REPORT TO

MACARTHUR PROJECTS

ON

PRELIMINARY (STAGE 1) SITE INVESTIGATION

FOR

PROPOSED MIXED USE DEVELOPMENT

AT

1105 BARRENJOEY ROAD AND 43 ILUKA ROAD, PALM BEACH, NSW

Date: 17 December 2020
Ref: E33500PHrpt

JKEnvironments
www.jkenvironments.com.au

T: +61 2 9888 5000
JK Environments Pty Ltd
ABN 90 633 911 403

Report prepared by:

Todd Hore
Senior Associate Environmental Engineer

Report reviewed by:

Brendan Page
Principal Associate | Environmental Scientist

For and on behalf of
JKE
PO BOX 976
NORTH RYDE BC NSW 1670

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Executive Summary

Macarthur Projects ('the client') commissioned JK Environments (JKE) to undertake a Preliminary (Stage 1) Site Investigation (PSI) for the proposed mixed use development at 1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW ('the site'). The purpose of the investigation is to make a preliminary assessment of site contamination. A preliminary acid sulfate soil (ASS) assessment was completed concurrently with the PSI and is included in this report.

The PSI include a review of historical information, a walkover site inspection and soil sampling from two boreholes.

At the time of the inspection, the site was occupied by a two-storey, mixed-use development with some attic rooms forming a third level. The ground floor included some commercial/retail premises (real estate agent and Thai massage/spa) with residential apartments on the upper levels.

The review of historical information indicated the following:

- Pre 1959 the site may have included a boat builder working with a slipway across Iluka Road. As the boat builder did not have waterfront access it is considered unlikely that heavy industry type activities occurred on-site;
- From 1959 to early 1990's the site was occupied by a service station; and
- The site was redeveloped for commercial/retail and residential purposes in the early 1990's.

The boreholes encountered shallow fill overlying natural sandy soils and deep sandstone bedrock.

Contaminant concentrations in the soil samples were less than the assessment criteria and no ASS conditions were encountered to a depth of 4m. Although no contamination has been encountered in the soil samples analysed, sampling for the PSI was limited and there remains a potential for contamination associated with historical use of the site as a service station. Information relating to the decommissioning of the service station was not made available to us during preparation of this PSI report.

JKE note that use of the site as a service station is a trigger to undertake a Detailed Site Investigation (DSI) under the State Environment Planning Policy No. 55 (SEPP55) planning guidelines. Based on the findings of the investigation, JKE are of the opinion that the site can be made suitable for the proposed development, provided the following recommendations are implemented:

- A DSI is to be undertaken to better assess the soil and groundwater contamination conditions at the site; and
- A hazardous materials assessment should be undertaken prior to demolition of the existing building.

Due to the substantial site access constraints associated with the existing development, it is acknowledged that completing a full DSI would not be practicable prior to demolition. On this basis, JKE recommend that the soil and groundwater contamination conditions be characterised to the extent practicable in accessible areas, then a suitable plan (i.e. a Remediation Action Plan – RAP) be developed to manage/remediate actual or potential contamination. This plan would then be implemented following demolition. In our opinion, this approach should be adequate for the consent authority to make their determination with regards to Clause 7 of SEPP55.

Preliminary waste classifications have been provided and further confirmatory waste classification assessment is required during the construction phase of the project, prior to the off-site disposal of waste.

ASS materials were not identified to a depth of 4mBGL and an ASSMP is not recommended for the proposed development.

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

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Abbreviations

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Bureau of Meteorology	**BOM**
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Source, Pathway, Receptor	**SPR**
Specific Contamination Concentration	**SCC**
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Toxicity Characteristic Leaching Procedure	**TCLP**
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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

Macarthur Projects ('the client') commissioned JK Environments (JKE) to undertake a Preliminary (Stage 1) Site Investigation (PSI) for the proposed mixed use development at 1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW ('the site'). The purpose of the investigation is to make a preliminary assessment of site contamination. A preliminary acid sulfate soil a(ASS) assessment was completed concurrently with the PSI and is included in this report.

The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2.

This report has been prepared to support the lodgement of a Development Application (DA) for the proposed mixed use development.

A geotechnical investigation was undertaken in conjunction with this PSI by JK Geotechnics (JKG). The results of the geotechnical investigation are presented in a separate report (Ref: 33500Srpt, dated 1 December 2020)[1]. This report should be read in conjunction with the JKG report.

1.1 Proposed Development Details

The proposed development involves demolition of the existing buildings and excavation of a basement level over which a three-storey shop-top housing development will be constructed. Details of the development have been provided in architectural drawings by PBD Architects, Project No 1816 dated 18 September 2018 as attached in the appendices. The basement will have a finished floor level (FFL) at RL 0.5m which will require excavation to depths of approximately 4m below surrounding ground levels and will occupy the majority of the site footprint.

1.2 Aims and Objectives

The primary aims of the investigation were to identify any past or present potentially contaminating activities at the site, identify the potential for site contamination, make a preliminary assessment of the soil contamination conditions, and make a preliminary assessment of the occurrence of ASS and the need to prepare an ASS management plan (ASSMP). The 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 and ASS 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;

[1] JKG, (2020). *Report to Macarthur Projects on Geotechnical Investigation for Proposed Shoptop Development at 1105-1107 Barrenjoey Road, Palm Beach, NSW* (referred to as JKG report)

- 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 investigation was undertaken generally in accordance with a JKE proposal (Ref: EP46952PH-rev1) of 18 February 2020 and written acceptance from the client of 13 October 2020. The scope of work included the following:

- Review of site information, including background and site history information from various sources outlined in the report;
- 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)[2], other guidelines made under or with regards to the Contaminated Land Management Act (1997)[3] and State Environmental Planning Policy No.55 – Remediation of Land (1998)[4]. A list of reference documents/guidelines is included in the appendices.

The preliminary ASS assessment and preparation of this report were undertaken with reference to the National Acid Sulfate Soil Guidance (2018) documents and the Acid Sulfate Soil Management Advisory Committee (ASSMAC) Acid Sulfate Soil Manual (1998)[5].

[2] National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).* (referred to as NEPM 2013)
[3] Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)
[4] *State Environmental Planning Policy No. 55 – Remediation of Land 1998* (NSW) (referred to as SEPP55)
[5] Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). *Acid Sulfate Soils Manual* (ASS Manual 1998)

2 SITE INFORMATION

2.1 Site Identification

Table 2-1: Site Identification

Current Site Owner (certificate of title):	The Owners – Strata Plan No. 87022
Site Address:	1105 Barrenjoey Road & 43 Iluka Road, Palm Beach
Lot & Deposited Plan:	Strata Plans 87022 & 87024
Current Land Use:	Mixed retail/commercial and residential
Proposed Land Use:	Mixed retail/commercial and residential
Local Government Authority:	Northern Beaches Council
Current Zoning:	B2 Local Centre
Site Area (m^2) (approx.):	1,360
RL (AHD in m) (approx.):	4
Geographical Location (decimal degrees) (approx.):	Latitude: -33.599387 Longitude: 151.319002
Site Location Plan:	Figure 1
Sample Location Plan:	Figure 2

2.2 Site Location and Regional Setting

The site is located in a predominantly mixed commercial/retail and residential area of Palm Beach and is bound by Barrenjoey Road to the east and Iluka Road to the north and west. The site is located approximately 100m to the east of Pittwater.

2.3 Topography

The regional topography is characterised by a Peninsula that includes a north-south orientated ridgeline. The site is located towards the toe of the west side of the ridge and is generally flat and level. Parts of the site appear to have been levelled and partially excavated to accommodate the existing development.

2.4 Site Inspection

A walkover inspection of the site was undertaken by JKE on 30 November 2020. The inspection was limited to accessible areas of the site and immediate surrounds. An internal inspection of buildings was not undertaken.

A summary of the inspection findings is 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 majority of site was occupied by a two-storey, mixed-use development with some attic rooms forming a third level. The ground floor included some commercial/retail premises (real estate agent and Thai massage/spa) with residential apartments on the upper levels.

2.4.2 Buildings, Structures and Roads

The building occupied the majority of the site, with surrounding areas typically paved with brick pavers.

2.4.3 Boundary Conditions, Soil Stability and Erosion

The site shared a common wall along the south boundary and all remaining boundaries were unfenced and open to the adjoining footpaths and streets. No exposed soil was observed at the surface.

2.4.4 Presence of Drums/Chemical Storage and Waste

No chemical or waste storage was observed on the site.

2.4.5 Evidence of Cut and Fill

The site appeared to have undergone minor cut and fill associated with construction of the existing buildings. Some fill is likely to be present across the site.

2.4.6 Visible or Olfactory Indicators of Contamination (odours, spills etc)

No obvious indicators of contamination were encountered at the site.

2.4.7 Drainage and Services

Surface water flows would be expected to enter on-site stormwater drains and drain to street infrastructure. No other indicators of buried services were observed at the site.

2.4.8 Sensitive Environments

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

2.4.9 Landscaped Areas and Visible Signs of Plant Stress

Some landscaped areas/gardens were located in the north, east and west sections of the site. No obvious indicators of plant stress or dieback were observed.

2.5 Surrounding Land Use

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

- North – A wine store on the north side of Iluka Road, with a medium density residential area beyond;
- South – a hotel with retail (hairdresser) on the ground floor, with additional retail premises beyond (café and homewares);
- East – A medium density residential area on the east side of Barrenjoey Road, with bushland beyond; and
- West – A medium density residential area was located on the west side of Iluka Road, with the Pittwater Foreshore 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 investigation 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. Major services were not identified that would be expected to act as preferential pathways for contamination migration, with the exception of relatively shallow stormwater services.

2.7 Section 10.7 Planning Certificate

The section 10.7 (2 and 5) planning certificates were reviewed for the investigation. 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); and
- The land is not located in a heritage conservation area.

We note that the certificates do not mention risks relating to the occurrence of ASS.

3 GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Regional geological information was reviewed for the investigation. The information was sources from the Lotsearch report attached in the appendices. The report indicates that the site is underlain by Quaternary aged deposits of medium to fine-grained marine sands.

3.2 Acid Sulfate Soil (ASS) Risk and Planning

A review of the ASS risk map prepared by Department of Land and Water Conservation (1997)[6] indicated that the site is located in an area classed as having a 'low probability' of ASS occurrence at depths of between 1m to 3m below ground level (mBGL).

ASS information presented in the Lotsearch report indicated that the site is located within a Class 3 ASS risk area. Works in a Class 3 risk area that could pose an environmental risk in terms of ASS include works at depths beyond 1m below existing ground level or works by which the water table is likely to be lowered beyond 1m below existing ground level. The proposed development includes such works, therefore an assessment of ASS is required as outlined in this report.

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 multiple registered bores within the report buffer of 2,000m. In summary:

- The nearest registered bore was located approximately 24m from the site;
- The nearest bores were generally utilised for domestic purposes and appeared to be associated with the alluvial flats between the Peninsula ridge and Pittwater;
- Standing water levels (SWLs) in the bores generally ranged from 1.8m to 4mBGL.

The information reviewed for the PSI indicates that the subsurface conditions at the site are expected to consist of moderate to high permeability (alluvial) soils overlying relatively deep bedrock. Abstraction and use of groundwater at the site or in the immediate surrounds may be viable under these conditions and is evident by the registered groundwater bores in the site vicinity, however the use of groundwater is not proposed as part of the development. There is a reticulated water supply in the area and consumption of groundwater is not expected to occur.

Considering the local topography and surrounding land features, JKE anticipate groundwater to flow towards the 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 Pittwater located approximately 100m to the west of the site. The site location and regional topography

[6] Department of Land and Water Conservation, (1997). *1:25,000 Acid Sulfate Soil Risk Map (Series 9130N1, Ed 2)*

indicates that excess surface water flows have the potential to enter Pittwater. This water body is a potential receptor.

4 SITE HISTORY INFORMATION

4.1 Review of Historical Aerial Photographs and Historical Maps

Historical aerial photographs were reviewed for the investigation. The information was sourced for the Lotsearch report. JKE has reviewed the photographs and historical maps, and summarised relevant information in the following table:

Table 4-1: Summary of Historical Aerial Photographs and Historical Maps

Year	Details
1940	**On-site:** The site appeared to be occupied by two medium sized buildings that were larger than surrounding residential premises. This indicated that the site may have been used for commercial purposes. The western part of the site appeared to be occupied by smaller residential-type properties fronting Iluka Road, however these features were difficult to discern due to the poor quality of the image. **Off-site:** A similar medium sized building was located to the north of the site. The remaining surrounds appeared to be occupied by residential premises.
1947 1951 1955	The site and surrounding features appeared generally similar to the previous photograph.
1961	The site and surrounding features appeared generally similar to the previous photograph, except that some commercial development had been undertaken to the south of the site.
1965	The site and surrounding features appeared generally similar to the previous photograph.
1970	**On-site:** The two larger buildings in the eastern part of the site and the residential-type buildings fronting Iluka Road in the western part of the site had been demolished. An 'L' shaped building with a canopy-type structure occupied the central section of the site. Paved forecourts were present along the east side of the site. The layout of the building/canopy and forecourt appeared consistent with a service station. **Off-site:** The building to the north had been extended and appeared consistent with the existing (2020) commercial building. Several of the residential premises to the west of the site had been extended.
1978 1982 1986 **1991**	The site and surrounding features appeared generally similar to the previous photograph.
1994	**On-site:** The site had been redeveloped and was occupied by a building that appeared similar to the existing (2020) mixed used building. **Off-site:** The surrounding features appeared generally similar to the previous photograph.
2009 2014 2020	The site and surrounding features appeared generally similar to the previous photograph.

4.2 Review of Historical Land Title Records

Historical land title records were reviewed for the investigation. 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:

- The site was occupied by various private proprietors including a storekeeper, solicitor and baker;
- Part of the site was owned by the Port Jackson and Manly Steamship Company Limited from 1947 to 1952;
- Tara Investments Pty Limited owned the site from 1959 to 1967, when it was purchased by Ampol Provident Fund Management Pty Limited. Ampol remained the owners until 1992; and
- The site was subsequently owned by J & J Partitions Pty Limited from 1992 to 2017, when it was purchased by the current owners.

The historical land title records have indicated that the site was likely operated as a service station between 1967 and 1992 (Ampol ownership) and may have included some commercial uses prior to this period. This use was supported by the aerial photographs which included the presence of a service station type building with an apparent canopy structure on site during this period.

4.3 Review of Council Records

Council records were sourced under an informal access to information request and were reviewed for the investigation. The council records indicate the following:

- A DA for a mixed use building was refused in 1988. No records were available prior to this time;
- A DA (6729/92) was approved in 1992 for a development comprising three townhouses and five shops;
- Approvals for internal alterations of shops were granted in 1999;
- An approval was granted in 2008 for strata subdivision of the existing residential and commercial building; and
- An approval was granted in 2015 for minor internal alterations and use as a remedial massage premise.

4.4 SafeWork NSW Records

SafeWork NSW records in relation to the registered storage of dangerous goods were reviewed for the investigation. 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.

4.5 NSW EPA and Department of Defence Records

A review of the NSW EPA and Department of Defence databases was undertaken for the PSI. Information from the following databases were sourced from the Lotsearch report:

- 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)[7];
- Licensed activities under the Protection of the Environment Operations Act (1997)[8];
- Sites being investigated under the NSW EPA per-and polyfluoroalkyl substances (PFAS) investigation program;
- Sites being investigated by the Department of Defence for PFAS contamination; and
- Sites being managed by the Department of Defence for PFAS contamination.

The search included the site and surrounding areas in the report buffer. A summary of the information is provided below:

Table 4-2: NSW EPA and Department of Defence Records

Records	On-site	Off-site
Records under Section 58 of the CLM Act 1997	None	None
Records under the Duty to Report Contamination under Section 60 of the CLM Act 1997	None	None
Licences under the POEO Act 1997	None	Historical licenses were identified for the application of herbicides along waterways. However, these activities are considered unlikely to pose a contamination risk to the site or represent an off-site source of contamination.
Records relating to the NSW EPA PFAS Investigation Program	None	None
Records relating to the Department of Defence PFAS management and investigation programs	None	None

4.6 Historical Business Directory and Additional Lotsearch Information

Historical business records and other relevant information were reviewed for the investigation. The information was sourced from the Lotsearch report and summarised in the following table:

Table 4-3: Historical Business Directory and other Records

Records	On-site	Off-site
Historical dry cleaners, motor garages and service stations	The records indicated that the site was occupied by a service station from approximately 1959 to 1991.	A service station located approximately 500m to the south and cross-gradient of the site in the 1950's. Due to the distance and cross-gradient location, the property is not considered to represent an off-site source of contamination.

[7] 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)

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

Records	On-site	Off-site
Other historical businesses that could represent potential sources of contamination	A possible boat, launch and yacht builder and repairer was located on the site in the 1950's.	A boat, launch and yacht builder and repairer was located on Barrenjoey Road from the 1960's to the 1990's. The exact location of the business is unknown, however, it appeared to include a slipway so would have required waterfront access and, therefore, would not have been in the immediate vicinity of the site. A second slipway was located at 116 Iluka Road, to the west and down-gradient of the site in the 1960's.
National waste management site database	None	None
National liquid fuel facilities	None	None
Mapped heritage items	None	Various heritage items were mapped in the report buffer. These are not considered to have any relevance in the context of the PSI objectives.
Mapped ecological constraints	None	Various ecological items were mapped in the report buffer. These are not considered to have any relevance in the context of the PSI objectives.
Mapped naturally occurring asbestos	None	None

4.7 Summary of Site History Information

A time line summary of the historical land uses and activities is presented in the following table. 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 4-4: Summary of Historical Land Uses / Activities

Year(s)	On-site - Potential Land Use / Activities	Off-site - Potential Land Use / Activities
Pre 1959	The site may have included a boat builder working with a slipway across Iluka Road. As the boat builder did not have waterfront access it is considered unlikely that heavy industry type activities occurred on-site.	Possible boat builder and slipway at 116 Iluka Road during the 1950's and 1960's.
1959 to early 1990's	The site was occupied by a service station.	A commercial premises was developed in the 1960's.
Early 1990's to Present	The site was redeveloped for commercial/retail and residential purposes in the early 1990's.	The majority of areas surrounding the site remain occupied by residential premises.

4.8 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 appears to have been historically filled to achieve the existing levels. 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.
Fuel storage – The site was occupied by a service station until the early 1990's. It is unknown what remediation, if any, was undertaken prior to redevelopment of the site.	Lead, TRH, BTEX and PAHs
Boat Builder – The site was used as a boat builder in the 1950's. Fuels, oils and solvents may have been used during this site use. We note that a slipway was not evident on site and, therefore, Tributyl Tin (TBT) has not been considered as a CoPC.	Heavy metals, TRH, naphthalene and BTEX
Use of pesticides – Pesticides may have been used beneath the buildings and/or around the site.	Heavy metals and OCPs
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, subsurface release and spills. The subsurface release mechanism is associated with the former service station and the historical fuel storage.
Affected media	Soil and groundwater have been identified as the potentially affected media. The potential for soil vapour impacts would also need to be considered in the event volatile soil or groundwater contamination was encountered on site. Given the age of the former service station use, it is considered to be unlikely that substantial volatile contamination would still exist due to the effect of natural biodegradation processes that would have taken place over the past 20-30 years. This assumption requires further assessment/verification.
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, groundwater users (not drinking water) and recreational water users within Pittwater. Ecological receptors include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas), and marine ecology in Pittwater.
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/direct 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; • Migration of groundwater off-site and into nearby water bodies, including aquatic ecosystems and those being used for recreation; and • Migration of groundwater off-site into areas where groundwater is being utilised as a resource (i.e. for irrigation).
Presence of preferential pathways for contaminant movement	Given the sandy nature of soils at the site, preferential pathways for contaminant migration are unlikely to be present.

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)[9]. 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. This information will be considered by the consent authority in exercising its planning functions in relation to the development proposal.

A waste classification is required prior to off-site disposal of excavated soil/bedrock.

An ASS assessment is required prior to excavation or disturbance of soil at the site.

The DQOs were developed by the author of this report and checked by the reviewer. Both the author and reviewer were joint decision-makers in relation to Step 2 of the DQO process.

The investigation was constrained by the access limitations associated with the existing structures on site. The intrusive component of the PSI was designed prior to completion of the historical assessment.

6.1.2 Step 2 - Identify the Decisions of the Study

The objectives of the investigation 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 suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

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

6.1.3 Step 3 - Identify Information Inputs

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

- Site information, including site observations and site history documentation;
- Sampling of soil concurrently with the JKG investigation;
- Observations of sub-surface variables such as soil type, photo-ionisation detector (PID) concentrations, odours and staining;
- 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 and will be limited vertically to a depth of approximately 4m (spatial boundary). The sampling was completed on 11 and 12 November 2020 (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 within the existing building footprint 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. Contamination-related exceedances are considered in the context of the CSM and valid SPR-linkages.

For this investigation, the individual contamination 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. ASS have been assessed directly against the SAC/action criteria.

6.1.5.2 Field and Laboratory QA/QC

Field QA/QC included analysis of an intra-laboratory duplicate. 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 investigation, 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 investigation.

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 investigation objectives. Adjustment of the investigation 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 investigation is outlined in the table below:

Table 6-1: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	Samples were collected from two locations as shown on the attached Figure 2. Based on the site area (1,360m^2), this number of locations corresponded to a sampling density of approximately one sample per 700m^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)[10] or the minimum sampling density recommended for ASS Investigations.
Sampling Plan	The sampling locations were placed on a judgemental sampling plan and were broadly positioned for site coverage concurrently with the JKG investigation, taking into consideration areas that were

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

Aspect	Input
	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, the occurrence of ASS, and assess whether further investigation is warranted.
Set-out and Sampling Equipment	Sampling locations were set out using a tape measure. In-situ sampling locations were checked for underground services by an external contractor prior to sampling. 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 on 11 and 12 November 2020 in accordance with standard field procedures. 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 and samples for ASS analysis were placed in plastic bags with minimal headspace to limit oxidation. During sampling, soil at selected depths was split into primary and duplicate samples for field QA/QC analysis. The field splitting procedure included splitting the soil by hand and alternately filling the sampling containers to obtain a representative split sample.
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 or ice bricks. 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.

6.2.1 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 6-2: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicate)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	255800, 256187 and 256187-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 'residential with minimal opportunities for access to soils' exposure scenario (HIL-B);
- Health Screening Levels (HSLs) for a 'low-high density residential' exposure scenario (HSL-A & HSL-B). HSLs were calculated based on conservative assumptions including a 'sand' type and a depth interval of 0m to 1m;
- HSLs 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)[11]; 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 an 'urban residential and public open space' (URPOS) 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[12];
- 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)[13]. This method is considered to be adequate for the Tier 1 screening.

7.1.3 Management Limits for Petroleum Hydrocarbons

Management limits for petroleum hydrocarbons (as presented in Schedule B1 of NEPM 2013) were considered.

[11] 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*

[12] 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)

[13] 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

7.1.4 Waste Classification

Data for the waste classification assessment were assessed in accordance with the Waste Classification Guidelines, Part 1: Classifying Waste (2014)[14] 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.

7.1.5 Acid Sulfate Soil

The action criteria presented in the *National Acid Sulfate Soil Guidance: National acid sulfate soils sampling and identification methods manual* (2018) are summarised in the following table. The action criteria for 'coarse textured soils' were adopted.

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

Table 7-2: ASS Action Criteria

Type of material		Net Acidity			
Texture range* (NCST 2009)	Approximate clay content (%)	1–1000 t materials disturbed		> 1000 t materials disturbed	
		% S-equiv. (oven-dried basis)	mol H^+/t (oven-dried basis)	% S-equiv. (oven-dried basis)	mol H^+/t (oven-dried basis)
Fine - light medium to heavy clays	>40	≥0.10	≥62	≥0.03	≥18
Medium - clayey sand to light clays	5–40	≥0.06	≥36	≥0.03	≥18
Coarse and Peats - sands to loamy sands	<5	≥0.03	≥18	≥0.03	≥18

* If bulk density values are not available for the conversion of cubic meters to tonnes of soil, then default bulk densities, based on the soil texture, may be used.

7.1.5.1 Field Tests

The soil field tests commonly used for investigations for ASS materials include field pH (pH_F) and field pH peroxide (pH_{FOX}) tests. The pH_F test can help identify Actual ASS. While a pH_F of less than or equal to pH 4 is indicative of the presence of Actual ASS, it is not conclusive of the presence of ASS on its own, as naturally occurring, non ASS soils such as many organic soils (for example peats) and heavily leached soils may also have pH_F less than or equal to pH 4. To identify an Actual ASS other evidence must be presented that indicates the low pH_F has been mainly caused by the oxidation of reduced inorganic sulfur. Such information includes the presence of jarosite in the soil layer/horizon, or the location of other Actual ASS or PASS materials within the sampling location or in the nearby vicinity.

The difference between the pH_F and the pH_{FOX} is helpful in the preliminary identification of PASS. Combined, the pH_F and pH_{FOX} results can be a useful aid with soil sample selection for laboratory analysis. Additional Information in relation to interpretation of the pH field tests is provided in the appendices.

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
Pavement	Brick pavers, approximately 50mm thick, were encountered at the surface in both BH1 and BH2.
Fill	Fill was encountered beneath the pavement in both boreholes and extended to a depth of approximately 0.3m. The fill typically comprised sand with inclusions of igneous and sandstone gravel.
Natural Soil	Sand was encountered beneath the fill in both boreholes and extended to depths of approximately 5.7m to 12m in BH2 and BH1, respectively. Sandy silty clay was encountered beneath the sand in BH2 and extended to a depth of approximately 10.2m. The natural soil was typically brown or grey and contained traces of shell fragments and sandstone and ironstone gravel.
Bedrock	Extremely weathered sandstone was encountered beneath the natural soil in both boreholes. The sandstone was interbedded with siltstone and included some silty sandy clay bands to the termination of the boreholes at a maximum depth of approximately 19.5m.
Groundwater	Groundwater seepage was encountered in the boreholes during augering at depths of 3mBGL to 3.6mBGL. SWLs were measured approximately seven days after completion of drilling at approximately 3.3mBGL to 3.48mBGL.

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 less than 0.5ppm isobutylene equivalents which generally indicates a lack of PID detectable VOCs.

8.4 Soil Laboratory Results

The soil laboratory results were assessed against the SAC presented in Section 7.1. Individual SAC are shown in the report tables attached in the appendices. A summary of the results is presented in the following subsections:

8.4.1 Human Health and Environmental (Ecological) Assessment

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

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	4	<4	0	NSL	-
Cadmium	4	<0.4	0	NSL	-
Chromium (total)	4	14	0	0	-
Copper	4	18	0	0	-
Lead	4	80	0	0	-
Mercury	4	<0.1	0	NSL	-
Nickel	4	14	0	0	-
Zinc	4	110	0	0	-
Total PAHs	4	3.8	0	NSL	-
Benzo(a)pyrene	4	0.4	NSL	0	-
Carcinogenic PAHs (as BaP TEQ)	4	0.6	0	NSL	-
Naphthalene	4	<1	0	NSL	-
DDT+DDE+DDD	3	<0.1	0	NSL	-
DDT	3	<0.1	NSL	0	-
Aldrin and dieldrin	3	<0.1	0	NSL	-
Chlordane	3	<0.1	0	NSL	-
Heptachlor	3	<0.1	0	NSL	-
PCBs	3	<0.1	0	NSL	-
TRH F1	4	<25	0	0	-
TRH F2	4	<50	0	0	-
TRH F3	4	<100	0	0	-
TRH F4	4	<100	0	0	-
Benzene	4	<0.2	0	0	-

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
Toluene	4	<0.5	0	0	-
Ethylbenzene	4	<1	0	0	-
Xylenes	4	<3	0	0	-
Asbestos (in soil)	4	Not Detected	0	NA	-

Notes:

N: Total number (primary samples)

NSL: No set limit

NL: Not limiting

8.4.2 Waste Classification Assessment

The laboratory results were assessed against the criteria presented in Section 7.1.4. The results are presented in the report tables attached in the appendices. A summary of the results is presented in the following table:

Table 8-3: Summary of Soil Laboratory Results Compared to CT and SCC Criteria

Analyte	N	N > CT Criteria	N > SCC Criteria	Comments
Arsenic	4	0	0	-
Cadmium	4	0	0	-
Chromium	4	0	0	-
Copper	4	NSL	NSL	-
Lead	4	0	0	-
Mercury	4	0	0	-
Nickel	4	0	0	-
Zinc	4	NSL	NSL	-
TRH (C_6-C_9)	4	0	0	-
TRH (C_{10}-C_{36})	4	0	0	-
BTEX	4	0	0	-
Total PAHs	4	0	0	-
Benzo(a)pyrene	4	0	0	-
OCPs & OPPs	3	0	0	-

Analyte	N	N > CT Criteria	N > SCC Criteria	Comments
PCBs	3	0	0	-
Asbestos	3	-	-	Asbestos was not detected in the samples analysed.

N: Total number (primary samples)

NSL: No set limit

8.4.3 Acid Sulfate Soil Assessment

The soil laboratory results were assessed against the action criteria adopted for the assessment. The results are presented in the attached report tables and summarised fin the following table:

Table 8-4: Summary of ASS Results

Analysis	N	Comments
pH_F and pH_{FOX}	13	pH_F ranged from 8.2 to 9.2 and pH_{FOX} ranged from 6.7 to 8.2.
pH_{FOX} reaction rates	13	All samples recorded medium reaction rates and dropped by between 0.4 and 2.3 units following oxidation.
Net Acidity % S-equiv.	7	The results were all less than the action criterion of 0.03%.
Net Acidity mol H^+/t	7	The results were all less than the action criterion of 18 mol H+/t and less than the PQL.
S_{CR}%	7	The S_{CR}% results ranged from <0.005% to 0.005%. These results indicated that the soils did not contain significant oxidisable sulfur (i.e. Reduced Inorganic Sulfur – RIS – such as pyrite) concentrations.
Liming Rate	7	The liming rate required for neutralisation was less than the PQL in all samples.

N: Total number (primary samples)

9 WASTE CLASSIFICATION AND ASS ASSESSMENT

9.1 Preliminary Waste Classification of Fill

Based on the results of the waste classification assessment, and at the time of reporting, the fill material is assigned a preliminary classification of **General Solid Waste (non-putrescible)**. Further investigation/ assessment will be required to confirm this classification prior to excavation and off-site disposal. This can occur during the early demolition phase of the project when the site is accessible.

9.2 Preliminary Classification of Natural Soil

Based on the scope of work undertaken for this assessment, and at the time of reporting, the natural soil to a depth of 4mBGL is likely to meet the definition of **VENM** for off-site disposal or re-use purposes. Further investigation/ assessment will be required to confirm this classification prior to excavation and off-site disposal. This can occur during the early demolition phase of the project when the site is accessible.

There remains a risk that the natural ground is impacted by hydrocarbons from the historical service station land use. Should residual contamination be identified in the natural soil, this would compromise the VENM classification.

It is noted that deeper soils below 4mBGL have not been assessed for ASS characteristics. Deeper piling spoil generated from 4mBGL requires further assessment for waste classification purposes and such assessment must consider the potential occurrence of ASS materials at depth.

9.3 ASS

Based on the weight of evidence collected and evaluated for this assessment, there is considered to be a low potential for ASS materials to be disturbed during bulk excavations for the proposed development described in Section 1.1 of this report. On this basis, an ASSMP is not considered necessary for the proposed development.

It is unclear whether soils deeper than 4mBGL will be disturbed during piling. Should this occur, the extent of disturbance is expected to be minor and the potential risks posed by ASS materials within the piling spoil would be negligible provided good site and spoil management practices are implemented. The piling spoil is appropriately managed and additional waste classification assessment (including further screening for ASS characteristics in the waste) is to occur during construction. Reference is to be made to Parts 1 and 4 of the Waste Classification Guidelines (2014) in this regard.

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

All of the analyses results were less than the SAC. No actual contamination has been identified at the site during this PSI, however, there remains a potential for contamination associated with historical use of the site as a service station.

As the service station land use ceased nearly 30 years ago, the potential for residual soil contamination to remain at concentrations that could pose a risk to human health or the environment is considered to be low. Nevertheless, information relating to the historical fuel storage and dispensing facilities, and the removal and validation of the site during decommissioning of the service station is not available.

10.1.2 Groundwater

Groundwater has not been assessed during this PSI and a risk remains for potential contamination associated with subsurface storage of fuel during the historical use of the site as a service station.

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?*

Yes, the following potential contamination sources have been identified at the site:

- Fill material;
- Fuel storage during occupation by a service station;
- Use of the site by a Boat Builder;
- Use of pesticides; and
- Hazardous building materials may be present as a result of former building and demolition activities.

It is noted that service stations are listed as an activity that may cause contamination in Table 1 of the SEPP55 Planning Guidelines. This is a trigger for a Detailed Site Investigation (DSI).

Are any results above the SAC?

No, all soil results were less than the SAC.

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

The PSI did not identify any actual contamination risks or complete SPR linkages. However, sampling for the PSI was limited to two borehole locations outside the existing building footprint and, therefore, the contamination conditions in the central section of the site remain unknown. There remains a potential for contamination in this area associated with the former service station.

Is remediation required?

At this stage remediation is not considered to be required. The need for remediation is to be established following completion of a DSI.

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

The proposed development includes excavation across the majority of the site for the basement. Based on this, JKE consider that the site can be made suitable for the proposed development. A DSI is required to characterise the site to the extent practicable prior to demolition.

10.3 Data Gaps

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

Table 10-1: Data Gap Assessment

Data Gap	Assessment
No groundwater assessment undertaken	Based on the site history, there is considered to be a potential for groundwater contamination. Additional work to address this data gap is recommended.
Soil sampling density below minimum guideline density	Sampling was limited to approximately 30% of the minimum sampling density recommended in the EPA Sampling Design Guidelines 1995 and did not include any sampling within the existing building footprint. Additionally, asbestos quantification was not undertaken due to the preliminary nature of the investigation. Recommendations for additional soil sampling are included in the report to address this data gap.

11 CONCLUSIONS AND RECOMMENDATIONS

The investigation included a review of historical information and soil sampling from two boreholes. The site has historically been used as a boat builder, service station and more recently for mixed commercial and residential purposes.

Although no contamination has been encountered in the soil samples analysed, sampling for the PSI was limited and there remains a potential for contamination associated with historical use of the site as a service station. Information relating to the decommissioning of the service station was not made available to us during preparation of this PSI report.

JKE note that use of the site as a service station is a trigger to undertake a DSI under the SEPP55 planning guidelines. Based on the findings of the investigation, JKE are of the opinion that the site can be made suitable for the proposed development described in Section 1.1, provided the following recommendations are implemented:

- A DSI is to be undertaken to better assess the soil and groundwater contamination conditions at the site; and
- A hazardous materials assessment should be undertaken prior to demolition of the existing building.

Due to the substantial site access constraints associated with the existing development, it is acknowledged that completing a full DSI would not be practicable prior to demolition. On this basis, JKE recommend that the soil and groundwater contamination conditions be characterised to the extent practicable in accessible areas, then a suitable plan (i.e. a Remediation Action Plan – RAP) be developed to manage/remediate actual or potential contamination. This plan would then be implemented following demolition. In our opinion, this approach should be adequate for the consent authority to make their determination with regards to Clause 7 of SEPP55.

The requirement to notify any contamination under the NSW EPA Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997 (2015)[15] should be reviewed after completion of the DSI.

Preliminary waste classifications have been provided and further confirmatory waste classification assessment is required during the construction phase of the project, prior to the off-site disposal of waste.

ASS materials were not identified to a depth of 4mBGL and an ASSMP is not recommended for the proposed development.

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

[15] 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)

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 will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the investigation. If the subject site is sold, ownership of the investigation report should be transferred by JKE to the new site owners who will be informed of the conditions and limitations under which the investigation was undertaken. No person should apply an investigation 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 investigation 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 investigations 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 investigation 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.

Investigation Limitations
Although information provided by a site investigation can reduce exposure to the risk of the presence of contamination, no environmental site investigation can eliminate the risk. Even a rigorous professional investigation 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 Investigations by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an investigation 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 Investigation 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 investigation. 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 investigation. 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 investigation 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 investigation 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 investigation, 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

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

Title: **SITE LOCATION PLAN**

Location: 1105 BARRENJOEY ROAD AND
43 ILUKA ROAD, PALM BEACH, NSW

Project No: E33500PH

Figure No: 1

JKEnvironments

PLOT DATE: 10/12/2020 2:32:38 PM DWG FILE: Z:\5 EIS\5C- EIS \JOBS\33000\SIE33500PH PALM BEACH\CAD\E33500PH.DWG

BH1 (0.3)

BH2 (0.3)

APPROXIMATE OUTLINE OF PROPOSED BASEMENT LEVEL

PART S P 87022

PART S P 87024

D P 1173714

TOTAL SITE AREA 1366.5m²

ROAD

BARRENJOEY ROAD

ILUKA ROAD

NOTE 1:
SP 87022 IS ALL THE LAND ABOVE RL 6.85 (AHD)
SP 87024 IS ALL THE LAND BELOW RL 6.85 (AHD)

NOTE:
LAND IS AFFECTED BY:
(A) EASEMENT FOR SERVICES (WHOLE OF LOT) (DP 1173714)
(D) EASEMENT TO DRAIN WATER (DP 1173714)
RESTRICTIONS ON THE USE OF LAND (DP 1173714)(SP 87024 ONLY)
EASEMENT FOR SUBJACERNT AND LATERAL SUPPORT AND EASEMENT FOR SHELTER IMPLIED BY SEC 106 STRATA SCHEMES DEVELOPMENT ACT 2015
BUILDING IS AFFECTED BY A STRATA MANAGEMENT STATEMENT

LEGEND

APPROXIMATE SITE BOUNDARY	
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)

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: **SAMPLE LOCATION PLAN**

Location: 1105 BARRENJOEY ROAD AND 43 ILUKA ROAD, PALM BEACH, NSW

Project No: E33500PH

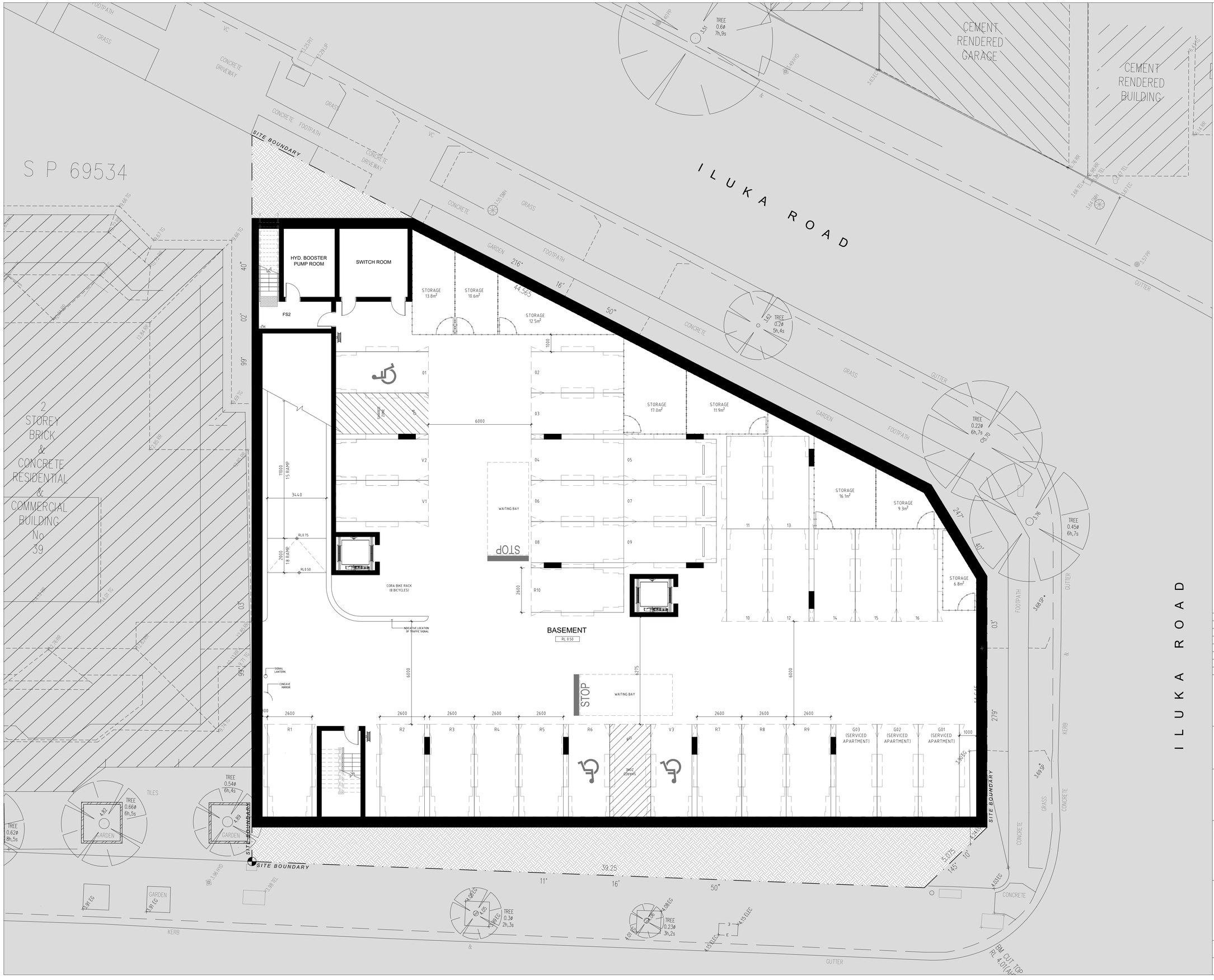
Figure No: 2

JKEnvironments

PLOT DATE: 10/12/2020 2:33:03 PM DWG FILE: Z:\S EIS\SC EIS JOBS\33000'S\E33500PH PALM BEACH\CAD\E33500PH.DWG

Appendix B: Site Information and Site History

Proposed Development Plans



GENERAL NOTES:

- ALL WORKS TO COMPLY WITH BUILDING CODE OF AUSTRALIA, REQUIREMENTS OF RELEVANT STATUTORY AUTHORITIES/ LOCAL GOVERNMENT & RELEVANT AUSTRALIAN BUILDING STANDARDS
- DRAWINGS FOR THE PURPOSES OF DA ONLY - FURTHER CONSULTANT/ AUTHORITY COORDINATION WILL BE REQUIRED AT CC STAGE WHICH MAY IMPACT ON DESIGN AND PLANNING LAYOUTS
- ARCHITECTURAL PLANS TO BE READ IN CONJUNCTION WITH CONSULTANT'S DRAWINGS, SPECIFICATIONS & REPORTS
- COPYRIGHT OF DESIGN SHOWN HEREON IS RETAINED BY PBD ARCHITECTS AND AUTHORITY IS REQUIRED FOR ANY REPRODUCTION
- AREA SCHEDULES SUPPLIED ARE APPROXIMATE ONLY - FUTURE ALLOWANCE FOR VERTICAL SERVICE DUCTS, STRUCTURAL WALL SYSTEMS AND CONSULTANT INPUT WILL BE REQUIRED

LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
GC	GARBAGE CHUTE
MB	MAILBOX TO FUTURE DETAIL
OG	OPAQUE GLASS
PB	PLANTERBOX
R	240L RECYCLING BIN
SK	SKYLIGHT
ST	STORAGE
WT	HOT WATER UNITS

MATERIALS LEGEND:

AFG	ALUMINIUM FRAMED GLAZING
AFL	ALUMINIUM ELLIPTICAL FIXED LOUVERS
AW	AWNING TO FUTURE DETAILS
BS	BATTEN SCREEN (TO FUTURE DETAIL)
FB	FACE BRICK
GB	FRAMELESS TOUGHENED GLASS BALUSTRADE (TO BCA/AUSTRALIAN STANDARDS)
MC	METAL CLADDING
MF	METAL FENCING (TO FUTURE SELECTION)
PS	PRIVACY SCREEN (TO FUTURE SELECTION)
PTx	PAINT FINISH TYPEx
RD	ROLLER DOOR
RP	RIVER PEBBLES
RW	RENDERED WALL/SELECTED PAINT FINISH
TC	TIMBER CLADDING

ISSUE	DATE	DESCRIPTION
P1	2020.11.20	FOR REVIEW

CLIENT:

MACARTHUR PROJECTS

ARCHITECT:

PBD | ARCHITECTS
ABN 36 147 035 550
P - 02 9698 8140 E - info@pbdarchitects.com.au W - www.pbdarchitects.com.au
Level 2, 52 Albion Street, Surry Hills NSW 2010

PROJECT:

PROPOSED SHOPTOP HOUSING

1105-1107 BARRENJOEY ROAD, PALM BEACH

DECEMBER 2017

DRAWING TITLE:

BASEMENT PLAN (OPTION)

SCALE:	DRAWING NO:	ISSUE:
1:100@A1 / 1:200@A3	DA100	P1
PROJECT NO: 1816		

GENERAL NOTES:

- ALL WORKS TO COMPLY WITH BUILDING CODE OF AUSTRALIA, REQUIREMENTS OF RELEVANT STATUTORY AUTHORITIES/ LOCAL GOVERNMENT & RELEVANT AUSTRALIAN BUILDING STANDARDS
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LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
GC	GARBAGE CHUTE
MB	MAILBOX TO FUTURE DETAIL
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ST	STORAGE
WT	HOT WATER UNITS

MATERIALS LEGEND:

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Level 2, 52 Albion Street, Surry Hills NSW 2010

PROJECT:
PROPOSED SHOPTOP HOUSING
1105-1107 BARRENJOEY ROAD, PALM BEACH

DECEMBER 2017

DRAWING TITLE:
GROUND FLOOR PLAN (OPTION)

SCALE:	DRAWING NO:	ISSUE:
1:100@A1 / 1:200@A3	DA101	P1
PROJECT NO: 1816		

S P 69534

ILUKA ROAD

SITE BOUNDARY

UNIT 101
194 m²

UNIT 102
171 m²

UNIT 103
135 m²

UNIT 104
127 m²

UNIT 105
129 m²

2 STOREY BRICK & CONCRETE RESIDENTIAL & COMMERCIAL BUILDING No 39

CEMENT RENDERED GARAGE

CEMENT RENDERED BUILDING

CONCRETE DRIVEWAY

GRASS

CONCRETE FOOTPATH

GARDEN

TILES

KERB

GUTTER

CONCRETE

TREE 0.6ø 7h,9s

TREE 0.2ø 5h,4s

TREE 0.22ø 6h,7s

TREE 0.45ø 6h,7s

TREE 0.62ø 8h,5s

TREE 0.66ø 6h,5s

TREE 0.54ø 6h,4s

TREE 0.3ø 2h,3s

TREE 0.23ø 3h,2s

BM CUT TOP RL 4.01(AHD)

GENERAL NOTES:

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LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
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RD	ROLLER DOOR
RP	RIVER PEBBLES
RW	RENDERED WALL/SELECTED PAINT FINISH
TC	TIMBER CLADDING

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Level 2, 52 Albion Street, Surry Hills NSW 2010

PROJECT:

PROPOSED SHOPTOP HOUSING

1105-1107 BARRENJOEY ROAD, PALM BEACH

DECEMBER 2017

DRAWING TITLE:

LEVEL 1 PLAN (OPTION)

SCALE:	DRAWING NO:	ISSUE:
1:100@A1 / 1:200@A3	DA102	P1
PROJECT NO: 1816		

S P 69534

ILUKA ROAD

SITE BOUNDARY

UNIT 201
213 m²

UNIT 202
199 m²

UNIT 203
175 m²

NON-TRAFFICABLE ROOF AREA

2 STOREY BRICK & CONCRETE RESIDENTIAL & COMMERCIAL BUILDING No 39

CEMENT RENDERED GARAGE

CEMENT RENDERED BUILDING

CONCRETE DRIVEWAY

GRASS

CONCRETE FOOTPATH

GARDEN

TILES

KERB

GUTTER

CONCRETE

TREE 0.6ø 7h,9s

TREE 0.2ø 5h,4s

TREE 0.22ø 6h,7s

TREE 0.45ø 6h,7s

TREE 0.54ø 6h,4s

TREE 0.66ø 6h,5s

TREE 0.62ø 8h,5s

TREE 0.3ø 2h,3s

TREE 0.23ø 3h,2s

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LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
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ST	STORAGE
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TC	TIMBER CLADDING

ISSUE	DATE	DESCRIPTION
P1	2020.11.20	FOR REVIEW

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PBD | ARCHITECTS
ABN 36 147 035 550
P - 02 9698 8140 E - info@pbdarchitects.com.au W - www.pbdarchitects.com.au
Level 2, 52 Albion Street, Surry Hills NSW 2010

PROJECT:
PROPOSED SHOPTOP HOUSING
1105-1107 BARRENJOEY ROAD, PALM BEACH

DECEMBER 2017

DRAWING TITLE:
LEVEL 2 PLAN (OPTION)

SCALE:	DRAWING NO:	ISSUE:
1:100@A1 / 1:200@A3	DA103	P1
PROJECT NO: 1816		

Lotsearch Environmental Risk and Planning Report

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 03 Nov 2020 13:48:09

Reference: LS015786 EP

Address: 1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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	13/05/2020	13/05/2020	Quarterly	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	22/10/2020	22/10/2020	Monthly	1000	0	0	0
Contaminated Land Records of Notice	Environment Protection Authority	28/09/2020	28/09/2020	Monthly	1000	0	0	0
Former Gasworks	Environment Protection Authority	29/09/2020	11/10/2017	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	15/05/2020	07/03/2017	Quarterly	1000	0	0	0
National Liquid Fuel Facilities	Geoscience Australia	12/08/2020	13/07/2012	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	12/10/2020	07/05/2020	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	14/10/2020	14/10/2020	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	14/10/2020	14/10/2020	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	28/09/2020	28/09/2020	Monthly	2000	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	14/10/2020	14/10/2020	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	04/02/2020	13/12/2018	Annually	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	25/09/2020	25/09/2020	Monthly	1000	0	0	0
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	25/09/2020	25/09/2020	Monthly	1000	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	25/09/2020	25/09/2020	Monthly	1000	0	3	3
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150	9	102	102
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150	-	85	88
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	20	20	24
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	24	24
Points of Interest	NSW Department of Finance, Services & Innovation	30/03/2020	30/03/2020	Quarterly	1000	0	2	29
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	30/03/2020	30/03/2020	Quarterly	1000	0	0	1
Tanks (Points)	NSW Department of Customer Service - Spatial Services	30/03/2020	30/03/2020	Quarterly	1000	0	0	1
Major Easements	NSW Department of Finance, Services & Innovation	30/03/2020	30/03/2020	Quarterly	1000	0	0	4
State Forest	Forestry Corporation of NSW	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	21/01/2020	30/09/2019	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	0	1	1
Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018	NSW Department of Planning, Industry and Environment	26/10/2020	21/02/2018	As required	1000	0	0	0

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	11	61
Geological Units 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		None planned	1000	1	-	6
Geological Structures 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		None planned	1000	0	-	0
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	19/05/2017	17/02/2011	As required	1000	0	0	2
Soil Landscapes of Central and Eastern NSW	NSW Department of Planning, Industry and Environment	14/10/2020	27/07/2020	Annually	1000	2	-	5
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	01/10/2020	03/07/2020	Monthly	500	1	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	3	3
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Department of Planning, Industry and Environment	12/05/2017	01/01/2002	None planned	1000	-	-	-
Mining Subsidence Districts	NSW Department of Customer Service - Subsidence Advisory NSW	30/03/2020	30/03/2020	Quarterly	1000	0	0	0
Current Mining Titles	NSW Department of Industry	29/07/2020	29/07/2020	Monthly	1000	0	0	0
Mining Title Applications	NSW Department of Industry	29/07/2020	29/07/2020	Monthly	1000	0	0	0
Historic Mining Titles	NSW Department of Industry	29/07/2020	29/07/2020	Monthly	1000	14	14	16
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	01/10/2020	07/12/2018	Monthly	1000	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	01/10/2020	25/09/2020	Monthly	1000	1	11	31
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/08/2020	20/11/2019	Quarterly	1000	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/08/2020	20/11/2019	Quarterly	1000	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	24/07/2020	02/07/2020	Quarterly	1000	0	0	0
Environmental Planning Instrument Heritage	NSW Department of Planning, Industry and Environment	01/10/2020	11/09/2020	Monthly	1000	0	0	56
Bush Fire Prone Land	NSW Rural Fire Service	02/11/2020	14/12/2019	Weekly	1000	1	2	2
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000	0	2	11
Ramsar Wetlands of Australia	Department of the Agriculture, Water and the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	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	02/11/2020	02/11/2020	Weekly	10000	-	-	-

Site Diagram

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 1358m^2

Total Perimeter: 152m

Disclaimers:

Measurements are approximate only and may have been simplified or smaller lengths removed for readability.

Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.

Scale: 0 10 20 Meters

Data Sources: Aerial Imagery © Aerometrex Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

Date: 03 November 2020

Contaminated Land

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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
N/A	No records in buffer								

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

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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

Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm

Former Gasworks

Former Gasworks within the dataset buffer:

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

Former Gasworks Data Source: Environment Protection Authority

Waste Management & Liquid Fuel Facilities

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

National Waste Management Site Database

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

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

National Liquid Fuel Facilities

National Liquid Fuel Facilties within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist (m)	Direction
N/A	No records in buffer										

PFAS Investigation & Management Programs

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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 Program

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

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

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

Defence PFAS Management Program

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

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

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

Airservices Australia National PFAS Management Program

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

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

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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

EPA Activities

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Licensed Activities under the POEO Act 1997

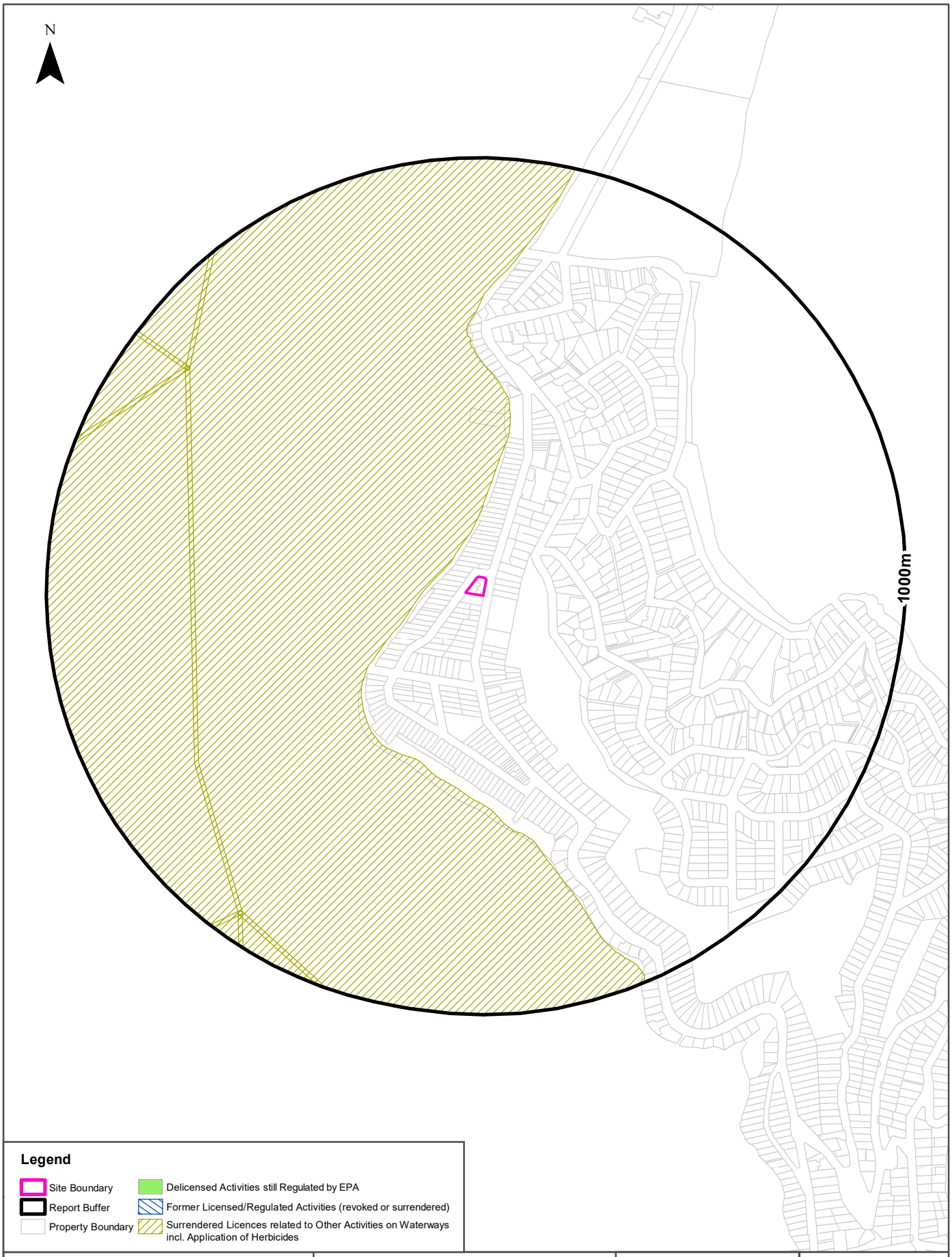
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

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

POEO Licence Data Source: Environment Protection Authority

Delicensed & Former Licensed EPA Activities

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



EPA Activities

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Delicensed Activities still regulated by the EPA

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

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

Delicensed Activities Data Source: Environment Protection Authority

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

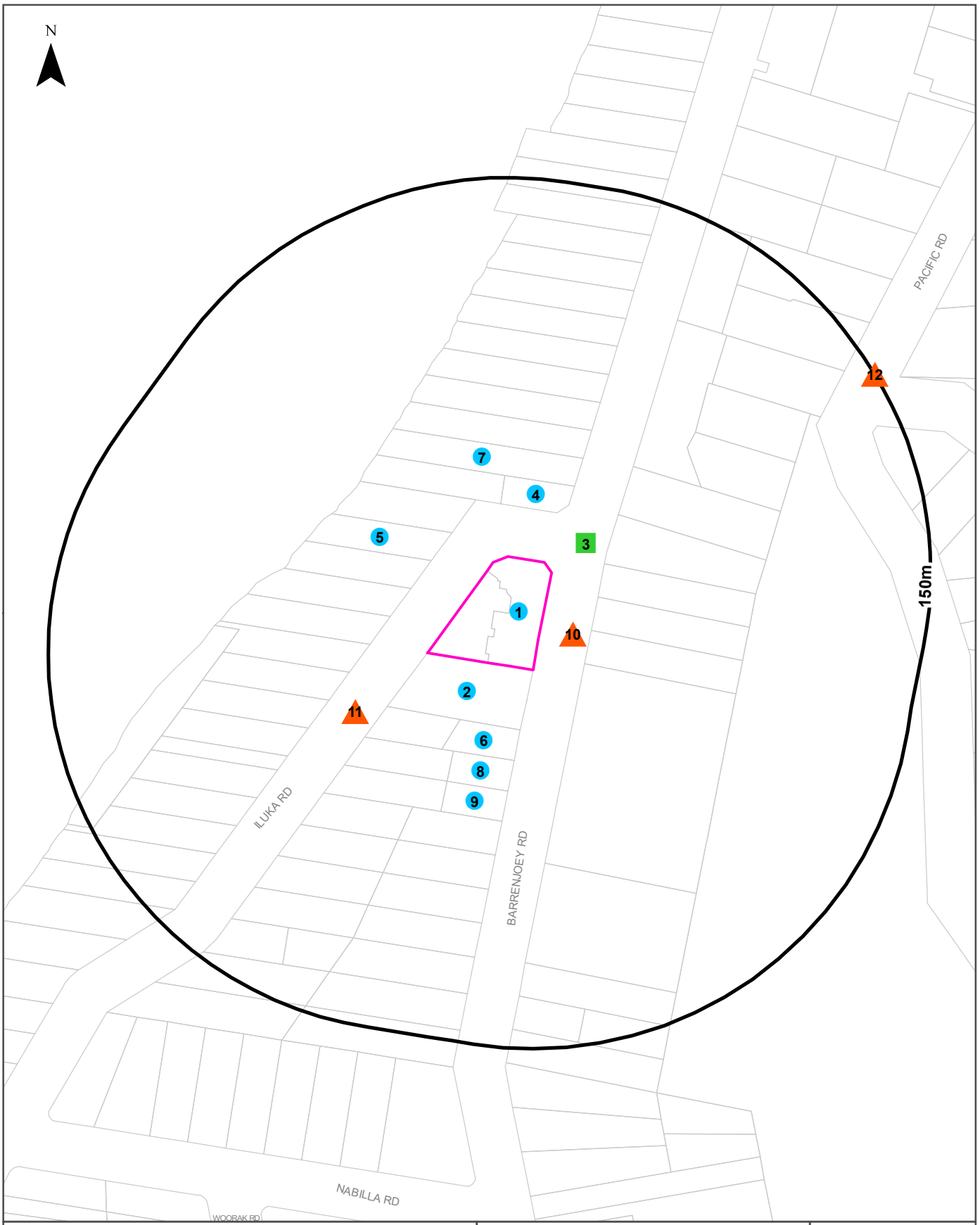
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	72m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	72m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	72m	-

Former Licensed Activities Data Source: Environment Protection Authority

Historical Business Directories

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Legend

- Site Boundary
- Buffer 150m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale: 0 25 50 75 100 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 03 November 2020

Historical Business Directories

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Business Directory Records 1950-1991
Premise or Road Intersection Matches

Universal Business Directory records from years 1991, 1986, 1982, 1978, 1975, 1970, 1965, 1961 & 1950, mapped to a premise or road intersection within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	Motor Garages & Service Stations	Ampol Palm Beach Service Station, 1099 Barrenjoey Rd., Palm Beach 2108	53487	1991	Premise Match	0m	On-site
	MOTOR GARAGES & SERVICE STATIONS.	Palm Beach, S. L., 1099 Barrenjoey Rd., Palm Beach. 2108	65228	1986	Premise Match	0m	On-site
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Palm Beach. S. L., 1099 Barrenjoey Rd., Palm Beach. 2108.	57346	1982	Premise Match	0m	On-site
	Hardware Dealers &/or Iron Mongers	Showroom Hardware Store, 1105-1107 Barrenjoey Rd. Palm Beach	99393	1965	Premise Match	0m	On-site
	MOTOR GARAGES & ENGINEERS	Lyall, R., Rear Palm Beach Garage. 1105 Barrenjoey Rd., PALM BEACH	347596	1961	Premise Match	0m	On-site
	MOTOR BODY REPAIRS/CONVERTERS	Palm Beach Garage, 1105 Barrenjoey Rd., Palm Beach	344409	1961	Premise Match	0m	On-site
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Palm Beach Garage, 1105 Barrenjoey Rd., PALM BEACH	350933	1961	Premise Match	0m	On-site
	MOTOR SPARE PARTS DEALERS—RETAIL	Palm Beach Garage, 1105 Barrenjoey Rd., Palm Beach	351666	1961	Premise Match	0m	On-site
	HARDWARE DEALERS/IRONMONGERS	Showroom Hardware Store, 1105-1107 Barrenjoey Rd., PALM BEACH	323437	1961	Premise Match	0m	On-site
2	Real Estate Agents	Hooker, L. J. Palm Beach, 1097 Barrenjoey Rd., Palm Beach 2108	60280	1991	Premise Match	0m	South West
	Real Estate Agents	MacRae, D. & Associates, 1097 Barrenjoey Rd., Palm Beach 2108	60447	1991	Premise Match	0m	South West
	HAIRDRESSERS-LADIES &/OR BEAUTY SALONS.	Palm Beach Hair Salon, 1101 Barrenjoey Rd., Palm Beach. 2108	42890	1986	Premise Match	0m	South West
	BUTCHERS-RETAIL.	Palm Beach Meat Service, 1101 Barrenjoey Rd., Palm Beach. 2108	10397	1986	Premise Match	0m	South West
	VETERINARY SURGEONS.	Ropert, J. 1101 Barrenjoey Rd. Palm Beach. 2108	97399	1986	Premise Match	0m	South West
	BEAUTY SALONS &/OR LADIES HAIRDRESSERS. (B2000)	Palm Beach Hair Salon, 1101 Barrenjoey Rd., Palm Beach. 2108.	6295	1982	Premise Match	0m	South West
	BUTCHERS - RETAIL. (B8040)	Palm Beach Meat Service, 1101 Barrenjoey Rd., Palm Beach. 2108.	11351	1982	Premise Match	0m	South West
	BEAUTY SALONS &/OR LADIES HAIRDRESSERS.	Palm Beach Hair Salon, 1101 Barrenjoey Rd., Palm Beach. 2106	5423	1978	Premise Match	0m	South West
	BUTCHERS-RETAIL.	Palm Beach Meat Service, 1101 Barrenjoey Rd., Palm Beach. 2106	9693	1978	Premise Match	0m	South West
	BEAUTY SALONS &/OR LADIES HAIRDRESSERS.	Palm Beach Beauty Salon, 1101 Barrenjoey Rd., Palm Beach. 2106	5749	1975	Premise Match	0m	South West
	BUTCHERS-RETAIL	Palm Beach Meat Service, 1101 Barrenjoey Rd, Palm Beach. 2106	10943	1975	Premise Match	0m	South West
	FRUITERERS/GREENGROCERS (F640)	McCudden's Supermarket., 1103 Barrenjoey Rd., Palm Beach	307519	1970	Premise Match	0m	South West
	BUTCHERS-RETAIL (B860)	Palm Beach Meat Service., 1099 Barrenjoey Rd., PalmBeach	274273	1970	Premise Match	0m	South West
	Fruiterers & Greengrocers	McCudden's SuperMarket, 1103 Barrenjoey Rd., Palm Beach	91639	1965	Premise Match	0m	South West
	Butchers - Retail	Palm Beach Butchery, 1099 Barrenjoey Rd., Palm Beach	59027	1965	Premise Match	0m	South West

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
2	Fruiterers & Greengrocers	Palm Beach Fruit, 1103 Barrenjoey Rd., Palm Beach	91880	1965	Premise Match	0m	South West
	Cake Shops & Pastrycooks	Palm Beach Oakes & Bread., 1101 Barrenjoey Rd., Palm Beach	61475	1965	Premise Match	0m	South West
	DENTISTS	Dupree, J., 1101 Barrenjoey Rd., Palm Beach	295876	1961	Premise Match	0m	South West
	FRUITERERS/GREENGROCERS	McCudden's Supermarket, 1103 Barrenjoey Rd., Palm Beach	315777	1961	Premise Match	0m	South West
	BUTCHERS-RETAIL	Palm Beach Butchery, 1099 Barrenjoey Rd., Palm Beach	280925	1961	Premise Match	0m	South West
	CAKE SHOPS & PASTRYCOOKS	Palm Beach Cakes & Bread, 1101 Barrenjoey Rd., Palm Beach	283217	1961	Premise Match	0m	South West
3	BOAT, LAUNCH & YACHT BUILDERS & REPAIRERS	Palm Beach Marine Service, Cnr. Iluka and Barrenjoey Rds., Palm Beach	8811	1950	Road Intersection	18m	North East
	BOAT, LAUNCH & YAGHT RIGGING SPECIALISTS	Palm Beach Marine Service, Cnr. Iluka and Barrenjoey Rds., Palm Beach	8853	1950	Road Intersection	18m	North East
	BOATS, LAUNCHES & YACHTS-FOR HIRE	Palm Beach Marine Service, Cnr. Iluka and Barrenjoey Rds., Palm Beach	8945	1950	Road Intersection	18m	North East
	ELECTRICAL ENGINEERS	Palm Beach Marine Service, Cnr. Iluka and Barrenjoey Rds., Palm Beach	38181	1950	Road Intersection	18m	North East
	ENGINEERS-MARINE	Palm Beach Marine Service, Cnr. Iluka and Barrenjoey Rds., Palm Beach	41703	1950	Road Intersection	18m	North East
	FERTILIZER IMPORTERS &/OR DISTRIBUTORS	Palm Beach Marine Service, Cnr. Iluka and Barrenjoey Rds., Palm Beach	43753	1950	Road Intersection	18m	North East
	RADIO TELEPHONE INSTALLATION SPECIALISTS	Palm Beach Marine Service, Cnr. Iluka and Barrenjoey Rds., Palm Beach	97773	1950	Road Intersection	18m	North East
	TRANSMISSION-MARINE-INSTALLATION	Palm Beach Marine Service, Cnr. Iluka and Barrenjoey Rds., Palm Beach	110200	1950	Road Intersection	18m	North East
	ENGINEERS-DIESEL	Palm Beach Marine Service, Cnr. Iluka and Barrenjoy Rds., Palm Beach	40189	1950	Road Intersection	18m	North East
4	MIXED BUSINESSES.	Palm Beach Cellars & Grocery Supplies, 1109 Barrenjoey Rd., Palm Beach. 2108	60265	1986	Premise Match	20m	North
	WINE &/OR SPIRIT MERCHANTS RETAIL.	Palm Beach Cellars & Grocery Supplies, 1109 Barrenjoey Rd., Palm Beach. 2108	99495	1986	Premise Match	20m	North
	MIXED BUSINESSES. (M4060)	Palm Beach Cellars & Grocery Supplies, 1109 Barrenjoey Rd., Palm Beach. 2108.	53320	1982	Premise Match	20m	North
	WINE &/OR SPIRIT MERCHANTS -. RETAIL. (W5960)	Palm Beach Cellars & Grocery Supplies, 1109 Barrenjoey Rd., Palm Beach. 2108.	84902	1982	Premise Match	20m	North
	WINE &/OR SPIRIT MERCHANTS- RETAIL.	Palm Beach Cellars & Grocery Supplies, 1109 Barrenjoey Rd., Palm Beach. 2106	74810	1978	Premise Match	20m	North
	MIXED BUSINESSES.	Palm Beach Cellars & Grocery Supplies. 1109 Barrenjoey Rd., Palm Beach. 2106	46963	1978	Premise Match	20m	North
	MIXED BUSINESSES.	Palm Beach Cellars & Grocery., 1109 Barrenjoey Rd., Palm Beach. 2106	55415	1975	Premise Match	20m	North
	RESTAURANTS (R320)	Barrenjoey Restaurant, 1109 Barrenjoey Rd., Palm Beach	356862	1970	Premise Match	20m	North
	BEAUTY SALONS &/OR LADIES' HAIRDRESSERS (B260)	Palm Beach Beauty Salon., 1109 Barrenjoey Rd., Palm Beach	266438	1970	Premise Match	20m	North
	WINE/SPIRIT MERCHANTS-RETAIL	Palm Beach Supply Stores, 1109 Barrenjoey Rd., Palm Beach	374584	1970	Premise Match	20m	North
	GROCERS-RETAIL (G655)	Palm Beach Supply Stores., 1109 Barrenjoey Rd., Palm Beach	312856	1970	Premise Match	20m	North
	MIXED BUSINESSES (M408)	Palm Beach Supply Stores., 1109 Barrenjoey Rd., Palm Beach	333527	1970	Premise Match	20m	North
	Mixed Businesses	Palm Beach Supply Stores., 1109 Barrenjoey Rd., Palm Beach	118286	1965	Premise Match	20m	North
	Wine/Spirit Merchants - Retail	Palm Beach Supply Stores., 1109 Barrenjoey Rd., Palm Beach	157347	1965	Premise Match	20m	North
	MIXED BUSINESS	Palm Beach Supply Stores, 1109 Barrenjoey Rd., Palm Beach	342021	1961	Premise Match	20m	North

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
4	WINE/SPIRIT MERCHANTS-RETAIL	Palm Beach Supply Stores, 1109 Barrenjoey Rd., Palm Beach	263099	1961	Premise Match	20m	North
5	SHIP CHANDLERS	Palm Beach Ferries (Port Jackson & Manly Steamship Co.), 116 Iluka Rd., Palm Beach	249583	1961	Premise Match	20m	North West
	SLIPWAYS	Palm Beach Ferries (Port Jackson & Manly Steamship Co.), 116 Iluka St., Palm Beach	250764	1961	Premise Match	20m	North West
	SHIPPING COMPANIES	Palm Beach Ferries, 116 Iluka Rd., Palm Beach	249882	1961	Premise Match	20m	North West
	BOAT, LAUNCH & YACHT BUILDERS & REPAIRERS	Palm Beach Ferries, Port Jackson & Manly Steamship Co., 116 Iluka Rd., Palm Beach	273672	1961	Premise Match	20m	North West
6	TRAVEL AGENCIES &/OR BOOKING OFFICES.	Palm Beach Travel, 1095 Barrenjoey Rd., Palm Beach. 2108.	95515	1986	Premise Match	24m	South
	TAKE-AWAY FOODS.	Pronto Creative Food, 1095 BarrenJoey Rd., Palm Beach. 2108.	91624	1986	Premise Match	24m	South
	TAKE-AWAY FOODS. (T0235)	Pronto Creative Food, 1095 Barrenjoey Rd., Palm Beach. 2108.	78850	1982	Premise Match	24m	South
	TAKE-AWAY FOODS.	Palm Beach Take Away Foods, 1095 Barrenjoey Rd., Palm Beach. 2108	69473	1978	Premise Match	24m	South
	FRUITERERS &/OR GREENGROCERS.	South, J. G. & M., 1095 Barrenjoey Rd., Palm Beach. 2106	30844	1978	Premise Match	24m	South
	CAFES, TEA ROOMS &/OR COFFEE LOUNGES.	Beachcomber Coffee Lounge, 1095 Barrenjoey Rd., Palm Beach. 2106	11822	1975	Premise Match	24m	South
	FRUITERERS &/OR GREENGROCERS.	Waratah Fruit Markets., 1095 Barrenjoey Rd., Palm Beach. 2106.	35976	1975	Premise Match	24m	South
	CAFES, COFFEE LOUNGES, Etc. (C030)	Beachcomber (The)., 1095 Barrenjoey Rd., Palm Beach	275356	1970	Premise Match	24m	South
	FRUITERERS/GREENGROCERS (F640)	Bottaro, J., 1095 Barrenjoey Rd., Palm Beach	306700	1970	Premise Match	24m	South
	CHEMISTS-PHARMACEUTICAL	Palm Beach Pharmacy., 1095 Barrenjoey Rd., Palm Beach	280932	1970	Premise Match	24m	South
	Chemists - Pharmaceutical	Palm Beach Pharmacy, 1095 Barrenjoey Rd., Palm Beach	65448	1965	Premise Match	24m	South
	CAFES, TEA ROOMS, COFFEE LOUNGES, Etc.	Beachcomber (The), 1095a Barrenjoey Rd., Palm Beach	281993	1961	Premise Match	24m	South
	CHEMISTS-PHARMACEUTICAL	Palm Beach Pharmacy, 1095 Barrenjoey Rd., Palm Beach	287957	1961	Premise Match	24m	South
7	CLOTHING-RETAIL-LADIES &/OR GIRLS WEAR.	Pajoie Boutique, 1111 Barrenjoey Rd., Palm Beach. 2108	17660	1986	Premise Match	32m	North
8	Real Estate Agents	Palm Beach Real Estate, 1093 Barrenjoey Rd., Palm Beach 2108	60532	1991	Premise Match	37m	South
	Real Estate Agents	Raine & Horne Palm Beach, 1093 Barrenjoey Rd Palm Beach 2108	60610	1991	Premise Match	37m	South
	CHEMISTS-PHARMACEUTICAL.	Palm Beach Pharmacy, 1093 Barrenjoey Rd., Palm Beach. 2108	14675	1986	Premise Match	37m	South
	PROPERTY MANAGEMENT.	Palm Beach Real Estate, 1093 Barrenjoey Rd., Palm Beach. 2108	77834	1986	Premise Match	37m	South
	REAL ESTATE AGENTS.	Palm Beach Real Estate, 1093 Barrenjoey Rd., Palm Beach. 2108	79944	1986	Premise Match	37m	South
	REAL ESTATE AGENTS.	Raine & Horne Palm Beach, 1093 Barrenjoey Rd, Palm Beach. 2108	80048	1986	Premise Match	37m	South
	PROPERTY MANAGEMENT.	Raine & Horne Palm Beach, 1093 Barrenjoey Rd., Palm Beach. 2108	77884	1986	Premise Match	37m	South
	CHEMISTS - PHARMACEUTICAL.(C4110)	Palm Beach Pharmacy, 1093 Barrenjoey Rd., Palm Beach. 2108.	15487	1982	Premise Match	37m	South
	PROPERTY MANAGEMENT. (P9060)	Palm Beach Real Estate, 1093 Barrenjoey Rd., Palm Beach. 2108.	67506	1982	Premise Match	37m	South
	REAL ESTATE AGENTS. (R2555)	Palm Beach Real Estate, 1093 Barrenjoey Rd., Palm Beach. 2108.	69489	1982	Premise Match	37m	South
	CHEMISTS-PHARMACEUTICAL.	Palm Beach Pharmacy, 1093 Barrenjoey Rd., Palm Beach. 2106	13654	1978	Premise Match	37m	South
	PROPERTY MANAGEMENT.	Palm Beach Real Estate, 1093 Barrenjoey Rd., Palm Beach. 2108	60302	1978	Premise Match	37m	South
	REAL ESTATE AGENTS &/OR VALUERS.	Palm Beach Real Estate, 1093 Barrenjoey Rd., Palm Beach. 2108	62075	1978	Premise Match	37m	South

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
8	MEDICAL PRACTITIONERS.	Stoner. J.M., 1093 Barrenjoey Rd., Palm Beach. 2106	44389	1978	Premise Match	37m	South
	CHEMISTS-PHARMACEUTICAL	Palm Beach Pharmacy, 1093 Barrenjoey Rd., Palm Beach. 2106	15740	1975	Premise Match	37m	South
	MEDICAL PRACTITIONERS.	Stoner, J. A., 1093 Barrenjoey Rd., Palm Beach. 2106	51649	1975	Premise Match	37m	South
	CHEMISTS-PHARMACEUTICAL	Curtis, A. P., 1093 Barrenjoey Rd., Palm Beach	280252	1970	Premise Match	37m	South
	DENTISTS (D140)	Harrington, Dr. J., 1093 Barrenjoey Rd., Palm Beach	288653	1970	Premise Match	37m	South
	DENTISTS (D140)	Hock, Dr. W. J., 1093 Barrenjoey Rd., Palm Beach	288684	1970	Premise Match	37m	South
	REAL ESTATE AGENTS/VALUERS(R205)	Palm Beach Real Estate, 1093 Barrenjoey Rd., PALM BEACH	355827	1970	Premise Match	37m	South
	DENTISTS	Dupree, J. Dr., 1093 Barrenjoey Rd., Palm Beach	73298	1965	Premise Match	37m	South
	Insurance Agents	Palm Beach Estate & Letting Agency (The), 1093 Barrenjoey Rd., Palm Beach	104467	1965	Premise Match	37m	South
	Real Estate Agents/Valuers	Palm Beach Estate & Letting Agency., 1093 Barrenjoey Rd. Palm Beach	139533	1965	Premise Match	37m	South
	BUSINESS AGENTS &/OR BROKERS	Palm Beach Estate & Letting Agency (The), 1093 Barrenjoey Rd., Palm Beach	279625	1961	Premise Match	37m	South
	INSURANCE AGENTS	Palm Beach Estate & Letting Agency (The), 1093 Barrenjoey Rd., Palm Beach	327954	1961	Premise Match	37m	South
	REAL ESTATE AGENTS/VALUERS	Palm Beach' Estate St Letting Agency (The), 1093 Barrenjoey Rd., PALM BEACH	244942	1961	Premise Match	37m	South
9	MEDICAL PRACTITIONERS.	Stoner, J. M., 1091 Barrenjoey Rd., Palm Beach. 2108	57771	1986	Premise Match	49m	South
	MEDICAL PRACTITIONERS. (M2020)	Stoner, J. M., 1091 Barrenjoey Rd., Palm Beach. 2108.	50455	1982	Premise Match	49m	South
	RADIO &/OR TELEVISION SALES & SERVICEMEN	Avalon Radio (Repairs), 1091 Barrenjoey Rd. PALM BEACH	364407	1961	Premise Match	49m	South

Business Directory Records 1950-1991
Road or Area Matches

Universal Business Directory records from years 1991, 1986, 1982, 1978, 1975, 1970, 1965, 1961 & 1950, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

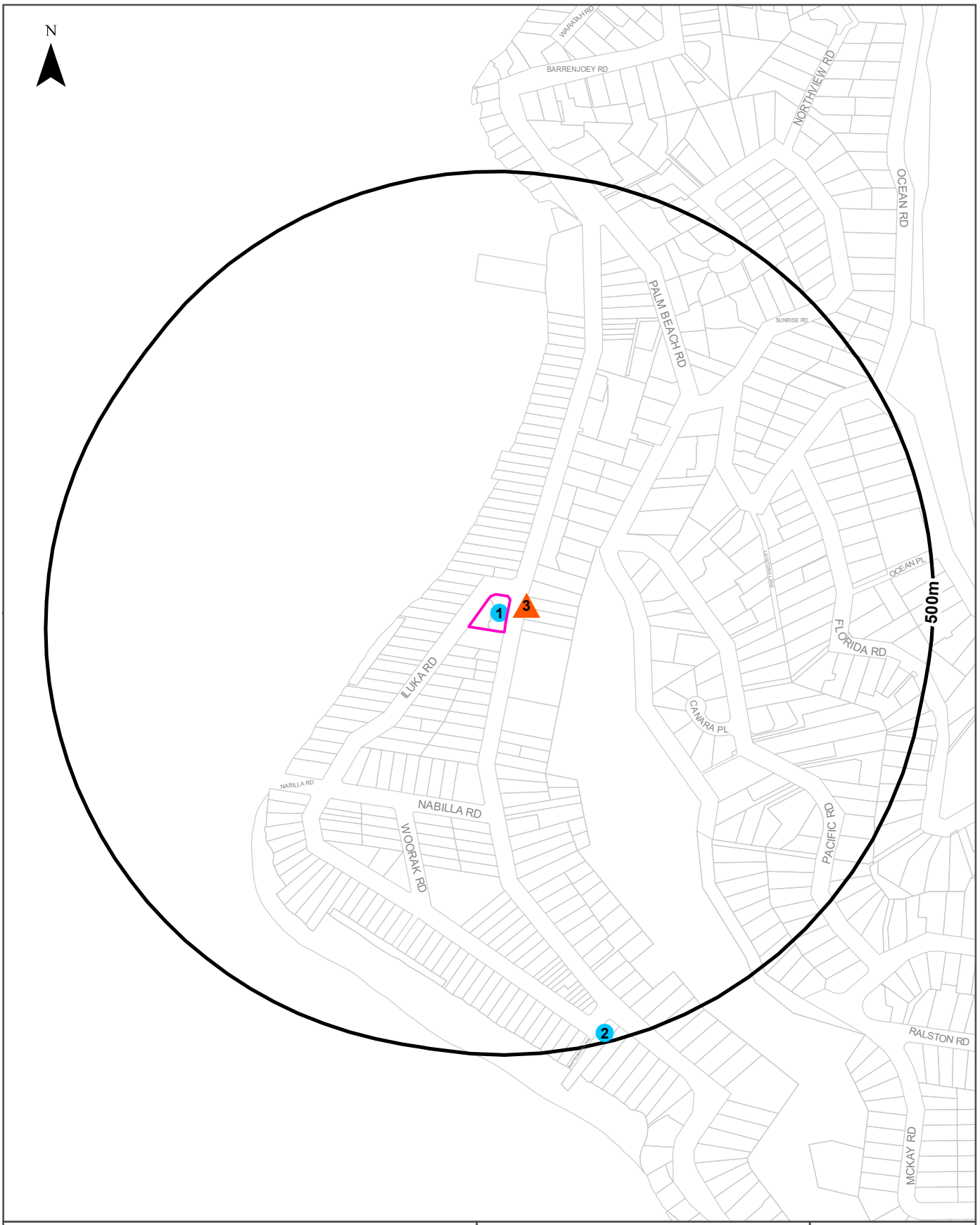
Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
10	Boat, Launch &/or Yacht Sales &/or Service	Gonsalves Bros. Boatshed & Slipway, Barrenjoey Rd, Palm Beach 2108	36264	1991	Road Match	0m
	BOAT, LAUNCH &/OR YACHT HIRERS.	Gonsalves Bros. Boatshed & Slipway, Barrenjoey Rd., Palm Beach. 2108	6408	1986	Road Match	0m
	BOAT, LAUNCH &/OR YACHT SALES &/OR SERVICE.	Gonsalves Bros. Boatshed & Slipway, Barrenjoey Rd., Palm Beach. 2108	6474	1986	Road Match	0m
	SLIPWAYS.	Gonsalves Bros. Boatshed & Slipway, Barrenjoey Rd., Palm Beach. 2108	87033	1986	Road Match	0m
	BOAT, LAUNCH &/OR YACHT SALES &/OR SERVICE. (B3660)	Gonsalves Bros. Boatshed & Slipway, Barrenjoey Rd., Palm Beach. 2108.	7332	1982	Road Match	0m
	BOAT, LAUNCH &/OR YACHTHIRERS. (B3620)	Gonsalves Bros. Boatshed & Slipway, Barrenjoey Rd., Palm Beach. 2108.	7275	1982	Road Match	0m
	SLIPWAYS. (S3920)	Gonsalves Bros. Boatshed & Slipway, Barrenjoey Rd., Palm Beach. 2108.	75071	1982	Road Match	0m
	BOAT, LAUNCH &/OR YACHT SALES &/OR SERVICE.	Gonsalves Bros. Boatshed & Slipway, Barrenjoey Rd., Palm Beach. 2108	6359	1978	Road Match	0m
	SLIPWAYS.	Gonsalves Bros. Boatshed & Slipway, Barrenjoey Rd., Palm Beach. 2108	66487	1978	Road Match	0m
	BOAT, LAUNCH &/OR YACHT HIRERS.	Gonsalves Bros. Boatshed & Slipway. Barrenjoey Rd., Palm Beach. 2108	6294	1978	Road Match	0m
	MIXED BUSINESSES.	Kalazich. A., Barrenjoey Rd., Palm Beach. 2106	46822	1978	Road Match	0m
	BOAT, LAUNCH &/OR YACHT HIRERS.	Gonsalves Bros. Boatshed & Slipway, Barrenjoey Rd., Palm Beach.	6725	1975	Road Match	0m
	BOAT, LAUNCH &/OR YACHT SALES &/OR SERVICE	Gonsalves Bros. Boatshed & Slipway, Barrenjoey Rd., Palm Beach. 2108	6797	1975	Road Match	0m
	SLIPWAYS.	Gonsalves Bros. Boatshed & Slipway., Barrenjoey Rd., Palm Beach. 2108	77812	1975	Road Match	0m
	SLIPWAYS.	Palm Beach Marine Service Pty. Ltd., Barrenjoey Rd., Palm Beach. 2108	77823	1975	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Palm Beach Service Station., Barrenjoey Rd., Palm Beach. 2108	59360	1975	Road Match	0m
	SLIPWAYS (S368)	Gows Boatshed & Slipway, Barrenjoey Rd., Palm Beach	361913	1970	Road Match	0m
	BOAT, LAUNCH & YACHT BUILDERS &/OR REPAIRERS	Gows Boatshed & Slipway., Barrenjoey Rd., Palm Beach	267525	1970	Road Match	0m
	BOAT, LAUNCH & YACHT SALES & SERVICE (B457)	Gows Boatshed & Slipway., Barrenjoey Rd., Palm Beach	267680	1970	Road Match	0m
	BOATS, LAUNCHES & YACHTS-FOR HIRE (B465)	Gows Boatshed & Slipway., Barrenjoey Rd., Palm Beach	267761	1970	Road Match	0m
	MIXED BUSINESSES (M408)	Loveless, C. & M., Barrenjoey Beach Rds., Palm Beach	333137	1970	Road Match	0m
	CLUBS & SPORTING BODIES (C487)	Palm Beach R. S. L Club., Barrenjoey Rd., Palm Beach	284536	1970	Road Match	0m
	CLUBS & SPORTING BODIES (C487)	Palm Beach R. S. L Sub-Branch Club., Barrenjoey Rd., Palm Beach	284537	1970	Road Match	0m
	MOTOR GARAGES & ENGINEERS(M6S6)	Palm Beach Service Station., Barrenjoey Rd., PALM BEACH	338374	1970	Road Match	0m
	MIXED BUSINESSES (M408)	Rendzvous (The)., Barrenjoey Rd., Palm Beach	333683	1970	Road Match	0m
	Boat, Launch & Yacht Brokers	Gows Boatshed & Slipway., Barrenjoey Rd., Palm Beach	51997	1965	Road Match	0m
	Boat, Launch & Yacht Builders & Repairers	Gows Boatshed & Slipway., Barrenjoey Rd., Palm Beach	52067	1965	Road Match	0m
	Boats, Launches & Yachts - For Hire	Gows Boatshed & Slipway., Barrenjoey Rd., Palm Beach	52189	1965	Road Match	0m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
10	Mixed Businesses	Loveless, C. & M., Barrenjoey Beach Rd., Palm Beach	117865	1965	Road Match	0m
	Clubs & Sporting Bodies	Palm Beach R.S.L. Sub-Branch Club, Barrenjoey Rd., Palm Beach	69200	1965	Road Match	0m
	MOTOR GARAGES & ENGINEERS	Ashford, G. A., Barrenjoey Rd., Palm Beach	346530	1961	Road Match	0m
	MOTOR ACCESSORIES/DEALERS	Beach Garage, Barrenjoey Rd., Palm Beach	343341	1961	Road Match	0m
	BOAT, LAUNCH & YACHT BUILDERS & REPAIRERS	Gow's Boat Shed, Barrenjoey Rd., Palm Beach	273620	1961	Road Match	0m
	BOATS, LAUNCHES & YACHTS-FOR HIRE	Gow's Boatshed, Barrenjoey Rd., Palm Beach	273757	1961	Road Match	0m
	PAVING CONTRACTORS	Kerr, Len, Barrenjoey Rd., Careel Bay., Palm Beach	357207	1961	Road Match	0m
	SURVEYORS-MARINE	Morgan, W. R., Barrenjoey Rd., Palm Beach	254681	1961	Road Match	0m
	CLUBS & SPORTS BODIES	Palm Beach R.S.L. Sub-Branch Club, Barrenjoey Rd., Palm Beach	291710	1961	Road Match	0m
	GIFT SHOPS	Bardon, Mrs., Barrenjoey Rd., Palm Beach	54262	1950	Road Match	0m
	FISHING TACKLE MFRS. &/OR DEALERS	Barrenjoey Boating Service Pty. Ltd., Barrenjoey Rd., Palm Beach	44724	1950	Road Match	0m
	BOATS, LAUNCHES & YACHTS-FOR HIRE	Barrenjoey Boating Services Pty. Ltd., Barrenjoey Rd., Palm Beach	8862	1950	Road Match	0m
	FLATS, RESIDENTIALS, Etc.	Barrenjoey House, Barrenjoey Rd., Palm Beach	44929	1950	Road Match	0m
	HOTELS-PRIVATE	Barrenjoey House, Barrenjoey Rd., Palm Beach	63551	1950	Road Match	0m
	RESTAURANTS, Etc.	Barrenjoey House, Barrenjoey Rd., Palm Beach	99460	1950	Road Match	0m
	VALUERS	Cane, J. B., Barrenjoey Rd., Palm Beach	111537	1950	Road Match	0m
	CHEMISTS-PHARMACEUTICAL	Curtis, A. P., Barrenjoey Rd., Palm Beach	21437	1950	Road Match	0m
	STONE MASONS	Gonsalves Bros., Barrenjoey Rd., Palm Beach	105752	1950	Road Match	0m
	BOATS, LAUNCHES & YACHTS-FOR HIRE	Gows Boatshed (W. McTaggart, Propr.), Barrenjoey Rd., Palm Beach	8900	1950	Road Match	0m
	FISH MERCHANTS-RETAIL	Huntington, B. and Son, Barrenjoey Rd., Palm Beach	44381	1950	Road Match	0m
	BAKERS-BREAD	James, C. V., Barrenjoey Rd., Palm Beach	5324	1950	Road Match	0m
	CAKE SHOPS & PASTRYCOOKS	James, C. V., Barrenjoey Rd., Palm Beach	16822	1950	Road Match	0m
	MIXED BUSINESSES & GENERAL STORES	Kalayzich, A., Barrenjoey Rd., Palm Beach	80282	1950	Road Match	0m
	MILK BARS & CONFECTIONERS	Kerr, C. E. W., Barrenjoey Rd., Palm Beach	76881	1950	Road Match	0m
	CAFES, TEA ROOMS, COFFEE LOUNGES, Etc.	Macks, Barrenjoey Rd., Palm Beach	15709	1950	Road Match	0m
	CAKE SHOPS & PASTRYCOOKS	Macks, Barrenjoey Rd., Palm Beach	16910	1950	Road Match	0m
	DELICATESSENS & SMALLGOODS DEALERS	Macks, Barrenjoey Rd., Palm Beach	30809	1950	Road Match	0m
	GROCERS-RETAIL	Macks, Barrenjoey Rd., Palm Beach	58172	1950	Road Match	0m
	FRUITERERS & GREENGROCERS	McCab, M., Barrenjoey Rd., Palm Beach	50674	1950	Road Match	0m
	GROCERS-RETAIL	McCabe, M., Barrenjoey Rd., Palm Beach	58237	1950	Road Match	0m
	ELECTRICAL CONTRACTORS &/OR ELECTRICIANS	Mitchell, J. V., Barrenjoey Rd., Palm Beach	37747	1950	Road Match	0m
	BOOKSELLERS &/OR STATIONERS	P.J. Stores (The), Barrenjoey Rd., Palm Beach	9678	1950	Road Match	0m
	FRUITERERS & GREENGROCERS	P.J. Stores, Barrenjoey Rd., Palm Beach	50875	1950	Road Match	0m
	WINE & SPIRIT MERCHANTS-RETAIL	P.J. Stores, Barrenjoey Rd., Palm Beach	113547	1950	Road Match	0m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
10	BOOT & SHOE REPAIRERS	Page, R., Barrenjoey Rd., Palm Beach	10509	1950	Road Match	0m
	REAL ESTATE AGENTS	Palm Beach Estate & Letting Agency, Barrenjoey Rd., Palm Beach	98654	1950	Road Match	0m
	REAL ESTATE AGENTS	Palm Beach Estate and Letting Agency, Barrenjoey Rd., Palm Beach	98655	1950	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS	Palm Beach Garage, Barrenjoey Rd., Palm Beach	84172	1950	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, Etc.	Palm Beach Garage, Barrenjoey Rd., Palm Beach	86260	1950	Road Match	0m
	LIBRARIES-LENDING	Palm Beach Gift Store, Barrenjoey Rd., Palm Beach	68854	1950	Road Match	0m
	MIXED BUSINESSES & GENERAL STORES	Palm Beach Gift Store, Barrenjoey Rd., Palm Beach	80697	1950	Road Match	0m
	NEWSAGENTS	Palm Beach Gift Store, Barrenjoey Rd., Palm Beach	88258	1950	Road Match	0m
	BOATS, LAUNCHES & YACHTS-FOR HIRE	Port Jackson and Manly Steamship Co., Barrenjoey Rd., Palm Beach	8952	1950	Road Match	0m
	FERRY & LAUNCH SERVICES OPERATORS	Port Jackson and Manly Steamship Co., Barrenjoey Rd., Palm Beach	43746	1950	Road Match	0m
	SLIPWAYS	Port Jackson and Manly Steamship Co., Barrenjoey Rd., Palm Beach	103026	1950	Road Match	0m
	MIXED BUSINESSES & GENERAL STORES	Potts and Heffernan, Barrenjoey Rd., Palm Beach	80794	1950	Road Match	0m
	MILK BARS & CONFECTIONERS	Rick's Inn., Barrenjoey Rd., Palm Beach	77270	1950	Road Match	0m
	BAKERS-BREAD	Rowen, G. W., Barrenjoey Rd., Palm Beach	5465	1950	Road Match	0m
	CAKE SHOPS & PASTRYCOOKS	Rowen, G. W., Barrenjoey Rd., Palm Beach	17181	1950	Road Match	0m
	BUTCHERS-RETAIL	Scarf's, Butcher, Barrenjoey Rd., Palm Beach	14279	1950	Road Match	0m
	BABY & CHILDREN'S WEAR-RETAIL	Suzanne Lee, Barrenjoey Rd., Palm Beach	4832	1950	Road Match	0m
	BLOUSE SPECIALISTS	Suzanne Lee, Barrenjoey Rd., Palm Beach	8680	1950	Road Match	0m
	DRAPERS-RETAIL	Suzanne Lee, Barrenjoey Rd., Palm Beach	34012	1950	Road Match	0m
	FROCK & COAT SALONS	Suzanne Lee, Barrenjoey Rd., Palm Beach	48962	1950	Road Match	0m
	MIXED BUSINESSES & GENERAL STORES	Waugh, W., Barrenjoey Rd., Palm Beach	81221	1950	Road Match	0m
11	FERRY /LAUNCH SERVICES OPERATORS (F105)	Palm Beach Ferries., Iluka Rd., Palm Beach	302325	1970	Road Match	0m
	Ferry/Launch Services Operators	Palm Beach Ferries, Iluka Rd., Palm Beach	85735	1965	Road Match	0m
12	FLATS, RESIDENTIALS, Etc.	Jonhas Guest House, Pacific Rd., Whale Beach	45195	1950	Road Match	141m
	CARRIERS & CARTAGE CONTRACTORS	Palm Beach Taxi Trucks (R. L. Vance), Pacific Rd., Palm Beach	19524	1950	Road Match	141m
	TAXI TRUCK OPERATORS	Palm Beach Taxi Trucks, Pacific Pde., Palm Beach	107228	1950	Road Match	141m

Dry Cleaners, Motor Garages & Service Stations

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Legend

- Site Boundary
- Buffer 500m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale: 0 80 160 240 320 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 03 November 2020

Historical Business Directories

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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

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

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
1	MOTOR GARAGES & SERVICE STATIONS.	Ampol Palm Beach Service Station, 1099 Barrenjoey Rd., Palm Beach. 2108	18515	1993	Premise Match	0m	On-site
	Motor Garages & Service Stations	Ampol Palm Beach Service Station, 1099 Barrenjoey Rd., Palm Beach 2108	53487	1991	Premise Match	0m	On-site
	MOTOR GARAGES & SERVICE STATIONS.	Ampol Palm Beach Service Station, 1099 Barrenjoey Rd., Palm Beach. 2108	5889	1990	Premise Match	0m	On-site
	MOTOR GARAGE & SERVICE STATIONS.	Ampol Palm Beach Service Station, 1099 Barrenjoey Rd., Palm Beach. 2108	64375	1989	Premise Match	0m	On-site
	MOTOR GARAGES & SERVICE STATIONS.	Ampol Palm Beach Service Station, 1099 Barrenjoey Rd., Palm Beach. 2108	53477	1988	Premise Match	0m	On-site
	MOTOR GARAGES & SERVICE STATIONS.	Palm Beach, S. L., 1099 Barrenjoey Rd., Palm Beach. 2108	65228	1986	Premise Match	0m	On-site
	MOTOR GARAGES & SERVICE STATIONS.	Palm Beach S. L., 1099 Barrenjoey Rd., Palm Beach. 2108	45337	1985	Premise Match	0m	On-site
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Plam Beach S.L., 1099 Barrenjoey Rd., Palm Beach. 2108	33911	1984	Premise Match	0m	On-site
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Palm Beach S. L., 1099 Barrenjoey Rd., Palm Beach 2108	21360	1983	Premise Match	0m	On-site
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Palm Beach. S. L., 1099 Barrenjoey Rd., Palm Beach. 2108.	57346	1982	Premise Match	0m	On-site
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Palm Beach S. L., 1099 Barrenjoey Rd., Palm Beach 2108	3896	1981	Premise Match	0m	On-site
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Palm Beach Service Centre., 1105 Barrenjoey Rd., Palm Beach 2108	34695	1976	Premise Match	0m	On-site
	MOTOR GARAGES & ENGINEERS.	Lyall R., Rear Palm Beach Garage 1105 Barrenjoey Rd., Palm Beach	33162	1962	Premise Match	0m	On-site
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Palm Beach Garage., 1105 Barrenjoey Rd Palm Beach	38521	1962	Premise Match	0m	On-site
	MOTOR GARAGES & ENGINEERS	Lyall, R., Rear Palm Beach Garage. 1105 Barrenjoey Rd., PALM BEACH	347596	1961	Premise Match	0m	On-site
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Palm Beach Garage, 1105 Barrenjoey Rd., PALM BEACH	350933	1961	Premise Match	0m	On-site
	MOTOR GARAGES & ENGINEERS.	Lyall R., Rear Palm Beach Garage 1105 Barrenjoey Rd Palm Beach	19738	1959	Premise Match	0m	On-site
	MOTOR SERVICE STATIONS-PETROL,. OIL, ETC.	Palm Beach Garage., 1105 Barrenjoey Rd Palm Beach	24440	1959	Premise Match	0m	On-site

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MOTOR GARAGE/ENGINEERS.	Palm Beach Garage., 1105 Barrenjoey Rd Palm Beach	4699	1958	Premise Match	0m	On-site
	MOTOR SERVICE STATIONS-PETROL, ETC.	Palm Beach Garage., 1105 Barrenjoey Rd., Palm Beach	9732	1958	Premise Match	0m	On-site
2	MOTOR GARAGES & ENGINEERS.	Smith's Service Station., 1017 Barrenjoey Rd Palm Beach	19739	1959	Premise Match	475m	South
	MOTOR SERVICE STATIONS-PETROL, ETC.	Smiths Service Staion., 1017 Barrenjoey Rd Palm Beach	9835	1958	Premise Match	475m	South
	MOTOR GARAGE/ENGINEERS.	Smiths Service Station., 1017 Barrenjoey Rd Palm Beach	4983	1958	Premise Match	475m	South
	MOTOR GARAGES &/OR ENGINEERS.	Smiths Service Station., 1017 Barrenjoey Rd Palm Beach	61507	1956	Premise Match	475m	South

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

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

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
3	MOTOR GARAGES &/OR ENGINEERS.	Palm Beach Service Station., Barrenjoey Rd., Palm Beach. 2108	59360	1975	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Palm Beach Service Station., Barrenjoey Rd Palm Beach	12793	1972	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Palm Beach Service Station., Barrenjoey Rd Palm Beach	62467	1971	Road Match	0m
	MOTOR GARAGES & ENGINEERS(M6S6)	Palm Beach Service Station., Barrenjoey Rd., PALM BEACH	338374	1970	Road Match	0m
	MOTOR GARAGES & ENGINEERS.	Palm Beach Garage., Barrenjoey Rd Palm Beach	46968	1969	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Palm Beach Garage., Barrenjoey Rd Palm Beach	50584	1969	Road Match	0m
	MOTOR GARAGES & ENGINEERS	Palm Beach Garage., Barrenjoey Rd Palm Beach	26278	1968	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Palm Beach Garage., Barrenjoey Rd Palm Beach	32609	1968	Road Match	0m
	MOTOR GARAGES & ENGINEERS.	Palm Beach Garage., Barrenjoey Rd Palm Beach	10779	1967	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Palm Beach Garage., Barrenjoey Rd Palm Beach	16071	1967	Road Match	0m
	MOTOR GARAGES & ENGINEERS.	Ashford G. A., Barrenjoey Rd Palm Beach	33161	1962	Road Match	0m
	MOTOR GARAGES & ENGINEERS	Ashford, G. A., Barrenjoey Rd., Palm Beach	346530	1961	Road Match	0m
	MOTOR GARAGES & ENGINEERS.	Ashford G. A., Barrenjoey Rd Palm Beach	19737	1959	Road Match	0m
	MOTOR GARAGE/ENGINEERS.	Ashford G. A., Barrenjoey Rd Palm Beach	551	1958	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Ashford G. A., Barrenjoey Rd Palm Beach	57174	1956	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Palm Beach Garage., Barrenjoey Rd Palm Beach	61238	1956	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Ashford G. A., Barrenjoey Rd Palm Beach	44744	1954	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Palm Beach Garage., Barrenjoey Rd Palm Beach	49800	1954	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Ashford G. A., Barrenjoey Rd Palm Beach	36536	1953	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Palm Beach Garage., Barrenjoey Rd Palm Beach	40466	1953	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Palm Beach Garage., Barren Joey Rd Palm Beach	32044	1952	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS	Palm Beach Garage, Barrenjoey Rd., Palm Beach	84172	1950	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, Etc.	Palm Beach Garage, Barrenjoey Rd., Palm Beach	86260	1950	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS.	Palm Beach Garage., Barrenjoey Rd Palm Beach	22705	1948-49	Road Match	0m

Aerial Imagery 2020

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Scale: 0 20 40 60 80 Meters	Data Sources: Aerial Imagery © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 03 November 2020

Aerial Imagery 2014

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 2009

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Scale: 0 20 40 60 80 Meters	Data Sources: Aerial Imagery © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 03 November 2020

Aerial Imagery 1994

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 1991

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 1986

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 1982

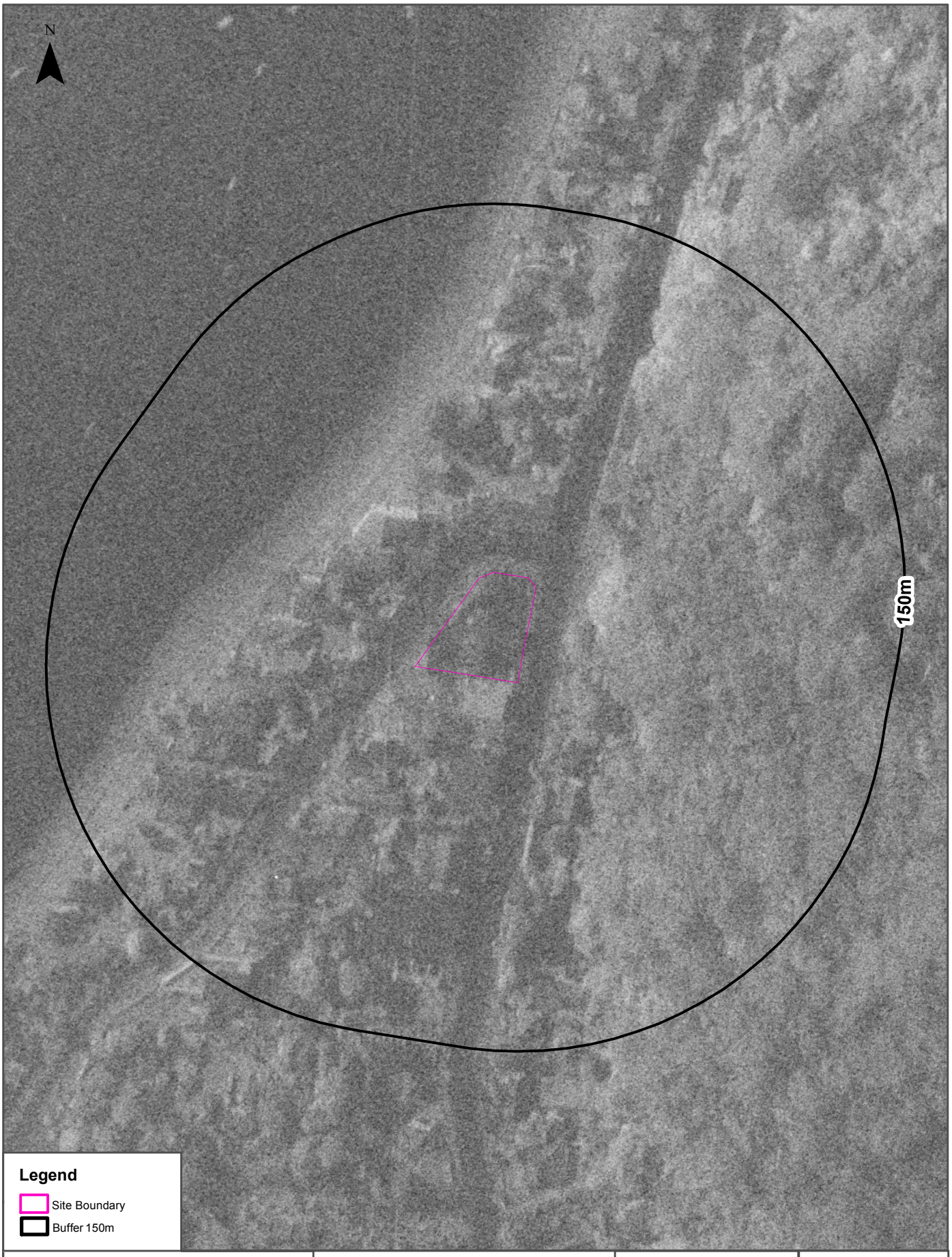
1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 1978

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 1975

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Aerial Imagery 1970

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 1965

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 1961

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 1955

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 1951

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 1947

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Aerial Imagery 1940

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

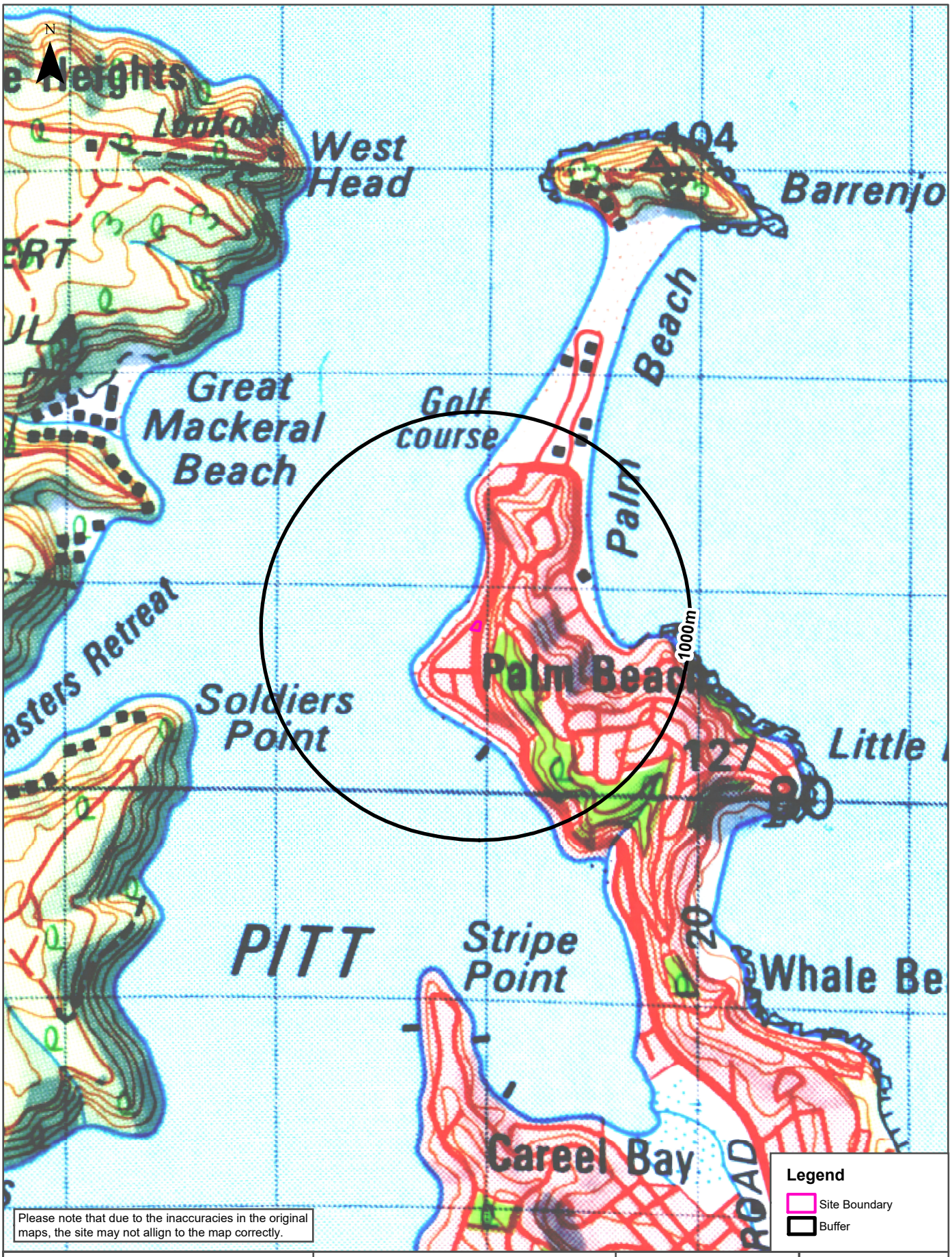
Topographic Map 2015

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Scale:	Data Sources: Topographic Map Data © NSW Land and Property Information	Coordinate System: GDA 1994 MGA Zone 56	Date: 03 November 2020

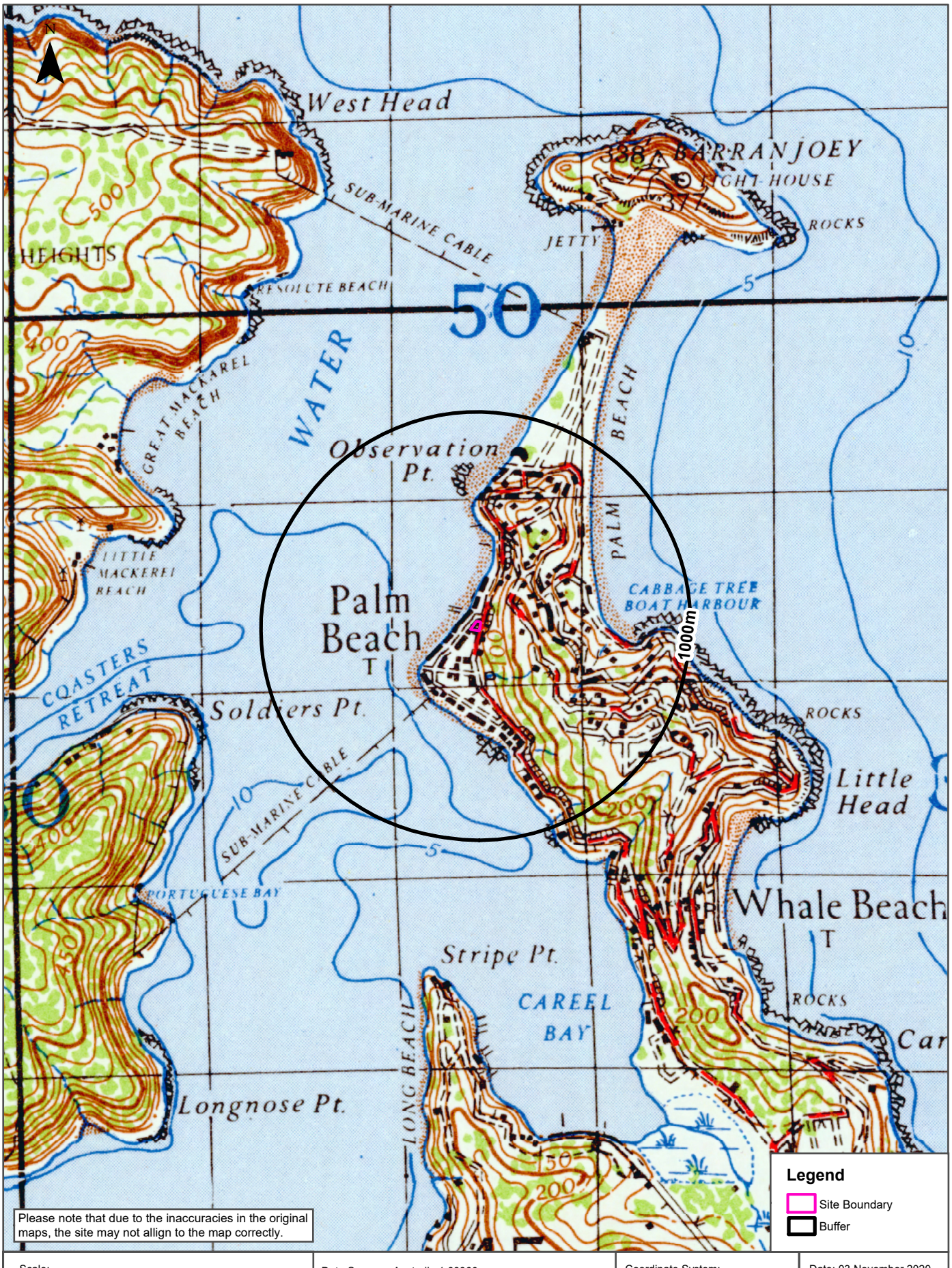
Historical Map 1975

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



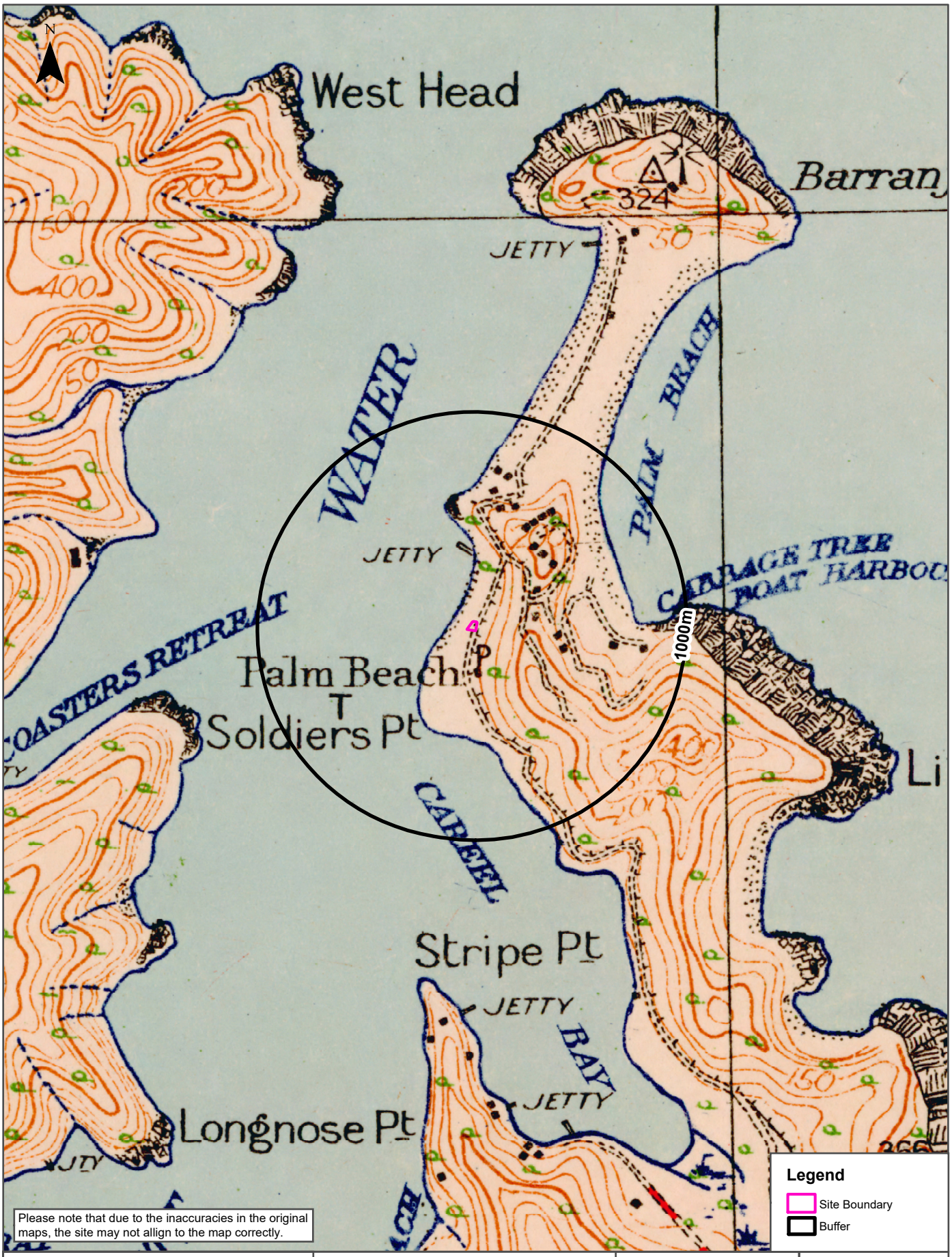
Historical Map c.1942

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Historical Map c.1920

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



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

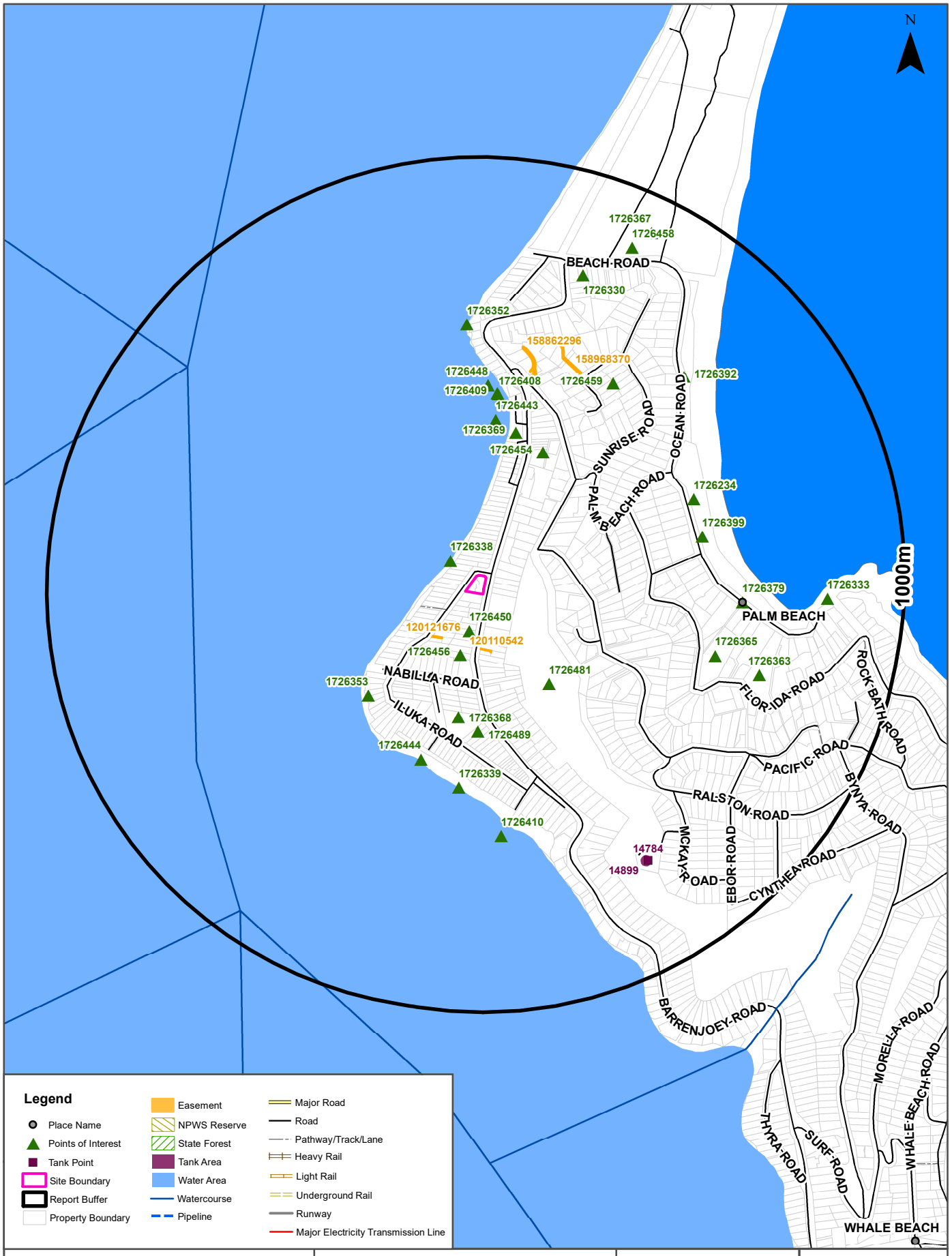
Data Sources: Australia 1:63360, Produced by Australian Section Imperial General Staff

Coordinate System: GDA 1994 MGA Zone 56

Date: 03 November 2020

Topographic Features

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Topographic Features

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
1726338	Beach	SNAPPERMAN BEACH	72m	North West
1726450	Club	PALM BEACH RSL S/B CLUB T/AS CLUB PALM BEACH	92m	South
1726456	Place Of Worship	ST DAVIDS ANGLICAN CHURCH	151m	South
1726285	Urban Place	SAND POINT	221m	South West
1726481	Park	MCKAY RESERVE	267m	South East
1726368	Park	ILUKA PARK	300m	South
1726454	Art Gallery	PALM BEACH GALLERY	327m	North East
1726489	Child Care Centre	PALM BEACH KINDERGARTEN	328m	South
1726353	Headland	SAND POINT	341m	South West
1726369	Park	PITTWATER PARK	351m	North
1726443	Wharf	Wharf	374m	North
1726444	Boat Ramp	Boat Ramp	415m	South
1726408	Slipway	Slipway	434m	North
1726409	Slipway	Slipway	438m	North
1726448	Wharf	Wharf	455m	North
1726339	Beach	SANDY BEACH	466m	South
1726399	Picnic Area	Picnic Area	526m	East
1726234	Community Facility	PALM BEACH SLSC	530m	East
1726459	Park	SUNRISE RESERVE	554m	North East
1726365	Park	WILTSHIRE PARK	573m	East
1726410	Wharf	Wharf	580m	South
1726352	Headland	OBSERVATION POINT	600m	North
1726379	Suburb	PALM BEACH	615m	East
1726392	Park	OCEAN ROAD RESERVE	673m	North East
1726363	Park	HORDERN PARK	688m	East
1726330	Club	PALM BEACH GOLF CLUB	757m	North
1726333	Swimming Pool	PALM BEACH ROCK POOL	817m	East
1726458	Park	PLAYGROUND	860m	North East
1726367	Park	GOVERNOR PHILLIP PARK	912m	North East

Topographic Features

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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
14899	Water	Operational	PALM BEACH RESERVOIR	01/09/2013	734m	South 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
14784	Water	Feature on Previous LPI Tank Area Supply		02/02/2000	749m	South East

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
120121676	Primary	Undefined		122m	South West
120110542	Primary	Undefined		129m	South
158862296	Primary	Right of way	VAR.	486m	North
158968370	Primary	Right of way	variable	533m	North

Topographic Features

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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)

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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 2020	Coordinate System: GDA 1994 MGA Zone 56	Date: 03 November 2020

0 100 200 400 Meters

Hydrogeology & Groundwater

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Hydrogeology

Description of aquifers on-site:

Description
No Data

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)
Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018

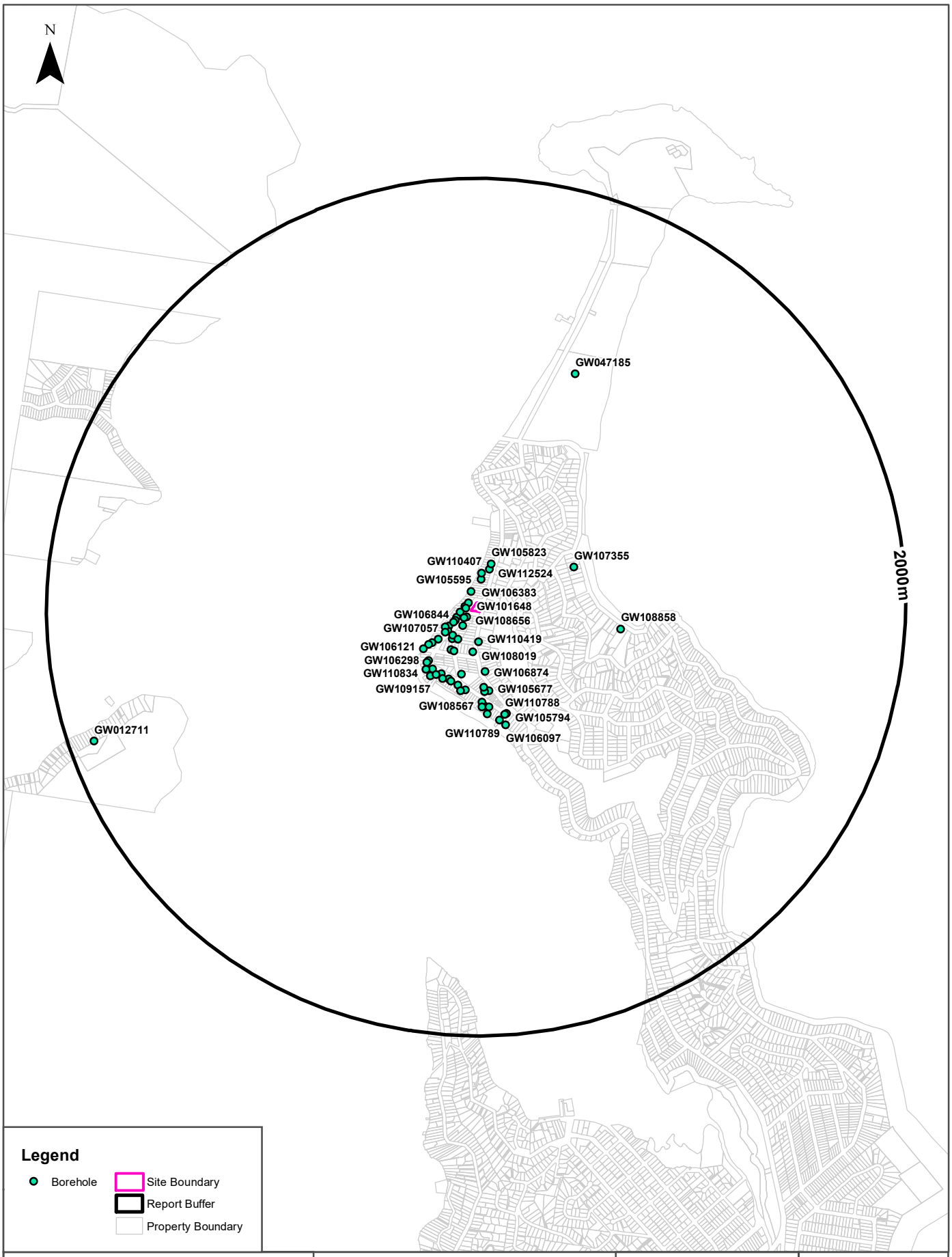
Temporary water restrictions relating to the Botany Sands aquifer within the dataset buffer:

Prohibition Area No.	Prohibition	Distance	Direction
N/A	No records in buffer		

Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018 Data Source : NSW Department of Primary Industries

Groundwater Boreholes

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Hydrogeology & Groundwater

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW108817	10BL600079, 10WA109048	Spear	Private	Domestic	Domestic		18/12/2006	6.00	6.00	Good	3.00	0.500		24m	West
GW101648	10BL158769, 10WA108426	Bore		Domestic	Domestic		01/01/1978	6.00	6.00			0.220		29m	North West
GW107894	10BL165973, 10WA109044	Spear	Private	Domestic	Domestic		03/02/2006	6.00	6.00		4.00	0.500		31m	West
GW108656	10BL600567, 10WA109093	Spear	Private	Domestic	Domestic		14/03/2007	6.00	6.00	Good	3.00	0.500		37m	South West
GW102234	10BL159016, 10WA108438	Bore	Private	Domestic	Domestic		01/01/1990	3.50	3.50		4.00	0.150		46m	South West
GW106559	10BL163298, 10WA108713	Spear	Private	Domestic	Domestic		11/11/2004	5.00	5.00	Good	3.00	0.500		49m	West
GW105595	10BL162300, 10WA108594	Spear	Private	Domestic	Domestic		05/11/2003	5.00	5.00	Good	2.50	0.500		57m	North
GW105596	10BL162202, 10WA108581	Spear	Private	Domestic	Domestic		14/11/2003	6.00	6.00	Good	3.00	0.500		73m	South West
GW106709	10BL162473, 10WA108619	Spear	Private	Domestic	Domestic		17/01/2005	6.00	6.00	Good	3.00	0.500		81m	South West
GW105726	10BL162324, 10WA108599	Spear	Private	Domestic	Domestic		09/01/2004	4.88	4.88		2.13	1.000		86m	South West
GW105992	10BL162720, 10WA108649	Spear	Private	Domestic	Domestic		23/03/2004	4.88	4.88		1.83	1.000		98m	South West
GW106383	10BL163623, 10WA108763	Spear	P.W.D.	Domestic	Domestic		24/09/2004	4.00	4.00		2.00	0.500		109m	North
GW106844	10BL162535, 10WA108628	Spear	Private	Domestic	Domestic		07/11/2003	5.49	5.49	Good	2.13	1.000		127m	South West
GW110407	10BL603039, 10WA109280	Spear	Private	Domestic	Domestic		01/01/1994	6.30						137m	North
GW110419	10BL602970, 10WA109278	Spear	Private	Domestic	Domestic		31/03/2009	6.00	6.00	177	3.50	0.500		142m	South

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW107386	10BL165597, 10WA109000	Spear		Domestic	Domestic		17/01/2003	5.49			2.13	1.000		143m	South West
GW108974	10BL602132, 10WA109228	Spear	Private	Domestic	Domestic		27/06/2008	6.00		330	23.00	0.900		145m	South West
GW023143	10BL017043, 10WA108126	Spear	Private	Domestic	General Use		01/10/1965	4.50	4.60	Good				145m	South West
GW108959	10BL601029, 10WA109142	Spear	Private	Domestic	Domestic		26/06/2008	6.00		230	2.30	0.900		149m	South West
GW107024	10BL164913, 10WA108938	Spear	Private	Domestic	Domestic		08/05/2005	5.80	5.80	Good	2.13	1.000		157m	South West
GW107014	10BL164905, 10WA108937	Spear	Private	Domestic	Domestic		04/05/2005	6.10	6.10		2.44	1.000		160m	South West
GW112524	10WA118620	Spear	Private	Domestic	Domestic		15/05/2013	4.30	4.30	185	1.75	1.000		163m	North
GW105823	10BL162956, 10WA108673	Spear	Private	Domestic	Domestic		15/03/2004	4.00	4.00	Good	2.00	0.500		189m	North
GW108019	10BL163205, 10WA108703	Spear	Private	Domestic	Domestic		04/06/2004	6.00	6.00		3.00	0.500		192m	South
GW107057	10BL164806, 10WA108927	Spear	Private	Domestic	Domestic		09/05/2005	4.00	4.00	Good	2.00	0.500		205m	South West
GW115794					Domestic		30/09/2016	6.00			3.00			208m	South West
GW107748	10BL165827, 10WA109024	Spear	Private	Domestic	Domestic		05/01/2006	5.00	5.00	Good	3.00	0.500		208m	South West
GW110848	10BL600683, 10WA109107	Spear	Private	Domestic	Domestic		01/01/2006	8.00			15.00	2.500		238m	South West
GW106472	10BL164088, 10WA108825	Spear	Private	Domestic	Domestic		24/09/2004	4.00	4.00		2.00	0.500		255m	South West
GW106874	10BL164532, 10WA108893	Spear	Private	Domestic	Domestic		18/12/2004	5.18	5.19	Good	2.13	0.300		284m	South
GW106121	10BL164801, 10BL165247, 10WA109451	Bore		Recreation (groundwater), Test Bore	Recreation (groundwater)		22/02/2005	4.00	4.00	220	2.00	0.500		287m	South West
GW106119	10BL164803, 10BL165245, 10WA109449	Bore		Recreation (groundwater), Test Bore	Recreation (groundwater)		22/02/2005	4.00	4.00	140	2.00	1.500		305m	South
GW106530	10BL163482, 10WA108745	Spear	Private	Domestic	Domestic		01/09/2004	4.80	4.80			1.000		308m	South West
GW106298	10BL163801, 10WA108790	Spear	Private	Domestic	Domestic		20/08/2004	5.80	5.80	Good	3.05	1.000		320m	South West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW108269	10BL600376, 10WA109069	Spear	Private	Domestic	Domestic		17/10/2006	6.00	6.00		2.50	1.000		329m	South West
GW111578	10WA117105	Bore	Private	Domestic	Domestic		01/10/2011	5.50	5.50	234	2.40	1.000		330m	South West
GW108127	10BL600434, 10WA109078	Spear	Private	Domestic	Domestic		08/08/2006	4.00	4.00		2.00	0.500		340m	South
GW109948	10BL602324, 10WA109248	Spear	Private	Domestic	Domestic		08/12/2008	6.00	6.00	Good	3.00	0.500		345m	South West
GW105406	10BL162120, 10WA108571	Bore		Domestic	Domestic		13/10/2003	5.19	5.19		1.83			347m	South
GW109650	10BL602497, 10WA109257	Spear	Private	Domestic	Domestic		21/10/2008	5.50	5.50	230	2.50	1.000		347m	South West
GW110834	10BL163341, 10WA108718	Bore	Private	Domestic	Domestic		01/01/2005	8.00			4.00	0.500		348m	South West
GW105810	10BL161274, 10WA108523	Spear	Private	Domestic	Domestic		18/12/2003	4.00	4.00	Good	2.00	0.500		358m	South
GW106055	10BL162546, 10WA108630	Spear	Private	Domestic	Domestic		28/02/2004	4.50	4.50	Good	2.00	0.500		358m	South
GW109157	10BL162385, 10WA108605	Spear	Private	Domestic	Domestic		05/08/2008	8.00						364m	South West
GW106952	10BL164755, 10WA108922	Spear	Private	Domestic	Domestic		23/04/2005	4.70	4.70			1.000		375m	South
GW105677	10BL162640, 10WA108642	Spear	Private	Domestic	Domestic		04/02/2004	4.00	4.00		2.00	0.500		377m	South
GW106385	10BL163597, 10WA108759	Spear	Private	Domestic	Domestic		21/09/2004	4.00	4.00		2.00	0.500		379m	South
GW106674	10BL162210, 10WA108582	Spear	Private	Domestic	Domestic		27/11/2004	5.70	5.70			1.000		382m	South
GW108567	10BL601117, 10WA109151	Spear	Private	Domestic	Domestic		02/02/2007	6.00	6.00	Good	1.80	1.000		427m	South
GW105987	10BL162686, 10WA108647	Spear	Private	Domestic	Domestic		23/03/2007	4.00	4.00	Good	2.00	0.500		445m	South
GW105986	10BL162685, 10WA108646	Spear	Private	Domestic	Domestic		23/03/2004	4.00	4.00	Good	2.00	0.500		450m	South
GW105824	10BL162957, 10WA108674	Spear	Private	Domestic	Domestic		15/03/2004	6.00	6.00	Good	2.00	0.500		452m	South
GW107355	10BL162900, 10WA107515	Spear	Private	Domestic	Domestic		21/07/2004	5.70	5.70			1.000		470m	East

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW107175	10BL163014, 10WA108680	Spear	Private	Domestic	Domestic		08/05/2004	4.70	4.70			1.000		483m	South
GW105794	10BL162629, 10WA108639	Bore		Domestic			22/04/2005							497m	South
GW110788	10BL164732, 10WA108919	Spear	Private	Domestic	Domestic		02/02/2006	4.20	4.20			1.000		499m	South
GW110789	10BL164732, 10WA108919	Spear	Private	Domestic	Domestic		02/02/2006	3.60	3.60			1.000		521m	South
GW106097	10BL162311, 10WA108596	Spear	Private	Domestic	Domestic		15/03/2004	4.00	4.00	Good	2.00	0.500		548m	South
GW108858	10BL163177, 10WA108701	Spear	Private	Domestic	Domestic		01/01/2005	6.00						669m	East
GW047185	10BL108816, 10CA107715	Well	Private	Irrigation, Recreation (groundwater)	Recreation (groundwater)			6.00	6.00	501-1000 ppm				1166m	North East
GW012711	10BL005536, 10WA108066	Bore	Private	Domestic	General Use			11.20		Fresh				1878m	West

Hydrogeology & Groundwater

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Driller's Logs

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

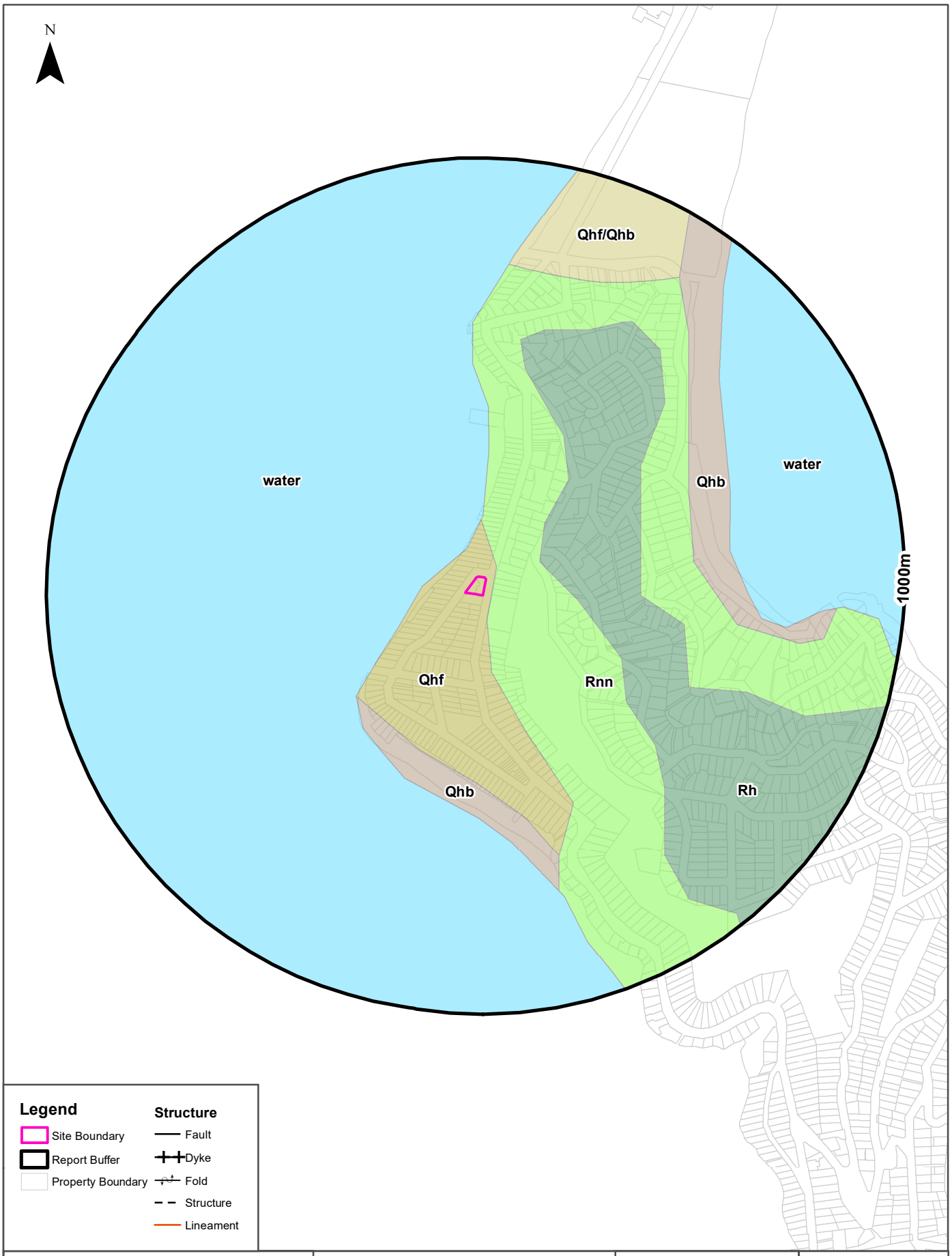
Groundwater No	Drillers Log	Distance	Direction
GW108817	0.00m-0.30m topsoil 0.30m-4.20m sand, yellow 4.20m-6.00m sand, yellow and crushed shells	24m	West
GW107894	0.00m-0.30m topsoil 0.30m-3.20m sand, yellow 3.20m-6.00m sand, grey	31m	West
GW108656	0.00m-0.30m topsoil 0.30m-4.50m sand, yellow 4.50m-6.00m sand, grey	37m	South West
GW106559	0.00m-0.30m topsoil 0.30m-3.50m sand, yellow 3.20m-5.00m sand, brown	49m	West
GW105595	0.00m-0.30m topsoil 0.30m-5.00m sand, yellow	57m	North
GW105596	0.00m-0.20m topsoil 0.20m-6.00m sand, yellow	73m	South West
GW106709	0.00m-0.30m topsoil 0.30m-3.20m sand, yellow 3.20m-6.00m sand, grey and shells	81m	South West
GW105726	0.00m-4.88m sand, unconsolidated	86m	South West
GW105992	0.00m-4.88m sand, unconsolidated	98m	South West
GW106383	0.00m-0.30m topsoil 0.30m-2.50m sand, yellow 2.50m-4.00m sand, yellow with shells	109m	North
GW106844	0.00m-5.49m sand, unconsolidated	127m	South West
GW110419	0.00m-2.00m RUBBLE 2.00m-3.50m SAND GREY 3.50m-5.00m SAND GOLDEN 5.00m-6.00m SAND GREY	142m	South
GW023143	0.00m-4.57m Loam Sandy Water Supply	145m	South West
GW107024	0.00m-5.79m Sand, unconsolidated	157m	South West
GW107014	0.00m-6.10m sand, unconsolidated	160m	South West
GW112524	0.00m-0.30m TOPSOIL 0.30m-1.75m SAND YELLOW 1.75m-3.00m SAND / SHELLS 3.00m-3.20m VEGETATION / SHELLS 3.20m-4.30m SAND / SHELLS	163m	North
GW105823	0.00m-0.30m topsoil 0.30m-2.80m sand, yellow 2.80m-4.00m sand, yellow with small shells	189m	North
GW108019	0.00m-2.50m fill, brown soil and rocks 2.50m-4.50m sand, silty brown 4.50m-6.00m sand, yellow	192m	South

Groundwater No	Drillers Log	Distance	Direction
GW107057	0.00m-0.30m topsoil 0.30m-2.50m sand, yellow 2.50m-4.00m sand, yellow and shells	205m	South West
GW107748	0.00m-0.30m topsoil 0.30m-3.50m sand, yellow 3.50m-5.00m sand, yellow and crushed shells	208m	South West
GW106472	0.00m-0.30m topsoil 0.30m-2.30m sand, yellow 2.30m-4.00m sand, and shells yellow	255m	South West
GW106874	0.00m-5.18m Sand, unconsolidated	284m	South
GW106121	0.00m-0.30m TOPSOIL 0.30m-3.20m YELLOW SAND 3.20m-4.00m YELLOW SAND AND SHELLS	287m	South West
GW106119	0.00m-0.30m TOPSOIL 0.30m-3.30m YELLOW SAND 3.30m-4.00m GREY SAND AND SHELLS	305m	South
GW106530	0.00m-0.15m topsoil, sandy loam 0.15m-4.80m sand	308m	South West
GW106298	0.00m-5.79m sand	320m	South West
GW108269	0.00m-0.20m topsoil 0.20m-6.00m sand, yellow	329m	South West
GW111578	0.00m-0.20m TOPSOIL 0.20m-1.00m TOPSOIL,PEBBLES AND ROCKS 1.00m-1.50m SAND WHITE AND GREY 1.50m-2.00m SAND YELLOW 2.00m-2.40m GOLDEN SAND	330m	South West
GW108127	0.00m-0.30m topsoil 0.30m-2.10m sand, yellow 2.10m-4.00m sand, yellow and small shells	340m	South
GW109948	0.00m-0.30m TOPSOIL 0.30m-4.30m SAND YELLOW 4.30m-6.00m COURSE BROWN SAND	345m	South West
GW105406	0.00m-5.18m UNCONSOLIDATES ALL SANDS	347m	South
GW109650	0.00m-0.50m TOPSOIL 0.50m-1.00m GREY SAND 1.00m-2.50m YELLOW SAND 2.50m-4.00m GREY SAND 4.00m-5.50m YELLOW SAND	347m	South West
GW105810	0.00m-0.30m topsoil 0.30m-2.00m sand, yellow 1.70m-4.00m sand, yellow with small crushed shells	358m	South
GW106055	0.00m-0.30m topsoil 0.30m-2.20m sand, yellow 2.20m-4.50m sand, yellow with shells	358m	South
GW106952	0.00m-0.30m Loam, sandy 0.30m-4.70m Sand	375m	South
GW105677	0.00m-0.30m sand, fill soil 0.30m-2.50m sand, yellow 2.50m-4.00m sand, yellow with samll shells	377m	South
GW106385	0.00m-0.30m topsoil 0.30m-2.50m sand, yellow 2.50m-4.00m sand, yellow with small shells	379m	South
GW106674	0.00m-0.30m topsoil, sandy loam 0.30m-5.70m sand	382m	South
GW108567	0.00m-2.00m Topsoil 2.00m-6.00m Sand, yellow, & Shells	427m	South

Groundwater No	Drillers Log	Distance	Direction
GW105987	0.00m-0.30m topsoil 0.30m-3.60m sand, yellow 3.60m-4.00m sand, yellow with small crushed shells	445m	South
GW105986	0.00m-0.30m topsoil 0.30m-3.50m sand, yellow 3.50m-4.00m sand, yellow with crushed shells	450m	South
GW105824	0.00m-0.30m topsoil 0.30m-2.50m sand,yellow 2.50m-3.50m sand, yellow with crushed shells 3.50m-6.00m sand, grey with some small shells	452m	South
GW107355	0.00m-0.15m topsoil, sandy loam 0.15m-5.70m sand	470m	East
GW107175	0.00m-4.70m sand	483m	South
GW110788	0.00m-4.20m SAND	499m	South
GW110789	0.00m-3.60m SAND	521m	South
GW106097	0.00m-0.30m topsoil 0.30m-3.00m sand, yellow 3.00m-4.00m sand, yellow with crushed small shells	548m	South
GW047185	0.00m-1.00m Soil 1.00m-6.00m Sand Water Supply	1166m	North East

Geology 1:100,000

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Geology

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Qhf	Medium to fine "marine" sand				Quaternary		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
Qhb	Coarse quartz sand, verying amounts of shell fragment				Quaternary		Sydney	1:100,000
Qhf	Medium to fine "marine" sand				Quaternary		Sydney	1:100,000
Qhf/Qhb							Sydney	1:100,000
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000
Rnn	Interbedded laminate, shale and quartz, to lithic quartz sandstone: Minor red claystone north of Hawkesbury River. Clay pellet sandstone (Garie Fm) south of Hawkesbury River	Newport Formation and Garie Formation	Narrabeen Group		Triassic		Sydney	1:100,000
water							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
No features				1:100,000

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

Naturally Occurring Asbestos Potential

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

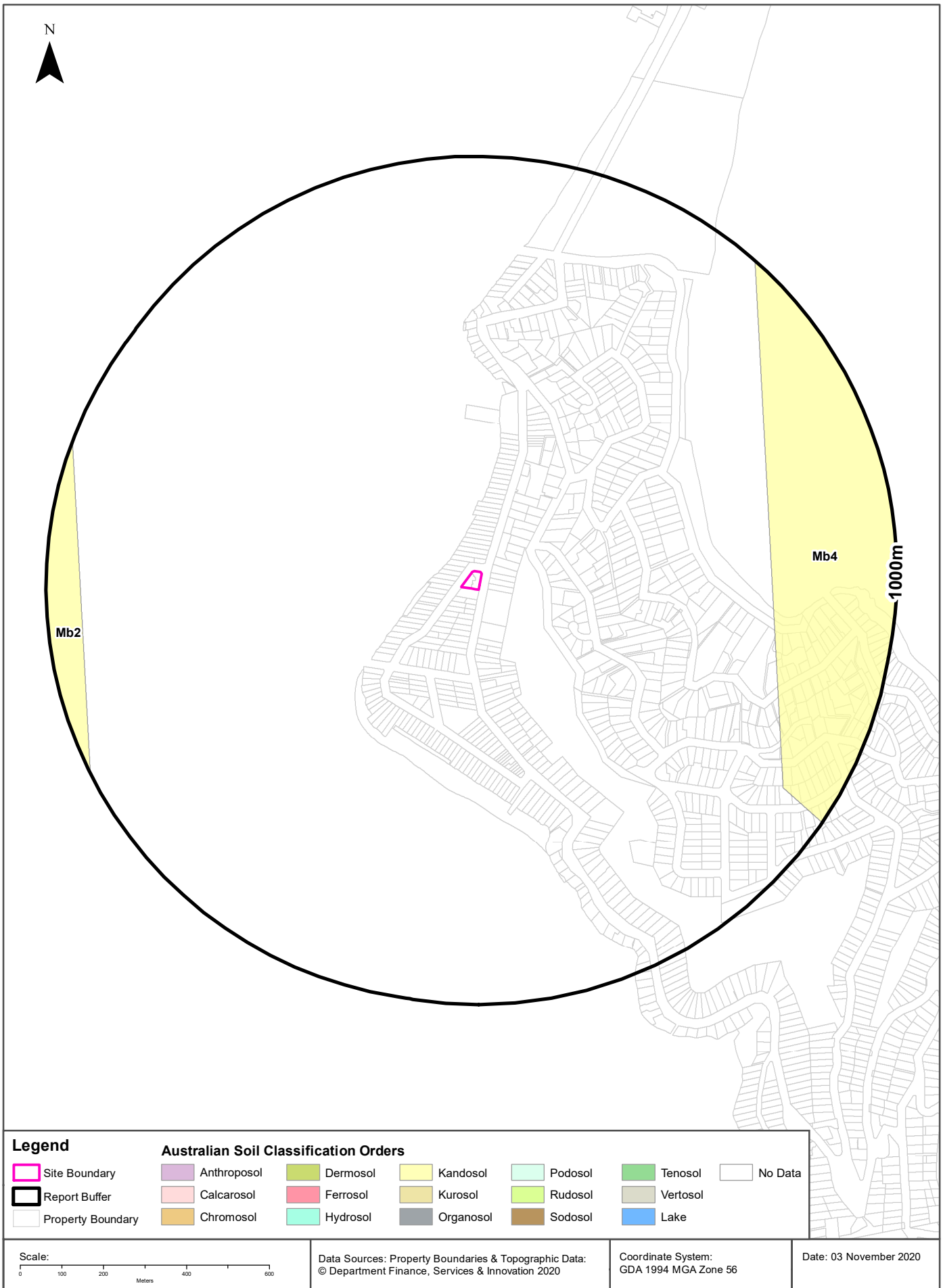
Naturally Occurring Asbestos Potential

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												

Atlas of Australian Soils

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Soils

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

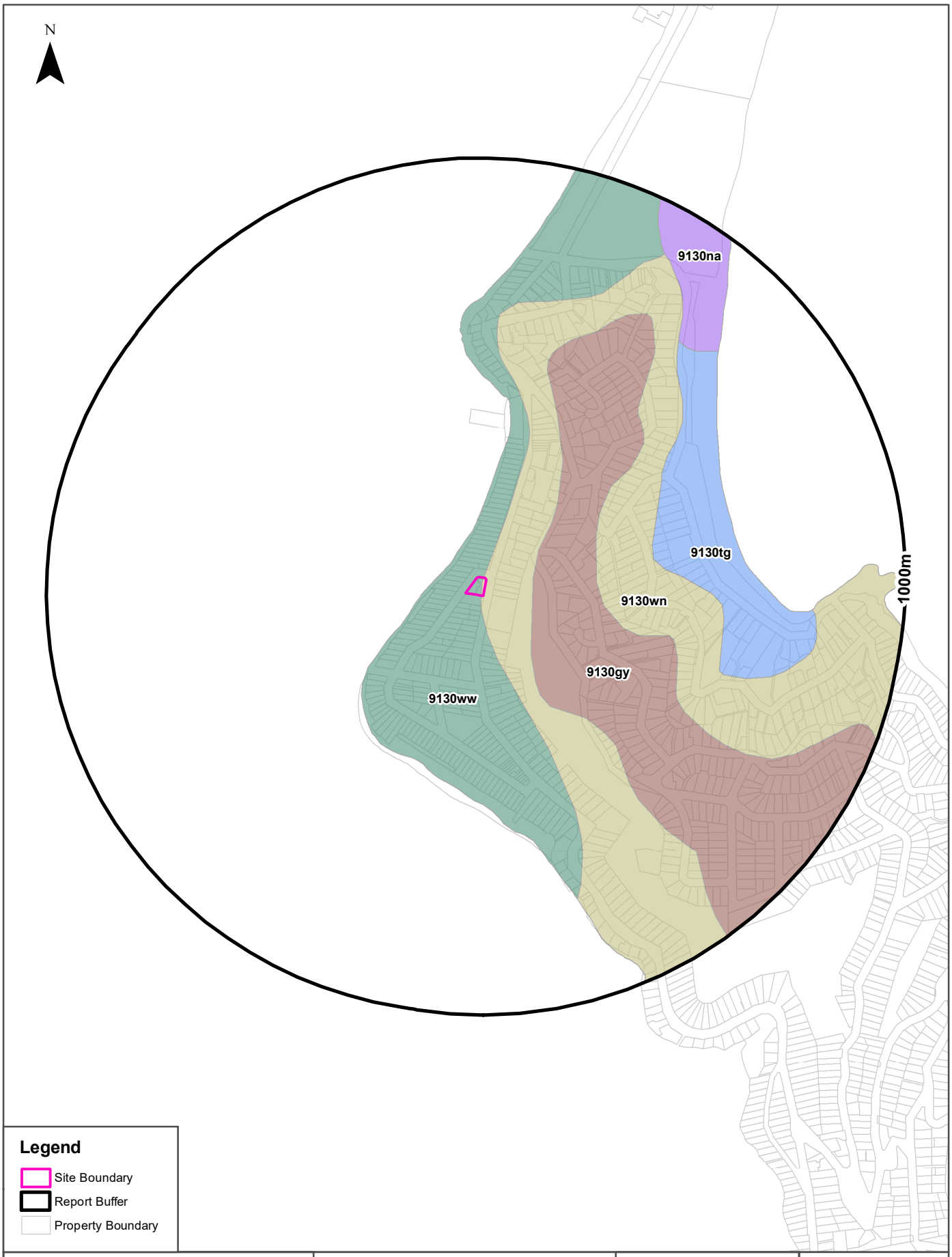
Atlas of Australian Soils

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

Map Unit Code	Soil Order	Map Unit Description	Distance
Mb4	Kandosol	Coastal complex: chief soils are acid yellow leached earths (Gn2.74) and (Gn2.34), hard acidic yellow mottled soils (Dy3.41), and hard acidic red soils (Dr2.21). This unit includes headlands and rugged coastal areas of unit Mb2; ridges and slopes of unit Tb35; low-lying coastal areas of unit Cb27; and some swampy areas.	695m
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.	917m

Soil Landscapes of Central and Eastern NSW

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Soils

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Soil Landscapes of Central and Eastern NSW

What are the on-site Soil Landscapes?

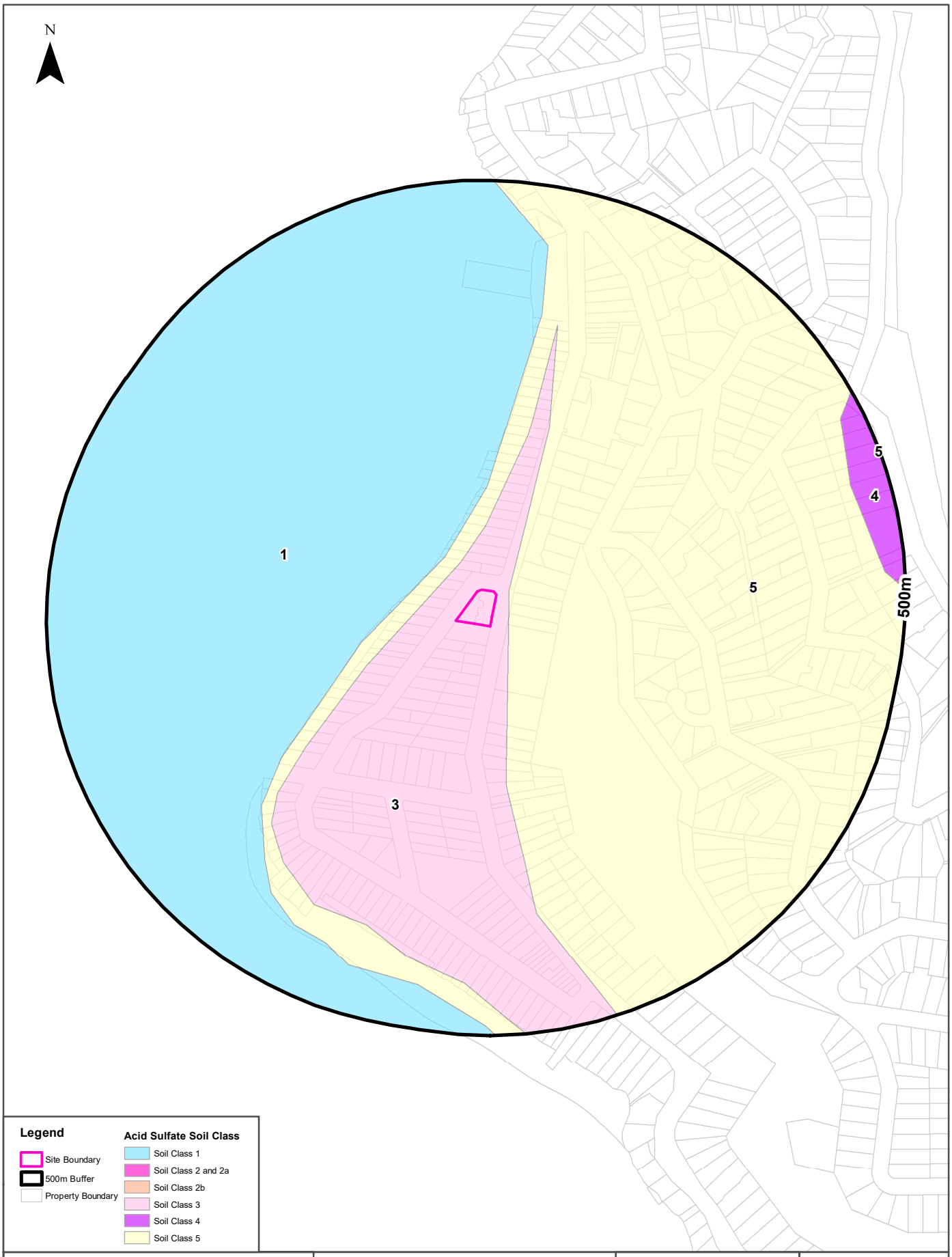
Soil Code	Name
9130wn	Watagan
9130ww	Woy Woy

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name
9130gy	Gymea
9130na	Narrabeen
9130tg	Tuggerah
9130wn	Watagan
9130ww	Woy Woy

Acid Sulfate Soils

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Scale:	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2020	Coordinate System: GDA 1994 MGA Zone 56	Date: 03 November 2020

Acid Sulfate Soils

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Environmental Planning Instrument - Acid Sulfate Soils

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

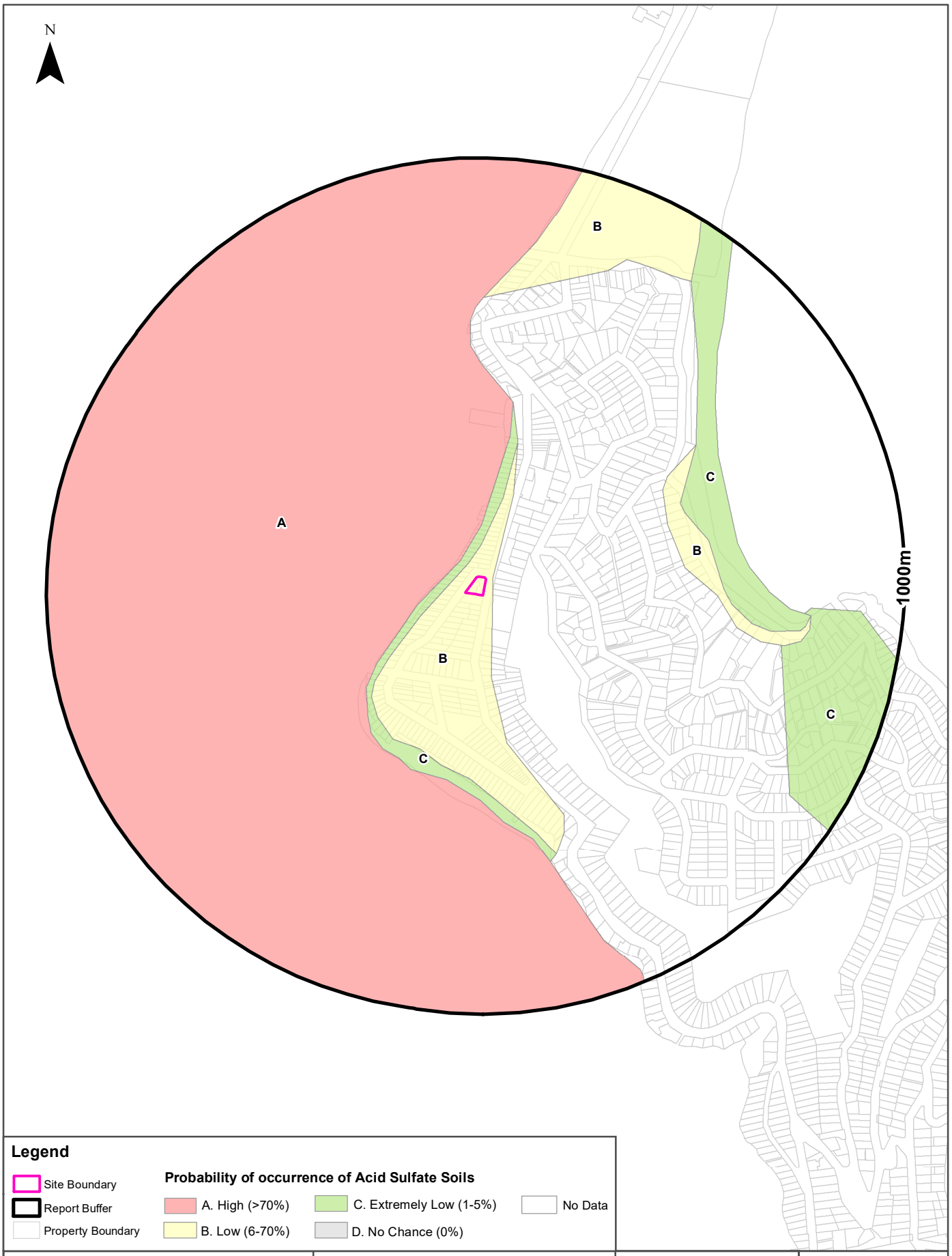
Soil Class	Description	EPI Name
3	Works more than 1 metre below natural ground surface present an environmental risk; Works by which the watertable is likely to be lowered more than 1 metre below natural ground surface, present an environmental risk	Pittwater Local Environmental Plan 2014

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

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Legend

- Site Boundary
- Report Buffer
- Property Boundary

Probability of occurrence of Acid Sulfate Soils

- A. High (>70%)
- B. Low (6-70%)
- C. Extremely Low (1-5%)
- D. No Chance (0%)
- No Data

Scale: 0 100 200 400 600 Meters

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

Coordinate System: GDA 1994 MGA Zone 56

Date: 03November 2020

Acid Sulfate Soils

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Atlas of Australian Acid Sulfate Soils

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

Class	Description	Distance
B	Low Probability of occurrence. 6-70% chance of occurrence.	0m
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	38m
A	High Probability of occurrence. >70% chance of occurrence.	56m

Dryland Salinity

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

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

Mining & Exploration Titles

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Mining

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Current Mining & Exploration Titles

Current Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Grant Date	Expiry Date	Last Renewed	Operation	Resource	Minerals	Dist (m)	Dir'
N/A	No Records in Buffer								

Current Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

Current Mining & Exploration Title Applications

Current Mining & Exploration Title Applications within the dataset buffer:

Application Ref	Applicant	Application Date	Operation	Resource	Minerals	Dist (m)	Dir'
N/A	No Records in Buffer						

Current Mining & Exploration Title Applications Data Source: © State of New South Wales through NSW Department of Industry

Mining

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist (m)	Dir'
EL0454	UNITED URANIUM	01 May 1971	01 May 1972	MINERALS	Heavy mineral sands	0m	Onsite
PEL0005	AGL UPSTREAM INVESTMENTS PTY LIMITED	11/11/1993	4/03/2015	PETROLEUM	Petroleum	0m	Onsite
PEL0102	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	Onsite
PEL0191	NORTHWEST OIL AND MINERALS CO NL			PETROLEUM	Petroleum	0m	Onsite
PEL0198	JOHN STREVENS (TERRIGAL) NL			PETROLEUM	Petroleum	0m	Onsite
PEL0210	THE AUSTRALIAN GAS LIGHT COMPANY (AGL), NORTH BULLI COLLIERIES PTY LTD			PETROLEUM	Petroleum	0m	Onsite
PEL0260	NORTH BULLI COLLIERIES PTY LTD, AGL PETROLEUM OPERATIONS PTY LTD, THE AUSTRALIAN GAS LIGHT CO.	9/09/1981	8/03/1993	PETROLEUM	Petroleum	0m	Onsite
PEL0279	THE ELECTRICITY COMMISSION OF NSW (TRADING AS PACIFIC POWER)	17/04/1990	11/11/1993	PETROLEUM	Petroleum	0m	Onsite
PEL0463	DART ENERGY (APOLLO) PTY LTD	22/10/2008	6/03/2015	PETROLEUM	Petroleum	0m	Onsite
PEL463	DART ENERGY (APOLLO) PTY LTD			MINERALS		0m	Onsite
PEL5	AGL UPSTREAM INVESTMENTS PTY LIMITED			MINERALS		0m	Onsite
PPL0003	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	Onsite
PSPAUTH17	MACQUARIE ENERGY PTY LTD			MINERALS		0m	Onsite
PSPAUTH17	MACQUARIE ENERGY PTY LTD	8/03/2007	7/03/2008	PETROLEUM	Petroleum	0m	Onsite
PEP0002	LASKAN MINERALS LTD			PETROLEUM	Petroleum	444m	East
EL0078	CONTINENTAL OIL CO OF AUSTRALIA LIMITED	01 Feb 1967	01 Feb 1968	MINERALS		959m	West

State Environmental Planning Policy

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

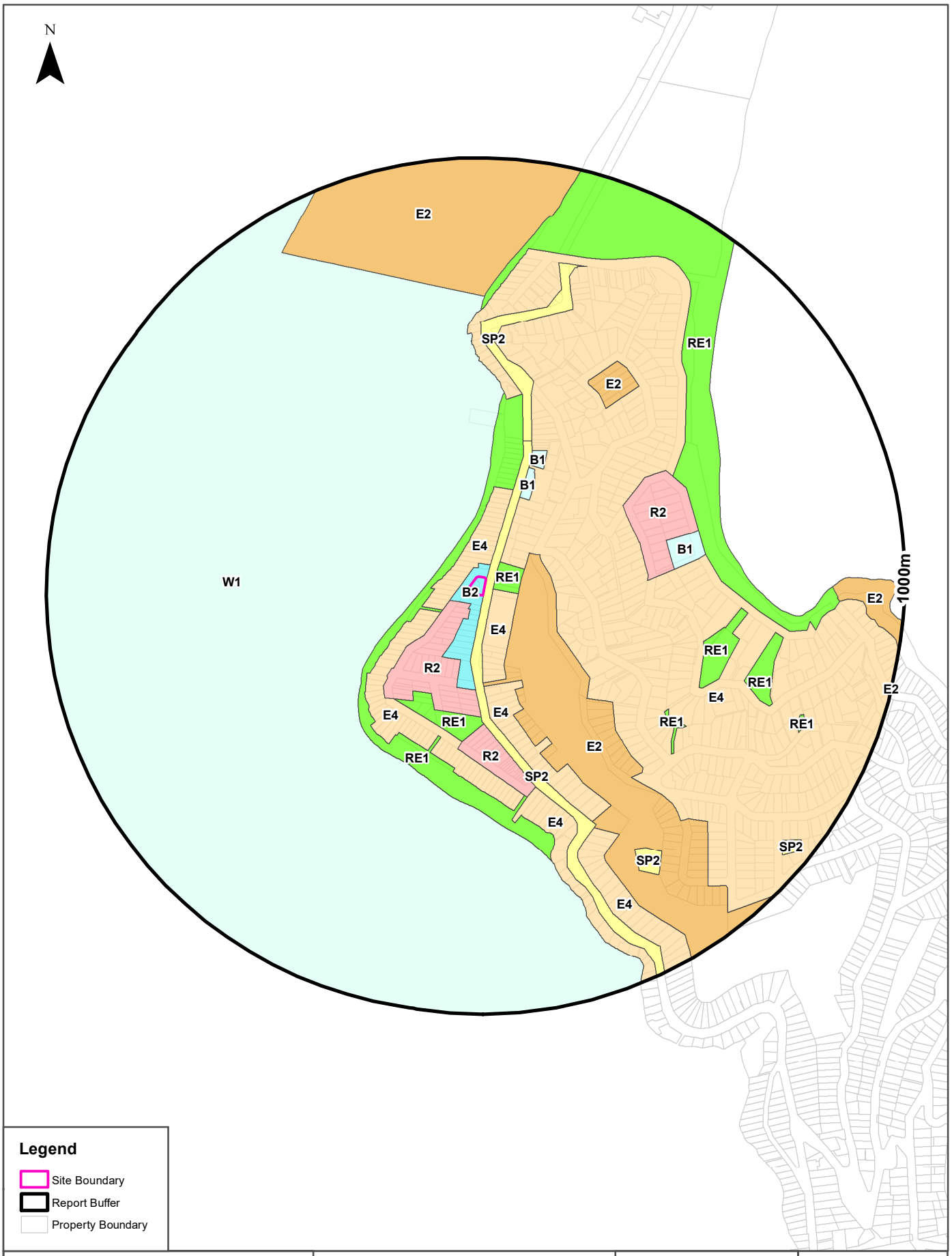
State Significant Precincts

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

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Environmental Planning Instrument

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Land Zoning

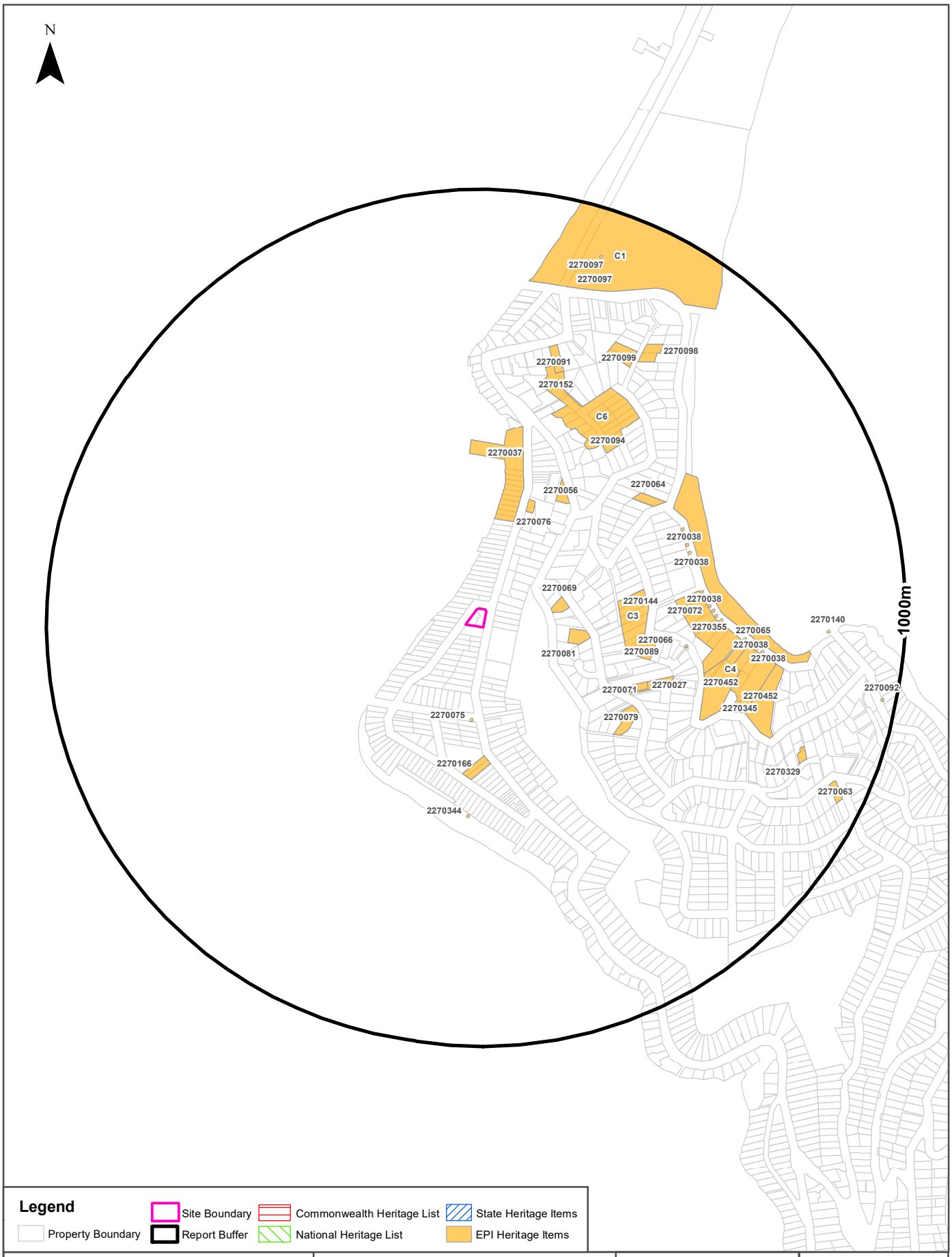
What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
B2	Local Centre		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		0m	Onsite
SP2	Infrastructure	Classified Road	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		0m	South East
E4	Environmental Living		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		19m	South
E4	Environmental Living		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		20m	North
RE1	Public Recreation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		20m	East
R2	Low Density Residential		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		24m	South West
E4	Environmental Living		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		52m	South East
RE1	Public Recreation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		61m	South
E4	Environmental Living		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		75m	South
E2	Environmental Conservation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		81m	South East
W1	Natural Waterways		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		85m	South West
B1	Neighbourhood Centre		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		209m	North East
E4	Environmental Living		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		214m	South
RE1	Public Recreation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		254m	South
B1	Neighbourhood Centre		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		289m	North East
R2	Low Density Residential		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		306m	South
SP2	Infrastructure	Classified Road	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		338m	North
R2	Low Density Residential		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		367m	East
B1	Neighbourhood Centre		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		438m	East
E4	Environmental Living		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		475m	South
E2	Environmental Conservation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		497m	North East
RE1	Public Recreation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		508m	North East
RE1	Public Recreation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		513m	South East
RE1	Public Recreation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		537m	East
E4	Environmental Living		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		613m	South East
RE1	Public Recreation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		654m	East
E2	Environmental Conservation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		670m	North
SP2	Infrastructure	Water Supply System	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		705m	South East

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		806m	South East
E2	Environmental Conservation		Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		826m	East
SP2	Infrastructure	Water Supply System	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	20/04/2018		921m	South East

Heritage Items

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Heritage

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Commonwealth Heritage List

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

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

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

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

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

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

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

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

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

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

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
2270069	House	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	153m	East
2270081	House - "Summerlands"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	203m	East
2270037	Norfolk Island Pines	Item - Archaeological	Local	Pittwater Local Environmental Plan 2014	22/01/2016	22/01/2016	22/01/2016	217m	North

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
2270496	Palm Beach Wharf	Item - Archaeological	Local	Pittwater Local Environmental Plan 2014	22/01/2016	22/01/2016	22/01/2016	217m	North
2270075	Post Box - Nabilla Road	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	219m	South
2270076	Restaurant/accommodation - "Barrenjoey House"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	254m	North East
2270166	Palm Beach Kindergarten	Item - General	Local	Pittwater Local Environmental Plan 2014	22/01/2016	22/01/2016	22/01/2016	306m	South
2270056	House - "Winten"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	309m	North East
2270119	House - "Back O'Moon"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	312m	East
C3	Florida Road Heritage Conservation Area	Conservation Area - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	312m	East
2270144	House - "The Moorings"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	315m	East
2270089	House - "Florida House"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	345m	East
2270071	House - "Craboon"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	351m	South East
2270079	House - "Burrawong"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	375m	South East
2270027	Cabbage Tree Palms (Livistona Australis) & Sydney Red Gums (Angophora Costata)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	376m	East
2270066	House - "Kookaburra"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	381m	East
2270064	House	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	439m	North East
2270344	Timber jetty (Sandy Beach Jetty)	Item - Archaeological	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	447m	South
C4	Ocean Road Heritage Conservation Area	Conservation Area - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	450m	East
2270072	Palm Beach Surf Club	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	450m	East
C6	Sunrise Hill Heritage Conservation Area	Conservation Area - General	Local	Pittwater Local Environmental Plan 2014	22/01/2016	22/01/2016	22/01/2016	454m	North East
2270094	House - "Craigie Lee"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	471m	North East
2270092	Old Street Lamps	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	479m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	499m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	500m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	502m	North East

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
2270065	Change Room and Toilets	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	508m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	511m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	517m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	527m	East
2270355	Memorial to Douglas Marks	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	529m	East
2270152	House - "Windyridge"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	532m	North
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	536m	East
2270452	Spotted Gums & Cabbage Tree Palms (Corymbia Maculata & Livistona Australis)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	537m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	543m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	556m	East
2270091	House - "Collins House"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	588m	North
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	615m	East
2270345	Spotted Gum (corymbia maculata) Community - known as the "Kelor Land"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	629m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	632m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	645m	East
2270099	House - "Villa d'Este"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	649m	North East
2270452	Spotted Gums & Cabbage Tree Palms (Corymbia Maculata & Livistona Australis)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	654m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	660m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	678m	East
2270038	Norfolk Island Pines (Araucaria Heterophylla)	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	694m	East
2270098	House - "Skye"	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	694m	North East
C1	Barrenjoey Heritage Conservation Area	Conservation Area - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	792m	North

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
2270329	Bible Garden	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	806m	South East
2270140	Ocean Rock Pool - Palm Beach	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	812m	East
2270097	Picnic Shelter Sheds	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	818m	North
2270097	Picnic Shelter Sheds	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	828m	North
2270097	Picnic Shelter Sheds	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	855m	North
2270097	Picnic Shelter Sheds	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	881m	North
2270063	House	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	905m	South East
2270092	Old Street Lamps	Item - General	Local	Pittwater Local Environmental Plan 2014	30/05/2014	27/06/2014	22/01/2016	962m	East

Natural Hazards - Bush Fire Prone Land

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Data Sources: Bush Fire Prone Land: © NSW Rural Fire Service 2020. Property Boundaries: © Department Finance, Services & Innovation 2020

Coordinate System: GDA 1994 MGA Zone 56

Date: 03 November 2020

Natural Hazards

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

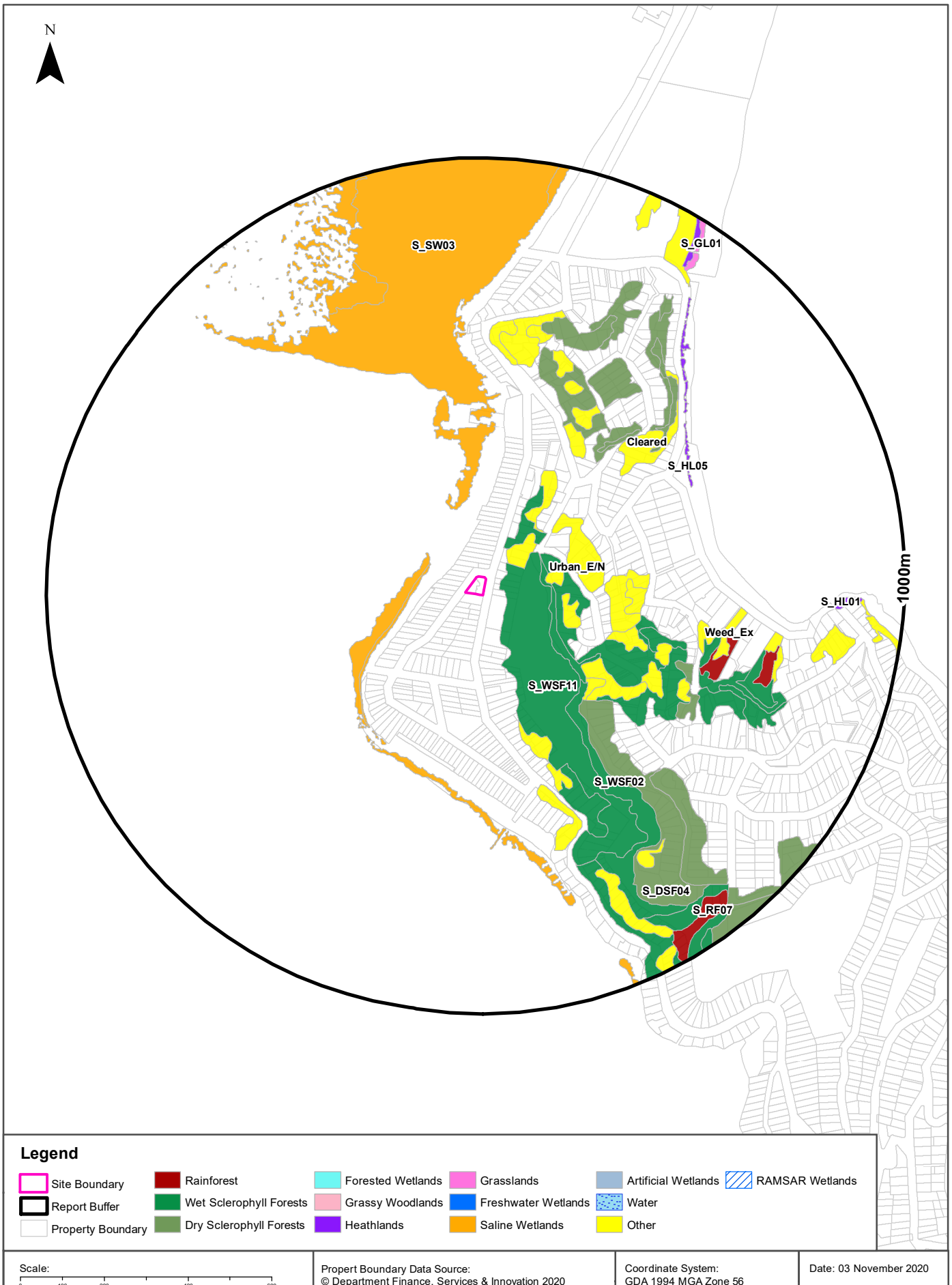
Bush Fire Prone Land

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

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	0m	Onsite
Vegetation Category 1	38m	South East

Ecological Constraints - Native Vegetation & RAMSAR Wetlands

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108



Ecological Constraints

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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
S_WSF11	S_WSF11: Pittwater Spotted Gum Forest	Pittwater Spotted Gum Forest		00: Not assessed	00: Not assessed	0: Not assessed	C.maculata/E.paniculata/S.glomulifera/E.umbra	33m	South East
Cleared	Cleared			00: Not assessed	00: Not assessed	0: Not assessed	Cleared	63m	North East
S_SW03	S_SW03: Seagrass Meadows			00: Not assessed	00: Not assessed	0: Not assessed	Seagrass (DPI)	102m	South West
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/Native	164m	North East
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			00: Not assessed	00: Not assessed	0: Not assessed	A.costata/E.botryoides/E.piperata	304m	South East
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			00: Not assessed	00: Not assessed	0: Not assessed	A.costata/E.botryoides/E.piperata	342m	South East
S_HL05	S_HL05: Coastal Foredune Wattle Scrub			00: Not assessed	00: Not assessed	0: Not assessed	B.integrifolia/L.laevigatum/M.elliptica	534m	North East
S_RF07	S_RF07: Coastal Escarpment Littoral Rainforest	Littoral Rainforest	Littoral Rainforest and Coastal Vine Thickets (possible)	00: Not assessed	00: Not assessed	0: Not assessed	A.smithii/G.ferdinandii/P.undulatum	541m	East
Weed_Ex	Weed_Ex: Weeds and Exotics			00: Not assessed	00: Not assessed	0: Not assessed	Exotic Species >90%cover	567m	East
S_HL01	S_HL01: Coastal Headland Clay Heath			00: Not assessed	00: Not assessed	0: Not assessed	A.distyla/B.integrifolia/L.laevigatum W.fruitocosa	830m	East
S_GL01	S_GL01: Beach Spinfex Grassland			00: Not assessed	00: Not assessed	0: Not assessed	S.sericea/C.glaucescens	874m	North East

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

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Groundwater Dependent Ecosystems Atlas

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

Ecological Constraints

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

Inflow Dependent Ecosystems Likelihood

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

Ecological Constraints

1105 Barrenjoey Road and 43 Iluka Road, Palm Beach, NSW 2108

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	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	Ardenna carneipes	Flesh-footed Shearwater	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Ardenna grisea	Sooty Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna pacifica	Wedge-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	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	
Animalia	Aves	Certhionyx variegatus	Pied Honeyeater	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Charadrius veredus	Oriental Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Cuculus optatus	Oriental Cuckoo	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Dasyornis brachypterus	Eastern Bristlebird	Endangered	Category 2	Endangered	
Animalia	Aves	Diomedea exulans	Wandering Albatross	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Diomedea gibsoni	Gibson's Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Esacus magnirostris	Beach Stone-curlew	Critically Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Fregetta grallaria	White-bellied Storm-Petrel	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus fuliginosus	Sooty Oystercatcher	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus longirostris	Pied Oystercatcher	Endangered	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Halobaena caerulea	Blue Petrel	Not Listed	Not Sensitive	Vulnerable	
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hydroprogne caspia	Caspian Tern	Not Listed	Not Sensitive	Not Listed	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	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	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius madagascariensis	Eastern Curlew	Not Listed	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Numenius phaeopus	Whimbrel	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Onychoprion fuscata	Sooty Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pterodroma leucoptera leucoptera	Gould's Petrel	Vulnerable	Not Sensitive	Endangered	
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	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	Thalassarche cauta	Shy Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalassarche chrysostoma	Grey-headed Albatross	Not Listed	Not Sensitive	Endangered	
Animalia	Aves	Thalassarche melanophris	Black-browed Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalasseus bergii	Crested Tern	Not Listed	Not Sensitive	Not Listed	JAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Insecta	Petalura gigantea	Giant Dragonfly	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus forsteri	New Zealand Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus pusillus doriferus	Australian Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Dugong dugon	Dugong	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Eubalaena australis	Southern Right Whale	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Megaptera novaeangliae	Humpback Whale	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus australis	Little Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Nyctophilus bifax	Eastern Long-eared Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Endangered Population, Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petrogale penicillata	Brush-tailed Rock-wallaby	Endangered	Not Sensitive	Vulnerable	
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 gracilicaudatus	Eastern Chestnut Mouse	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	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Reptilia	Aspidites ramsayi	Woma	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Cacophis harriettae	White-crowned Snake	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Caretta caretta	Loggerhead Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Dermochelys coriacea	Leatherback Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Eretmochelys imbricata	Hawksbill Turtle	Not Listed	Not Sensitive	Vulnerable	
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	
Plantae	Flora	Ancistrachne maidenii		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Asterolasia elegans		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Astrotricha crassifolia	Thick-leaf Star-hair	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Boronia umbellata	Orara Boronia	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Brachyscome muelleroides	Claypan Daisy	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Chamaesyce psammogeton	Sand Spurge	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Cryptostylis hunteriana	Leafless Tongue Orchid	Vulnerable	Category 2	Vulnerable	
Plantae	Flora	Darwinia glaucophylla		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Darwinia peduncularis		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	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 shiressii		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Kunzea rupestris		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Lasiopetalum joyceae		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	Maundia triglochinoides		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Melaleuca biconvexa	Biconvex Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Micromyrtus blakelyi		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Microtis angusii	Angus's Onion Orchid	Endangered	Category 2	Endangered	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Persoonia laxa		Presumed Extinct	Not Sensitive	Extinct	
Plantae	Flora	Pimelea curviflora var. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Prostanthera askania	Tranquility Mintbush	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Rhodamnia rubescens	Scrub Turpentine	Critically 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.

Location Confidences

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

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

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

Land Title Records

ABN: 36 092 724 251
Ph: 02 9099 7400
(Ph: 0412 199 304)

Level 14, 135 King Street, Sydney
Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

Summary of Owners Report

Address: - 1105 Barrenjoey Road & 43 Iluka Road, Palm Beach

Description: - Strata Plans 87022 & 87024.

As regards the part numbered (1) on the attached Cadastral Records Enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
28.10.1926 (1926 to 1928)	William Simpson (Plumber) Ethel May Simpson (Married Woman)	Vol 3929 Fol 83
15.08.1928 (1928 to 1953)	John McCabe (Gentleman)	Vol 3929 Fol 83
17.05.1953 (1953 to 1956)	John McLaughlan Ellis (Storekeeper)	Vol 3929 Fol 83
28.02.1956 (1956 to 1959)	Victor James Turner (Investor)	Vol 3929 Fol 83
23.02.1959 (1959 to 1959)	John Magney (Solicitor)	Vol 3929 Fol 83
27.08.1959 (1959 to 1967)	Tara Investments Pty Limited	Vol 3929 Fol 83
11.01.1967 (1967 to 1992)	Ampol Provident Fund Management Pty Limited	Vol 3929 Fol 83 Now 21/B/12979
21.10.1992 (1992 to 2017)	J & J Partitions Pty Limited	21/B/12979 Now 101/1173714 & 102/1173714
15.08.2017	Registration of Strata Plans 87022 & 87024	

Leases, excluding premises: -

- Various leases were found from 24.01.1927 to 01.06.1955 that have since expired or have been surrendered – not investigated

As regards the part numbered (2) on the attached Cadastral Records Enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
18.11.1929 (1929 to 1935)	Sylvania Boardman (Widow)	Vol 4349 Fol 192
28.02.1935 (1935 to 1946)	Ernest Reginald Nicholas (Baker)	Vol 4349 Fol 192 Now Vol 4680 Fol 19
12.04.1946 (1946 to 1947)	Annie Elizabeth Nicholas (Widow) (Transmission Application not investigated)	Vol 4680 Fol 19
05.02.1947 (1947 to 1952)	The Port Jackson and Manly Steamship Company Limited	Vol 4680 Fol 19
19.03.1952 (1952 to 1959)	Adelaide Development Co. Limited	Vol 4680 Fol 19

ABN: 36 092 724 251
Ph: 02 9099 7400
(Ph: 0412 199 304)

Level 14, 135 King Street, Sydney
Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

Continued as regards the part numbered (2) on the attached Cadastral Records Enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
16.10.1959 (1959 to 1967)	Tara Investments Pty Limited	Vol 4680 Fol 19
11.01.1967 (1967 to 1992)	Ampol Provident Fund Management Pty Limited	Vol 4680 Fol 19 Now 22/B/12979
21.10.1992 (1992 to 2017)	J & J Partitions Pty Limited	22/B/12979 Now 101/1173714 & 102/1173714
15.08.2017	Registration of Strata Plans 87022 & 87024	

Leases, excluding premises: -

- 28.09.1939 to Keith Ian Miller (Baker & Pastry Cook) – expired 09.04.1947

Continued as regards the Common Areas of Strata Plan No. 87022 – limited in Stratum

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
15.08.2017 (2017 to Date)	# The Owners – Strata Plan No. 87022	101/1173714 Now CP/SP 87022

 # Denotes current registered proprietor

Easements: -

- Easement for Subjacent and Lateral Support and Easement for Shelter implied by Section 106 Strata Schemes Development Act 2015
- 14.08.2017 (D.P. 1173714) Easement for Services, affecting the whole

Continued as regards the Common Areas of Strata Plan No. 87024

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
15.08.2017 (2017 to Date)	# The Owners – Strata Plan No. 87022	102/1173714 Now CP/SP 87024

 # Denotes current registered proprietor

Continued over

ABN: 36 092 724 251
Ph: 02 9099 7400
(Ph: 0412 199 304)

Level 14, 135 King Street, Sydney
Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

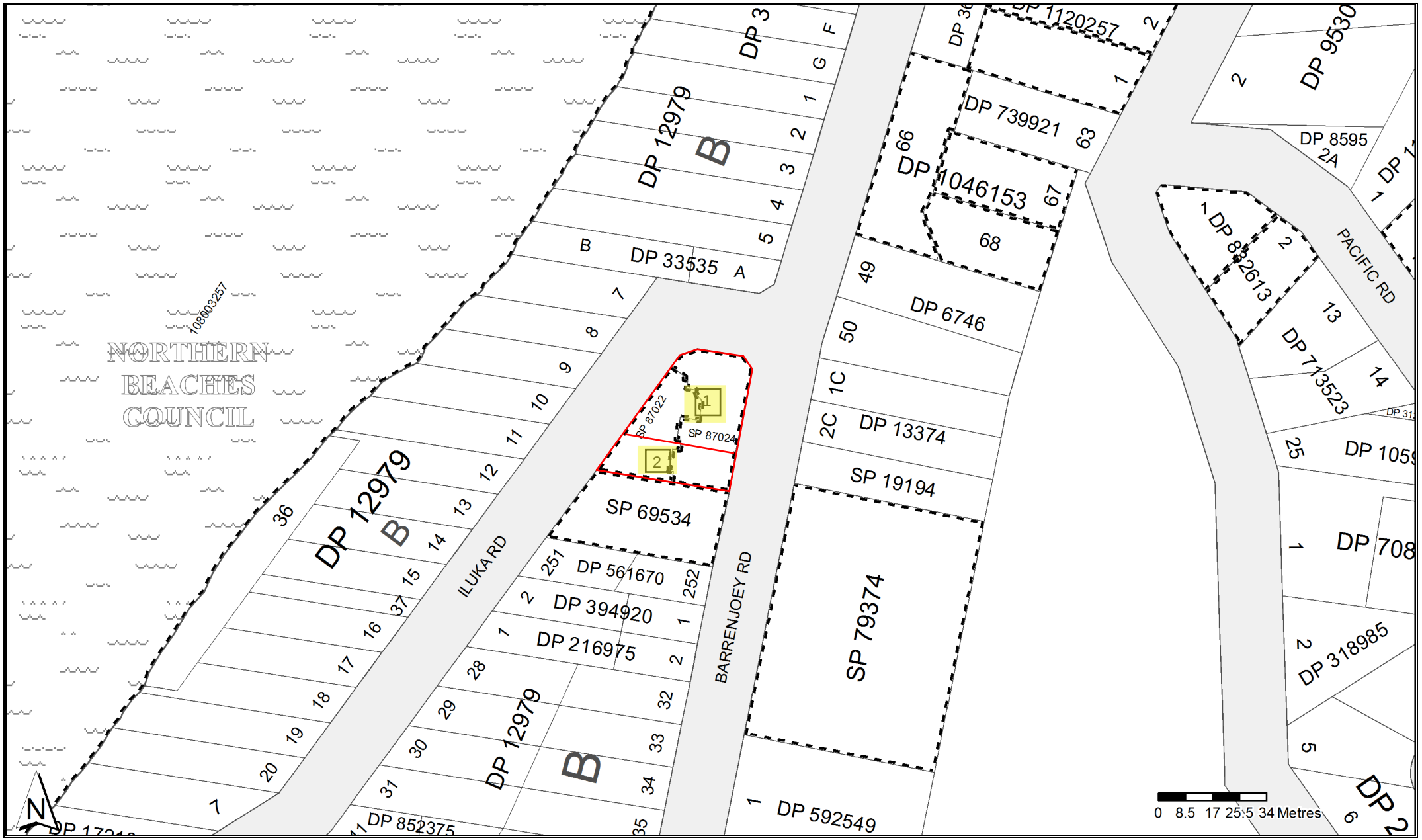
Easements: -

- 14.08.2017 (D.P. 1173714) Easement for Services, affecting the whole
- 14.08.2017 (D.P. 1173714) Easement to Drain Water variable width
- Easement for Subjacent and Lateral Support and Easement for Shelter implied by Section 106 Strata Schemes Development Act 2015

Yours Sincerely
Mark Groll
9 November 2020

Cadastral Records Enquiry Report : SP 87024

Locality : PALM BEACH
Parish : NARRABEEN
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

[redacted]RTIFICATE OF TITLE

NEW SOUTH WALES [redacted]ROPERTY ACT, 1900, as amended.

10487/141

Appln. No. 23996

Vol. 10487 Fol. 141

Prior Title Vol. 3929 Fol. 83

Edition issued 2-2-1967

RP K559365

(Page 1) Vol. 10487 Fol. 141

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

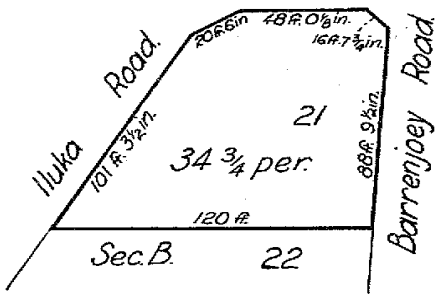
Witness S Vandine

Registrar General.

PLAN SHOWING LOCATION OF LAND

CANCELLED

SEE [illegible]



K 559365

S

Scale: 60 feet to one inch.

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 21 of Section B in Deposited Plan 12979 Shire of Warringah Parish of Narrabeen and County of Cumberland being part of Portion 18 granted to James Napper on 16-3-1816.

FIRST SCHEDULE (continued overleaf)

AMPOL PROVIDENT FUND MANAGEMENT PTY. LIMITED.

GRY

SECOND SCHEDULE (continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.

Registrar General

V.C.N. Blight, Government Printer

Vol. 10487 Fol 141

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar-General
	NATURE	NUMBER	DATE		
CANCE[illegible] SEE AUTO [illegible]					

SECOND SCHEDULE (continued)

INSTRUMENT			PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION
NATURE	NUMBER	DATE				

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
9/11/2020 1:41PM

FOLIO: 21/B/12979

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 10487 FOL 141

Recorded	Number	Type of Instrument	C.T. Issue
5/8/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
22/8/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
21/10/1992	E839054	TRANSFER	EDITION 1
2/11/1992	E864493	MORTGAGE	EDITION 2
8/12/1992	DP826942	DEPOSITED PLAN	FOLIO CANCELLED
28/8/1997		AMENDMENT: LOCAL GOVT AREA	

*** END OF SEARCH ***

Received: 09/11/2020 13:41:57

RP13

TRANSFER

Real Property Act, 1900

E 839054 U

Office of State Revenue use only

2

$2.00

(A) **LAND TRANSFERRED**

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

Folio Identifier 21/B/12979 &
22/B/12979

(B) **LODGED BY**

L.T.O. Box	Name, Address or DX and Telephone
245	COMMONWEALTH BANK OF AUSTRALIA BRANCH LENDING SUPPORT PHONE: 227-7618 / DX 1020 REFERENCE (max. 15 characters): Partitions s/c

(C) **TRANSFEROR** **AMPOL PROVIDENT FUND MANAGEMENT PTY LTD** (ACN 000 139 958)
of 580 GEORGE STREET, SYDNEY

(D) acknowledges receipt of the consideration of $525,000.00
and as regards the land specified above transfers to the transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. ..... 2. ..... 3. .....

(F) **TRANSFEREE**

T

(G) **J & J PARTITIONS PTY LIMITED** (ACN 001 335 324)
of 218 HUDSON PARADE, CLAREVILLE

as joint tenants/tenants in common

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. **DATE OF EXECUTION** 15.10.92

Signed in my presence by the transferor who is personally known to me.

The Common Seal of AMPOL PROVIDENT FUND MANAGEMENT PTY LTD was hereunto affixed by the authority of the Board in the presence of:

Director

Director

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Secretary

Signature of Transferor

AMPOL PROVIDENT FUND MANAGEMENT PTY LIMITED Common Seal A.C.N. 000 139 953

Signed in my presence by the transferee who is personally known to me.

~~The Common Seal of J & J PARTITIONS PTY~~ LIMITED was hereunto affixed by the authority of the Board in the presence of:

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

(B. L. THOMPSON)

Signature of Transferee

☞ **INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE**

CHECKED BY (office use only)

17

Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
9/11/2020 1:41PM

FOLIO: 22/B/12979

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 4680 FOL 19

Recorded	Number	Type of Instrument	C.T. Issue
9/9/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
23/2/1990		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
21/10/1992	E839054	TRANSFER	EDITION 1
2/11/1992	E864493	MORTGAGE	EDITION 2
8/12/1992	DP826942	DEPOSITED PLAN	FOLIO CANCELLED
28/8/1997		AMENDMENT: LOCAL GOVT AREA	

*** END OF SEARCH ***

Received: 09/11/2020 13:41:57

Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
9/11/2020 1:40PM

FOLIO: 101/1173714

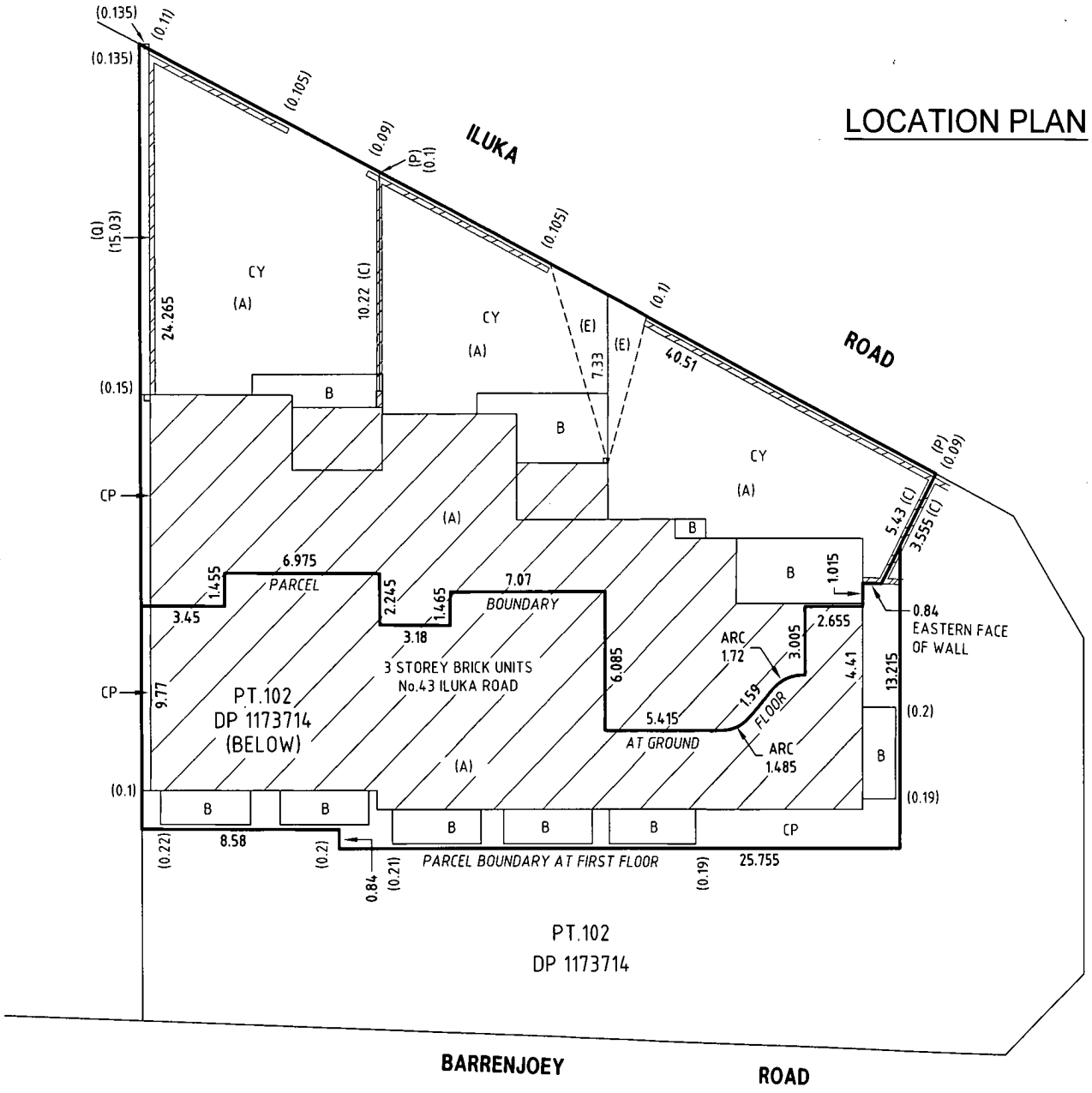
First Title(s): OLD SYSTEM
Prior Title(s): 1/826942

Recorded	Number	Type of Instrument	C.T. Issue
14/8/2017	DP1173714	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
15/8/2017	SP87022	STRATA PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

Received: 09/11/2020 13:41:56

LOCATION PLAN



⌊ - DENOTES RIGHT ANGLE
B - DENOTES BALCONY
CP - DENOTES COMMON PROPERTY
CY - DENOTES COURTYARD

(A) EASEMENT FOR SERVICES (DP 1173714)

(E) RIGHT OF CARRIAGEWAY VARIABLE WIDTH

(C) BOUNDARY IS CENTRELINE OF BRICK FENCE

(P) DENOTES DISTANCE FROM N.W FACE OF WALL ALONG PROLONGATION OF CENTRELINE OF BRICK FENCE (BRICK FENCE IS VISIBLE)

(Q) DENOTES DISTANCE FROM S.W CORNER OF GARAGE ALONG SOUTHERN FACE OF BRICK FENCE

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 Table of mm

Surveyor: ANTHONY JOHN BENNETT
Surveyor's Ref: 2388R
Subdivision No: P18/11
Lengths are in metres. Reduction Ratio 1: 200

Registered 15.8.2017

SP87022 P

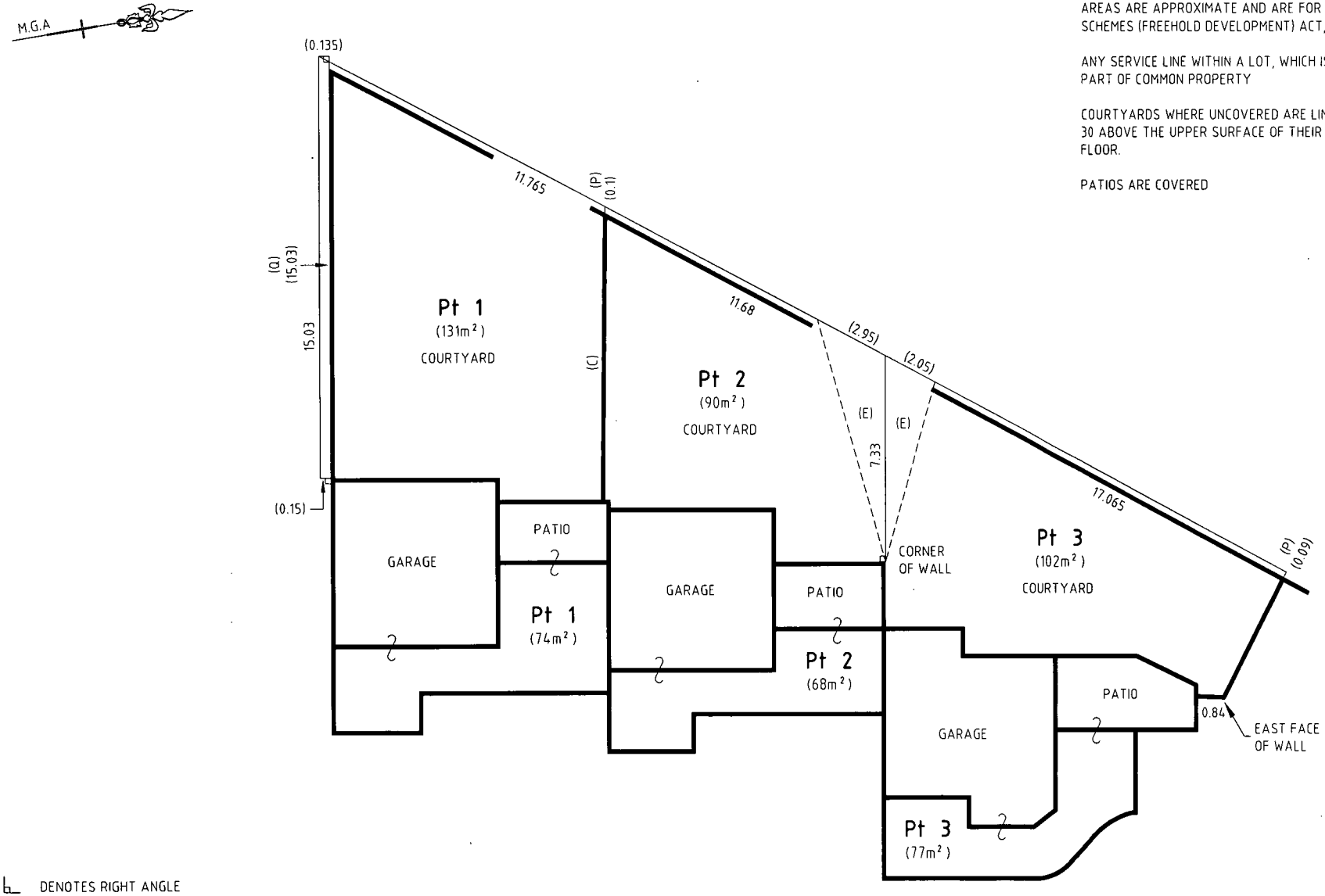
NOTES:

AREAS ARE APPROXIMATE AND ARE FOR THE PURPOSES OF THE STRATA SCHEMES (FREEHOLD DEVELOPMENT) ACT, 1973.

ANY SERVICE LINE WITHIN A LOT, WHICH IS SERVING ANOTHER LOT FORMS PART OF COMMON PROPERTY

COURTYARDS WHERE UNCOVERED ARE LIMITED IN STRATUM TO 5 BELOW AND 30 ABOVE THE UPPER SURFACE OF THEIR RESPECTIVE GARAGE CONCRETE FLOOR.

PATIOS ARE COVERED



GROUND FLOOR

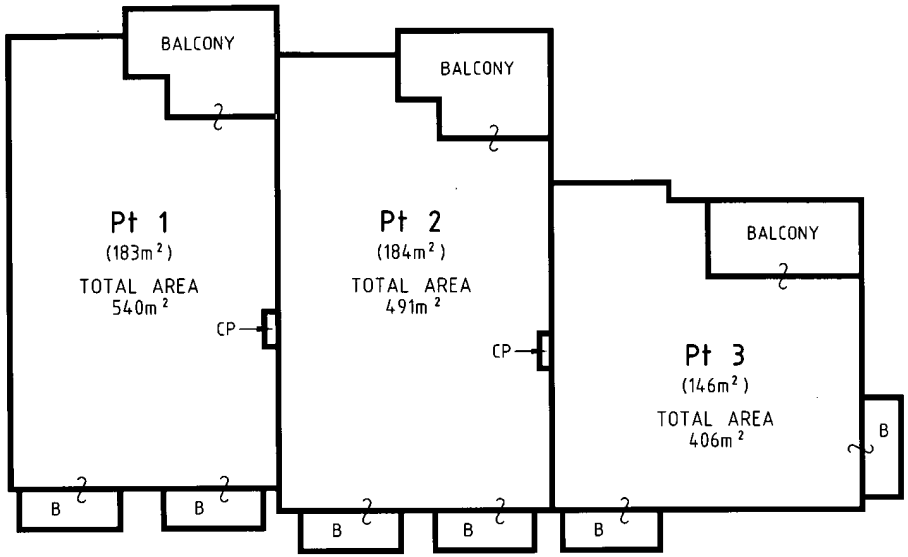
- ⌞ DENOTES RIGHT ANGLE
- (E) RIGHT OF CARRIAGEWAY VARIABLE WIDTH
- (P) DENOTES DISTANCE FROM N.W FACE OF WALL ALONG PROLONGATION OF CENTRELINE OF BRICK FENCE (BRICK FENCE IS VISIBLE)
- (Q) DENOTES DISTANCE FROM S.W CORNER OF GARAGE ALONG SOUTHERN FACE OF BRICK FENCE
- (C) DENOTES CENTRE OF BRICK FENCE

Surveyor:	ANTHONY JOHN BENNETT
Surveyor's Ref:	2388R
Subdivision No:	P18/11
Lengths are in metres. Reduction Ratio 1: 150	

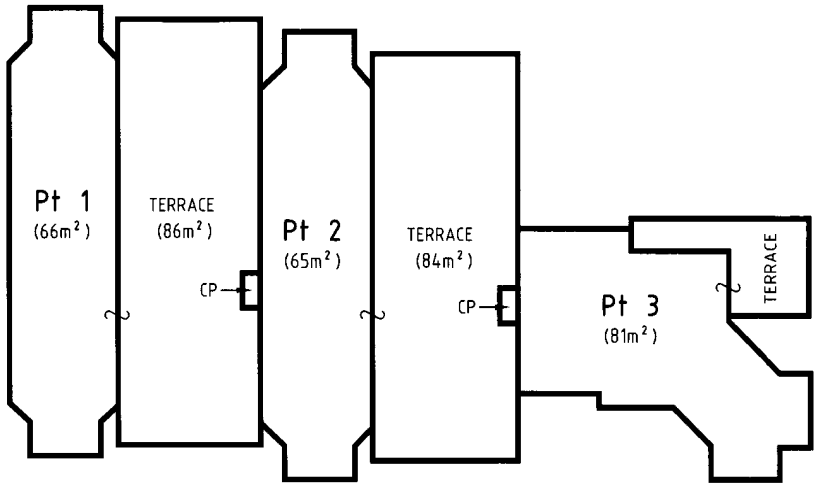
Registered 15.8.2017

SP87022

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 Table of mm



FIRST FLOOR



SECOND FLOOR

NOTES:

AREAS ARE APPROXIMATE AND ARE FOR THE PURPOSES OF THE STRATA SCHEMES (FREEHOLD DEVELOPMENT) ACT, 1973.

ANY SERVICE LINE WITHIN A LOT, WHICH IS SERVING ANOTHER LOT FORMS PART OF COMMON PROPERTY

BALCONIES WHERE UNCOVERED ARE LIMITED IN HEIGHT TO 4 METRES ABOVE THE UPPER SURFACE OF THEIR CONCRETE SLAB BASE.

TERRACES WHERE UNCOVERED ARE LIMITED IN HEIGHT TO 5 METRES ABOVE THE UPPER SURFACE OF THE STRUCTURAL FLOOR OF THEIR RESPECTIVE UNIT AT THE SECOND FLOOR LEVEL.

B - DENOTES BALCONY
CP - DENOTES COMMON PROPERTY

Surveyor: ANTHONY JOHN BENNETT	Registered
Surveyor's Ref: 2388R	15.8.2017
Subdivision No: P18/11	SP87022
Lengths are in metres. Reduction Ratio 1: 200	

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 Table of mm

STRATA PLAN FORM 3 (Part 1) WARNING: Creasing or folding will lead to rejection

STRATA PLAN ADMINISTRATION SHEET

Sheet 1 of 2 sheet(s)

Name of, and address for service of notices on, the Owners Corporation. (Address required on original strata plan only)

The Owners - Strata Plan No

No.43 ILUKA ROAD
PALM BEACH NSW 2108

SP87022 S

Registered: 15.8.2017

Purpose: STRATA PLAN

PLAN OF SUBDIVISION OF LOT 101 IN DP 1173714

RESIDENTIAL* **Model by-laws adopted for this scheme**
***Keeping of animals**: Option B
~~*Schedule of By-laws in ___ sheets filed with plan~~
~~*No By-laws apply~~ Smoke penetration: Option A
* strike out whichever is inapplicable
** Schedule 3 Strata Schemes Management Reg. 20

Strata Certificate

* Name of Council/* ~~Accredited Certifier~~ Pittwater Council being satisfied that the requirements of the * Strata Schemes (Freehold Development) Act 1973 or * Strata Schemes (Leasehold Development) Act 1986 have been complied with, approves of the proposed:

* strata plan/* ~~strata plan of subdivision~~

illustrated in the annexure to this certificate.

* ~~The~~ accredited certifier is satisfied that the plan is consistent with a relevant development consent in force, and that all conditions of the development consent that by its terms are required to be complied with before a strata certificate may be issued, have been complied with.

~~* The strata plan/strata plan of subdivision is part of a development scheme.~~
The * council/* accredited certifier is satisfied that the plan is consistent with any applicable conditions of any development consent and that the plan gives effect to the stage of the strata development contract to which it ~~relates.~~

~~* The Council does not object to the encroachment of the building beyond the alignment of~~

.....

* ~~The Accredited Certifier~~ is satisfied that the building complies with a relevant development consent in force that allows the ~~encroachment.~~

~~* This approval is given on the condition that the use of lot (s)~~
.....(being utility lot/s designed to be used primarily for the storage or accommodation of boats, motor vehicles or goods and not for human occupation as a residence, office, shop or the like) is restricted to the proprietor or occupier of a lot or proposed lot (not being such a utility lot) the subject of the strata scheme concerned, as referred to in * section 39 of the Strata Schemes (Freehold Development) Act 1973 or * section 68 of ~~the Strata Schemes (Leasehold Development) Act 1986.~~

Date 11 February 2013

Subdivision No. P18/11

Accreditation No.

Relevant Development Consent No. ~~N~~0224/08

Issued by Pittwater Council

Authorised Person /~~General Manager/Accredited Certifier~~

* Complete or delete if applicable.

LGA: ~~PITTWATER~~ NORTHERN BEACHES

Locality: PALM BEACH

Parish: NARRABEEN

County: CUMBERLAND

Surveyor's Certificate

I, ANTHONY JOHN BENNETT
of USHER & COMPANY PTY LIMITED
PO BOX 1199, CHATSWOOD NSW 2057

a surveyor registered under the Surveying Act, 2002, hereby certify that:

(1) each applicable requirement of
*Schedule 1A to the Strata Schemes (Freehold Development) Act 1973
~~*Schedule 1A to the Strata Schemes (Leasehold Development) Act 1986~~
has been met;

~~(2) *(a)the building encroaches on a public place;~~
*(b)the building encroaches on land (other than a public place), in respect of which encroachment an appropriate easement:

*has been created by registered + ...
~~*is to be created under section 88B of the Conveyancing Act 1919~~

~~(3) *the survey information recorded in the accompanying location plan is accurate.~~

Signature: .....

Date: 30/3/2009

* Delete if inapplicable
+ State whether dealing or plan, and quote registered number.

SURVEYOR'S REFERENCE: 2388R

Use STRATA PLAN FORM 3A for additional certificates, signatures and seals

* OFFICE USE ONLY

STRATA PLAN ADMINISTRATION SHEET

PLAN OF SUBDIVISION OF LOT 101 IN DP 1173714

SP87022

Registered: 15.8.2017

* OFFICE USE ONLY

Strata Certificate Details: Subdivision No: P18/11 Date: 11 February 2013

SCHEDULE OF UNIT ENTITLEMENT

(if insufficient space use additional annexure sheet)

LOT NO.	UNIT ENTITLEMENT
1	38
2	31
3	31
AGGREGATE	100

Signatures, seals and statements of intention to create easements, restrictions on the use of land or positive covenants

(if insufficient space use additional annexure sheet)

PURSUANT TO SECTION 88B OF THE CONVEYANCING ACT 1919 AND SECTION 7(3) OF THE STRATA SCHEMES (FREEHOLD DEVELOPMENT) ACT 1973
IT IS INTENDED TO CREATE:

1. RIGHT OF CARRIAGEWAY VARIABLE WIDTH

~~2. EASEMENT FOR SERVICES~~

THIS PLAN CONTAINS A STRATA MANAGEMENT STATEMENT OF 15 SHEETS

JOHN VANYA BEZINOVIC
DIRECTOR

B. Bezinovic
BERYL LYNN BEZINOVIC
DIRECTOR

J. & J. PARTITIONS PTY LIMITED
ACN 001335324

SURVEYOR'S REFERENCE: 2388R

LAND REGISTRY SERVICES

Title Search

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: CP/SP87022

SEARCH DATE	TIME	EDITION NO	DATE
9/11/2020	1:37 PM	1	15/8/2017

LAND

THE COMMON PROPERTY IN THE STRATA SCHEME BASED ON STRATA PLAN 87022 WITHIN THE PARCEL SHOWN IN THE TITLE DIAGRAM

AT PALM BEACH
LOCAL GOVERNMENT AREA NORTHERN BEACHES
PARISH OF NARRABEEN COUNTY OF CUMBERLAND
TITLE DIAGRAM SP87022

FIRST SCHEDULE

THE OWNERS - STRATA PLAN NO. 87022
ADDRESS FOR SERVICE OF DOCUMENTS:
NO. 43 ILUKA ROAD
PALM BEACH NSW 2108

SECOND SCHEDULE (8 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 ATTENTION IS DIRECTED TO THE RESIDENTIAL SCHEMES MODEL BY-LAWS CONTAINED IN THE STRATA SCHEMES MANAGEMENT REGULATION APPLICABLE AT THE DATE OF REGISTRATION OF THE SCHEME
KEEPING OF ANIMALS - OPTION B HAS BEEN ADOPTED
SMOKE PENETRATION - OPTION A HAS BEEN ADOPTED
3 THE LAND ABOVE DESCRIBED IS LIMITED IN STRATUM IN THE MANNER DESCRIBED IN DP1173714
4 ATTENTION IS DIRECTED TO THE STRATA MANAGEMENT STATEMENT FILED WITH SP87022
5 EASEMENT FOR SUBJACENT AND LATERAL SUPPORT AND EASEMENT FOR SHELTER IMPLIED BY SECTION 106 STRATA SCHEMES DEVELOPMENT ACT 2015
6 DP1173714 EASEMENT FOR SERVICES AFFECTING THE WHOLE OF THE LAND ABOVE DESCRIBED
7 DP1173714 EASEMENT FOR SERVICES APPURTENANT TO THE LAND ABOVE DESCRIBED
8 DP1173714 EASEMENT TO DRAIN WATER VARIABLE WIDTH APPURTENANT TO THE LAND ABOVE DESCRIBED

SCHEDULE OF UNIT ENTITLEMENT (AGGREGATE: 100)

END OF PAGE 1 - CONTINUED OVER

FOLIO: CP/SP87022 PAGE 2

SCHEDULE OF UNIT ENTITLEMENT (AGGREGATE: 100) (CONTINUED)

STRATA PLAN 87022

LOT	ENT	LOT	ENT	LOT	ENT
STRATA PLAN 87022					
LOT	ENT	LOT	ENT	LOT	ENT
1 - 38		2 - 31		3 - 31	

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Received: 09/11/2020 13:37:42

Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
9/11/2020 1:44PM

FOLIO: 102/1173714

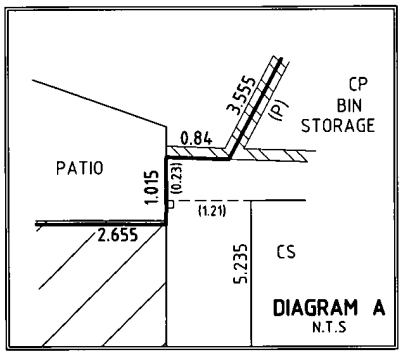
First Title(s): OLD SYSTEM
Prior Title(s): 1/826942

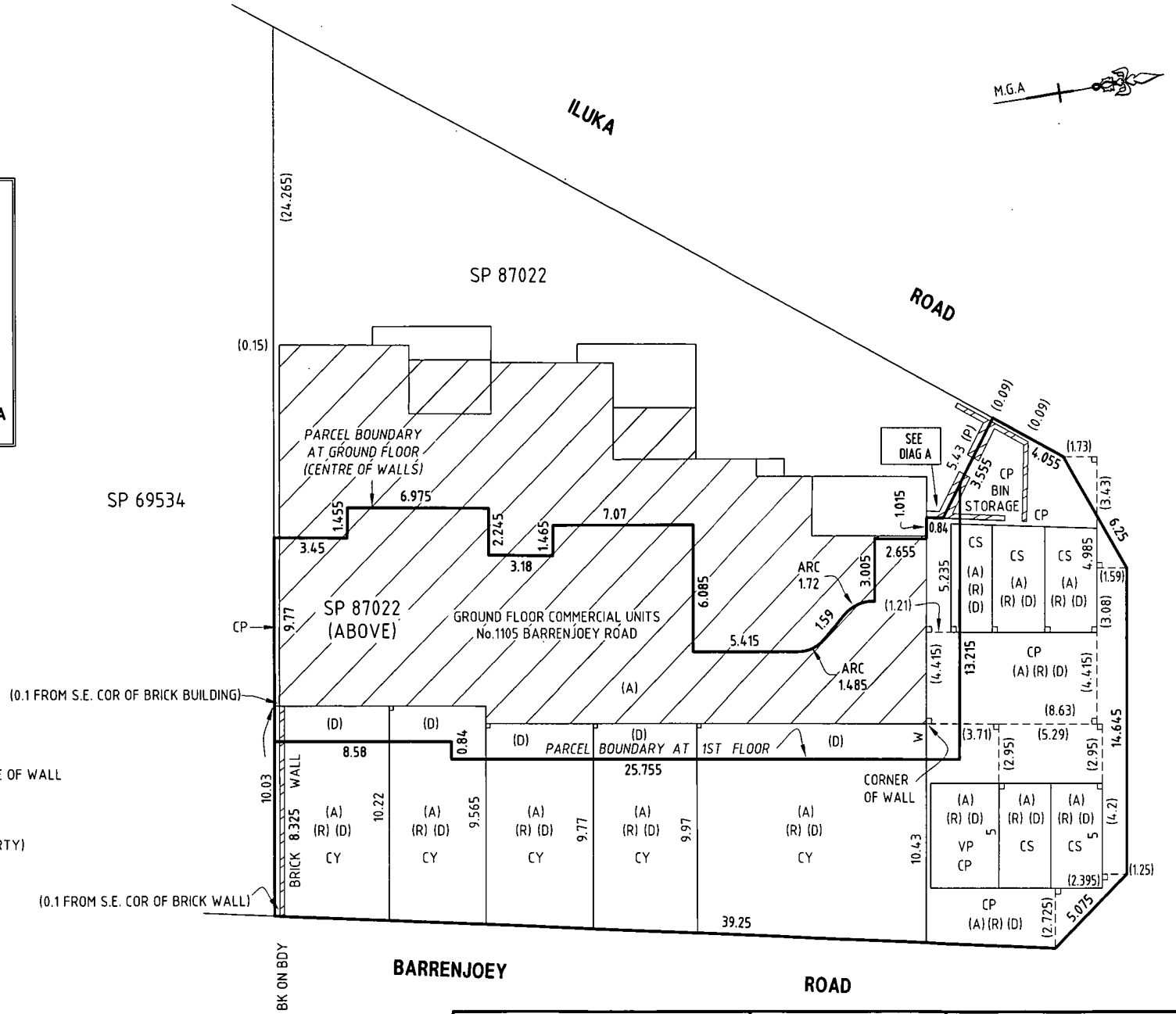
Recorded	Number	Type of Instrument	C.T. Issue
14/8/2017	DP1173714	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
15/8/2017	AM644261	DEPARTMENTAL DEALING	
15/8/2017	SP87024	STRATA PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

Received: 09/11/2020 13:44:16

LOCATION PLAN





- ⌐ – DENOTES RIGHT ANGLE
- W – DENOTES PROLONGATION OF NORTHERN FACE OF WALL
- CP – DENOTES COMMON PROPERTY
- CS – DENOTES CAR SPACE
- CY – DENOTES COURTYARD
- VP – DENOTES VISITOR PARKING (COMMON PROPERTY)

- (A) EASEMENT FOR SERVICES (DP 1173714)
- (R) RESTRICTION ON THE USE OF LAND (DP 1173714)
- (D) EASEMENT TO DRAIN WATER (DP 1173714)
- (P) BOUNDARY IS CENTRE OF 0.23 WIDE BRICK WALL

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 Table of mm

Surveyor: ANTHONY JOHN BENNETT
Surveyor's Ref: 2388C
Subdivision No: P19/11
Lengths are in metres. Reduction Ratio 1: 200

Registered
15.8.2017

SP87024 P

NOTES:

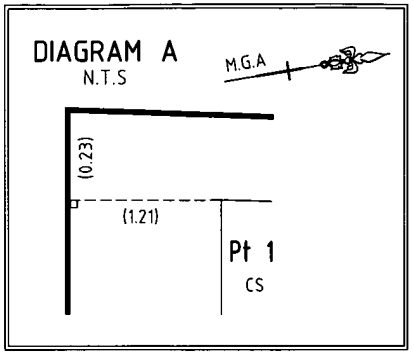
AREAS ARE APPROXIMATE AND ARE FOR THE PURPOSES OF THE STRATA SCHEMES (FREEHOLD DEVELOPMENT) ACT, 1973.

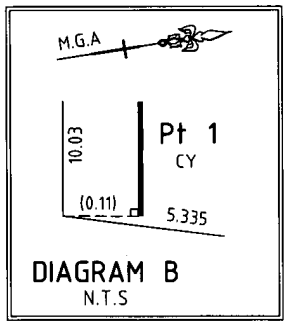
ANY SERVICE LINE WITHIN A LOT, WHICH IS SERVING ANOTHER LOT FORMS PART OF COMMON PROPERTY

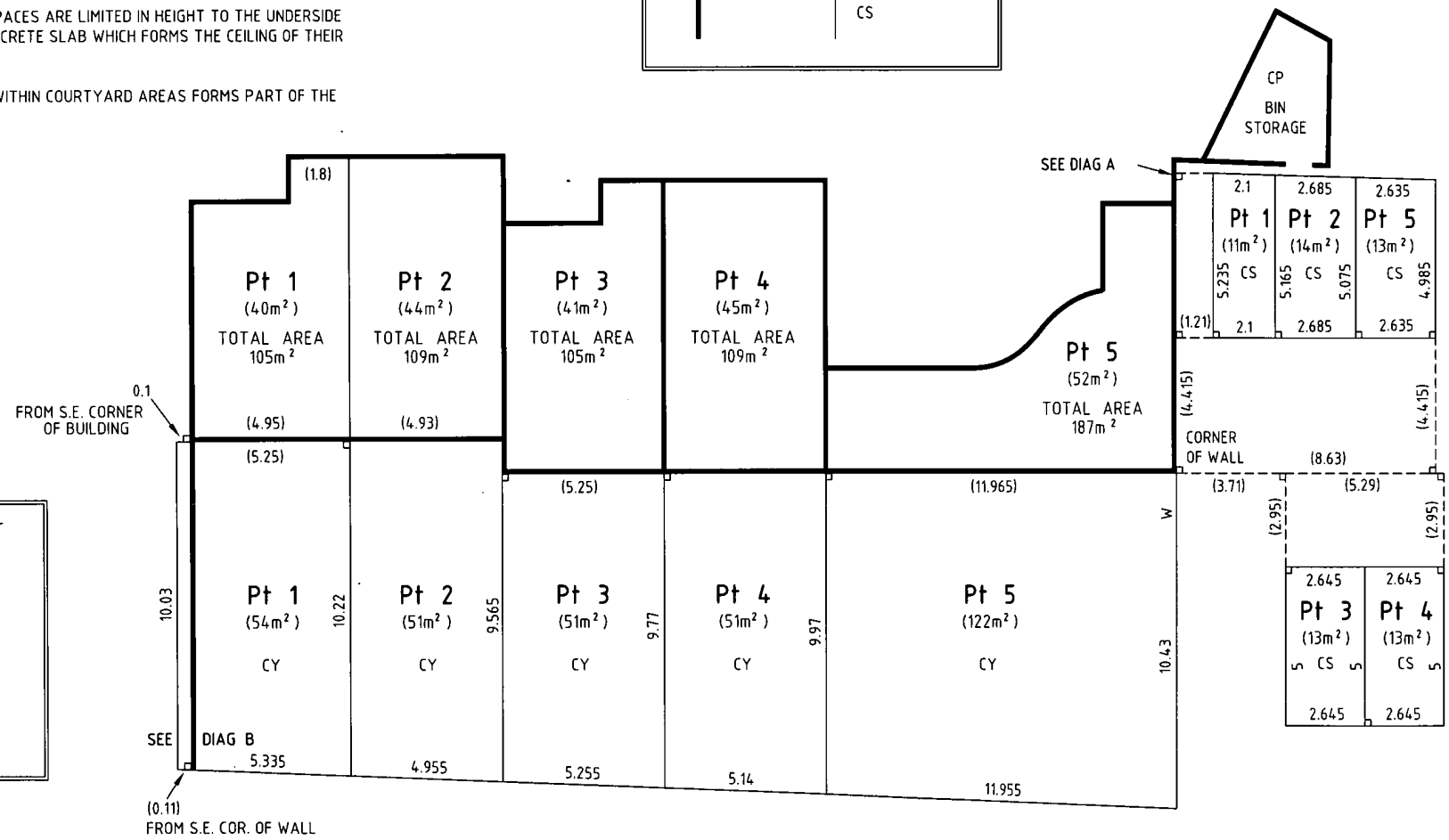
COURTYARDS AND CARSPACES ARE LIMITED IN DEPTH TO 1 METRE BELOW THE UPPER SURFACE OF THE CONCRETE SLAB FLOOR OF THEIR RESPECTIVE UNIT.

COURTYARDS AND CARSPACES ARE LIMITED IN HEIGHT TO THE UNDERSIDE OF THE STRUCTURAL CONCRETE SLAB WHICH FORMS THE CEILING OF THEIR RESPECTIVE UNIT.

BRICK PAVING LOCATED WITHIN COURTYARD AREAS FORMS PART OF THE COMMON PROPERTY.







GROUND FLOOR

- ⌙ - DENOTES RIGHT ANGLE
- W - DENOTES PROLONGATION OF NORTHERN FACE OF WALL
- CP - DENOTES COMMON PROPERTY
- CS - DENOTES CAR SPACE
- CY - DENOTES COURTYARD

Surveyor: ANTHONY JOHN BENNETT Surveyor's Ref: 2388C Subdivision No: P19/11 Lengths are in metres. Reduction Ratio 1: 150	Registered 15.8.2017	SP87024

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 Table of mm

STRATA PLAN FORM 3 (Part 1) WARNING: Creasing or folding will lead to rejection

STRATA PLAN ADMINISTRATION SHEET

Sheet 1 of 2 sheet(s)

* OFFICE USE ONLY

Name of, and address for service of notices on, the Owners Corporation. (Address required on original strata plan only)

The Owners - Strata Plan No

No.1105 BARRENJOEY ROAD
PALM BEACH NSW 2108

* SP87024 S

Registered: 15.8.2017

Purpose: STRATA PLAN

PLAN OF SUBDIVISION OF LOT 102 IN DP 1173714

~~RESIDENTIAL~~
~~*COMMERCIAL Model by-laws adopted for this scheme~~
~~*Keeping of animals: Option A B~~
~~*Schedule of By-laws in ___ sheets filed with plan~~
~~*No By-laws apply~~ ~~*Smoke penetration: Option A~~
* strike out whichever is inapplicable The by-laws adopted for this scheme are the by-laws lodged with the plan.

Strata Certificate

* Name of Council/* ~~Accredited Certifier~~ Pittwater Council being satisfied that the requirements of the * Strata Schemes (Freehold Development) Act 1973 or * Strata Schemes (Leasehold Development) Act 1986 have been complied with, approves of the proposed:

* strata plan/* ~~strata plan of subdivision~~

illustrated in the annexure to this certificate.

* The accredited certifier is satisfied that the plan is consistent with a relevant development consent in force, and that all conditions of the development consent that by its terms are required to be complied with before a strata ~~certificate~~ may be issued, have been complied with.

~~* The strata plan/strata plan of subdivision is part of a development scheme.~~
The * council/* accredited certifier is satisfied that the plan is consistent with any applicable conditions of any development consent and that the plan gives effect to the stage of the strata development contract to which it ~~relates.~~

~~* The Council does not object to the encroachment of the building beyond the alignment of~~

.....

~~* The Accredited Certifier is satisfied that the building complies with a relevant development consent in force that allows the encroachment.~~

~~* This approval is given on the condition that the use of lot (s).....~~ .....(being utility lot/s designed to be used primarily for the storage or accommodation of boats, motor vehicles or goods and not for human occupation as a residence, office, shop or the like) is restricted to the proprietor or occupier of a lot or proposed lot (not being such a utility lot) the subject of the strata scheme concerned, as referred to in * section 39 of the Strata Schemes (Freehold Development) Act 1973 or * section 68 of ~~the Strata Schemes (Leasehold Development) Act 1986.~~

Date..... 11 February 2013

Subdivision No..... P19/11

Accreditation No.....

Relevant Development Consent No..... N0224/08

Issued by..... Pittwater Council

.....
Authorised Person ~~/General Manager/Accredited Certifier~~

* Complete or delete if applicable.

LGA: ~~PITTWATER~~ NORTHERN BEACHES

Locality: PALM BEACH

Parish: NARRABEEN

County: CUMBERLAND

Surveyor's Certificate

I, ANTHONY JOHN BENNETT
of USHER & COMPANY PTY LIMITED
PO BOX 1199, CHATSWOOD NSW 2057

a surveyor registered under the Surveying Act, 2002, hereby certify that:

(1) each applicable requirement of
*Schedule 1A to the Strata Schemes (Freehold Development) Act 1973
~~*Schedule 1A to the Strata Schemes (Leasehold Development) Act 1986~~
has been met;

~~(2) *(a)the building encroaches on a public place;~~
*(b)the building encroaches on land (other than a public place), in respect of which encroachment an appropriate easement:

*has been created by registered + ...
~~*is to be created under section 88B of the Conveyancing Act 1919~~

~~(3) *the survey information recorded in the accompanying location plan is accurate.~~

Signature: A J Bennett

Date: 30/3/2009

* Delete if inapplicable
\+ State whether dealing or plan, and quote registered number.

SURVEYOR'S REFERENCE: 2388C

Use STRATA PLAN FORM 3A for additional certificates, signatures and seals

STRATA PLAN FORM 3 (Part 2) WARNING: Creasing or folding will lead to rejection

STRATA PLAN ADMINISTRATION SHEET

PLAN OF SUBDIVISION OF LOT 102 IN DP 1173714

* SP87024

* **Registered:** 15.8.2017

* OFFICE USE ONLY

Strata Certificate Details: Subdivision No: P19/11 Date: 11 February 2013

SCHEDULE OF UNIT ENTITLEMENT

(if insufficient space use additional annexure sheet)

LOT NO.	UNIT ENTITLEMENT
1	17
2	18
3	19
4	20
5	26
AGGREGATE	100

Signatures, seals and statements of intention to create easements, restrictions on the use of land or positive covenants

(if insufficient space use additional annexure sheet)

~~THIS PLAN CONTAINS A STRATA MANAGEMENT STATEMENT OF 15 SHEETS~~

B Beznovic

Director JOHN VANYA BEZINOVIC
Director BEAYL LYNN BEZINOVIC
J & J Partitioning Pty ~~Ltd~~ Limited
ACN 001 335 324

SURVEYOR'S REFERENCE: 2388C

LAND REGISTRY SERVICES

Title Search

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: CP/SP87024

SEARCH DATE	TIME	EDITION NO	DATE
9/11/2020	1:37 PM	1	15/8/2017

LAND

THE COMMON PROPERTY IN THE STRATA SCHEME BASED ON STRATA PLAN 87024
WITHIN THE PARCEL SHOWN IN THE TITLE DIAGRAM

AT PALM BEACH
LOCAL GOVERNMENT AREA NORTHERN BEACHES
PARISH OF NARRABEEN COUNTY OF CUMBERLAND
TITLE DIAGRAM SP87024

FIRST SCHEDULE

THE OWNERS - STRATA PLAN NO. 87024
ADDRESS FOR SERVICE OF DOCUMENTS:
NO 1105 BARRENJOEY ROAD
PALM BEACH NSW 2108

SECOND SCHEDULE (8 NOTIFICATIONS)

---

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 ATTENTION IS DIRECTED TO THE STRATA SCHEME BY-LAWS FILED WITH THE STRATA PLAN
3 DP1173714 EASEMENT FOR SERVICES AFFECTING THE WHOLE OF THE LAND ABOVE DESCRIBED
4 DP1173714 EASEMENT FOR SERVICES APPURTENANT TO THE LAND ABOVE DESCRIBED
5 DP1173714 RESTRICTION(S) ON THE USE OF LAND (R)
6 DP1173714 EASEMENT TO DRAIN WATER VARIABLE WIDTH (D) AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
7 ATTENTION IS DIRECTED TO THE STRATA MANAGEMENT STATEMENT FILED WITH SP87022
8 EASEMENT FOR SUBJACENT AND LATERAL SUPPORT AND EASEMENT FOR SHELTER IMPLIED BY SECTION 106 STRATA SCHEMES DEVELOPMENT ACT 2015

SCHEDULE OF UNIT ENTITLEMENT (AGGREGATE: 100)

STRATA PLAN 87024

LOT	ENT	LOT	ENT	LOT	ENT	LOT	ENT
1 - 17		2 - 18		3 - 19		4 - 20	
5 - 26							

END OF PAGE 1 - CONTINUED OVER

FOLIO: CP/SP87024 PAGE 2

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Section 10.7 Certificates

Northern Beaches Council Planning Certificate – Part 2&5

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

Reference: E33500PH th
Date: 30/10/2020
Certificate No. ePLC2020/7047

Address of Property: 43 Iluka Road PALM BEACH NSW 2108
Description of Property: Lot CP SP 87022

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

Pittwater Local Environmental Plan 2014

1.1b) State Environmental Planning Policies and Regional Environmental Plans

State Environmental Planning Policy 19 – Bushland in Urban Areas
State Environmental Planning Policy 21 – Caravan Parks
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 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 (State and Regional Development) 2011
State Environmental Planning Policy (State Significant Precincts) 2005
State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017
State Environmental Planning Policy (Primary Production and Rural Development) 2019
State Environmental Planning Policy (Koala Habitat Protection) 2019
Wholly Affected - State Environmental Planning Policy (Coastal Management) 2018
Sydney Regional Environmental Plan No 20-Hawkesbury-Nepean River (No 2-1997)

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

Draft State Environmental Planning Policy (Environment)
Draft State Environmental Planning Policy (Short-term Rental Accommodation) 2019
Amendment to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
Draft Remediation of Land State Environmental Planning Policy (intended to replace State Environmental Planning Policy 55)

1.2 b) Draft Local Environmental Plans

1.3 Development Control Plans

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

Pittwater 21 Development Control Plan

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.

Zone B2 Local Centre

2 Permitted without consent

Home businesses; Home occupations

3 Permitted with consent

Amusement centres; Boarding houses; Car parks; Centre-based child care facilities; Commercial premises; Community facilities; Educational establishments; Entertainment facilities; Environmental protection works; Function centres; Home-based child care; Home industries; Horticulture; Information and education facilities; Medical centres; Passenger transport facilities; Places of public worship; Public administration building; Recreation areas; Recreation facilities (indoor); Registered clubs; Respite day care centres; Restricted premises; Roads; Service stations; Sex services premises; Shop top housing; Signage; Tourist and visitor accommodation; Veterinary hospitals

4 Prohibited

Pond-based aquaculture; Any other development not specified in item 2 or 3

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 *Pittwater Local Environmental Plan 2014* 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.

Note: *Further zone based limitations may apply. See State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 clause:*
3.1 Land to which code applies
This code applies to development that is specified in clauses 3.2-3.5 on any lot in Zone R1, R2, R3, R4 or RU5 that:
(a) has an area of at least 200m2, and
(b) has a width, measured at the building line fronting a primary road, of at least 6m.

b) Rural Housing Code

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

Note: *Further zone based limitations may apply. See State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 clause:*
3A.1 Land to which code applies
This code applies to development that is specified in clauses 3A.2-3A.5 on lots in Zone RU1, RU2, RU3, RU4, RU6 and R5.

c) Low Rise Housing Diversity Code

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

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.

Note: *Further zone based limitations may apply. See State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 clause:*
5A.1 Land to which code applies

This code applies to development that is specified in clause 5A.2 on any lot in Zone B1, B2, B3, B4, B5, B6, B7, B8, IN1, IN2, IN3, IN4 or SP3.

i) Container Recycling Facilities Code

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

Note: *Further zone based limitations may apply. See State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 clause:*
5B.2 Development to which code applies
This code applies to development that is specified in clause 5B.3 on any lot in Zone B1, B2, B3, B4, B5, B6, B7, B8, IN1, IN2, IN3, IN4 or SP3.

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.

m) Inland Code

Complying Development under the Inland Code does not apply to the land.

Note: Pursuant to clause 3D.1 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*, the Inland Code only applies to 'inland local government areas'. Northern Beaches local government area is not defined as an 'inland local government area' by *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

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:

Bush Fire Prone Land
This land is identified on a Bush Fire Prone Land map certified by the Commissioner of the NSW Rural Fire Service as being bush fire prone land. The requirements of the NSW Rural Fire Service document Planning for Bush Fire Protection apply to this land. For further information please contact the Northern Beaches District NSW Rural Fire Service.

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 3.15 of the Act.

9. Contribution plans

The following applies to the land:

Northern Beaches Section 7.12 Contributions Plan 2019

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
All of the land is 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

ePLC2020/7047

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:

Nil

Additional Information Applying To The Land

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

Nil

General Information

Tree Preservation and Management Order
Tree preservation and Management order applies to the subject land

Ray Brownlee PSM
Chief Executive Officer
30/10/2020

Northern Beaches Council Planning Certificate – Part 2&5

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

Reference: E33500PH th2
Date: 30/10/2020
Certificate No. ePLC2020/7048

Address of Property: 1105 Barrenjoey Road PALM BEACH NSW 2108
Description of Property: Lot CP SP 87024

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

Pittwater Local Environmental Plan 2014

1.1b) State Environmental Planning Policies and Regional Environmental Plans

State Environmental Planning Policy 19 – Bushland in Urban Areas
State Environmental Planning Policy 21 – Caravan Parks
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 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 (State and Regional Development) 2011
State Environmental Planning Policy (State Significant Precincts) 2005
State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017
State Environmental Planning Policy (Primary Production and Rural Development) 2019
State Environmental Planning Policy (Koala Habitat Protection) 2019
Partly Affected - State Environmental Planning Policy (Coastal Management) 2018
Sydney Regional Environmental Plan No 20-Hawkesbury-Nepean River (No 2-1997)

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

Draft State Environmental Planning Policy (Environment)
Draft State Environmental Planning Policy (Short-term Rental Accommodation) 2019
Amendment to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
Draft Remediation of Land State Environmental Planning Policy (intended to replace State Environmental Planning Policy 55)

1.2 b) Draft Local Environmental Plans

1.3 Development Control Plans

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

Pittwater 21 Development Control Plan

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.

Zone B2 Local Centre

2 Permitted without consent

Home businesses; Home occupations

3 Permitted with consent

Amusement centres; Boarding houses; Car parks; Centre-based child care facilities; Commercial premises; Community facilities; Educational establishments; Entertainment facilities; Environmental protection works; Function centres; Home-based child care; Home industries; Horticulture; Information and education facilities; Medical centres; Passenger transport facilities; Places of public worship; Public administration building; Recreation areas; Recreation facilities (indoor); Registered clubs; Respite day care centres; Restricted premises; Roads; Service stations; Sex services premises; Shop top housing; Signage; Tourist and visitor accommodation; Veterinary hospitals

4 Prohibited

Pond-based aquaculture; Any other development not specified in item 2 or 3

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 *Pittwater Local Environmental Plan 2014* 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.

Note: *Further zone based limitations may apply. See State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 clause:*
3.1 Land to which code applies
This code applies to development that is specified in clauses 3.2-3.5 on any lot in Zone R1, R2, R3, R4 or RU5 that:
(a) has an area of at least 200m2, and
(b) has a width, measured at the building line fronting a primary road, of at least 6m.

b) Rural Housing Code

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

Note: *Further zone based limitations may apply. See State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 clause:*
3A.1 Land to which code applies
This code applies to development that is specified in clauses 3A.2-3A.5 on lots in Zone RU1, RU2, RU3, RU4, RU6 and R5.

c) Low Rise Housing Diversity Code

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

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.

Note: *Further zone based limitations may apply. See State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 clause:*
5A.1 Land to which code applies

This code applies to development that is specified in clause 5A.2 on any lot in Zone B1, B2, B3, B4, B5, B6, B7, B8, IN1, IN2, IN3, IN4 or SP3.

i) Container Recycling Facilities Code

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

Note: *Further zone based limitations may apply. See State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 clause:*
5B.2 Development to which code applies
This code applies to development that is specified in clause 5B.3 on any lot in Zone B1, B2, B3, B4, B5, B6, B7, B8, IN1, IN2, IN3, IN4 or SP3.

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.

m) Inland Code

Complying Development under the Inland Code does not apply to the land.

Note: Pursuant to clause 3D.1 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*, the Inland Code only applies to 'inland local government areas'. Northern Beaches local government area is not defined as an 'inland local government area' by *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

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:

Bush Fire Prone Land
This land is identified on a Bush Fire Prone Land map certified by the Commissioner of the NSW Rural Fire Service as being bush fire prone land. The requirements of the NSW Rural Fire Service document Planning for Bush Fire Protection apply to this land. For further information please contact the Northern Beaches District NSW Rural Fire Service.

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 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 3.15 of the Act.

9. Contribution plans

The following applies to the land:

Northern Beaches Section 7.12 Contributions Plan 2019

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
All of the land is 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

ePLC2020/7048

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:

Nil

Additional Information Applying To The Land

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

Nil

General Information

Tree Preservation and Management Order
Tree preservation and Management order applies to the subject land

Ray Brownlee PSM
Chief Executive Officer
30/10/2020

SafeWork NSW Records

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

Our Ref: D20/219625

30 November 2020

Mr Todd Hore
JK Environments Pty Ltd
thore@jkenvironments.com.au

Dear Mr Hore

RE SITE: 1105 Barrenjoey Rd and 43 Iluka Rd, Palm Beach NSW

I refer to your site search request received by SafeWork NSW on 20 October 2020 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

Gabriela Draper

Licensing Representative
Licensing and Funds, Better Regulation
SafeWork NSW

Appendix C: Laboratory Results Summary Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

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

QA/QC Table:

- Field blank, Inter and Intra laboratory duplicate results are reported in mg/kg.
- Trip spike results are reported as percentage recovery.
- Field rinsate results are reported in µg/L.

TABLE S1

SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.

HIL-B: 'Residential with minimal opportunities for soil access; including dwellings with fully/permanently paved yards like high-rise buildings'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	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	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC)			500	150	500	30000	1200	120	1200	60000	400	4	15	400	500	10	90	600	10	340	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH1	0.1-0.2	F: Sand	<4	<0.4	**5**	**15**	**22**	<0.1	**6**	**40**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH1	0.1-0.2	Lab Duplicate	<4	<0.4	**6**	**15**	**22**	<0.1	**8**	**73**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH1	0.3-0.4	Sand	<4	<0.4	**2**	<1	<1	<0.1	<1	**2**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH2	0.1-0.2	F: Sand	<4	<0.4	**8**	**13**	**31**	<0.1	**8**	**63**	**3.8**	**0.6**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH2	0.8-1.0	Sand	<4	<0.4	**2**	<1	**1**	<0.1	<1	**2**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
SDUP1	-	Intra-lab Duplicate	<4	<0.4	**7**	**18**	**23**	<0.1	**7**	**41**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1	0.1-0.2	Triplicate	<4	<0.4	**14**	**17**	**80**	<0.1	**14**	**110**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			7	7	7	7	7	7	7	7	5	5	3	3	3	3	3	3	3	3	3	4
Maximum Value			<PQL	<PQL	14	18	80	<PQL	14	110	3.8	0.6	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Not Detected

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**

TABLE S2
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-A/B: LOW/HIGH DENSITY RESIDENTIAL**							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH1	0.1-0.2	F: Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.2
BH1	0.1-0.2	Lab Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.2
BH1	0.3-0.4	Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH2	0.1-0.2	F: Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH2	0.8-1.0	Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
Total Number of Samples					5	5	5	5	5	5	5	5
Maximum Value					<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	0.2

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**
The guideline corresponding to the concentration above the SAC is highlighted in grey in the Site Assessment Criteria Table below

HSL SOIL ASSESSMENT CRITERIA

Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
BH1	0.1-0.2	F: Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1	0.1-0.2	Lab Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1	0.3-0.4	Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH2	0.1-0.2	F: Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH2	0.8-1.0	Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3

TABLE S3
SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS
All data in mg/kg unless stated otherwise

			C_6-C_{10} (F1) plus BTEX	$>C_{10}$-C_{16} (F2) plus napthalene	$>C_{16}$-C_{34} (F3)	$>C_{34}$-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH1	0.1-0.2	Coarse	<25	<50	<100	<100
BH1	0.1-0.2	Coarse	<25	<50	<100	<100
BH1	0.3-0.4	Coarse	<25	<50	<100	<100
BH2	0.1-0.2	Coarse	<25	<50	<100	<100
BH2	0.8-1.0	Coarse	<25	<50	<100	<100
BH1	0.1-0.2	Coarse	NA	NA	NA	NA
Total Number of Samples			5	5	5	5
Maximum Value			<PQL	<PQL	<PQL	<PQL

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**

MANAGEMENT LIMIT ASSESSMENT CRITERIA

Sample Reference	**Sample Depth**	**Soil Texture**	C_6-C_{10} (F1) plus BTEX	$>C_{10}$-C_{16} (F2) plus napthalene	$>C_{16}$-C_{34} (F3)	$>C_{34}$-C_{40} (F4)
BH1	0.1-0.2	Coarse	700	1000	2500	10000
BH1	0.1-0.2	Coarse	700	1000	2500	10000
BH1	0.3-0.4	Coarse	700	1000	2500	10000
BH2	0.1-0.2	Coarse	700	1000	2500	10000
BH2	0.8-1.0	Coarse	700	1000	2500	10000
BH1	0.1-0.2	Coarse	NA	NA	NA	NA

TABLE S4
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		5,600	4,200	5,800	8,100	140	21,000	5,900	17,000	2,200	
Site Use		**HIGH DENSITY RESIDENTIAL - DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH1	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0.2**
BH1	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0.2**
BH1	0.3-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH2	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH2	0.8-1.0	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH1	0.1-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	0
Total Number of Samples		5	5	5	5	5	5	5	5	5	6
Maximum Value		<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	0.2

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**

TABLE S5
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																	
							AGED HEAVY METALS-EILs						EILs		ESLs							
				pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2) plus napthalene	>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	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	0.1-0.2	F: Sand	Coarse	NA	NA	NA	<4	**5**	**15**	**22**	**6**	**40**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH1	0.1-0.2	Lab Duplicate	Coarse	NA	NA	NA	<4	**6**	**15**	**22**	**8**	**73**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH1	0.3-0.4	Sand	Coarse	NA	NA	NA	<4	**2**	<1	<1	<1	**2**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH2	0.1-0.2	F: Sand	Coarse	NA	NA	NA	<4	**8**	**13**	**31**	**8**	**63**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.4**
BH2	0.8-1.0	Sand	Coarse	NA	NA	NA	<4	**2**	<1	**1**	<1	**2**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
SDUP1	-	Intra-lab Duplicate	Coarse	NA	NA	NA	<4	**7**	**18**	**23**	**7**	**41**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1	0.1-0.2	Triplicate	Coarse	NA	NA	NA	<4	**14**	**17**	**80**	**14**	**110**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples				0	0	0	7	7	7	7	7	7	5	3	5	5	5	5	5	5	5	5	5
Maximum Value				NA	NA	NA	<PQL	14	18	80	14	110	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	0.4

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**
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

Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**	pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH1	0.1-0.2	F: Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH1	0.1-0.2	Lab Duplicate	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH1	0.3-0.4	Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
BH2	0.1-0.2	F: Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH2	0.8-1.0	Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	--	180	120	300	2800	50	85	70	105	20
SDUP1	-	Intra-lab Duplicate	Coarse	NA	NA	NA	100	200	90	1300	35	190	--	--	--	--	--	--	--	--	--	--	--
BH1	0.1-0.2	Triplicate	Coarse	NA	NA	NA	100	200	90	1300	35	190	--	--	--	--	--	--	--	--	--	--	--

TABLE S6
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total PCBs	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		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	0.1-0.2	F: Sand	<4	<0.4	**5**	**15**	**22**	<0.1	**6**	**40**	<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
BH1	0.1-0.2	Lab Duplicate	<4	<0.4	**6**	**15**	**22**	<0.1	**8**	**73**	<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	NA
BH1	0.3-0.4	Sand	<4	<0.4	**2**	<1	<1	<0.1	<1	**2**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH2	0.1-0.2	F: Sand	<4	<0.4	**8**	**13**	**31**	<0.1	**8**	**63**	**3.8**	**0.4**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH2	0.8-1.0	Sand	<4	<0.4	**2**	<1	**1**	<0.1	<1	**2**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
SDUP1	-	Intra-lab Duplicate	<4	<0.4	**7**	**18**	**23**	<0.1	**7**	**41**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1	0.1-0.2	Triplicate	<4	<0.4	**14**	**17**	**80**	<0.1	**14**	**110**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			7	7	7	7	7	7	7	7	5	5	3	3	3	3	3	5	5	5	5	5	5	5	5	5	4
Maximum Value			<PQL	<PQL	14	18	80	<PQL	14	110	3.8	0.4	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Not Detected
Statistical Analysis on Fill Samples																											
Number of Fill Samples			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mean Value			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Standard Deviation			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
% UCL			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
UCL Value			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Concentration above the CT1	**VALUE**
Concentration above SCC1	**VALUE**
Concentration above the SCC2	**VALUE**
Concentration above PQL	**Bold**

TABLE S7
SOIL QA/QC SUMMARY

			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD		*4*	*0.4*	*1*	*1*	*1*	*0.1*	*1*	*1*
	PQL Envirolab VIC		*4.0*	*0.4*	*1.0*	*1.0*	*1.0*	*0.1*	*1.0*	*1.0*
Intra laboratory duplicate	BH1	0.1-0.2	<4	<0.4	5	15	22	<0.1	6	40
	SDUP1	-	<4	<0.4	7	18	23	<0.1	7	41
	MEAN		nc	nc	6	16.5	22.5	nc	6.5	40.5
	RPD %		nc	nc	33%	18%	4%	nc	15%	2%

Result outside of QA/QC acceptance criteria

Appendix D: Borehole Logs

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BOREHOLE LOG

Borehole No. 1

Client: MACARTHUR PROJECTS

Project: PROPOSED MIXED USE DEVELOPMENT

Location: 1105-1107 BARRENJOEY ROAD, PALM BEACH, NSW

Job No.: 33500S

Method: SPIRAL AUGER AND WASHBORE

R.L. Surface: ~4.0 m

Date: 12/11/20

Datum: AHD

Plant Type: JK205

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									-	BRICK PAVERS: 50mm.t	M			
										FILL: fine coarse grained sand, orange brown, trace of igneous gravel.				
									SP	SAND: fine to medium grained, light yellow brown.	M	MD		MARINE
					N = 11 5,5,6	3	1							
												L		
					N = 8 3,4,4	2	2							
												MD		
ON 18/11/20					N = 16 3,5,11	1	3				W			
ON COMPETION OF CORING						0	4			as above, light grey, with trace of clay.				COMMENCE WASHBORE DRILLING
					N = 11 3,4,7	-1	5							
												L		
					N = 6 2,2,4	-2	6							

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BOREHOLE LOG

Borehole No. 1

Client: MACARTHUR PROJECTS

Project: PROPOSED MIXED USE DEVELOPMENT

Location: 1105-1107 BARRENJOEY ROAD, PALM BEACH, NSW

Job No.: 33500S

Method: SPIRAL AUGER AND WASHBORE

R.L. Surface: ~4.0 m

Date: 12/11/20

Datum: AHD

Plant Type: JK205

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
									SP	SAND: fine to medium grained, grey, trace of fine to coarse grained sandstone gravel, and shell fragments.	W	L - MD		
				■	N = 10 1,3,7	-4	8							
				■	N = 11 3,5,6	-5	9							
						-6	10			SAND: fine to coarse grained, grey, trace of fine to medium grained igneous gravel.				
				■	N = 8 3,4,4	-7	11							
														LOW 'TC' BIT RESISTANCE
					N=SPT 2/ 0mm REFUSAL	-8	12			REFER TO CORED BOREHOLE LOG				NO SPT RETURN GROUNDWATER MONITORING WELL INSTALLED TO 5.9m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 0.1m TO 5.9m. 2mm SAND FILTER PACK 0.4m TO 5.9m. BENTONITE SEAL 0.1m TO 0.4m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
						-9	13							

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CORED BOREHOLE LOG

Borehole No. 1 3 / 4

Client: MACARTHUR PROJECTS

Project: PROPOSED MIXED USE DEVELOPMENT

Location: 1105-1107 BARRENJOEY ROAD, PALM BEACH, NSW

Job No.: 33500S **Core Size:** NMLC **R.L. Surface:** ~4.0 m

Date: 12/11/20 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **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 (Specific / General)	Formation
					START CORING AT 12.00m						
		-8	12		SANDSTONE: fine to medium grained, light grey mottled with orange brown.	MW	H				
					NO CORE 0.60m						
		-9	13		Silty sandy CLAY: medium plasticity, light grey and red brown, with iron indurated bands.	w>PL	St			(12.80m) HP: 440 kPa (12.90m) HP: 140 kPa (13.20m) HP: 250 kPa	Newport Formation
		-10	14				Hd			(13.60m) HP: >600 kPa	
					WASHBORING						
		-11	15								
		-12	16		NO CORE 0.71m						
		-13	17		Extremely Weathered sandstone: silty sandy CLAY, grey, with iron indurated bands.	XW	Hd			(16.90m) HP: >600 kPa (17.50m) HP: 400 kPa (17.90m) HP: 500kPa	Newport Formation

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

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CORED BOREHOLE LOG

Borehole No. 1 **4 / 4**

Client: MACARTHUR PROJECTS

Project: PROPOSED MIXED USE DEVELOPMENT

Location: 1105-1107 BARRENJOEY ROAD, PALM BEACH, NSW

Job No.: 33500S **Core Size:** NMLC **R.L. Surface:** ~4.0 m

Date: 12/11/20 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **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 $I_s(50)$ (VL -0.1, L -0.3, M -1, H -3, VH -10, EH)	DEFECT DETAILS: SPACING (mm) (600, 200, 60, 20)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
					Extremely Weathered siltstone: silty CLAY, dark grey, with iron indurated bands.	XW	Hd			(18.30m) HP: >600 kPa	Newport Formation
		-15	19		Extremely Weathered sandstone: silty clayey SAND, fine to medium grained, light grey and orange brown.		D				
		-16	20		END OF BOREHOLE AT 19.50 m						
		-17	21								
		-18	22								
		-19	23								
		-20	24								

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

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BOREHOLE LOG

Borehole No. 2

Client: MACARTHUR PROJECTS

Project: PROPOSED MIXED USE DEVELOPMENT

Location: 1105-1107 BARRENJOEY ROAD, PALM BEACH, NSW

Job No.: 33500S

Method: SPIRAL AUGER AND WASHBORE

R.L. Surface: ~4.1 m

Date: 11/11/20

Datum: AHD

Plant Type: JK308

Logged/Checked By: S.D./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						4			-	BRICK PAVER: 50mm.t	M			
										FILL: Sand, fine to medium grained, brown, with silt, trace of fine to medium grained igneous and sandstone gravel.				
									SP		M	L		MARINE
					N = 8 3,4,4					SAND: fine to medium grained, light brown and brown.				
						3	1							
					N = 8 2,3,5					as above, but light brown.				
						2	2							
					N = 8 3,4,4									
DURING DRILLING (3.3m) ON COMPLETION OF CORING (3.48m) ON 18/11/20						1	3				W			
					N = 25 11,13,12	0	4					MD		
						-1	5							COMMENCED WASHBORE DRILLING
					N = 6 2,2,4	-2	6		CI	Sandy silty CLAY: medium plasticity, light grey, with fine to medium grained sand.	w>PL	St	170 190 110	RESIDUAL
									CH			VSt		

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BOREHOLE LOG

Borehole No. 2

Client: MACARTHUR PROJECTS

Project: PROPOSED MIXED USE DEVELOPMENT

Location: 1105-1107 BARRENJOEY ROAD, PALM BEACH, NSW

Job No.: 33500S
Method: SPIRAL AUGER AND WASHBORE
R.L. Surface: ~4.1 m
Date: 11/11/20
Datum: AHD
Plant Type: JK308
Logged/Checked By: S.D./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
						-3			CH	Silty CLAY: high plasticity, light grey, trace of fine to medium grained ironstone gravel. *(continued)*	w>PL	VSt		
				■	N = 17 2,7,10								310 290 320	
						-4	8							
				■	N = 17 4,9,8	-5	9			as above, but without ironstone gravel.		VSt - Hd	360 420 290	
						-6	10							
										REFER TO CORED BOREHOLE LOG				GROUNDWATER MONITORING WELL INSTALLED TO 5.76m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 2.76m TO 5.76m. CASING 0.11m TO 2.76m. 2mm SAND FILTER PACK 0.6m TO 5.76m. BENTONITE SEAL 0.3m TO 0.6m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
						-7	11							
						-8	12							
						-9	13							

JKGeotechnics

CORED BOREHOLE LOG

Borehole No. 2 **3 / 3**

Client: MACARTHUR PROJECTS

Project: PROPOSED MIXED USE DEVELOPMENT

Location: 1105-1107 BARRENJOEY ROAD, PALM BEACH, NSW

Job No.: 33500S **Core Size:** NMLC **R.L. Surface:** ~4.1 m

Date: 11/11/20 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK308 **Bearing:** N/A **Logged/Checked By:** S.D./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 Specific / General	Formation
		-6			START CORING AT 10.12m			VL -0.1, L -0.3, M -1, H -3, VH -10, EH	600, 200, 60, 20		
			11		Extremely Weathered sandstone: silty clayey SAND, fine to medium grained, light grey, with iron indurated bands.	XW	(D)				
		-7			Extremely Weathered siltstone: silty CLAY, medium to high plasticity, light grey, grey and brown.		Hd			(11.20m) HP: 500 kPa (11.40m) HP: >600 kPa (11.60m) HP: >600 kPa (11.80m) HP: >600 kPa	
			12		SANDSTONE: fine to medium grained, light grey and brown, bedded at 0-5°.	HW	VL			(12.10m) J, 65°, P, R, Cn (12.32m) CS, 0° (12.42m) J, 70 - 90°, Un, R, Cn	
100% RETURN		-8								(12.73m) J, 60°, P, R, Cn (12.82m) J, 60°, P, R, Cn (12.87m) J, 80°, Un, R, Cn	
		-9	13							(13.11m) XWS, 0°	
					Extremely Weathered siltstone: silty CLAY, medium to high plasticity, grey.	XW	Hd			(13.40m) HP: >600 kPa	
					SANDSTONE: fine to medium grained, light grey, bedded at 0-5°.	SW	L - M			(13.75m) J, 90°, P, R, Cn	
					Extremely Weathered siltstone: silty CLAY, medium to high plasticity, grey.	XW	Hd			(13.90m) HP: >600 kPa	
		-10	14		SANDSTONE: fine to medium grained, light grey, bedded at 0-5°.	SW	L - M			(14.21m) J, 70°, P, R, Cn	
					Extremely Weathered siltstone: silty CLAY, high plasticity, grey and brown.	XW	Hd			(14.60m) HP: >600 kPa (14.70m) HP: >600 kPa	
					SANDSTONE: fine to medium grained, light grey, bedded at 0-5°.	SW	L - M			(15.26m) Jh, 75°, Un	
		-11	15							(15.60m) J, 80°, Un, R, Cn (15.79m) CS, 0° (15.92m) CS, 0°	
			16								
		-12			END OF BOREHOLE AT 16.10 m						

Newport Formation

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:

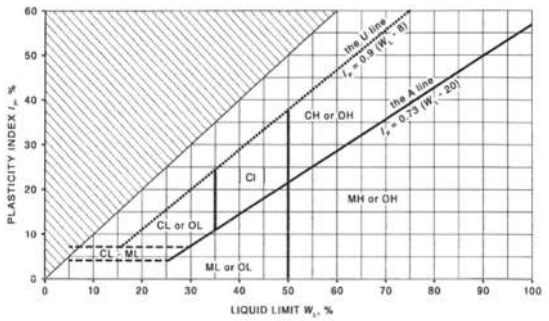
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

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.

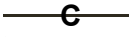
3 Clay soils with liquid limits > 35% and ≤ 50% may be classified as being of medium plasticity.

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 Report(s) & COC Documents

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 255800

Client Details

Client	JK Environments
Attention	Todd Hore
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E33500PH, Palm Beach**
Number of Samples	8 Soil
Date samples received	16/11/2020
Date completed instructions received	16/11/2020

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	23/11/2020
Date of Issue	20/11/2020

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

Results Approved By
Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Senior Chemist
Lucy Zhu, Asbestos Supervisor
Manju Dewendrage, Chemist

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		255800-1	255800-2	255800-5	255800-6
Your Reference	UNITS	BH1	BH1	BH2	BH2
Depth		0.1-0.2	0.3-0.4	0.1-0.2	0.8-1.0
Date Sampled		12/11/2020	12/11/2020	11/11/2020	11/11/2020
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Date analysed	-	19/11/2020	19/11/2020	19/11/2020	19/11/2020
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	%	103	108	117	106

svTRH (C10-C40) in Soil					
Our Reference		255800-1	255800-2	255800-5	255800-6
Your Reference	UNITS	BH1	BH1	BH2	BH2
Depth		0.1-0.2	0.3-0.4	0.1-0.2	0.8-1.0
Date Sampled		12/11/2020	12/11/2020	11/11/2020	11/11/2020
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50
Surrogate o-Terphenyl	%	91	90	88	86

PAHs in Soil					
Our Reference		255800-1	255800-2	255800-5	255800-6
Your Reference	UNITS	BH1	BH1	BH2	BH2
Depth		0.1-0.2	0.3-0.4	0.1-0.2	0.8-1.0
Date Sampled		12/11/2020	12/11/2020	11/11/2020	11/11/2020
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.4	<0.1
Anthracene	mg/kg	<0.1	<0.1	0.2	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.5	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.5	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.3	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.6	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.4	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.2	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.4	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	3.8	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	0.6	<0.5
Surrogate p-Terphenyl-d14	%	115	121	120	122

Organochlorine Pesticides in soil			
Our Reference		255800-1	255800-5
Your Reference	UNITS	BH1	BH2
Depth		0.1-0.2	0.1-0.2
Date Sampled		12/11/2020	11/11/2020
Type of sample		Soil	Soil
Date extracted	-	18/11/2020	18/11/2020
Date analysed	-	18/11/2020	18/11/2020
alpha-BHC	mg/kg	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	109	110

Organophosphorus Pesticides in Soil			
Our Reference		255800-1	255800-5
Your Reference	UNITS	BH1	BH2
Depth		0.1-0.2	0.1-0.2
Date Sampled		12/11/2020	11/11/2020
Type of sample		Soil	Soil
Date extracted	-	18/11/2020	18/11/2020
Date analysed	-	18/11/2020	18/11/2020
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	109	110

PCBs in Soil			
Our Reference		255800-1	255800-5
Your Reference	UNITS	BH1	BH2
Depth		0.1-0.2	0.1-0.2
Date Sampled		12/11/2020	11/11/2020
Type of sample		Soil	Soil
Date extracted	-	18/11/2020	18/11/2020
Date analysed	-	18/11/2020	18/11/2020
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	109	110

Acid Extractable metals in soil						
Our Reference		255800-1	255800-2	255800-5	255800-6	255800-7
Your Reference	UNITS	BH1	BH1	BH2	BH2	SDUP1
Depth		0.1-0.2	0.3-0.4	0.1-0.2	0.8-1.0	-
Date Sampled		12/11/2020	12/11/2020	11/11/2020	11/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	5	2	8	2	7
Copper	mg/kg	15	<1	13	<1	18
Lead	mg/kg	22	<1	31	1	23
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	<1	8	<1	7
Zinc	mg/kg	40	2	63	2	41

Acid Extractable metals in soil		
Our Reference		255800-9
Your Reference	UNITS	BH1 - [TRIPLICATE]
Depth		0.1-0.2
Date Sampled		12/11/2020
Type of sample		Soil
Date prepared	-	18/11/2020
Date analysed	-	18/11/2020
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	14
Copper	mg/kg	17
Lead	mg/kg	80
Mercury	mg/kg	<0.1
Nickel	mg/kg	14
Zinc	mg/kg	110

Moisture						
Our Reference		255800-1	255800-2	255800-5	255800-6	255800-7
Your Reference	UNITS	BH1	BH1	BH2	BH2	SDUP1
Depth		0.1-0.2	0.3-0.4	0.1-0.2	0.8-1.0	-
Date Sampled		12/11/2020	12/11/2020	11/11/2020	11/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Date analysed	-	19/11/2020	19/11/2020	19/11/2020	19/11/2020	19/11/2020
Moisture	%	7.1	4.5	5.4	6.1	13

Asbestos ID - soils					
Our Reference		255800-1	255800-2	255800-5	255800-6
Your Reference	UNITS	BH1	BH1	BH2	BH2
Depth		0.1-0.2	0.3-0.4	0.1-0.2	0.8-1.0
Date Sampled		12/11/2020	12/11/2020	11/11/2020	11/11/2020
Type of sample		Soil	Soil	Soil	Soil
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Sample mass tested	g	Approx. 30g	Approx. 15g	Approx. 35g	Approx. 40g
Sample Description	-	Brown coarse-grained soil & rocks	Beige coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained 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
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	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-020	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-020	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-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	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-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. 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.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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-023	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-2	255800-5
Date extracted	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
Date analysed	-			19/11/2020	1	19/11/2020	19/11/2020		19/11/2020	19/11/2020
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	113	116
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	113	116
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	108	111
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	107	110
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	113	121
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	119	119
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	118	119
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	109	1	103	123	18	107	111

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	255800-5
Date extracted	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
Date analysed	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	124	106
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	109	99
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	92	126
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	124	106
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	109	99
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	92	126
Surrogate o-Terphenyl	%		Org-020	108	1	91	89	2	96	88

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	255800-5
Date extracted	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
Date analysed	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	116	98
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	106
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	100
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	117	108
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	116
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	113	114
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	120	104
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	110	122
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	116	1	115	114	1	110	119

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	255800-5
Date extracted	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
Date analysed	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	111	96
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	88
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	123	108
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	117	108
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	118	90
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	90
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	109	102
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	102
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	110	92
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	124	82
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	113	1	109	101	8	100	113

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	255800-5
Date extracted	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
Date analysed	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	80	70
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	102
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	103	94
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	125	96
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	118	98
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	110	98
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	125	122
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	113	1	109	101	8	100	113

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	255800-5
Date extracted	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
Date analysed	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	120	140
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	113	1	109	101	8	100	107

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	255800-5
Date prepared	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
Date analysed	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	18/11/2020
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	106	93
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	101	80
Chromium	mg/kg	1	Metals-020	<1	1	5	6	18	102	88
Copper	mg/kg	1	Metals-020	<1	1	15	15	0	105	107
Lead	mg/kg	1	Metals-020	<1	1	22	22	0	101	88
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	105	102
Nickel	mg/kg	1	Metals-020	<1	1	6	8	29	102	80
Zinc	mg/kg	1	Metals-020	<1	1	40	73	58	107	99

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.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

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.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-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.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 255800-1 for Zn. Therefore a triplicate result has been issued as laboratory sample number 255800-9.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Environmental Investigation Services
Attention	Todd Hore

Sample Login Details

Your reference	E33500PH, Palm Beach
Envirolab Reference	255800
Date Sample Received	16/11/2020
Date Instructions Received	16/11/2020
Date Results Expected to be Reported	23/11/2020

Sample Condition

Samples received in appropriate condition for analysis	
No. of Samples Provided	8 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	13
Cooling Method	Ice Pack
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 Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils	On Hold
BH1-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH1-0.3-0.4	✓	✓	✓				✓	✓	
BH1-0.5-0.6									✓
BH1-1.5-1.6									✓
BH2-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	
BH2-0.8-1.0	✓	✓	✓				✓	✓	
SDUP1							✓		
SDUP2									✓

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	JKE Job Number: E33500PH	JKEnvironments
12 ASHLEY STREET		REAR OF 115 WICKS ROAD
CHATSWOOD NSW 2067		MACQUARIE PARK, NSW 2113
P: (02) 99106200	Date Results Required: STANDARD	P: 02-9888 5000 F: 02-9888 5001
F: (02) 99106201		Attention: Todd Hore
Attention: Aileen	Page: 1	

Location:	Palm Beach						Sample Preserved in Esky on Ice											
Sampler:	WS						Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6a	Combo 3a	8 Heavy Metals									
12.11.20	1	BH1	0.1-0.2	G, A	0.2	F: Sand	X											
12.11.20	2	BH1	0.3-0.4	G, A	0	Sand		X										
12.11.20	3	BH1	0.5-0.6	G, A	0	Sand												
12.11.20	4	BH1	1.5-1.6	G, A	0	Sand												
11.11.20	5	BH2	0.1-0.2	G, A	0	F: Sand	X											
11.11.20	6	BH2	0.8-1.0	G, A	0	Sand		X										
12.11.20	7	SDUP1	-	G	-	Soil DUP			X									
11.11.20	8	SDUP2	-	G	-	Soil DUP												

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 155800
Date Received: 16/11/20
Time Received: 1015
Received By: XM
Temp: Cool/Ambient
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: Hore	Date: 16/11/20	Time: 9am NOJ	Received By: C.Mullen	Date: 13/11/20

COC: 16/11/20 1015

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ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 256187

Client Details

Client	JK Environments
Attention	Todd Hore
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E33500PH, Palm Beach**
Number of Samples	13 soil
Date samples received	19/11/2020
Date completed instructions received	19/11/2020

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	26/11/2020
Date of Issue	26/11/2020

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

sPOCAS field test						
Our Reference		256187-1	256187-2	256187-3	256187-4	256187-5
Your Reference	UNITS	BH1	BH1	BH1	BH1	BH1
Depth		0.1-0.2	0.3-0.4	1.0-1.1	2.0-2.1	2.5-2.6
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020
Date analysed	-	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020
pH_F (field pH test)*	pH Units	8.6	8.9	9.0	9.0	9.2
pH_{FOX} (field peroxide test)*	pH Units	7.4	7.3	7.0	7.0	6.9
Reaction Rate*	-	Medium reaction	Medium reaction	Medium reaction	Medium reaction	Medium reaction

sPOCAS field test						
Our Reference		256187-6	256187-7	256187-8	256187-9	256187-10
Your Reference	UNITS	BH1	BH1	BH1	BH2	BH2
Depth		3.0-3.1	3.5-3.6	4.0-4.1	0.1-0.2	0.8-1.0
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020
Date analysed	-	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020
pH_F (field pH test)*	pH Units	9.1	8.8	8.2	8.3	8.9
pH_{FOX} (field peroxide test)*	pH Units	7.1	7.0	7.1	7.0	6.7
Reaction Rate*	-	Medium reaction	Medium reaction	Medium reaction	Medium reaction	Medium reaction

sPOCAS field test				
Our Reference		256187-11	256187-12	256187-13
Your Reference	UNITS	BH2	BH2	BH2
Depth		1.9-2.0	2.6-2.7	3.9-4.0
Date Sampled		12/11/2020	12/11/2020	12/11/2020
Type of sample		soil	soil	soil
Date prepared	-	20/11/2020	20/11/2020	20/11/2020
Date analysed	-	20/11/2020	20/11/2020	20/11/2020
pH_F (field pH test)*	pH Units	8.9	8.9	8.6
pH_{FOX} (field peroxide test)*	pH Units	7.2	7.1	8.2
Reaction Rate*	-	Medium reaction	Medium reaction	Medium reaction

Method ID	Methodology Summary
Inorg-063	pH- measured using pH meter and electrode. Soil is oxidised with Hydrogen Peroxide or extracted with water. Based on section H, Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004. To ensure accurate results these tests are recommended to be done in the field as pH may change with time thus these results may not be representative of true field conditions.

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
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Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-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.

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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.

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ph 02 9910 6200 fax 02 9910 6201
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SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	Todd Hore

Sample Login Details

Your reference	E33500PH, Palm Beach
Envirolab Reference	256187
Date Sample Received	19/11/2020
Date Instructions Received	19/11/2020
Date Results Expected to be Reported	26/11/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	13 soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10.9
Cooling Method	None
Sampling Date Provided	YES

Comments

Mismatch Job ID
COC: E33500PH
Sample: E335005

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:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	sPOCAS field test
BH1-0.1-0.2	✓
BH1-0.3-0.4	✓
BH1-1.0-1.1	✓
BH1-2.0-2.1	✓
BH1-2.5-2.6	✓
BH1-3.0-3.1	✓
BH1-3.5-3.6	✓
BH1-4.0-4.1	✓
BH2-0.1-0.2	✓
BH2-0.8-1.0	✓
BH2-1.9-2.0	✓
BH2-2.6-2.7	✓
BH2-3.9-4.0	✓

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

Additional Info

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TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:	JKE Job Number: E33500PH	FROM: JKEnvironments
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	Date Results Required: STANDARD Page: 1	REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Todd Hore

Location:	Palm Beach					Sample Preserved in Esky on Ice											
Sampler:	WS					Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	Sample Description	pH Field Test											
12.11.20	1	BH1	0.1-0.2	P	F: Sand	X											
12.11.20	2	BH1	0.3-0.4	P	Sand	X											
12.11.20	3	BH1	1.0-1.1	P	Sand	X											
12.11.20	4	BH1	2.0-2.1	P	Sand	X											
12.11.20	5	BH1	2.5-2.6	P	Sand	X											
12.11.20	6	BH1	3.0-3.1	P	Sand	X											
12.11.20	7	BH1	3.5-3.6	P	Sand	X											
12.11.20	8	BH1	4.0-4.1	P	Sand	X											
11.11.20	9	BH2	0.1-0.2	P	F: Sand	X											
11.11.20	10	BH2	0.8-1.0	P	Sand	X											
11.11.20	11	BH2	1.9-2.0	P	Sand	X											
11.11.20	12	BH2	2.6-2.7	P	Sand	X											
11.11.20	13	BH2	3.9-4.0	P	Sand	X											

ENVIROLAB GROUP

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

Job No: 256187

Date Received: 19/11/2020 18:00

Time Received:

Received By:

Temp: Cool/Ambient

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: 12:00	Received By:	Date: 13/11/2020

10.9°C

COC: 19/11/2020
15.101

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 256187-A

Client Details

Client	JK Environments
Attention	Todd Hore
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E33500PH, Palm Beach**
Number of Samples	13 soil
Date samples received	19/11/2020
Date completed instructions received	26/11/2020

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	03/12/2020
Date of Issue	03/12/2020

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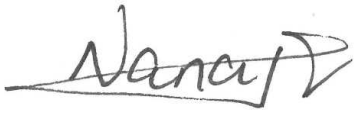
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

Chromium Suite						
Our Reference		256187-A-2	256187-A-5	256187-A-6	256187-A-8	256187-A-10
Your Reference	UNITS	BH1	BH1	BH1	BH1	BH2
Depth		0.3-0.4	2.5-2.6	3.0-3.1	4.0-4.1	0.8-1.0
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	27/11/2020	27/11/2020	27/11/2020	27/11/2020	27/11/2020
Date analysed	-	27/11/2020	27/11/2020	27/11/2020	27/11/2020	27/11/2020
pH $_{kcl}$	pH units	9.1	9.1	9.2	9.0	9.1
s-TAA pH 6.5	%w/w S	<0.01	<0.01	<0.01	<0.01	<0.01
TAA pH 6.5	moles H^+ /t	<5	<5	<5	<5	<5
Chromium Reducible Sulfur	%w/w	<0.005	<0.005	<0.005	0.005	<0.005
a-Chromium Reducible Sulfur	moles H^+ /t	<3	<3	<3	<3	<3
S_{HCl}	%w/w S	NT	NT	NT	NT	NT
S_{KCl}	%w/w S	<0.005	<0.005	<0.005	<0.005	<0.005
S_{NAS}	%w/w S	NT	NT	NT	NT	NT
ANC_{BT}	% $CaCO_3$	7.8	8.8	7.4	10	4.6
s-ANC_{BT}	%w/w S	2.5	2.8	2.4	3.3	1.5
s-Net Acidity	%w/w S	<0.005	<0.005	<0.005	<0.005	<0.005
a-Net Acidity	moles H^+ /t	<5	<5	<5	<5	<5
Liming rate	kg $CaCO_3$ /t	<0.75	<0.75	<0.75	<0.75	<0.75
a-Net Acidity without ANCE	moles H^+ /t	<5	<5	<5	<5	<5
Liming rate without ANCE	kg $CaCO_3$ /t	<0.75	<0.75	<0.75	<0.75	<0.75
s-Net Acidity without ANCE	%w/w S	<0.005	<0.005	<0.005	0.0050	<0.005

Chromium Suite			
Our Reference		256187-A-12	256187-A-13
Your Reference	UNITS	BH2	BH2
Depth		2.6-2.7	3.9-4.0
Date Sampled		12/11/2020	12/11/2020
Type of sample		soil	soil
Date prepared	-	27/11/2020	27/11/2020
Date analysed	-	27/11/2020	27/11/2020
pH $_{kcl}$	pH units	9.2	9.1
s-TAA pH 6.5	%w/w S	<0.01	<0.01
TAA pH 6.5	moles H^+ /t	<5	<5
Chromium Reducible Sulfur	%w/w	<0.005	<0.005
a-Chromium Reducible Sulfur	moles H^+ /t	<3	<3
S_{HCl}	%w/w S	NT	NT
S_{KCl}	%w/w S	<0.005	<0.005
S_{NAS}	%w/w S	NT	NT
ANC_{BT}	% $CaCO_3$	9.5	13
s-ANC_{BT}	%w/w S	3.0	4.1
s-Net Acidity	%w/w S	<0.005	<0.005
a-Net Acidity	moles H^+ /t	<5	<5
Liming rate	kg $CaCO_3$ /t	<0.75	<0.75
a-Net Acidity without ANCE	moles H^+ /t	<5	<5
Liming rate without ANCE	kg $CaCO_3$ /t	<0.75	<0.75
s-Net Acidity without ANCE	%w/w S	<0.005	<0.005

Method ID	Methodology Summary
Inorg-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.

QUALITY CONTROL: Chromium Suite						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			27/11/2020	[NT]	[NT]	[NT]	[NT]	27/11/2020	[NT]
Date analysed	-			27/11/2020	[NT]	[NT]	[NT]	[NT]	27/11/2020	[NT]
pH $_{kcl}$	pH units		Inorg-068	[NT]	[NT]	[NT]	[NT]	[NT]	98	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-068	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
TAA pH 6.5	moles H^+ /t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Chromium Reducible Sulfur	moles H^+ /t	3	Inorg-068	<3	[NT]	[NT]	[NT]	[NT]	115	[NT]
S_{HCl}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{KCl}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
ANC_{BT}	% $CaCO_3$	0.05	Inorg-068	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-ANC_{BT}	%w/w S	0.05	Inorg-068	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-Net Acidity	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Net Acidity	moles H^+ /t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Liming rate	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Net Acidity without ANCE	moles H^+ /t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Liming rate without ANCE	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-Net Acidity without ANCE	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[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.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

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.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-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.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	Todd Hore

Sample Login Details

Your reference	E33500PH, Palm Beach
Envirolab Reference	256187-A
Date Sample Received	19/11/2020
Date Instructions Received	26/11/2020
Date Results Expected to be Reported	03/12/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	13 soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10.9
Cooling Method	None
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:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	Chromium Suite	On Hold
BH1-0.1-0.2		✓
BH1-0.3-0.4	✓	
BH1-1.0-1.1		✓
BH1-2.0-2.1		✓
BH1-2.5-2.6	✓	
BH1-3.0-3.1	✓	
BH1-3.5-3.6		✓
BH1-4.0-4.1	✓	
BH2-0.1-0.2		✓
BH2-0.8-1.0	✓	
BH2-1.9-2.0		✓
BH2-2.6-2.7	✓	
BH2-3.9-4.0	✓	

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.

From: Todd Hore <THore@jkenvironments.com.au>
Sent: Thursday, 26 November 2020 3:23 PM
To: Aileen Hie <AHie@envirolab.com.au>
Subject: 256187

Hi Aileen,
Can you please schedule the following additional analyses for E33500PH:

	Sample No.		SCR
BH1	1	0.1-0.2	
BH1	2	0.3-0.4	X
BH1	3	1.0-1.1	
BH1	4	2.0-2.1	
BH1	5	2.5-2.6	X
BH1	6	3.0-3.1	X
BH1	7	3.5-3.6	
BH1	8	4.0-4.1	X
BH2	9	0.1-0.2	
BH2	10	0.8-1.0	X
BH2	11	1.9-2.0	
BH2	12	2.6-2.7	X
BH2	13	3.9-4.0	X

256187-A

Due: 3/12/20

Regards
Todd Hore
Senior Associate | Environmental Engineer

JK Group are now predominantly working from our office. Please contact us by mobile phone rather than landline as some staff are still working from home.

T: +612 9888 5000
D: 0414 863 307
E: THore@jkenvironments.com.au
www.jkenvironments.com.au

PO Box 976
NORTH RYDE BC NSW 1670
115 Wicks Road
MACQUARIE PARK NSW 2113

JKEnvironments

Appendix F: Report Explanatory Notes

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)[16] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[17]. 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;
- All blank data reported;

[16] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)

[17] Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*

- 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 investigation is provided in the following table:

Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Intra-laboratory duplicate (soil)	SDUP1 (primary sample BH1 0.1-0.2m)	Approximately 10% of primary samples	Heavy metals

The results for the field QA/QC samples are detailed in the laboratory summary tables (Table S7) attached to the investigation 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.

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. Field sampling procedures were designed 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°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 Duplicates

The results indicated that field precision was acceptable. One RPD non-conformance was reported for chromium in SDUP1/BH1 (0.1-0.2m). This exceedance has been attributed to sample heterogeneity and the very low concentrations in the samples. As both the primary and duplicate sample results were less than the SAC, the exceedances are not considered to have had an adverse impact on the data set as a whole.

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 investigation.

A review of the laboratory QA/QC data identified the following minor non-conformances:

- The laboratory RPD acceptance criteria was exceeded for one sample (255800-1) for Zinc. Therefore, a triplicate result has been issued as laboratory sample number 255800-9.

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: Information on Acid Sulfate Soils

A. Background

Acid Sulfate Soil (ASS) is formed from iron rich alluvial sediments and sulfate (found in seawater) in the presence of sulfate reducing bacteria and plentiful organic matter. These conditions are generally found in mangroves, salt marsh vegetation or tidal areas and at the bottom of coastal rivers and lakes. ASS materials are distinguished from other soil or sediment materials (referred to as 'soil materials' throughout the National Acid Sulfate Soils Guidance) by having properties and behaviour that have either:

1) Been affected considerably by the oxidation of Reduced Inorganic Sulfur (RIS), or
2) The capacity to be affected considerably by the oxidation of their RIS constituents.

Acid sulfate soil materials include potential acid sulfate soils (PASS or sulfidic soil materials) and actual acid sulfate soils (AASS or sulfuric soil materials). These are often found in the same profile, with AASS overlying PASS. PASS and AASS are defined further below:

- PASS are soil materials which contain RIS such as pyrite. The field pH of these soils in their undisturbed state is usually more than pH 4 and is commonly neutral to alkaline (pH 7–9). These soil materials are invariably saturated with water in their natural state. Their texture may be peat, clay, loam, silt or sand and is often dark grey in colour and soft in consistence, but these materials may also exhibit colours that are dark brown, or medium to pale grey to white; and
- AASS are soil materials which contained RIS such as pyrite that have undergone oxidation. This oxidation results in low pH (that is pH less than 4) and often a yellow (jarosite) and/or orange to red mottling (ferric iron oxides) in the soil profile. Actual ASS contains Actual Acidity, and commonly also contains RIS (the source of Potential Sulfuric Acidity) as well as Retained Acidity.

B. The ASS Planning Maps

The ASS planning maps provide an indication of the relative potential for disturbance of ASS to occur at locations within the council area. These maps do not provide an indication of the actual occurrence of ASS at a site or the likely severity of the conditions.

The maps are divided into five classes dependent upon the type of activities/works that if undertaken, may represent an environmental risk through the development of acidic conditions associated with ASS:

Table 1: Risk Classes

Risk Class	Description
Class 1	All works.
Class 2	All works below existing ground level and works by which the water table is likely to be lowered.
Class 3	Works at depths beyond 1m below existing ground level or works by which the water table is likely to be lowered beyond 1m below existing ground level.
Class 4	Works at depths beyond 2m below existing ground level or works by which the water table is likely to be lowered beyond 2m below existing ground level.

Risk Class	Description
Class 5	Works within 500m of adjacent Class 1, 2, 3, 4 land which are likely to lower the water table below 1m AHD on the adjacent land.

C. The ASS Risk Maps

The ASS risk maps provide an indication of the probability of occurrence of ASS materials at a particular location based on interpretation from geological and soil landscape maps. The maps provide classes based on high probability, low probability, no known occurrence and areas of disturbed terrain (site specific assessment necessary) and the likely depth at which ASS materials are likely to be encountered.

D. Interpretation of ASS Field Tests

Tables A1 and A2 below provide some guidance on the interpretation of pH_F and pH_{FOX} test results, as detailed in the *National Acid Sulfate Soil Guidance: National acid sulfate soils sampling and identification methods manual* (2018):

Table A1: Interpretation of some pH_F test ranges

pH value	Result	Comments
$pH_F \leq 4$, jarosite not observed in the soil layer/horizon	May indicate an AASS indicating previous oxidation of RIS or may indicate naturally occurring, non ASS soils.	Generally not conclusive as naturally occurring, non ASS soils, such as many organic soils (for example peats) and heavily leached soils, often also return $pH_F \leq 4$.
$pH_F \leq 4$, jarosite observed in the soil layer/horizon	The soil material is an AASS.	Jarosite and other iron precipitate minerals in ASS such as schwertmannite require a pH < 4 to form and indicate prior oxidation of RIS.
$pH_F > 7$	Expected in waterlogged, unoxidised, or poorly drained soils.	Marine muds commonly have a pH > 7 which reflects a seawater (pH 8.2) influence. Oxidation of samples with H_2O_2 can help indicate if the soil materials contain RIS.

Source: Adapted from DER (2015a).

Table A2: Interpretation of pH_{FOX} test results

pH value and reaction	Result	Comments
Strong reaction of soil with H_2O_2 (that is X or V)	Useful indicator of the presence of RIS but cannot be used alone	Organic rich substrates such as peat and coffee rock, and soil constituents like manganese oxides, can also cause a reaction. Care must be exercised in interpreting these results. Laboratory analyses are required to confirm if appreciable RIS is present.
pH_{FOX} value at least one unit below field pH_F and strong reaction with H_2O_2 (that is X or V)	May indicate PASS	The difference between pH_F and pH_{FOX} is termed the ΔpH. Generally the larger the ΔpH the more indicative of PASS. The lower the final pH_{FOX} the better the likelihood of an appreciable RIS content. For example, a change from pH_F of 8 to pH_{FOX} of 7 (that is a ΔpH of 1) would not indicate PASS, however, a unit change from pH_F of 3.5 to pH_{FOX} of 2.5 would be indicative of PASS. Laboratory analyses are required to confirm if appreciable RIS is present.

pH_{FOX} < 3, large pH and a strong reaction with H_2O_2 (that is X or V)	Strongly indicates PASS	The lower the pH_{FOX} below 3, the greater the likelihood that appreciable RIS is present. A combination of all three parameters – pH_{FOX}, ΔpH and reaction strength – gives the best indication of PASS. Laboratory analyses are required to confirm that appreciable RIS is present.
A pH_{FOX} 3–4 and Low, Medium or Strong reaction with H_2O_2	Inconclusive	RIS may be present; however, organic matter may also be responsible for the decrease in pH. Laboratory analyses are required to confirm the presence of RIS.
pH_{FOX} 4–5	Inconclusive	RIS may be present in small quantities, or poorly reactive under rapid oxidation, or the sample may contain shell/ carbonate which neutralises some or all acid produced on oxidation. Equally, the pH_{FOX} value may be due to the production of organic acids with no RIS present. Laboratory analyses are required to confirm if appreciable RIS is present.
pH_{FOX} > 5, small or no pH, but Low, Medium or Strong reaction with H_2O_2	Inconclusive	For neutral to alkaline pHF with shell or white concretions, the fizz test with 1 M HCl can be used to identify the presence of carbonates. Laboratory analyses are required to confirm if appreciable RIS is present and further testing is required to confirm that effective self-neutralising materials are present.

Source: Adapted from DER (2015a).

Appendix I: Guidelines and Reference Documents

Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). Acid Sulfate Soils Manual

Australian and New Zealand Environment Conservation Council (ANZECC), (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality

Canadian Council of Ministers of the Environment, (1999). Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)

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Contaminated Land Management Act 1997 (NSW)

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

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

National Health and Medical Research Council (NHMRC), (2018). National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011

NSW Department of Environment and Conservation, (2007). Guidelines for the Assessment and Management of Groundwater Contamination

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

NSW EPA, (2020). Consultants Reporting on Contaminated Land, Contaminated Land Guidelines

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

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

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

World Health Organisation (WHO), (2008). Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality

Western Australia Department of Health, (2009). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia