2019	07/08/2019		[NT]	[NT]
Date analysed	-			[NT]	18	07/08/2019	07/08/2019		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	18	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	18	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	18	11	15	31	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	18	96	51	61	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	18	7	4	55	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	18	7	5	33	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	18	26	21	21	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
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Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

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Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Report Comments

Acid Extractable Metals in Soil:
- The laboratory RPD acceptance criteria has been exceeded for 223166-1 for Ni. Therefore a triplicate result has been issued as laboratory sample number 223166-22.
- The laboratory RPD acceptance criteria has been exceeded for 223166-18 for Cu, Pb. Therefore a triplicate result has been issued as laboratory sample number 223166-23.

PAHs in Soil - The RPD for duplicate results is accepted due to the non homogenous nature of sample 223166-1.

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12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
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SAMPLE RECEIPT ADVICE

Client Details

Client	Environmental Investigation Services
Attention	Katrina Taylor

Sample Login Details

Your reference	E32505BT, Frenchs Forest
Envirolab Reference	223166
Date Sample Received	05/08/2019
Date Instructions Received	05/08/2019
Date Results Expected to be Reported	12/08/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	21 SOIL
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	13.8
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticidesin soil	Organophosphorus Pesticides	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils	On Hold
BH1-0.0-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH1-0.5-0.7	✓	✓	✓				✓		
BH1-1.0-1.2									✓
BH1-1.4-1.6									✓
BH2-0.0-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH2-0.5-0.7	✓	✓	✓				✓		
BH3-0.0-0.3	✓	✓	✓	✓	✓	✓	✓	✓	
BH3-0.7-0.9	✓	✓	✓				✓		
BH4-0.0-0.3	✓	✓	✓	✓	✓	✓	✓	✓	
BH4-0.6-0.9									✓
BH5-0.0-0.3	✓	✓	✓				✓		
BH5-0.4-0.6									✓
BH5-0.6-0.95									✓
BH6-0.0-0.3	✓	✓	✓	✓	✓	✓	✓	✓	
BH6-0.6-0.8	✓	✓	✓				✓		
BH7-0.0-0.2									✓
BH7-0.7-1.0									✓
BH8-0.0-0.1	✓	✓	✓	✓	✓	✓	✓	✓	
BH8-0.5-0.7	✓	✓	✓				✓		
TB	✓								
DUP1	✓	✓	✓				✓		

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job Number: E32505BT Date Results Required: STANDARD Page: 1 OF 1	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: ktaylor@jkenvironments.com.au

Location:	FRENCHS FOREST	Sample Preserved in Esky on Ice
Sampler:	WS/RK	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6a	Combo 3	BTEX
1/08/2019	1	BH1	0.0-0.2	G, A	0	FILL: silty gravelly clay	X		
	2		0.5-0.7	G, A	|	FILL: silty gravelly clay		X	
	3		1.0-1.2	G, A	|	Silty clay			
	4		1.4-1.6	G, A	|	Silty clay			
1/08/2019	5	BH2	0.0-0.2	G, A	|	FILL: silty clay	X		
	6		0.5-0.7	G, A	|	Silty clay		X	
1/08/2019	7	BH3	0.0-0.3	G, A	|	FILL: silty clay	X		
	8		0.7-0.9	G, A	|	Silty clay		X	
1/08/2019	9	BH4	0.0-0.3	G, A	|	FILL: silty clay	X		
	10		0.6-0.9	G, A	|	Silty clay			
1/08/2019	11	BH5	0.0-0.3	G, A	|	FILL: silty clay		X	
	12		0.4-0.6	G, A	|	FILL: silty clay			
	13		0.6-0.95	G, A	|	Silty clay			
1/08/2019	14	BH6	0.0-0.3	G, A	|	FILL: silty clay	X		
	15		0.6-0.8	G, A	|	Silty clay		X	
1/08/2019	16	BH7	0.0-0.2	G, A	|	FILL: silty clay			
	17		0.7-1.0	G, A	|	Silty clay			
2/08/2019	18	BH8	0.0-0.1	G, A	|	FILL: silty clay	X		
	19		0.5-0.7	G, A	V	Silty clay		X	
1-2/8/2019	20	TB	-	G	-	SAND			X
1/08/2019	21	DUP1	-	G	-	FILL		X	

ENVIROLAB GROUP

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 223166

Date Received: 05.08.19

Time Received: 15:55

Received by: TC

Temp: Cool/Ambient 12.8C

Cooling: Ice/Icepack

Security: Intact/Broken/None

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

Relinquished By:	Date:	Time:	Received By:	Date:
	5-8-19	15:55	ELS Thurwood Carvalho	05.08.19

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CERTIFICATE OF ANALYSIS 223166-A

Client Details

Client	Environmental Investigation Services
Attention	Katrina Taylor
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E32505BT, Frenchs Forest**
Number of Samples	21 SOIL
Date samples received	05/08/2019
Date completed instructions received	13/08/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

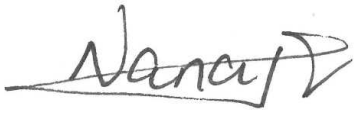
Date results requested by	16/08/2019
Date of Issue	16/08/2019

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Loren Bardwell, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

Metals in TCLP USEPA1311		
Our Reference		223166-A-5
Your Reference	UNITS	BH2
Depth		0.0-0.2
Date Sampled		01/08/2019
Type of sample		SOIL
Date extracted	-	15/08/2019
Date analysed	-	15/08/2019
pH of soil for fluid# determ.	pH units	9.3
pH of soil TCLP (after HCl)	pH units	1.7
Extraction fluid used	-	1
pH of final Leachate	pH units	5.0
Nickel in TCLP	mg/L	0.07

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			15/08/2019	[NT]	[NT]	[NT]	[NT]	15/08/2019	[NT]
Date analysed	-			15/08/2019	[NT]	[NT]	[NT]	[NT]	15/08/2019	[NT]
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	[NT]	[NT]	[NT]	[NT]	96	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
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RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
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SAMPLE RECEIPT ADVICE

Client Details

Client	Environmental Investigation Services
Attention	Katrina Taylor

Sample Login Details

Your reference	E32505BT, Frenchs Forest
Envirolab Reference	223166-A
Date Sample Received	05/08/2019
Date Instructions Received	13/08/2019
Date Results Expected to be Reported	16/08/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	21 SOIL
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	13.8
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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12 Ashley St Chatswood NSW 2067
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Sample ID	pH of soil for fluid#determ.	pH of soil TCLP (after HCl)	Extraction fluid used	pH of final Leachate	Nickel in TCLP	On Hold
BH1-0.0-0.2						✓
BH1-0.5-0.7						✓
BH1-1.0-1.2						✓
BH1-1.4-1.6						✓
BH2-0.0-0.2	✓	✓	✓	✓	✓	
BH2-0.5-0.7						✓
BH3-0.0-0.3						✓
BH3-0.7-0.9						✓
BH4-0.0-0.3						✓
BH4-0.6-0.9						✓
BH5-0.0-0.3						✓
BH5-0.4-0.6						✓
BH5-0.6-0.95						✓
BH6-0.0-0.3						✓
BH6-0.6-0.8						✓
BH7-0.0-0.2						✓
BH7-0.7-1.0						✓
BH8-0.0-0.1						✓
BH8-0.5-0.7						✓
TB						✓
DUP1						✓
BH1 - [TRIPLICATE]-0.0-0.2						✓
BH8 - [TRIPLICATE]-0.0-0.1						✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Jessica Hie

From: Katrina Taylor <KTaylor@jkenvironments.com.au>
Sent: Tuesday, 13 August 2019 9:21 AM
To: Samplereceipt; Simon Song
Subject: RE: Results for Registration 223166 E32505BT, Frenchs Forest

Morning,

(5)

Please schedule sample BH2 (0.0-0.2) for TCLP nickel on 3 day turnaround.

223166-A
Due: 16/8/19
3 day TAT

Thanks.

Regards
Katrina Taylor
Senior Environmental Scientist
NSW Licensed Asbestos Assessor

T: +612 9888 5000
E: KTaylor@jkenvironments.com.au
www.jkenvironments.com.au

PO Box 976
NORTH RYDE BC NSW 1670
115 Wicks Road
MACQUARIE PARK NSW 2113

JKEnvironments

From: Ken Nguyen [mailto:KNguyen@envirolab.com.au]
Sent: Monday, 12 August 2019 5:17 PM
To: Katrina Taylor <KTaylor@jkenvironments.com.au>
Subject: Results for Registration 223166 E32505BT, Frenchs Forest

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the COC/paperwork received from you
an Excel or .csv file containing the results
Please note that a hard copy will not be posted.

Enquiries should be made directly to:
customerservice@envirolab.com.au

Regards,

Ken Nguyen | Customer Service / Chemist | Envirolab Services Pty Ltd
(Monday to Friday 1pm to 9pm)

Great Science, Great Service.

Appendix F: Report Explanatory Notes

Standard Sampling Procedure

These protocols specify the basic procedures to be used when sampling soils or groundwater for environmental site assessments undertaken by JKE. The purpose of these protocols is to provide standard methods for: sampling, decontamination procedures for sampling equipment, sample preservation, sample storage and sample handling. Deviations from these procedures must be recorded.

A. Soil Sampling

- Prepare a borehole/test pit log or made a note of the sample description for stockpiles.
- Layout sampling equipment on clean plastic sheeting to prevent direct contact with ground surface. The work area should be at a distance from the drill rig/excavator such that the machine can operate in a safe manner.
- Ensure all sampling equipment has been decontaminated prior to use.
- Remove any surface debris from the immediate area of the sampling location.
- Collect samples and place in glass jar with a Teflon seal. This should be undertaken as quickly as possible to prevent the loss of any volatiles. If possible, fill the glass jars completely.
- Collect samples for asbestos analysis and place in a zip-lock plastic bag.
- Label the sampling containers with the JKE job number, sample location (eg. BH1), sampling depth interval and date. If more than one sample container is used, this should also be indicated (eg. 2 = Sample jar 1 of 2 jars).
- Photoionisation detector (PID) screening of volatile organic compounds (VOCs) should be undertaken on samples using the soil sample headspace method. Headspace measurements are taken following equilibration of the headspace gasses in partly filled zip-lock plastic bags. PID headspace data is recorded on the borehole/test pit log and the chain of custody forms.
- Record the lithology of the sample and sample depth on the borehole/test pit log generally in accordance with AS1726-2017[17].
- Store the sample in a sample container cooled with ice or chill packs. On completion of the sampling the sample container should be delivered to the lab immediately or stored in the refrigerator prior to delivery to the lab. All samples are preserved in accordance with the standards outlined in the report.
- Check for the presence of groundwater after completion of each borehole using an electronic dip metre or water whistle. Boreholes should be left open until the end of fieldwork where it is safe to do so. All groundwater levels in the boreholes should be rechecked on the completion of the fieldwork.
- Backfill the boreholes/test pits with the excavation cuttings or clean sand prior to leaving the site.

B. Decontamination Procedures for Soil Sampling Equipment

- All sampling equipment should be decontaminated between every sampling location. This excludes single use PVC tubing used for push tubes etc. Equipment and materials required for the decontamination include:
  - Phosphate free detergent (Decon 90);
  - Potable water;
  - Stiff brushes; and
  - Plastic sheets.
- Ensure the decontamination materials are clean prior to proceeding with the decontamination.
- Fill both buckets with clean potable water and add phosphate free detergent to one bucket.
- In the bucket containing the detergent, scrub the sampling equipment until all the material attached to the equipment has been removed.
- Rinse sampling equipment in the bucket containing potable water.

[17] Standards Australia, (2017), *Geotechnical Site Investigations.* (AS1726-2017)

- Place cleaned equipment on clean plastic sheets.

If all materials are not removed by this procedure, high-pressure water cleaning is recommended. If any equipment is not completely decontaminated by both these processes, then the equipment should not be used until it has been thoroughly cleaned.

QA/QC Definitions

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994)[18] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[19]. The NEPM (2013) is consistent with these documents.

A. Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection Limit for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations: *"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit*" (Keith, 1991).

B. Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD).

C. Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured (i.e. the proximity of an averaged result to the true value, where all random errors have been statistically removed). The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes. Accuracy is typically reported as percent recovery.

D. Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

E. Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;

[18] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)

[19] Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide.*

- All blank data reported;
- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

F. Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

G. Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

H. Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{\text{(Spike Sample Result – Sample Result) x 100}}{\text{Concentration of Spike Added}}$$

I. Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

J. Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$

Appendix G: Data (QA/QC) Evaluation

Data (QA/QC) Evaluation

A. INTRODUCTION

This Data (QA/QC) Evaluation forms part of the validation process for the DQOs documented in Section 6.1 of this report. Checks were made to assess the data in terms of precision, accuracy, representativeness, comparability and completeness. These 'PARCC' parameters are referred to collectively as DQIs and are defined in the Report Explanatory Notes attached in the report appendices.

1. Field and Laboratory Considerations

The quality of the analytical data produced for this project has been considered in relation to the following:

- Sample collection, storage, transport and analysis;
- Laboratory PQLs;
- Field QA/QC results; and
- Laboratory QA/QC results.

2. Field QA/QC Samples and Analysis

A summary of the field QA/QC samples collected and analysed for this assessment is provided in the following table:

Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Intra-laboratory duplicate (soil)	DUP1 (primary sample BH5 0.0-0.3m)	Approximately 8% of primary samples	Heavy metals, TRH/BTEX, and PAHs
Trip blank (soil)	TB1 (1 August 2019)	One for the assessment to demonstrate adequacy of storage and transport methods	BTEX

The results for the field QA/QC samples are detailed in the laboratory summary tables (Table H and Table I inclusive) attached to the assessment report and are discussed in the subsequent sections of this Data (QA/QC) Evaluation report.

3. Data Assessment Criteria

JKE adopted the following criteria for assessing the field and laboratory QA/QC analytical results:

Field Duplicates

Acceptable targets for precision of field duplicates in this report will be 30% or less, consistent with NEPM (2013). RPD failures will be considered qualitatively on a case-by-case basis taking into account factors such as the concentrations used to calculate the RPD (i.e. RPD exceedance where concentrations are close to the PQL are typically not as significant as those where concentrations are reported at least five or 10 times the PQL), sample type, collection methods and the specific analyte where the RPD exceedance was reported.

Field Blanks

Acceptable targets for the field blank sample in this report will be less than the PQL for organic analytes.

Trip Spikes

Acceptable targets for trip spike samples in this report will be 70% to 130%. This is in line with spike recovery limits adopted by the laboratory for organic analysis.

Laboratory QA/QC

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the laboratory reports. These criteria were developed and implemented in accordance with the laboratory's NATA accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

A summary of the acceptable limits adopted by the primary laboratory (Envirolab) is provided below:

RPDs

- Results that are <5 times the PQL, any RPD is acceptable; and
- Results >5 times the PQL, RPDs between 0-50% are acceptable.

Laboratory Control Samples (LCS) and Matrix Spikes

- 70-130% recovery acceptable for metals and inorganics;
- 60-140% recovery acceptable for organics; and
- 10-140% recovery acceptable for VOCs.

Surrogate Spikes

- 60-140% recovery acceptable for general organics; and
- 10-140% recovery acceptable for VOCs.

Method Blanks

- All results less than PQL.

B. DATA EVALUATION

1. Sample Collection, Storage, Transport and Analysis

Samples were collected by trained field staff in accordance with the JKE SSP. The SSP was developed to be consistent with relevant guidelines, including NEPM (2013) and other guidelines made under the CLM Act 1997.

Appropriate sample preservation, handling and storage procedures were adopted. Laboratory analysis was undertaken within specified holding times in accordance with Schedule B(3) of NEPM (2013) and the laboratory NATA accredited methodologies.

JKE note that the temperature on receipt of soil samples was reported to be up to 13.8°C. JKE understand that the temperature is measured at the laboratory using an infrared temperature probe by scanning the

outside of the sample container (i.e. one sample jar/container at the time of registering the samples). This procedure is not considered to be robust as there is a potential for the outside of the jar to warm to ambient temperature, or at least to increase from that of the internal contents, relatively quickly. On this basis, JKE are of the opinion that the temperatures reported on the Sample Receipts are unlikely to be reliable or representative of the overall batch.

Review of the project data also indicated that:

- COC documentation was adequately maintained;
- Sample receipt advice documentation was provided for all sample batches;
- All analytical results were reported; and
- Consistent units were used to report the analysis results.

2. Laboratory PQLs

Appropriate PQLs were adopted for the analysis and all PQLs were below the SAC.

3. Field QA/QC Sample Results

Field Duplicate

The results indicated that field precision was acceptable. Elevated RPDs were reported for chromium, zinc, acenapthylene and TRH (F3 and F4) in DUP1/BH5 (0.0-0.3m). These values outside the acceptable limits have been attributed to sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogeneous matrices. Where applicable, the higher duplicate value has been adopted as a conservative measure (see attached report tables).

Field Blank

During the investigation, one soil trip blank was placed in the esky during sampling and transported back to the laboratory. The results were all less than the PQLs, therefore cross contamination between samples that may have significance for data validity did not occur.

4. Laboratory QA/QC

The analytical methods implemented by the laboratory were performed in accordance with their NATA accreditation and were consistent with Schedule B(3) of NEPM (2013). The frequency of data reported for the laboratory QA/QC (i.e. duplicates, spikes, blanks, LCS) was considered to be acceptable for the purpose of this assessment. A review of the laboratory QA/QC data identified the following minor non-conformances:

- The laboratory RPD acceptance criteria was exceeded for one sample for nickel and one sample for copper and lead, therefore triplicate results were issued for these samples; and
- The RPD for duplicate results was accepted due to the non homogenous nature of one sample.

C. DATA QUALITY SUMMARY

JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

Non-conformances were reported for some field QA/QC samples and laboratory QA/QC analysis. These non-conformances were considered to be sporadic and minor, and were not considered to be indicative of systematic sampling or analytical errors. On this basis, these non-conformances are not considered to materially impact the report findings.

Appendix H: Guidelines and Reference Documents

Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). Acid Sulfate Soils Manual

Canadian Council of Ministers of the Environment, (1999). Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

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, (1995). Contaminated Sites Sampling Design Guidelines

NSW EPA, (2014). Waste Classification Guidelines - Part 1: Classifying Waste

NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

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)

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

Olszowy, H., Torr, P., and Imray, P., (1995). Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

Protection of the Environment Operations Act 1997 (NSW)

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

Western Australia Department of Health, (2009). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia