REPORT TO

ROYAL MOTOR YACHT CLUB BROKEN BAY

ON

PRELIMINARY SITE INVESTIGATION AND PRELIMINARY ACID SULFATE SOIL ASSESSMENT

FOR

PROPOSED ALTERATIONS AND ADDITIONS

AT

ROYAL MOTOR YACHT CLUB, 46 PRINCE ALFRED PARADE, NEWPORT, NSW

Date: 25 January 2023
Ref: E35645Prpt

JKEnvironments
www.jkenvironments.com.au

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

Report prepared by:

Alexis Diodati
Environmental Scientist

Report reviewed by:

Brendan Page
Principal Associate | Environmental Scientist
CEnvP SC

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

DOCUMENT REVISION RECORD

Report Reference	Report Status	Report Date
E35645Prpt	Final Report	25 January 2023

Executive Summary

Royal Motor Yacht Club Broken Bay ('the client') commissioned JK Environments (JKE) to undertake a Preliminary Site Investigation (PSI) in relation to contamination and a Preliminary Acid Sulfate Soil (ASS) Assessment for the proposed alterations and additions at the Royal Motor Yacht Club, 46 Prince Alfred Parade, Newport, NSW. The investigation was confined to the proposed development footprint, which is referred to as 'the site' throughout this report. The site location and approximate boundaries are shown on Figure 1 and Figure 2 attached in the appendices.

The purpose of the investigation is to make a preliminary assessment of site contamination and ASS conditions. This report has been prepared to support the lodgement of a Development Application (DA) for the proposed alterations and additions.

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, and make a preliminary assessment of the soil contamination and ASS conditions. 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);
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint);
- Assess whether further intrusive investigation and/or remediation is required; and
- Assess whether an ASS management plan (ASSMP) is required.

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) and action criteria;
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

The investigation included a review of background and historical information, a site walkover inspection, and sampling from four boreholes. The site was historically part of the Pittwater water body and foreshore, before being reclaimed via filling in the 1960's, to be utilised by the yacht club. Since that time, the site was predominantly part of the car park area, before being redeveloped to include club facilities associated with the bistro/dining area.

Potential contamination sources identified at the site and the immediate surrounds included:

- Historic filling activities;
- Use of pesticides beneath the buildings and/or around the site; and
- Hazardous building materials within former and current structures.

Contamination was not identified within the scope of the PSI and we consider that the potential for site contamination to pose an unacceptable risk to the receptors in the context of the proposed land use is relatively low.

The PSI did not identify any triggers for remediation. Therefore, JKE is of the opinion that the site is suitable for the proposed development, from a contamination viewpoint. There is a potential for unexpected finds on site and this can be managed via the development and implementation of a suitable Unexpected Finds Protocol (UFP) so that risks from potential contamination remain low and acceptable.

PASS was identified and potential environmental risks relating to the disturbance of this material are to be managed under an ASSMP.

Our recommendations are as follows:

- A suitably qualified contamination land consultant who is a Certified Environmental Practitioner Site Contamination (CEnvP SC) specialist, or equivalent, must prepare an appropriate UFP which is to be implemented during the proposed development works;
- An ASSMP is to be prepared to consider the soil disturbance which will occur during the proposed development works and outline the requirements for the management of PASS materials during the works; and
- The UFP and ASSMP should be integrated into the Construction Environmental Management Plan (CEMP) for the construction works.

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

Table of Contents

List of Tables

Attachments

Abbreviations

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

Sampling, Analysis and Quality Plan	**SAQP**
Site Audit Statement	**SAS**
Site Audit Report	**SAR**
State Environmental Planning Policy	**SEPP**
Site Specific Assessment	**SSA**
Source, Pathway, Receptor	**SPR**
Standing Water Level	**SWL**
Trip Blank	**TB**
Total Recoverable Hydrocarbons	**TRH**
Trip Spike	**TS**
Upper Confidence Limit	**UCL**
United States Environmental Protection Agency	**USEPA**
Underground Storage Tank	**UST**
Volatile Organic Compounds	**VOC**
World Health Organisation	**WHO**
Work Health and Safety	**WHS**

Units

Litres	**L**
Metres BGL	**mBGL**
Metres	**m**
Milligrams per Kilogram	**mg/kg**
Parts Per Million	**ppm**
Percentage	**%**
Percentage weight for weight	**%w/w**

1 INTRODUCTION

Royal Motor Yacht Club Broken Bay ('the client') commissioned JK Environments (JKE) to undertake a Preliminary Site Investigation (PSI) in relation to contamination and a Preliminary Acid Sulfate Soil (ASS) Assessment for the proposed alterations and additions at the Royal Motor Yacht Club, 46 Prince Alfred Parade, Newport, NSW. The investigation was confined to the proposed development footprint, which is referred to as 'the site' throughout this report. The site location and approximate boundaries are shown on Figure 1 and Figure 2 attached in the appendices.

The purpose of the investigation is to make a preliminary assessment of site contamination and ASS conditions. This report has been prepared to support the lodgement of a Development Application (DA) for the proposed alterations and additions.

1.1 Proposed Development Details

JKE understand that the proposed development includes alterations and additions to the existing Royal Motor Yacht Club facility, including:

- Internal refurbishment to improve amenity and upgrade member services;
- Construction of a two-storey extension to the west of the existing clubhouse to provide dining and social facilities for members;
- Provision of improved accessibility and fire safety compliance to existing parts of the building; and
- Upgrade sustainability performance of the new and upgraded building.

The supplied development plans are attached in the appendices. The proposed depth of soil disturbance associated with the development works has not been confirmed. However, it is anticipated that the development will be close to the existing grade. On this basis we have assumed that that soil disturbance will be minor and will largely occur for the installation of the building foundations and trenching for new services.

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, and make a preliminary assessment of the soil contamination and ASS conditions. 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);
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint);
- Assess whether further intrusive investigation and/or remediation is required; and

- Assess whether an ASS management plan (ASSMP) is required.

1.3 Scope of Work

The investigation was undertaken generally in accordance with a JKE proposal (Ref: EP57696Prev1) of 17 November 2022 and written acceptance from the client of 17 November 2022. 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) and action criteria;
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

The contamination-related scope of work was undertaken with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)[1], other guidelines made under or with regards to the Contaminated Land Management Act (1997)[2] and State Environmental Planning Policy (Resilience and Hazards) 2021[3] (formerly known as SEPP55).

The preliminary ASS assessment and preparation of this report were undertaken with reference to the National Acid Sulfate Soil Guidance (2018) documents the Acid Sulfate Soil Management Advisory Committee (ASSMAC) Acid Sulfate Soil Manual (1998)[4].

A list of reference documents/guidelines is included in the appendices.

1.4 Background on ASS

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

- PASS are soil materials which contain Reduced Inorganic Sulfur (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 soils which contained RIS such as pyrite that have undergone oxidation. The oxidation results in low pH (that is pH less than 4) and often a yellow (jarosite) and/or orange to red mottling (ferric iron

[1] National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).* (referred to as NEPM 2013)
[2] Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)
[3] *State Environmental Planning Policy (Resilience and Hazards) 2021* (NSW) (referred to as SEPP Resilience and Hazards 2021)
[4] Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). *Acid Sulfate Soils Manual (ASS Manual 1998)*

oxides) in the soil profile. Actual ASS contains Actual Acidity, and commonly also contains RIS (the source of Potential Sulfuric Acidity) as well Retained Acidity.

2 SITE INFORMATION

2.1 Background Reports

2.1.1 Groundwater Monitoring Event Report

A groundwater monitoring event was undertaken by Leighton O'Brien Field Services[5] on 7 October 2022 associated with the monitoring of groundwater in the vicinity of three underground fuel storage tanks (USTs) within the south-western portion of the wider yacht club property. It is understood that the USTs are located approximately 25m to the south-west of the site area applicable to this PSI (see Figure 2 attached in the appendices) and contain diesel and unleaded petroleum. The associated bowsers are located along the wharf at the southern-most extent of the wider property.

Groundwater samples were extracted from two monitoring wells located in the vicinity of the USTs and were analysed for total recoverable hydrocarbons (TRHs) and benzene, toluene, ethylbenzene and xylenes (BTEX). All results were below the laboratory practical quantitation limits (PQLs). No light non-aqueous phase liquid (LNAPL) was detected in the wells.

Although all concentrations were below detection limits, the report noted that the groundwater flow direction had not been confirmed, and well installation information had not been provided. Therefore, it was unknown whether the placement and installation of the monitoring wells were sufficient in detecting any leaks from the USTs. The report recommendations included the following:

- Confirm groundwater flow direction;
- Note flow on as built plans for the site;
- Confirm well screening (construction) information; and
- Continue with ongoing monitoring in accordance with the regulations.

Notwithstanding the recommendations made, JKE is of the opinion that the monitoring wells that were sampled were positioned in reasonably close proximity to the USTs and would be expected to detect and significant impacts from fuel leaks from the tanks, had leaks occurred. The groundwater flow direction in that portion of the wider yacht club property is expected to be variable due to tidal movements.

2.1.2 Maintenance and Test Report

A maintenance and pressure test was conducted by Moore Management[6] on 21 April 2022 to determine whether the pipelines associated with the USTs/fuel dispensing infrastructure were leak and defect free. The report indicated that pressure test results from Diesel (Inner Wharf and Outer Dock), Premium Unleaded Petrol (Inner Wharf) and Unleaded Petrol (Inner Wharf) were all deemed to 'pass' and met AS1940 requirements when tested to a pressure of 300kPa. As a result, the installed double walled pipes and joints were determined to be leak and defect free.

[5] Leighton O'Brien Field Services, (2022). *Groundwater Monitoring Event Report*

[6] Moore Management, (2022). *Maintenance and Test Report, Royal Motor Yacht Club, Broken Bay*

2.1.3 Preliminary Environmental Screening

A Preliminary Environmental Screening was undertaken for the wider site by Environmental Investigation Services (EIS) (note EIS re-branded to JKE in mid-2019) in 2000[7] which involved multiple sampling events. The purpose of the screening was to assess the risk of contamination of the sediments and seawater in the vicinity of the slipway at the southern end of the wider property (i.e. to the south of the site applicable to the PSI). Concentrations of heavy metals (copper, zinc, lead and mercury) were detected in the sediment samples and above the adopted guidelines. Tributyltin (TBT) and traces of the organochlorine pesticide (OCP) DDT were also detected in the sediment samples. Exceedances of copper, zinc and TBT were likely associated with the use of marine paints.

The report concluded that not enough data was available to form any firm conclusions regarding the presence and extent of contamination, and recommended additional investigation.

2.2 Site Identification

Table 2-1: Site Identification

Current Site Owner (certificate of title):	Royal Motor Yacht Club Broken Bay New South Wales
Site Address:	Royal Motor Yacht Club, 46 Prince Alfred Parade, Newport, NSW
Lot & Deposited Plan:	Parts of Lot 6 in DP110670, Lot 5 Section 1 in DP4689 and Lot 262 in DP752046
Current Land Use:	Yacht Club
Proposed Land Use:	Yacht Club
Local Government Authority:	Northern Beaches Council
Current Zoning:	RE2: Private Recreation
Site Area (m^2) (approx.):	700
Geographical Location (decimal degrees) (approx.):	Latitude: -33.6483483 Longitude: 151.3055902
Site Location Plan:	Figure 1
Sample Location Plan:	Figure 2

2.3 Site Location and Regional Setting

The wider Royal Motor Yacht Club property is located in a predominantly residential area of Newport and is bound by Prince Alfred Parade to the north-east.

[7] Environmental Investigation Services (EIS), (2000). *Preliminary Environmental Screening, 46 Prince Alfred Parade, Newport*

The site itself occupies part of the eastern portion of the property and is located approximately 50m to the north and east of the water body of Pittwater (and Salt Pan Cove).

2.4 Topography

The regional topography is characterised by a south and west-facing hillside that falls towards Pittwater/Salt Pan Cove. The site is relatively level and is located towards the toe of the hillside, with a gentle slope of approximately 1-2° towards the south. The site and wider yacht club property appear to have been levelled via land reclamation along the foreshore.

2.5 Site Inspection

A walkover inspection of the site was undertaken by JKE on 5 December 2022. The inspection was limited to accessible areas of the site and immediate surrounds. Selected site photographs obtained during the inspection are attached in the appendices.

A summary of the inspection findings is outlined in the following subsections:

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

At the time of the inspection, the majority of the site was occupied by an indoor and outdoor bistro/dining area utilised by the Royal Motor Yacht Club. No indicators of former site use were observed.

2.5.2 Buildings, Structures and Roads

A single-storey brick and glass building with a tiled roof occupied the south-west portion of the site and appeared in good condition. Outside of the building footprint, the majority of the site included brick pavers at the ground surface, with a fabric shade cloth roof. A children's outdoor play equipment area was observed in the northern portion of the site which included slides and climbing equipment on soft-fall flooring (no accessible soils).

2.5.3 Boundary Conditions, Soil Stability and Erosion

The site was generally unfenced and accessible to the wider yacht club property. No evidence of erosion or soil instability was observed.

2.5.4 Presence of Drums/Chemical Storage and Waste

No chemicals or waste were observed during the inspection.

Dip/fill points for three USTs were observed approximately 25m south-west of the site (see Figure 2). Signage indicated that the tanks contained diesel, unleaded petrol and premium unleaded petrol.

The Newport Sewage Pumping Station was observed approximately 70m north-west of the site. Signage at the pumping station indicated that oil and battery waste were stored behind the building. A waste compactor and general/recycling waste storage area was observed immediately south of the pumping station.

2.5.5 Evidence of Cut and Fill

Landscaped hedges raised above the adjacent ground level were observed along the western boundary of the site. The presence of raised garden beds was indicative of potential filling at the site. Overall, however, the site and immediate surrounds to the south and west were considered likely to have been filled via land reclamation processes.

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

Visible or olfactory indicators of contamination were not observed during the inspection.

2.5.7 Drainage and Services

Most surface water from rainfall is expected to be intercepted by the on-site stormwater drainage system before being discharged into the adjoining water body of Pittwater. In periods of prolonged or heavy rainfall, excess surface water flows are expected to flow towards the south, in sympathy with the topography, and enter the water body of Pittwater.

2.5.8 Sensitive Environments

There were no sensitive environments on site or in the adjoining surrounds. The areas of Pittwater (and Salt Pan Cove) further to the south and west of the site appeared to largely be manmade ground formed by land reclamation and these areas did not include any mangroves.

2.5.9 Landscaped Areas and Visible Signs of Plant Stress

Formed gardens were observed along the western site boundary and included exotic hedges, grasses and shrubs. No visible signs of plant stress or dieback were observed.

2.6 Surrounding Land Use

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

- North – Carpark with Newport Sewage Pumping Station (north-west) and residential properties beyond;
- South/south-west – Carpark areas associated with the yacht club, with three USTs and the water body of Pittwater/Salt Pan Cove beyond;
- East – Part of the yacht club property comprising a two-storey building; and
- West – Carpark areas associated with the yacht club, with the water body of Pittwater/Salt Pan Cove beyond.

Considering the topography, the sewer pump station and the USTs were not considered to be off-site sources of contamination that would represent an AEC in the context of the proposed development. JKE did not observe any other land uses in the immediate surrounds that were identified as potential contamination sources for the site.

2.7 Underground Services

The 'Before You Dig Australia' (BYDA) 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.

2.8 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.

It is noted that the planning certificates suggest that part of the land is in a Class 1 ASS risk area. However, we note that this area is not part of the site. This is discussed further in Section 3 of this report.

3 GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Regional geological information was reviewed for the PSI. The information was sourced from our in-house Geographic Information System (GIS) report[8] attached in the appendices. The report indicated that the site is underlain by Quaternary aged deposits of silty to peaty quartz sand, silty and clay, ferruginous and humic cementation in places with common shell layers.

3.2 Acid Sulfate Soil (ASS) Risk and Planning

ASS information presented in the JKE GIS report indicated that the site is not located in an ASS risk area according to the Department of Land and Water Conservation risk map series. However, the site is located within 50m of an area (i.e. Pittwater) classed as having a 'high probability' of ASS occurrence in bottom sediments.

Council planning information on ASS presented in the JKE GIS report indicated that the site is located within a Class 5 ASS risk area. Works in a Class 5 risk area that could pose an environmental risk in terms of ASS include works within 500m of adjacent Class 1,2,3,4 land which are likely to lower the water table below 1m AHD on the adjacent Class 1,2,3,4 land.

3.3 Hydrogeology

Hydrogeological information presented in the JKE GIS 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 no registered bores within the report buffer of 500m.

The information reviewed for the PSI indicates that the subsurface conditions at the site are expected to consist of fill and moderate to high permeability (alluvial) soils overlying bedrock. Abstraction and use of groundwater at the site or in the immediate surrounds may be viable under these conditions, however the use of groundwater is not proposed as part of the development and does not appear to be occurring based on the absence of any licensed groundwater users nearby. 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 south-west. However, it is noted that groundwater, particularly loser to Pittwater, is likely to be influenced by tidal movements.

3.4 Receiving Water Bodies

The site location and regional topography indicates that excess surface water flows have the potential to enter the Pittwater/Salt Pan Cove located down-gradient of the site. This water body is a potential receptor.

[8] JKE, (2022). *E35645P Newport (Referred to as JKE GIS report).*

4 SITE HISTORY INFORMATION

4.1 Review of Historical Aerial Photographs

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

Table 4-1: Summary of Historical Aerial Photographs

Year	Details
1955	**On-site:** The site was part of the Pittwater water body, adjacent to the foreshore. **Off-site:** The surrounds to the east largely included vacant bushland, with scattered residential type properties and associated access roads/driveways.
1965	**On-site:** The site appeared to be reclaimed/filled. There may have been a small structure in the eastern part of the site. **Off-site:** Land reclamation works appeared to be underway to the south of the site. The land to the east and north of the site appeared predominantly used for residential purposes.
1971	**On-site:** The image was of poor quality. The site appeared to form part of a wider car park area, likely associated with the yacht club. The small structure was no longer visible. **Off-site:** Further land reclamation had occurred to the west and south of the site, and these works appeared complete, with the areas in use as a carpark. Marina berths were constructed south of the site in Pittwater. The main clubhouse building was visible to the east of the site.
1975	The site and the immediate surrounds generally appeared similar to the previous photograph.
1982	**On-site:** The site appeared generally similar to the previous photograph. **Off-site:** A swimming pool was visible to the east of site. Additional marina berths had been constructed to the west and north-west of the site in Pittwater.
1986 1991	The site and immediate surrounds generally appeared similar to the previous photograph.
1994[9] 1996 1998	The site and the immediate surrounds generally appeared similar to the previous photograph, except a structure was visible in the southern/eastern portion of the site in the 1998 photograph. This appeared consistent with the existing shade cloth feature.
2004 2005	The site and immediate surrounds generally appeared 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 InfoTrack. Copies of the title records are attached in the appendices. The title records indicate that between 1919 and 1937, parts of the site were owned by various individuals with occupations including solicitor, medical practitioner, clerk, funeral director and importer. Between 1927 and 1973, parts of the site were purchased by The Broken Bay Club-House Limited. In 1973, the Royal Motor Yacht Club of New South Wales

[9] We note that the site location shown on the 1994 photograph is incorrect due to a georeferencing issue

Broken Bay Branch (now Royal Motor Yacht Club Broken Bay New South Wales) took ownership of the site and remain the current proprietor.

Activities associated with the yacht club such as fuel storage and maintenance of boats have the potential to result in site contamination. However, it is note that the site has predominantly appeared to form part of a car park area.

4.3 Review of Council and SafeWork Records

A search and review of council and SafeWork records is currently underway. The results will be provided when received.

4.4 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 JKE GIS 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)[10];
- Licensed activities under the Protection of the Environment Operations Act (1997)[11];
- 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	A current license was identified for the wider property relating to the general construction and maintenance of boats at the Royal Motor Yacht Club.	A current license for general construction and maintenance of boats was identified 454m south-east of the site. This license was held by The Royal Prince Alfred Yacht Club and such activities are not

[10] 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)

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

Records	On-site	Off-site
		considered to represent a potential 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

4.5 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 4-3: Summary of Historical Land Uses / Activities

Year(s)	On-site - Potential Land Use / Activities	Off-site - Potential Land Use / Activities
To at least 1955	The site formed part of the water body of Pittwater, adjacent to the foreshore.	Bushland and residential land use.
Circa 1965	Land reclamation/filling of the site occurred. There may have been a small structure on site in the 1965 aerial photograph (this was subsequently demolished).	Land reclamation/filling occurred to the south of the site. Further residential development in the site surrounds.
1971 - Current	The site appeared to form part of the car park area associated with the yacht club until around the 1990s when part of the site was redeveloped to include a shade structure associated with the clubhouse facilities.	The main yacht club building was visible to the east of the site by 1971. Additional development of the club and residential areas in the surrounds occurred.

4.6 Integrity of Site History Information

The majority of the site history information was obtained from government organisations as outlined in the relevant sections of this report. The veracity of the information from these sources is considered to be relatively high. A certain degree of information loss can be expected given the lack of specific land use details over time. However, it is noted that the JKE GIS 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 9.

5.1 Potential Contamination Sources/AEC and CoPC

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.
Use of pesticides – Pesticides may have been used beneath the buildings and/or around the site for general pest control applications.	Heavy metals and OCPs.
Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition activities. These materials may also be present in the existing buildings/ structures on site.	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	Potential mechanisms for contamination include: • Fill material – importation of impacted material, 'top-down' impacts (e.g. placement of fill, leaching from surficial material etc), or sub-surface release (e.g. impacts from buried material); • Use of pesticides – 'top-down' and spills (e.g. during normal use, application and/or improper storage); • Hazardous building materials – 'top-down' (e.g. demolition resulting in surficial impacts in unpaved areas);
Affected media	Soil has been identified as the potentially affected medium. The potential for groundwater impacts is considered to be relatively low. However, groundwater

	would need to be considered in the event significant contamination (i.e. high concentrations of mobile/leachable contamination) was identified in soil.
Receptor identification	Human receptors include site occupants/users (including adults and children), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users (adults and children) and recreational water users within Pittwater Bay. 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. In the context of the proposed development, it is expected that the site will predominantly be paved and there will not be extensive areas of exposed soils. 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.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the proposed building (from soil contamination); • Contact (dermal, ingestion or inhalation) with exposed soils during construction and potentially in minor 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

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). 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.

Investigation data is also required to assess the potential for ASS to be disturbed during the development, and assess whether an ASSMP is required.

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 or ASS 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?
- Does the proposed development require an ASSMP?

6.1.3 Step 3 - Identify Information Inputs

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

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

- Laboratory analysis of soils for ASS indicators and conditions using acid base accounting methods; and
- Field and laboratory QA/QC data.

6.1.4 Step 4 - Define the Study Boundary

The sampling was confined to the borehole locations as shown in Figure 2 and was limited vertically to a maximum depth of 2.6mBGL (spatial boundary). The sampling was completed on 5 December 2022 (temporal boundary). The assessment of potential risk to adjacent land users has been made based on data collected within the site boundary.

Access to the site for drilling/soil sampling was significantly constrained by the existing site features and operations. On this basis, sampling occurred from locations positioned marginally beyond the site boundary. Considering the filling history, we are of the opinion that the soils at the sampling locations are likely to be sufficiently representative of the soil conditions on site, to the extent that reasonable conclusions can be drawn regarding the potential for site contamination.

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

6.1.5.1 Tier 1 Screening Criteria

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

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

6.1.5.2 Field and Laboratory QA/QC

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

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

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

6.1.5.3 Appropriateness of Practical Quantitation Limits (PQLs)

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

6.1.6 Step 6 – Specify Limits on Decision Errors

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

Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. For this 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.

Quantitative limits on decision errors were not established as the sample plan was not probabilistic.

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 for the PSI were collected from four locations (BH1 to BH4 inclusive) as shown on the attached Figure 2. The sampling plan was not designed to meet the minimum sampling density for hotspot identification, as outlined in the NSW EPA Sampling Design Part 1 – Application (2022)[12] contaminated land guidelines due to the preliminary nature of the investigation and site access constraints.

[12] NSW EPA, (2022). *Sampling design part 1 - application.* (referred to as EPA Sampling Design Guidelines 2022)

Aspect	Input
	Samples for the ASS assessment were collected from the same four locations. This sampling density met the minimum requirements outlined in the *National Acid Sulfate Soil Guidance: National acid sulfate soils sampling and identification methods manual* (2018)[13]
Sampling Plan	The sampling locations were placed on a judgemental sampling plan in accessible areas, as close as practicable to the site. This sampling plan was considered suitable to make a preliminary assessment of potential risks associated with the AEC and CoPC identified in the CSM, and assess whether further investigation is warranted. Sampling for ASS generally occurred from soils, until the termination depth of the boreholes or to the depth of bedrock.
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 push tube drill rig and 150mm diameter auger. Soil samples were obtained from disposable polyethylene push tube samplers and directly from the auger. Each borehole was initially advanced using push tubes for standard contamination sampling, then subsequently using a 150mm diameter auger to facilitate the asbestos quantification sampling.
Sample Collection and Field QA/QC	Soil samples were obtained on 5 December 2022 in accordance with our 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 for general contamination analysis 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. Samples for ASS analysis were placed in plastic bags within minimal headspace and sealed with twist ties. During sampling, soil at selected depths was split into primary and duplicate samples for field QA/QC analysis. The field splitting procedure included 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. The field screening for asbestos quantification included the following: • A representative bulk sample was collected from fill at 1m intervals, or from each distinct fill profile to the extent practicable (noting that limited sample return occurred). The quantity of material for each sample varied based on whatever return could be achieved using the auger. The bulk sample intervals are shown on the attached borehole logs; • Each sample was weighed using an electronic scale; • Each bulk sample was passed through a sieve with a 7.1mm aperture and inspected for the presence of fibre cement. Any soil clumps/nodules were disaggregated;

[13] Water Quality Australia, (2018). *National Acid Sulfate Soils Guidance: National acid sulfate soils sampling and identification methods manual*

Aspect	Input
	• The condition of fibre cement or any other suspected asbestos materials was noted on the field records; and • If observed, any fragments of fibre cement in the bulk sample were collected, placed in a zip-lock bag and assigned a unique identifier. Calculations for asbestos content were undertaken based on the requirements outlined in Schedule B1 of NEPM (2013), as summarised in Section 7. The scale used to weigh the 10L samples was not calibrated, however this is not considered significant as this method of providing a weight for the bulk sample is considered to be considerably more accurate than applying a nominal soil density conversion.
Decontami-nation and Sample Preservation	Sampling personnel used disposable nitrile gloves during sampling activities. Re-usable sampling equipment was decontaminated using Decon90 and potable water. Soil samples were preserved by immediate storage in an insulated sample container with ice. On completion of the fieldwork, the samples were stored temporarily in fridges (ASS samples were stored in a freezer) in the JKE warehouse before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard chain of custody (COC) procedures.

6.3 Analytical Schedule

The soil analysis typically targeted the fill soils, with samples selected and analysed for the CoPC (applicable to fill) in an attempt to provide representative coverage of the various fill profiles encountered.

Soil samples for the ASS assessment were analysed for ASS field tests (including pH_F and pH_{FOX}) and using the chromium reducible sulfur (S_{CR}) acid base accounting analytical methods. All tests/analysis were performed at the laboratory and JKE did not carry out the testing in the field due to time constraints.

6.3.1 Laboratory Analysis

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

Table 6-2: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates and trip spike samples)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	312387, 312387-A

7 SITE ASSESSMENT CRITERIA (SAC) / ACTION CRITERIA

7.1 Contamination

Although children have been identified as potential receptors, we are of the opinion that use of the site by children is expected to be infrequent and of short duration given the nature of the proposed land use. On this basis, and considering the site redevelopment will not include extensive landscaping and extensive areas of exposed soils, we consider that assessment of contamination risks in the context of a 'commercial/industrial' land use setting is appropriate.

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

7.1.1 Human Health

- Health Investigation Levels (HILs) for a 'commercial/industrial' exposure scenario (HIL-D);
- Health Screening Levels (HSLs) for a 'commercial/industrial' exposure scenario (HSL-D). 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)[14]; and
- Asbestos was assessed against the HSL-D criteria. However, given the preliminary nature of the investigation, the results were also considered on the basis of presence/absence (i.e. detected or not detected). A summary of the asbestos criteria is provided in the table below:

Table 7-1: Details for Asbestos SAC

Guideline	Applicability
Asbestos in Soil	The HSL-D criteria were adopted for the assessment of asbestos in soil. The SAC adopted for asbestos were derived from the NEPM 2013 and are based on the Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2021)[15]. The SAC include the following: • No visible asbestos at the surface/in the top 10cm of soil; • <0.05% w/w bonded asbestos containing material (ACM) in soil; and • <0.001% w/w asbestos fines/fibrous asbestos (AF/FA) in soil. Concentrations for bonded ACM concentrations in soil are based on the following equation which is presented in Schedule B1 of NEPM (2013): **% w/w asbestos in soil =** $\frac{\text{**% asbestos content x bonded ACM (kg)**}}{\text{Soil volume (L) x soil density (kg/L)}}$ However, we are of the opinion that the actual soil volume in a 10L bucket varies considerably due to the presence of voids, particularly when assessing cohesive soils.

[14] 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*

[15] Western Australian (WA) Department of Health (DoH), (2021). *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. (referred to as WA DoH 2021)

Guideline	Applicability
	Therefore, each bucket sample was weighed using electronic scales and the above equation was adjusted as follows (we note that the units have also converted to grams): **% w/w asbestos in soil =** $\frac{\text{**% asbestos content x bonded ACM (g)**}}{\text{Soil weight (g)}}$

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

7.1.2 Environment (Ecological – terrestrial ecosystems)

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for a 'commercial/industrial' 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[16];
- 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)[17].This method is considered to be adequate for the Tier 1 screening.

7.2 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.

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

[16] 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)

[17] 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

Type of material		Net Acidity			
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.

8 RESULTS

8.1 Summary of Data (QA/QC) Evaluation

The data evaluation is presented in the appendices. In summary, JKE is 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	Asphaltic Concrete (AC) pavement was encountered at the surface in all borehole locations.
Fill	Fill was encountered beneath the pavement in all boreholes and extended to depths of approximately 0.8mBGL to 1.5mBGL. The fill typically comprised clayey gravelly sand (roadbase), silty sandy clay, sandy clay and silty clay with inclusions of asphalt, igneous, sandstone and ironstone gravel, sand, ash and shell fragments.
Natural Soil	Alluvial sandy soils and (possibly) residual silty clay soils were encountered beneath the fill in BH3 and BH4 respectively. The natural soils extended to the termination depth of BH3 at 2.6mBGL and to a depth of approximately 2mBGL in BH4. Organic odours were observed in BH3 in the natural soils.
Bedrock	Sandstone bedrock was encountered beneath the fill in BH1 and BH2, and beneath the natural soils in BH4. The sandstone extended to the termination depth of these boreholes, at a maximum depth of 2.6mBGL. BH2 may have refused on a sandstone boulder (floater) in fill, rather than bedrock, however, this could not be confirmed based on the drilling observations.
Groundwater	On completion of drilling, groundwater SWLs in BH3 and BH4 were measured to be approximately 2.2mBGL and 2.0mBGL respectively. BH1 and BH2 remained dry on completion of drilling.

8.3 Field Screening

A summary of the field screening results is presented in the following table:

Table 8-2: Summary of Field Screening

Aspect	Details
PID Screening of Soil Samples for VOCs	PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. The results ranged from 1ppm to 6ppm equivalent isobutylene. These results indicate a general lack of PID detectable VOCs in the samples and were consistent with observations of no hydrocarbon staining or hydrocarbon odours.
Bulk Screening for Asbestos	The bulk field screening results are summarised in the attached report Table S5. Fibre cement/suspected ACM was not identified during the bulk screening.

8.4 Soil Laboratory Results

The soil laboratory results were assessed against the SAC presented in Section 7. Individual SAC are shown in the report tables attached in the appendices. A summary of the results is presented below:

8.4.1 Human Health and Environmental (Ecological) Assessment

Table 8-3: Summary of Soil Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	6	<PQL	0	0	-
Cadmium	6	<PQL	0	NSL	-
Chromium (total)	6	71	0	0	-
Copper	6	43	0	0	-
Lead	6	14	0	0	-
Mercury	6	<PQL	0	NSL	-
Nickel	6	56	0	0	-
Zinc	6	45	0	0	-
Total PAHs	4	31	0	NSL	-
Benzo(a)pyrene	4	3.1	NSL	0	-
Carcinogenic PAHs (as BaP TEQ)	4	4.4	0	NSL	-
Naphthalene	4	<PQL	0	NSL	-
DDT+DDE+DDD	4	<PQL	0	NSL	-
DDT	4	<PQL	NSL	0	-
Aldrin and dieldrin	4	<PQL	0	NSL	-
Chlordane	4	<PQL	0	NSL	-
Heptachlor	4	<PQL	0	NSL	-
Chlorpyrifos (OPP)	4	<PQL	0	NSL	-
PCBs	4	<PQL	0	NSL	-

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
TRH F1	4	<PQL	0	0	-
TRH F2	4	72	0	0	-
TRH F3	4	800	0	0	-
TRH F4	4	540	0	0	-
Benzene	4	<PQL	0	0	-
Toluene	4	<PQL	0	0	-
Ethylbenzene	4	<PQL	0	0	-
Xylenes	4	<PQL	0	0	-
Asbestos (in soil) (%w/w)		<0.01 ACM <0.001 AF/FA	0	NA	Asbestos was not detected in the samples analysed.

Notes:

N: Total number (primary samples)

NSL: No set limit

NL: Not limiting

8.4.2 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 in the following table:

Table 8-4: Summary of ASS Results

Analysis	N	Comments
pH_F and pH_{FOX}	12	The pH_F results ranged from pH 4.8 to pH 10.7. The pH_{FOX} results ranged from pH 2.3 to pH 10.8. The maximum difference from pH_F to pH_{FOX} was 5.7 pH units.
pH_{FOX} reaction rates	12	Reaction rates ranged from low to volcanic/extreme. Five samples recorded volcanic/extreme reactions, and three samples recorded high reactions. All other reactions were classed as low or medium. The pH_F results, pH_{FOX} results, and reaction rates indicated that some of the soils may contain PASS. Five samples were selected for analysis of ASS characteristics using acid base accounting methods. The samples were selected based on a combination of the pH_F results, pH_{FOX} results and reaction rates, and to provide spatial coverage and vertical distribution through the soil profiles.

Analysis	N	Comments
Net Acidity % S-equiv.	5	The net acidity results ranged from 0.0060% to 0.069%. The net acidity (%/S) results exceeded the action criterion in three samples collected from BH2 (0.4-0.5m), BH3 (2.0-2.3m) and BH4 (0.8-1.0m).
Net Acidity mol H^+/t	5	The net acidity results ranged from below the laboratory PQL of 5mol H^+/t to 43mol H^+/t. The net acidity (mol H^+/t) results exceeded the action criterion in the same three samples collected from BH2 (0.4-0.5m), BH3 (2.0-2.3m) and BH4 (0.8-1.0m).
S_{CR}%	5	The S_{CR}% results ranged from below the laboratory PQL of 0.005% to 0.06%. The highest results correlated with the highest net acidity results, indicating that the net acidity in BH2 (0.4-0.5m), BH3 (2.0-2.3m) and BH4 (0.8-1.0m) is likely to be attributable to oxidisable sulfur concentrations and hence, indicative of PASS.
Liming Rate	5	The liming rate required for neutralisation ranged from <0.075 kg$CaCO_3$/tonne to 3.2 kg$CaCO_3$/tonne.

N: Total number (primary samples)

We note that the use of the less conservative action criteria for 'medium' textured soils (such as would be applicable to silty clay) would still have identified results greater than the action criteria.

9 DISCUSSION

9.1 Contamination Sources/AEC and Potential for Site Contamination

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

- Historic filling/levelling activities;
- Use of pesticides beneath the buildings and around the site; and
- Hazardous building materials from former building and demolition activities, and within the existing buildings and structures.

Considering the above, and based on a qualitative assessment of various lines of evidence as discussed throughout this report, JKE is of the opinion that there is potential for site contamination. The preliminary soil data collected for the investigation is discussed further in the following subsection, as part of the Tier 1 risk assessment.

9.2 Contamination 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.

9.2.1 Contamination

Elevated concentrations of the CoPC were not encountered above the adopted SAC in any of the soil samples analysed for this investigation. On this basis, there were no complete SPR linkages identified.

There was no soil contamination identified that was considered to pose an unacceptable risk to groundwater and the groundwater did not exhibit indicators (i.e. visual or olfactory) of contamination based on observations from the boreholes. Groundwater sampling by others in the vicinity of the off-site USTs did not detect TRHs or BTEX in the groundwater.

9.2.2 Review of CSM

In relation to the CSM, we note the following:

- The boreholes confirmed the presence of imported fill which correlated with the site observations and observations from the historical aerial photographs review regarding historical land reclamation;
- Pesticides were not detected in the samples. However, sampling beneath the building did not occur;
- The fill did not contain significant building and demolition rubble inclusions and there was no fibre cement/suspected ACM observed during the field asbestos quantification sampling. However, sampling did occur from boreholes which only provides a limited visual assessment of the fill;

- Soil contaminant concentrations were low and there were no hydrocarbon odours or hydrocarbon staining observed in soils; and
- Due to the filling and site history, we consider that the data from the boreholes is likely to be representative of the conditions on site.

In light of the above and the overall findings of the PSI, we consider that the potential for site contamination to pose an unacceptable risk to the receptors in the context of the proposed land use is relatively low.

9.3 ASS

PASS conditions were identified within fill and natural soils. Based on the analysis results and the relatively close proximity of the site to Pittwater, an ASSMP should be prepared to manage potential risks to the environment associated with the disturbance of PASS during the proposed development works.

9.4 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, as noted in Section 9.1.

Are any results above the SAC?

No, all results were reported below the SAC.

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

JKE is of the opinion that potential risks associated with contamination at the site are low in the context of the proposed development. There were no complete SPR-linkages identified. There is a potential for unexpected finds on site and this can be managed via the development and implementation of a suitable unexpected finds protocol (UFP) so that risks from potential contamination remain low and acceptable.

PASS was identified and potential environmental risks relating to the disturbance of this material are to be managed under an ASSMP.

Is remediation required?

The PSI did not identify any triggers for remediation.

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

JKE is of the opinion that the site is suitable for the proposed development. It is recommended that the UFP be prepared as part of the Construction Environmental Management Plan (CEMP) for the proposed development.

9.5 Data Gaps

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

Table 9-1: Data Gap Assessment

Data Gap	Assessment
SafeWork and Council records not reviewed	These records have been requested and will be supplied when available. We consider it unlikely that these searches would provide information that would alter the CSM.
Soil sampling was limited	Due to access constraints, soil sampling was limited and only occurred from boreholes located just outside the site boundary. Considering that the filling of the site and these immediately adjoining areas occurred concurrently, we consider that that the data obtained is likely to be representative of the site conditions. Development and implementation of an appropriate UFP during the proposed development works is considered to be appropriate so that contamination-related risks remain low and acceptable.

10 CONCLUSIONS AND RECOMMENDATIONS

The investigation included a review of background and historical information, a site walkover inspection, and sampling from four boreholes. The site was historically part of the Pittwater water body and foreshore, before being reclaimed via filling in the 1960's, to be utilised by the yacht club. Since that time, the site was predominantly part of the car park area, before being redeveloped to include club facilities associated with the bistro/dining area.

Potential contamination sources identified at the site and the immediate surrounds included:

- Historic filling activities;
- Use of pesticides beneath the buildings and/or around the site; and
- Hazardous building materials within former and current structures.

Contamination was not identified within the scope of the PSI and we consider that the potential for site contamination to pose an unacceptable risk to the receptors in the context of the proposed land use is relatively low.

The PSI did not identify any triggers for remediation. Therefore, JKE is of the opinion that the site is suitable for the proposed development, from a contamination viewpoint. There is a potential for unexpected finds on site and this can be managed via the development and implementation of a suitable UFP so that risks from potential contamination remain low and acceptable.

PASS was identified and potential environmental risks relating to the disturbance of this material are to be managed under an ASSMP.

Our recommendations are as follows:

- A suitably qualified contamination land consultant who is a Certified Environmental Practitioner Site Contamination (CEnvP SC) specialist, or equivalent, must prepare an appropriate UFP which is to be implemented during the proposed development works;
- An ASSMP is to be prepared to consider the soil disturbance which will occur during the proposed development works and outline the requirements for the management of PASS materials during the works; and
- The UFP and ASSMP should be integrated into the CEMP for the construction works.

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

11 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: ROYAL MOTOR YACHT CLUB, 46 PRINCE ALFRED PARADE, NEWPORT, NSW

Project No: E35645P

Figure No: 1

JKEnvironments

PLOT DATE: 12/12/2022 1:53:47 PM DWG FILE: K:\SC EIS \JOBS\35000\SIE35645P NEWPORT\CAD\E35645P.DWG

LEGEND

APPROXIMATE SITE BOUNDARY

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

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 4 8 12 16 20

SCALE 1:400 @A3 METRES

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

Title: **SAMPLE LOCATION PLAN**

Location: ROYAL MOTOR YACHT CLUB, 46 PRINCE ALFRED PARADE, NEWPORT, NSW

Project No: E35645P

Figure No: 2

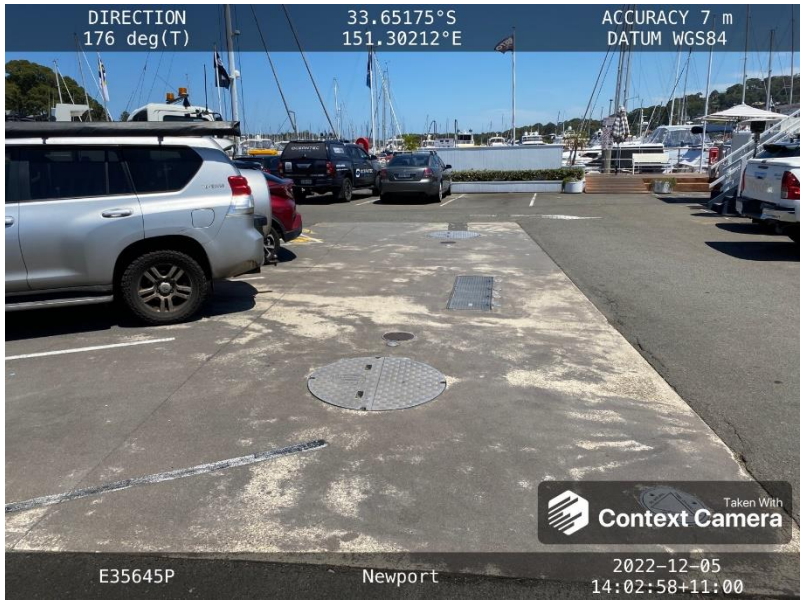
JKEnvironments

PLOT DATE: 12/12/2022 1:53:54 PM DWG FILE: K:\5C EIS JOBS\35000'S\E35645P NEWPORT\CAD\E35645P.DWG

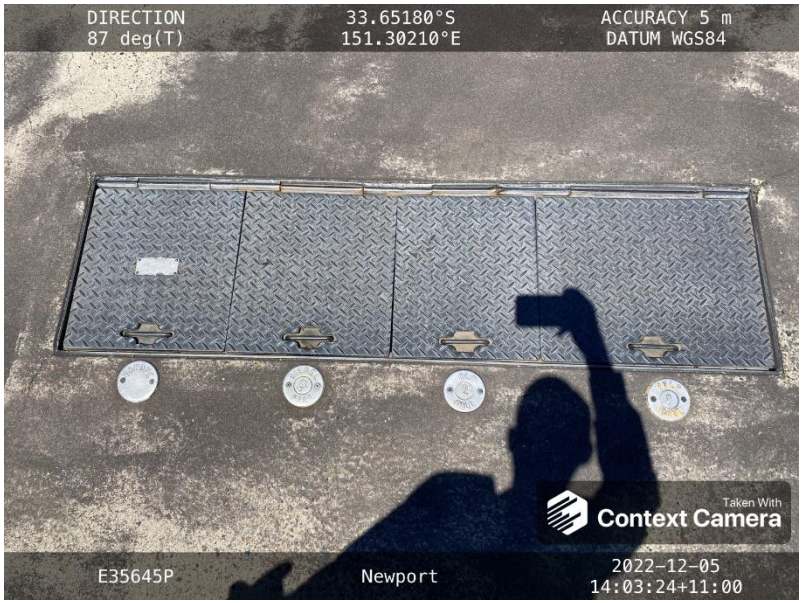
Appendix B: Site Information and Site History

Selected Site Photographs

Photograph 1: Soil return from BH3



Photograph 2: Location of USTs south-west of the site

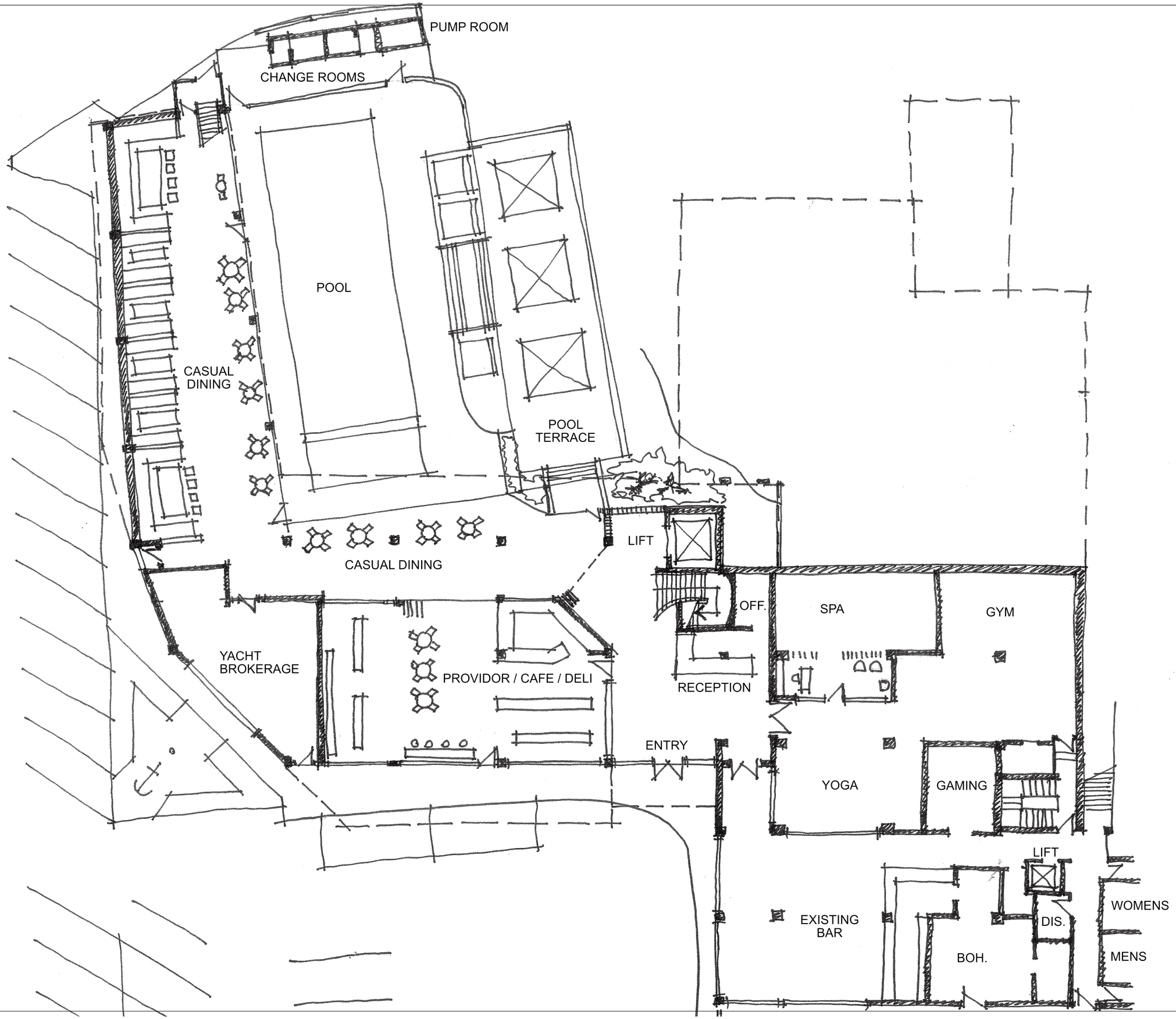


Photograph 3: USTs south-west of the site

Photograph 4: Facing south towards Pittwater Bay

Proposed Development Plans

H:\MCHP\Royal Motor Yacht Club Newport\2022 Pre-DA\Model\21-079_MainModel.rvt 3/8/2022 4:51:45 PM



0 1 5 10
metres

No	Date	Description	By
A	03.08.2022	PRELIMINARY ISSUE	SG

Client

ROYAL MOTOR YACHT CLUB

Project

PROPOSED YACHT CLUB EXTENSION

46 PRINCE ALFRED PARADE
NEWPORT NSW 2106

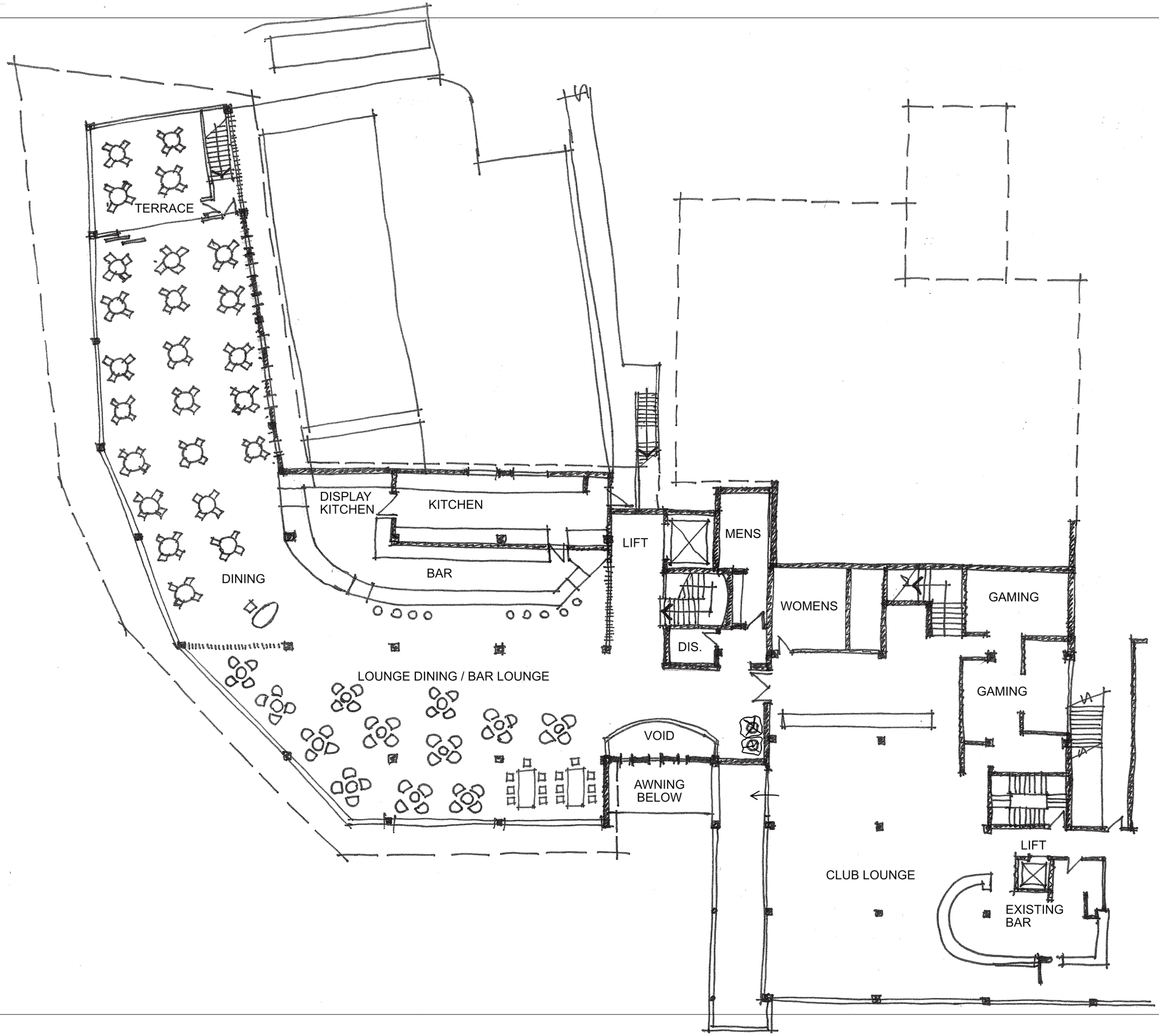
Drawing Title

GROUND FLOOR PLAN

A1 Scale	A3 Scale	Date	Drawn
	HALF A1 SCALE	**02/11/22**	**Author**

Drawing No: **21-079 SK02** Revision: **A**

MCHP ARCHITECTS
SUITE 5, 38-46 ALBANY ST
ST LEONARDS NSW 2065
02 9436 2222 mchp.com.au
ABN: 21 096 632 450
NOMINATED ARCHITECTS:
Craig Ridgewell 9109 NSW David Cahill 7135 NSW | 16212 Vic | 5724 Qld | 2805 ACT | 1093 Tas
MCHP Architects Victorian Registration: 600137



0 1 5 10
metres

No	Date	Description	By
A	03.08.2022	PRELIMINARY ISSUE	SG

Client
ROYAL MOTOR YACHT CLUB

Project
PROPOSED YACHT CLUB EXTENSION

46 PRINCE ALFRED PARADE
NEWPORT NSW 2106

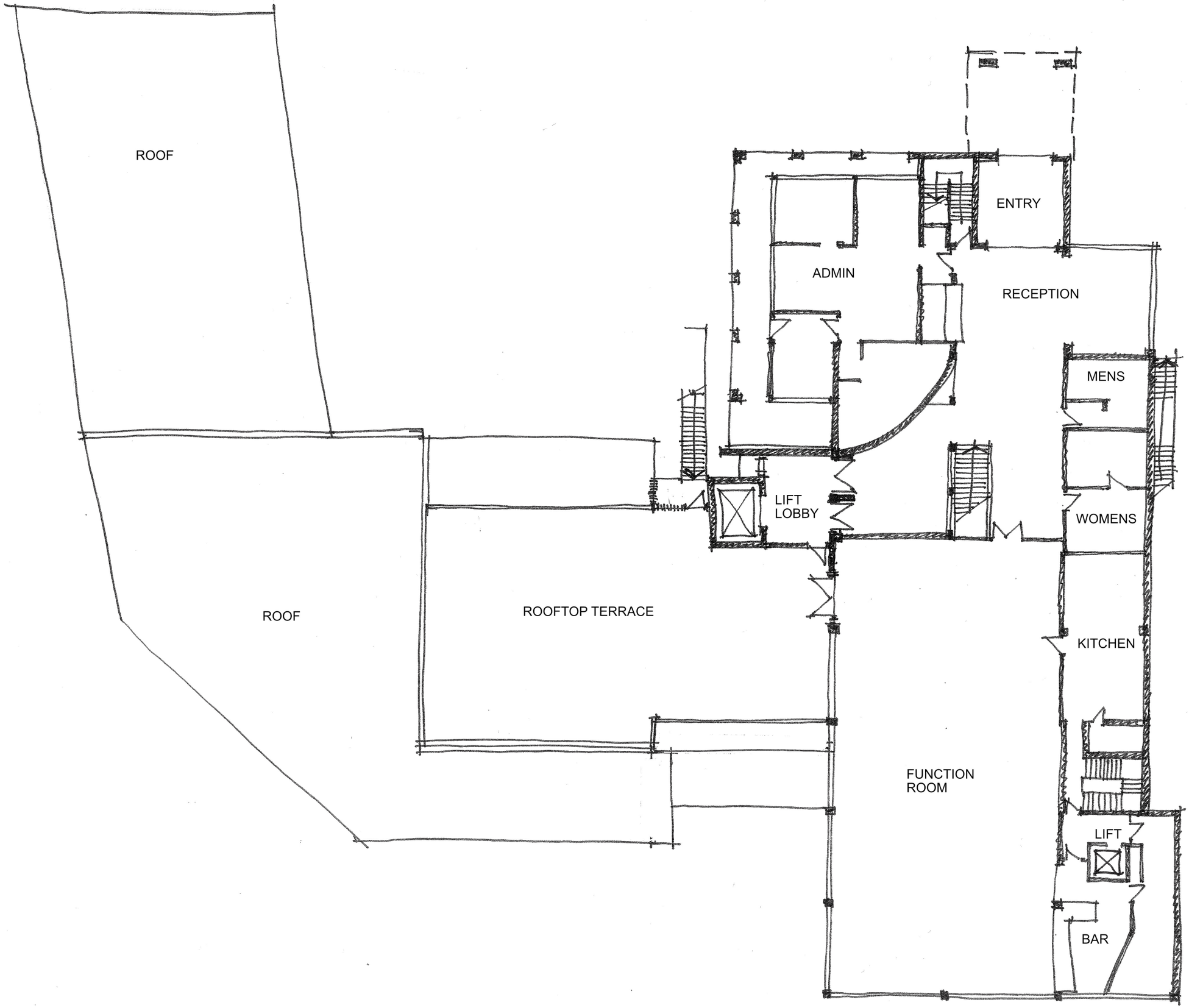
Drawing Title
FIRST FLOOR PLAN

A1 Scale	A3 Scale	Date	Drawn
	HALF A1 SCALE	**02/11/22**	**Author**

Drawing No **21-079 SK03** Revision **A**

MCHP ARCHITECTS
SUITE 5, 38-46 ALBANY ST
ST LEONARDS NSW 2065
02 9436 2222 mchp.com.au
ABN: 21 096 632 450

NOMINATED ARCHITECTS:
Craig Ridgewell 9109 NSW David Cahill 7135 NSW | 16212 Vic | 5724 Qld | 2805 ACT | 1093 Tas
MCHP Architects Victorian Registration: 600137



0 1 5 10
metres

No	Date	Description	By
A	03.08.2022	PRELIMINARY ISSUE	SG

Client

ROYAL MOTOR YACHT CLUB

Project

PROPOSED YACHT CLUB EXTENSION

46 PRINCE ALFRED PARADE
NEWPORT NSW 2106

Drawing Title

SECOND FLOOR PLAN

A1 Scale	A3 Scale	Date	Drawn
	HALF A1 SCALE	**02/11/22**	**Author**

Drawing No **21-079 SK04** Revision **A**

MCHP ARCHITECTS
SUITE 5, 38-46 ALBANY ST
ST LEONARDS NSW 2065
02 9436 2222 mchp.com.au
ABN: 21 096 632 450

NOMINATED ARCHITECTS:
Craig Ridgewell 9109 NSW David Cahill 7135 NSW | 16212 Vic | 5724 Qld | 2805 ACT | 1093 Tas
MCHP Architects Victorian Registration: 600137

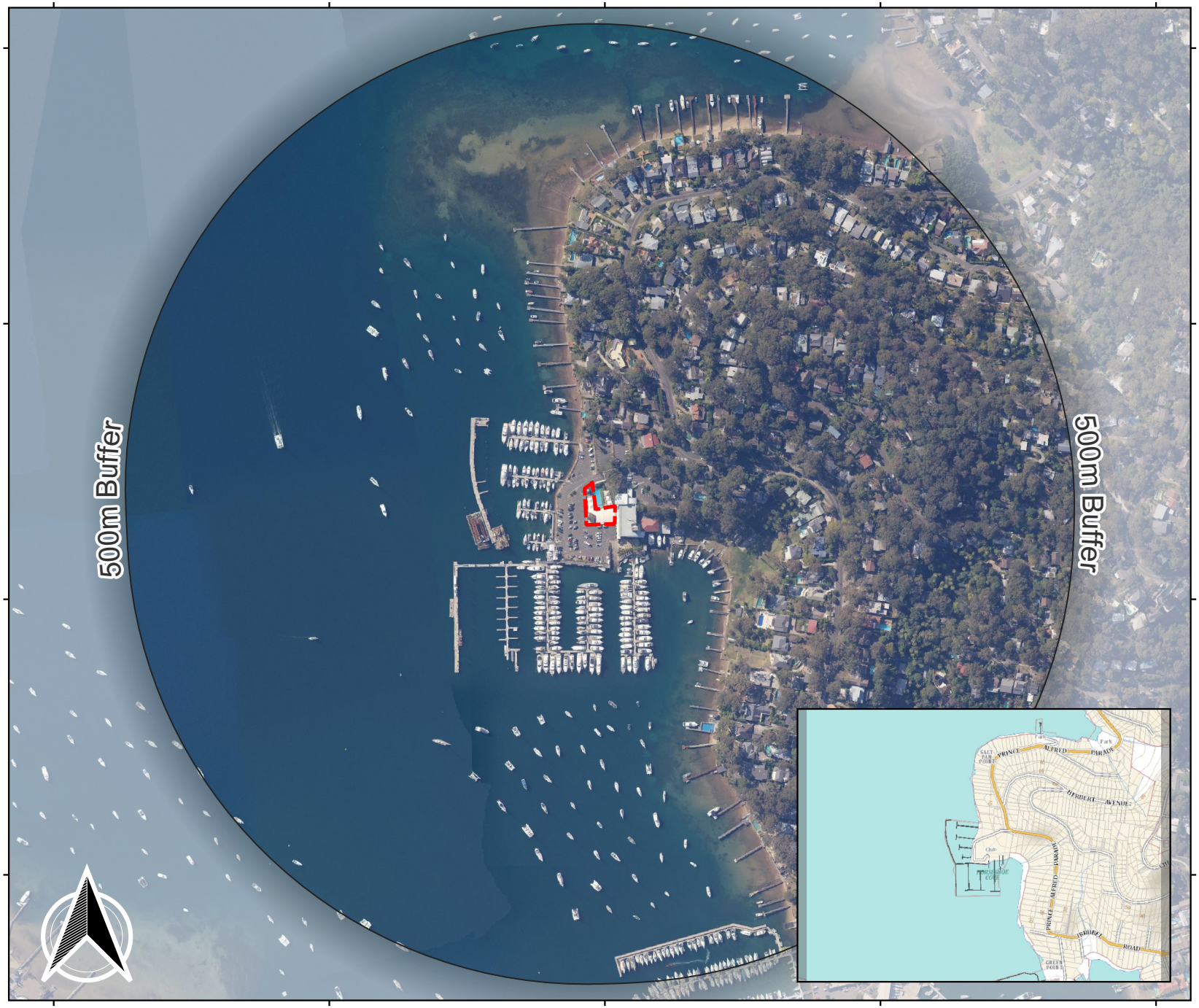
JKE GIS Report

E35645P
Newport

Report Generated: 16/01/2023

JKEnvironments
www.jkenvironments.com.au

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



JK ENVIRONMENTS

Title:	**REGIONAL CONTEXT**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS01
CRS:	GDA2020 / MGA zone 56
Sources:	- Department of Finance, Services & Innovation 2018

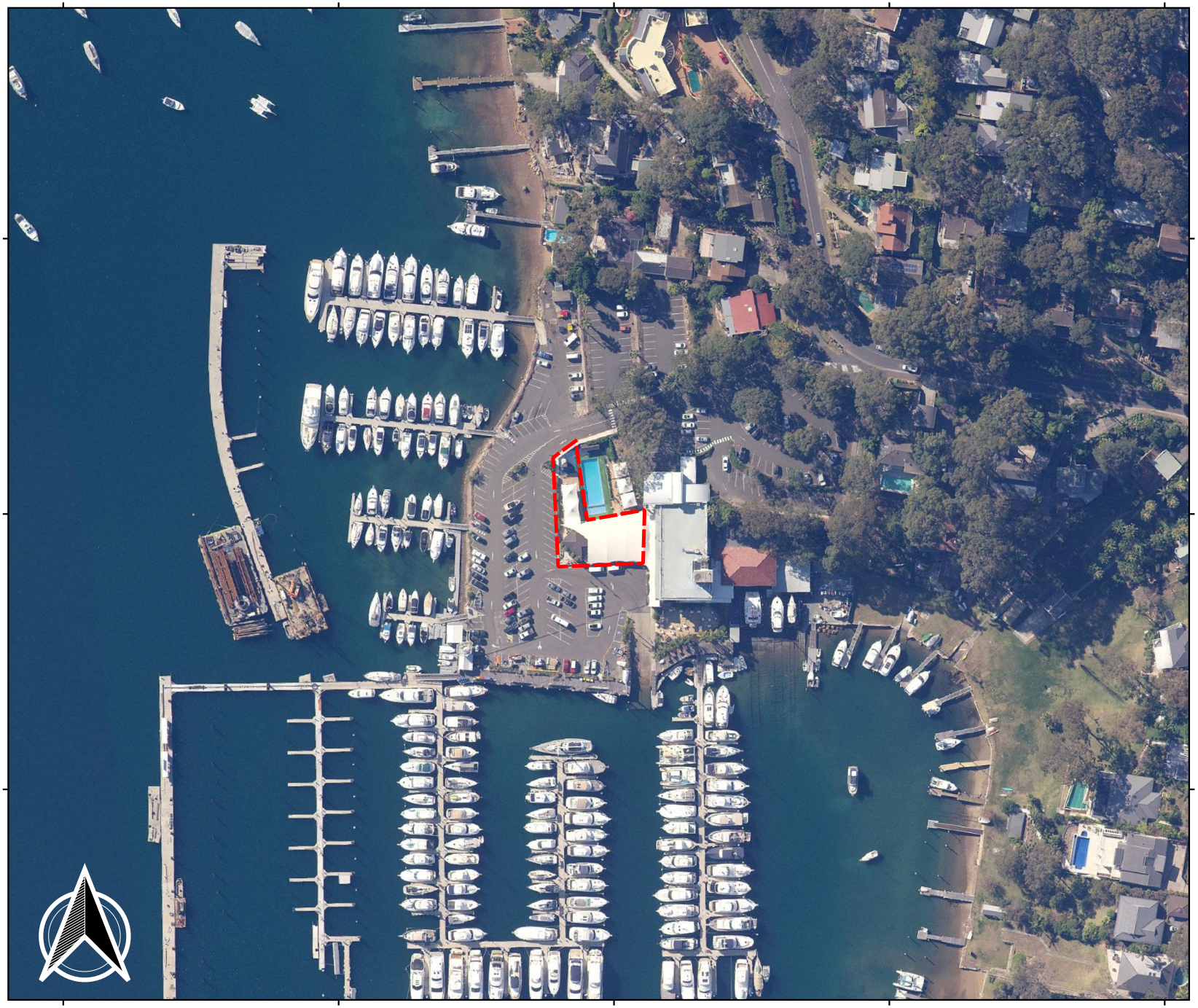
LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title:	**SITE FEATURES**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS02
CRS:	GDA2020 / MGA zone 56
Sources:	- Department of Finance, Services & Innovation 2018

LEGEND

Regional Layers

- Approximate Site Boundary

20 0 20 40 60 80 m

Scale: 1:2,000

JK ENVIRONMENTS

Title:	**Lots**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No: E35645P	**Figure No:** GIS03
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Department of Planning, Industry and Environment

LEGEND

Regional Layers

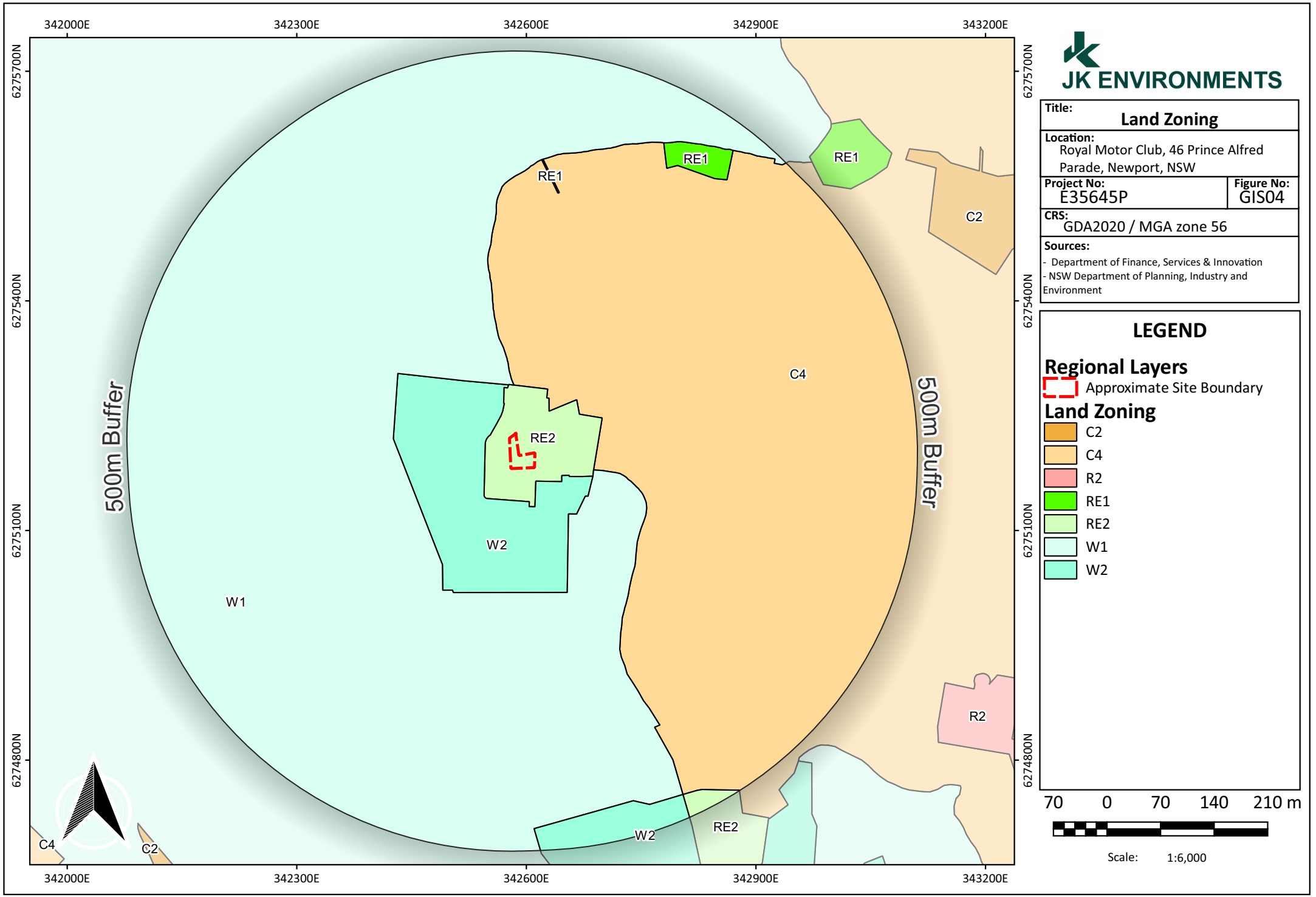
- Approximate Site Boundary

Cadastral Features

- Lots
- DP Outline

20 0 20 40 60 80 m

Scale: 1:2,000



JK ENVIRONMENTS

Title:	**Land Zoning**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS04
CRS:	GDA2020 / MGA zone 56
Sources:	- Department of Finance, Services & Innovation - NSW Department of Planning, Industry and Environment

LEGEND

Regional Layers

- Approximate Site Boundary

Land Zoning

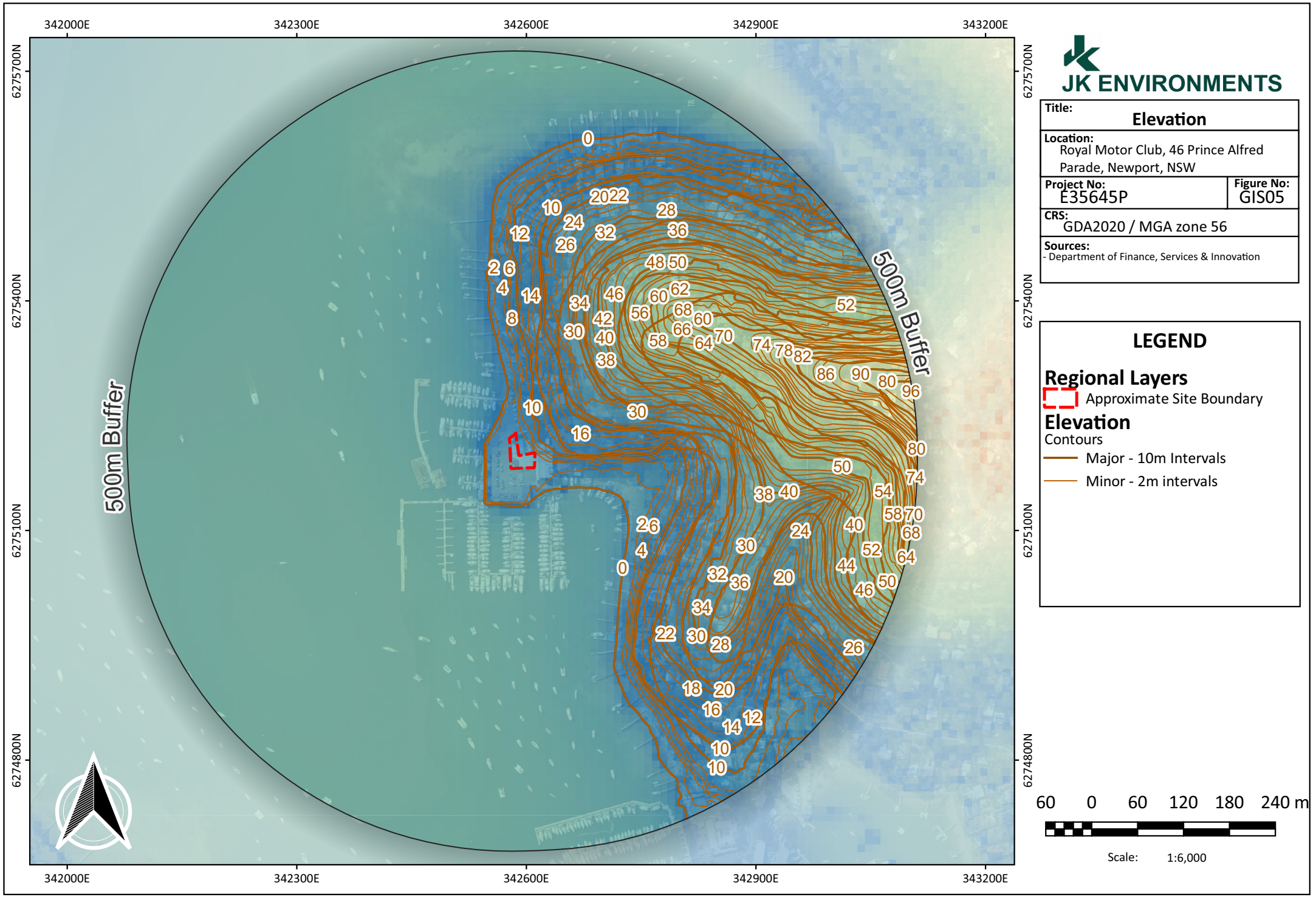
- C2
- C4
- R2
- RE1
- RE2
- W1
- W2

70 0 70 140 210 m

Scale: 1:6,000

Land Zoning

Code	Classification	EPI	LGA
C4	Environmental Living	Pittwater Local Environmental Plan 2014	NORTHERN BEACHES
RE1	Public Recreation	Pittwater Local Environmental Plan 2014	NORTHERN BEACHES
RE2	Private Recreation	Pittwater Local Environmental Plan 2014	NORTHERN BEACHES
W1	Natural Waterways	Pittwater Local Environmental Plan 2014	NORTHERN BEACHES
W2	Recreational Waterways	Pittwater Local Environmental Plan 2014	NORTHERN BEACHES



JK ENVIRONMENTS

Title:	**Elevation**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS05
CRS:	GDA2020 / MGA zone 56
Sources:	- Department of Finance, Services & Innovation

LEGEND

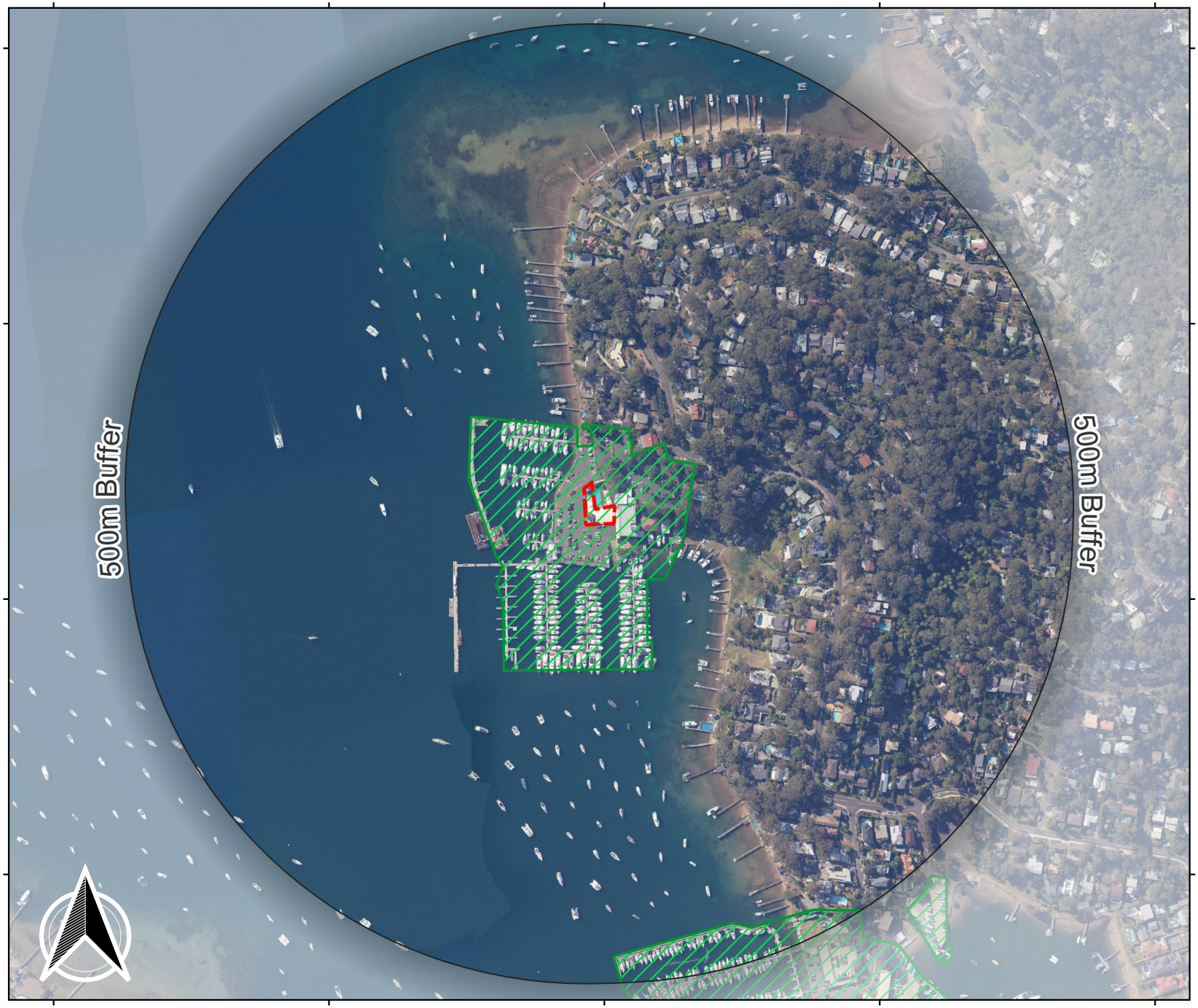
Regional Layers

Approximate Site Boundary

Elevation

Contours

- Major - 10m Intervals
- Minor - 2m intervals



JK ENVIRONMENTS

Title:	**Contaminated Sites**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS06
CRS:	GDA2020 / MGA zone 56

Sources:
- Department of Finance, Services & Innovation 2018
- NSW Environmental Protection Agency

LEGEND

Regional Layers

Approximate Site Boundary

Current POEO Licensed Activity

Current POEO License

60 0 60 120 180 240 m

Scale: 1:6,000

Section 58: Records of Notice

Site Name	Address	Number of Notices	Distance (m)
No Licensed Activities within Buffer			

Section 60: List of Notified Sites

Site Name	Contaminating Activity	Management Class	Address	Distance (m)
No Licensed Activities within Buffer				

List of Licensed Activities Under POEO 1997

EPL	Organisaion	Location Name	Address	Fee-Based Activity	Distance (m)
11202	THE ROYAL PRINCE ALFRED YACHT CLUB	ROYAL PRINCE ALFRED YACHT CLUB	16 MITALA STREET	Boat construction/maintenance (general)	454
10820	ROYAL MOTOR YACHT CLUB BROKEN BAY NEW SOUTH WALES	ROYAL MOTOR YACHT CLUB	46 PRINCE ALFRED PARADE	Boat construction/maintenance (general)	0

Unlicensed Premises Regulated by the EPA

EPL	Organisation Name	Locaiton Name	Premises Address	Premises Suburb	Fee-Based Activity
No Unlicensed Premises Regulated by the EPA in Buffer					

JK ENVIRONMENTS

Title:	**Fuel Facilities**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS07
CRS:	GDA2020 / MGA zone 56

Sources:
- Geoscience Australia
- Department of Finance, Services & Innovation

LEGEND

Regional Layers

Regional Layers

Approximate Site Boundary

60 0 60 120 180 240 m

Scale: 1:6,000

National Petrol Stations within Buffer

NAME	OPERATIONAL STATUS	OWNER	ADDRESS	SUBURB	DISTANCE (m)
No Petrol Stations observed within buffer					

National Liquid Fuel Terminals within Buffer

NAME	OPERATOR	OWNER	ADDRESS	SUBURB
No Liquid Fuel Terminals observed within buffer				

National Liquid Fuel Refineries within Buffer

NAME	OPERATIONAL STATUS	OPERATOR	OWNER	ADDRESS	SUBURB
No Liquid Fuel Refineries observed within buffer					

National Liquid Fuel Depots within Buffer

NAME	OPERATIONAL STATUS	OPERATOR	OWNER	ADDRESS	SUBURB
No Liquid Fuel Depots observed within buffer					

Waste Management Facilities within Buffer

Facility Name	Description	Operator	Address	Suburb
No Waste Management Facilities observed within buffer				

JK ENVIRONMENTS

Title:	**Groundwater Bores**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS08
CRS:	GDA2020 / MGA zone 56

Sources:
- Bureau of Meteorology
- Department of Finance, Services & Innovation

LEGEND

Regional Layers

Regional Layers

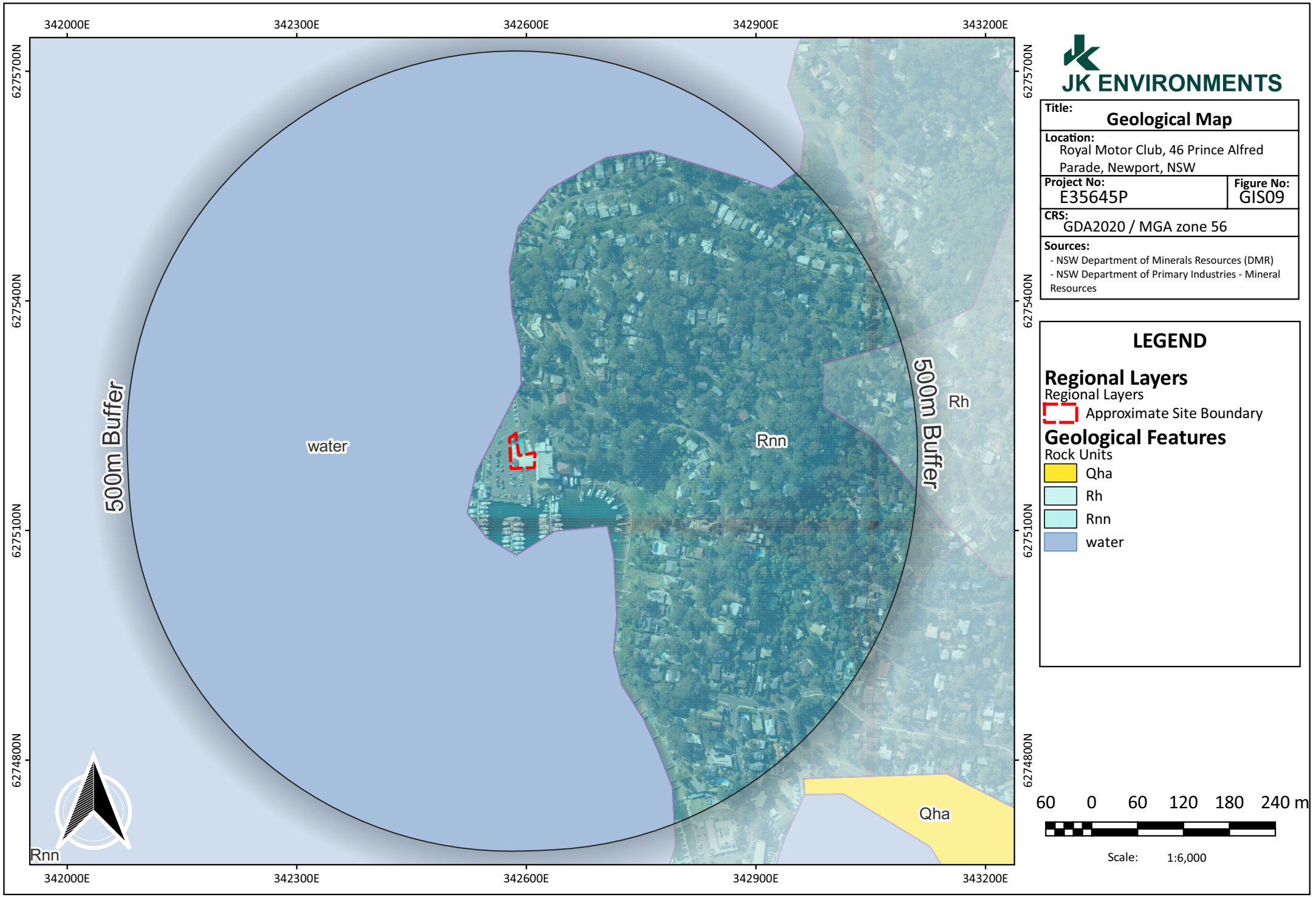
Approximate Site Boundary

60 0 60 120 180 240 m

Scale: 1:6,000

Groundwater Bores

State Bore ID	Bore Depth (m)	Status	Dilled Date	Usage	Type	Distance (m)
No Groundwater Bores within Buffer						

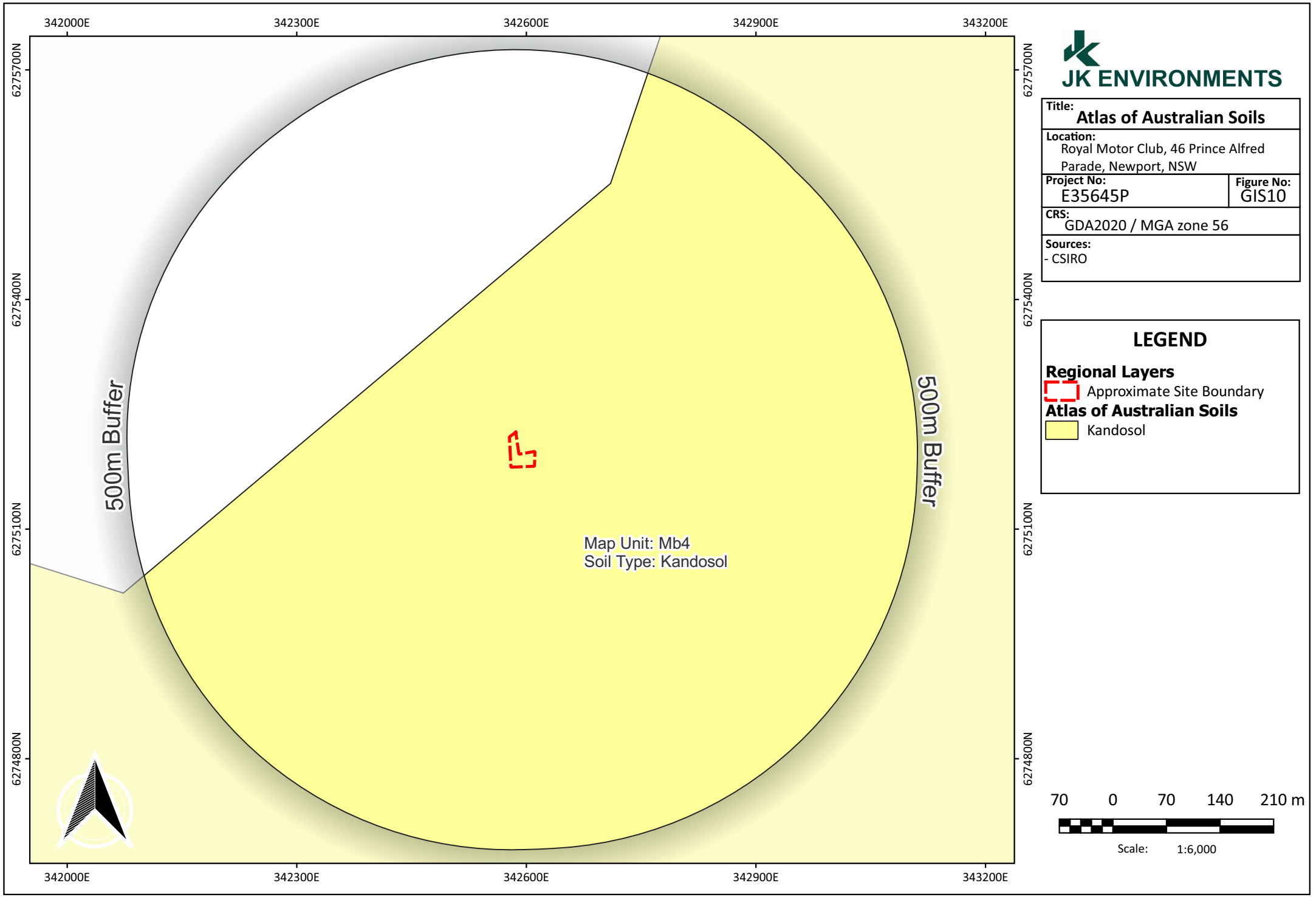


Geological Units within Buffer

Unit	Era	Group	Formation	Lithology
Rnn	Mesozoic	Narrabeen Group	Newport Formation and Garie Formation	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
Rh	Mesozoic	NULL	NULL	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses
water	NULL	NULL	NULL	NULL

Linear Geological Units

ObjectID	Feature Name
No Linear Geological Units within Buffer	



JK ENVIRONMENTS

Title: Atlas of Australian Soils

Location: Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW

Project No: E35645P

Figure No: GIS10

CRS: GDA2020 / MGA zone 56

Sources:
- CSIRO

LEGEND

Regional Layers

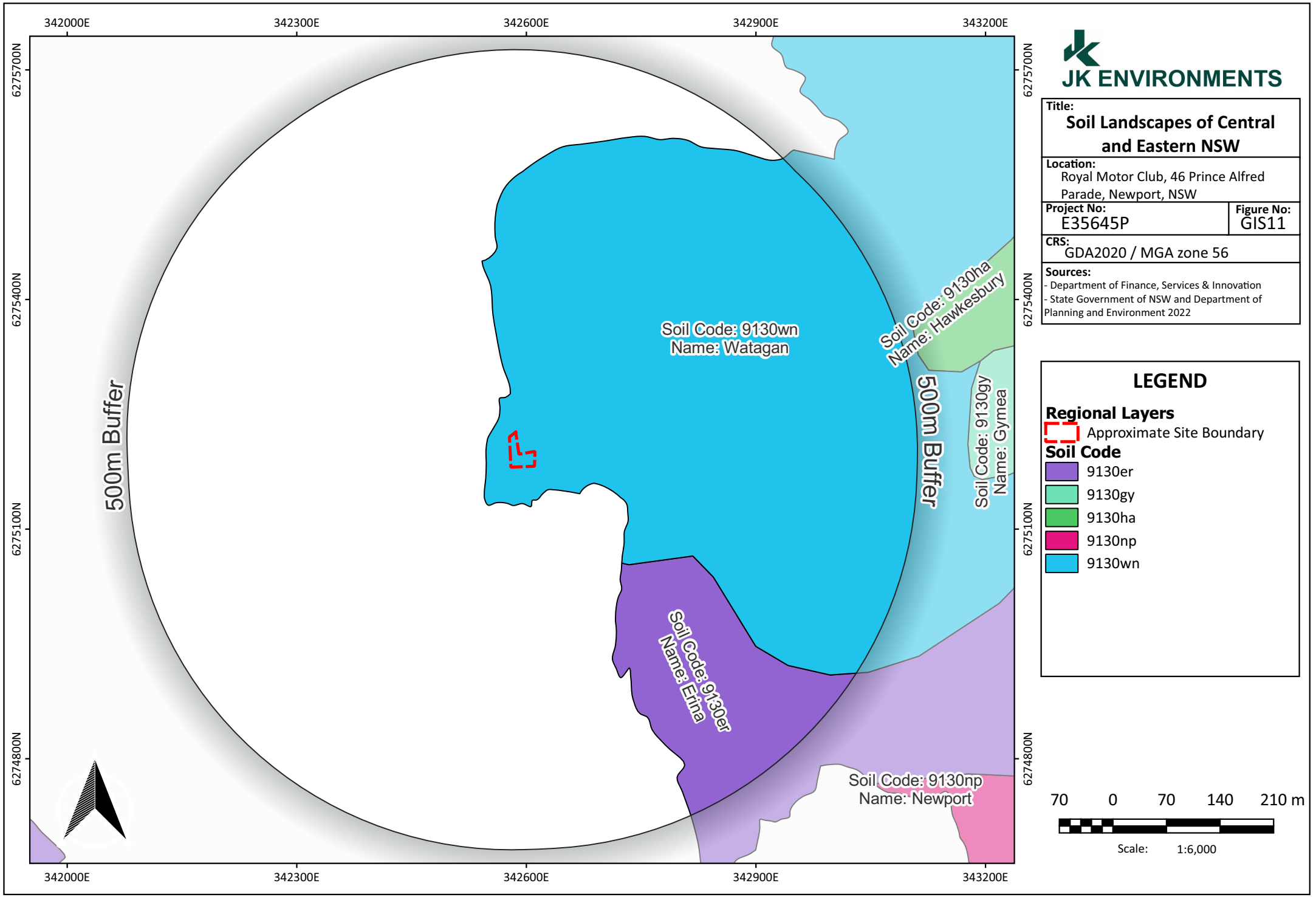
Approximate Site Boundary

Atlas of Australian Soils

Kandosol

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title: Soil Landscapes of Central and Eastern NSW

Location: Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW

Project No: E35645P

Figure No: GIS11

CRS: GDA2020 / MGA zone 56

Sources:
- Department of Finance, Services & Innovation
- State Government of NSW and Department of Planning and Environment 2022

LEGEND

Regional Layers
- Approximate Site Boundary

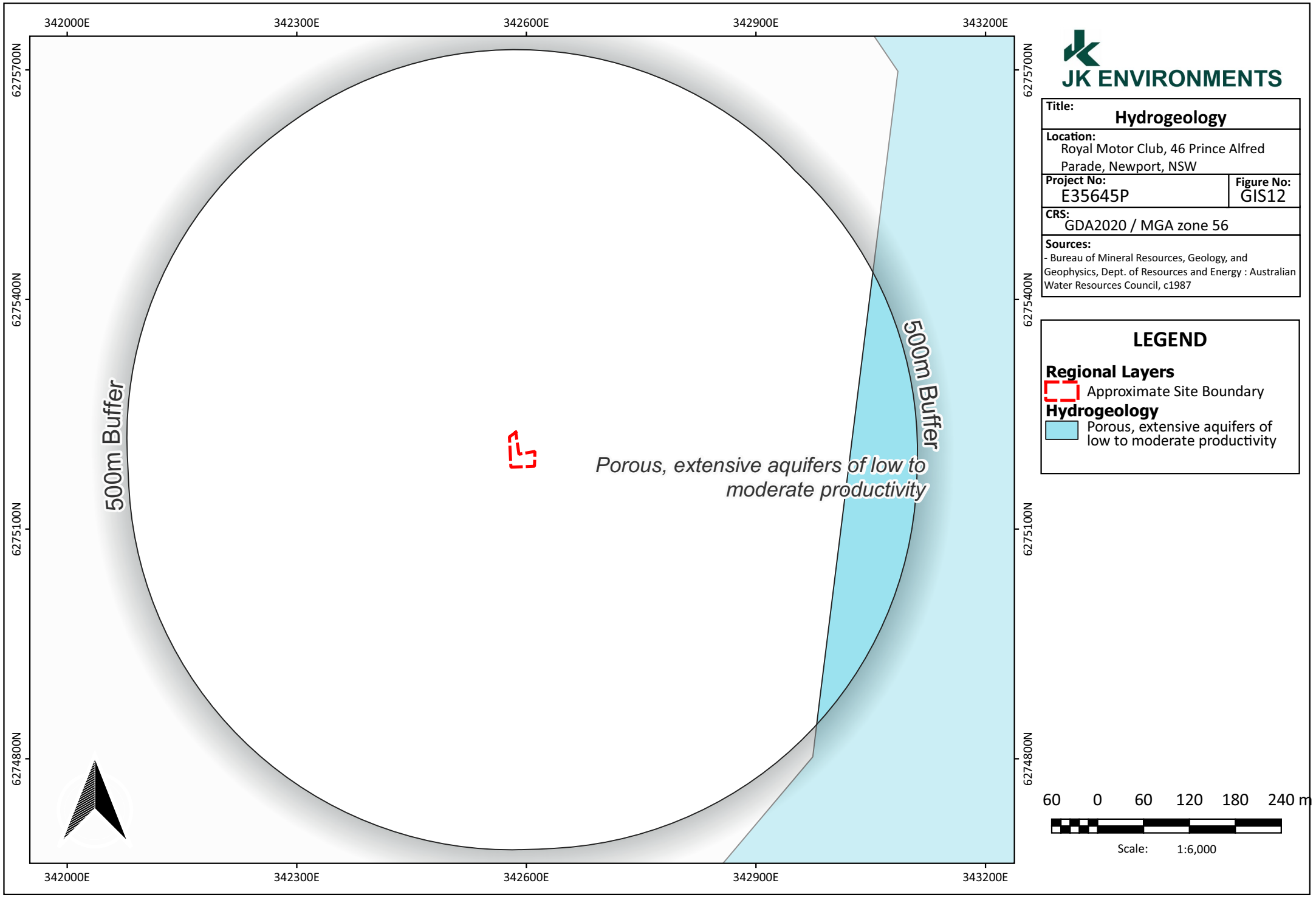
Soil Code
- 9130er
- 9130gy
- 9130ha
- 9130np
- 9130wn

Atlas of Australian Soils - Unit Descriptions

Map Unit	Soil Type	Description
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

Soil Landscapes of Central and Eastern NSW

Soil Code	Name
9130er	Erina
9130wn	Watagan



JK ENVIRONMENTS

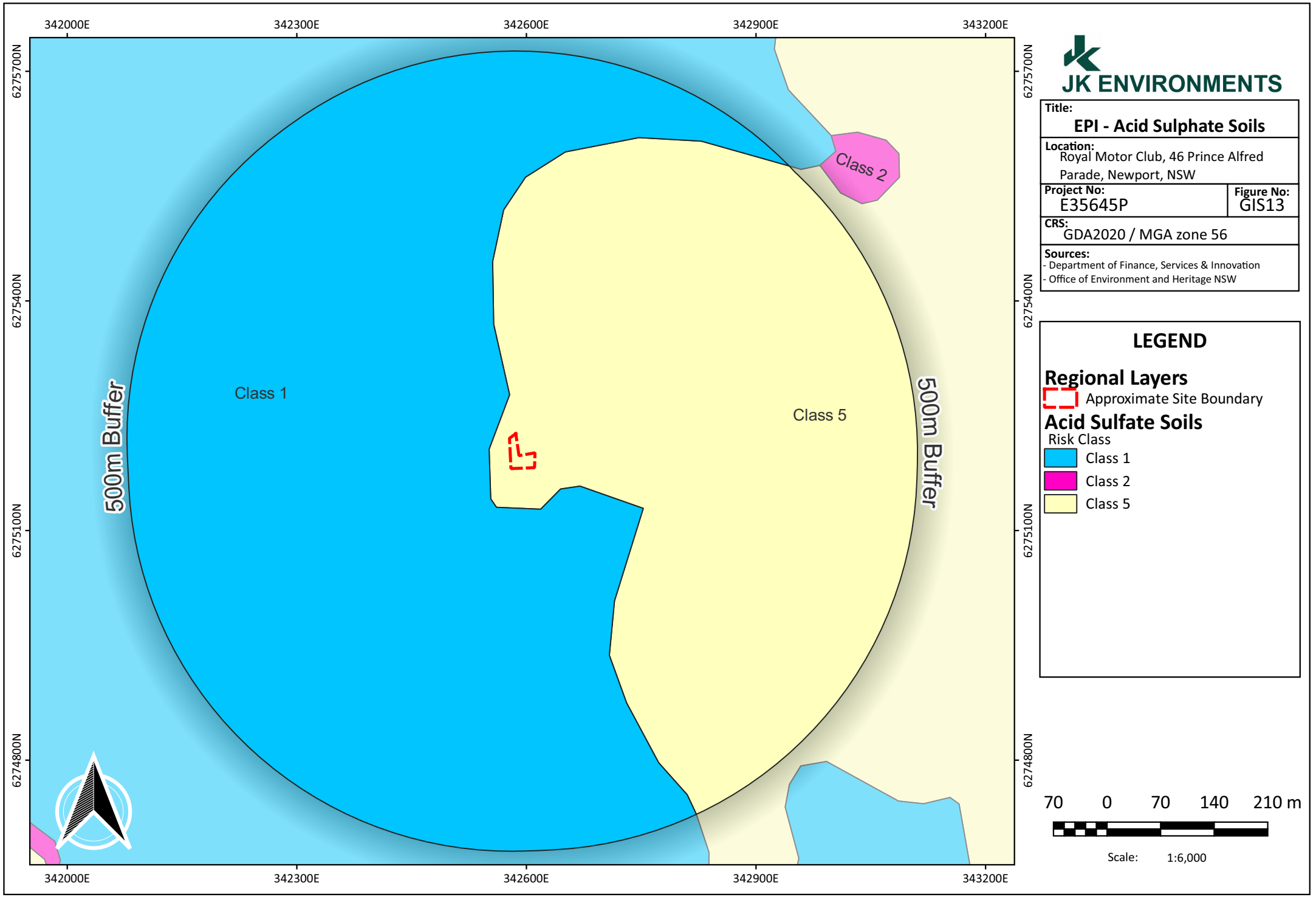
Title:	**Hydrogeology**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS12
CRS:	GDA2020 / MGA zone 56

Sources:
- Bureau of Mineral Resources, Geology, and Geophysics, Dept. of Resources and Energy : Australian Water Resources Council, c1987

LEGEND

Regional Layers
- Approximate Site Boundary

Hydrogeology
- Porous, extensive aquifers of low to moderate productivity



JK ENVIRONMENTS

Title: EPI - Acid Sulphate Soils

Location: Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW

Project No: E35645P

Figure No: GIS13

CRS: GDA2020 / MGA zone 56

Sources:
- Department of Finance, Services & Innovation
- Office of Environment and Heritage NSW

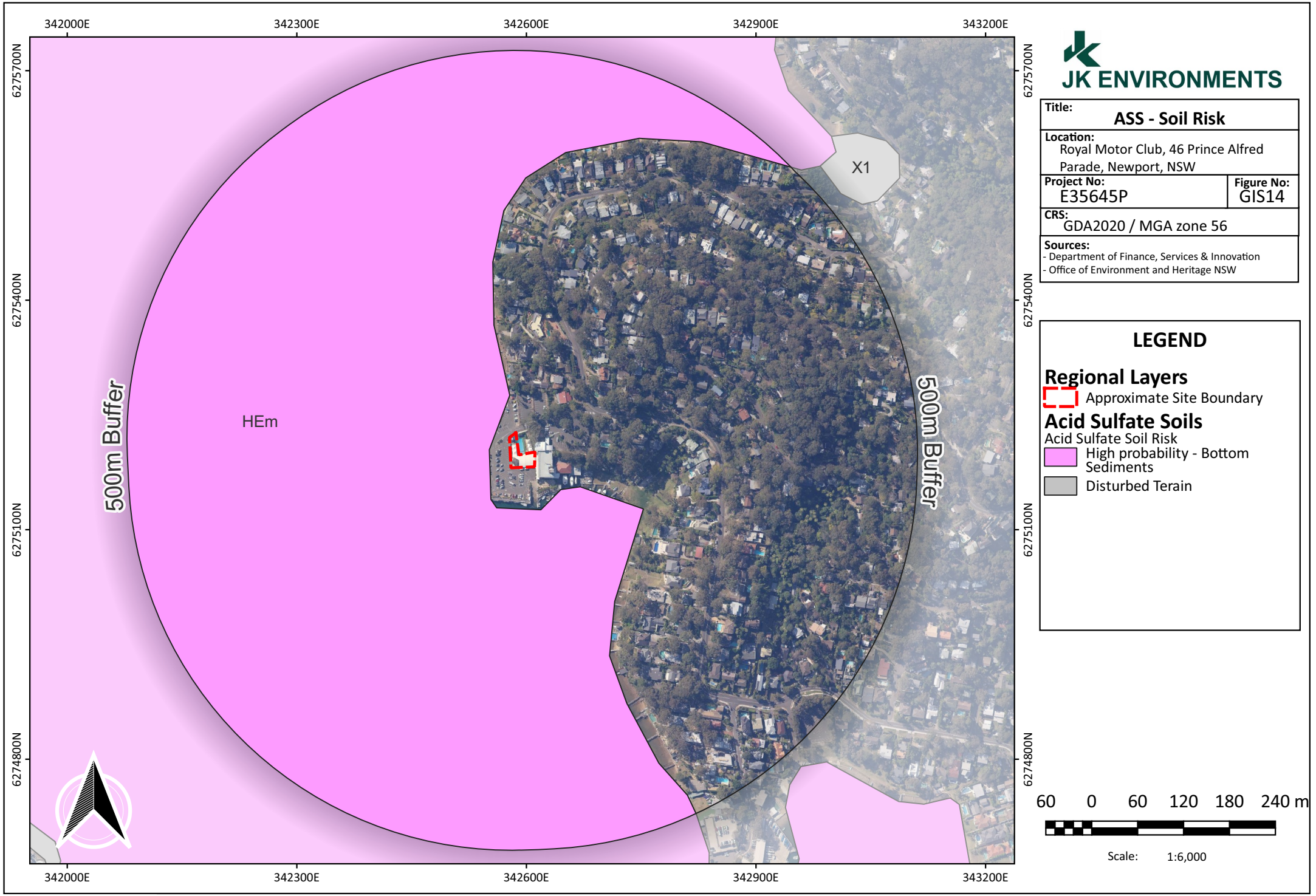
LEGEND

Regional Layers
- Approximate Site Boundary

Acid Sulfate Soils
Risk Class
- Class 1
- Class 2
- Class 5

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title:	**ASS - Soil Risk**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS14
CRS:	GDA2020 / MGA zone 56
Sources:	- Department of Finance, Services & Innovation - Office of Environment and Heritage NSW

LEGEND

Regional Layers

Approximate Site Boundary

Acid Sulfate Soils

Acid Sulfate Soil Risk

High probability - Bottom Sediments

Disturbed Terain

60 0 60 120 180 240 m

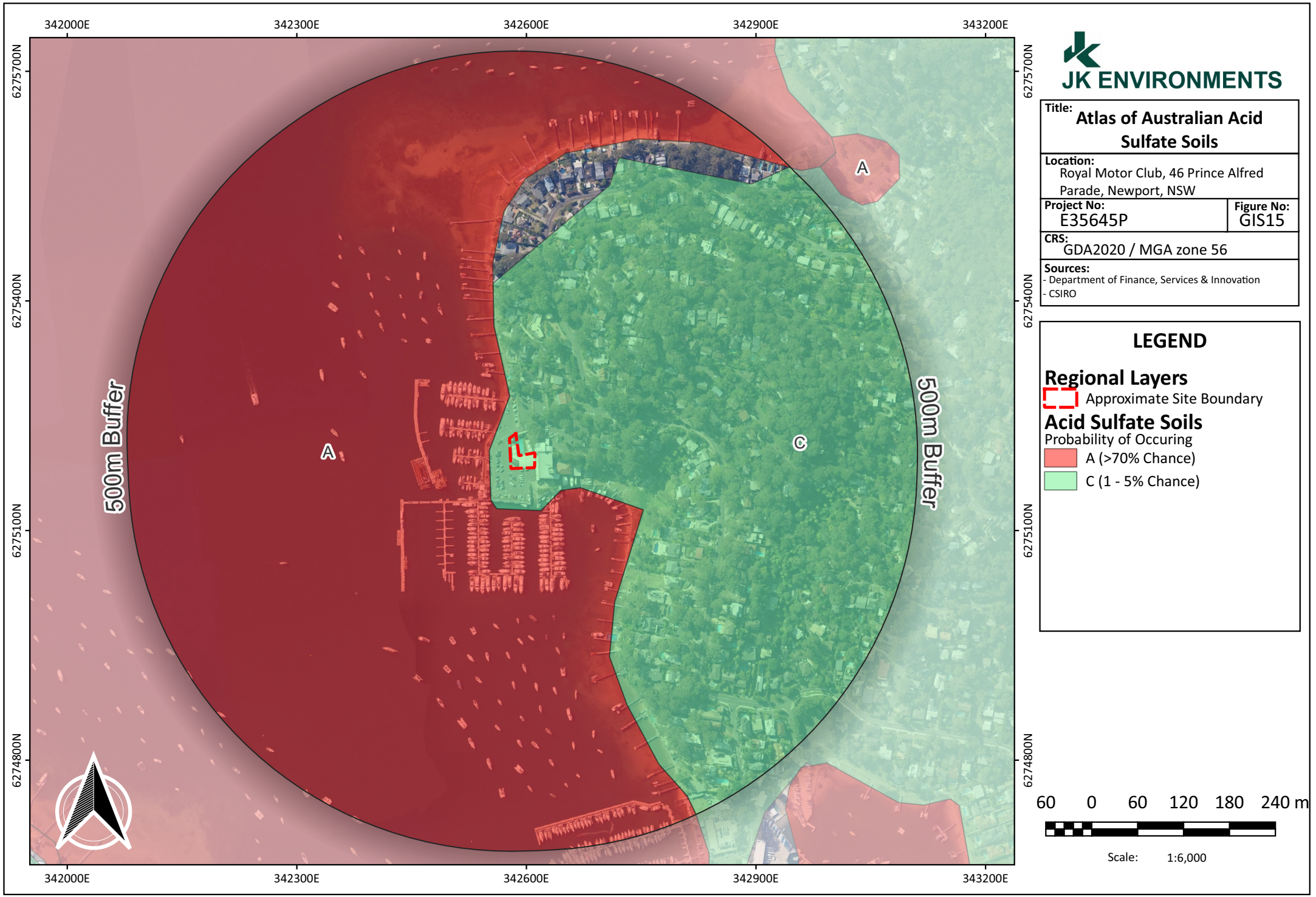
Scale: 1:6,000

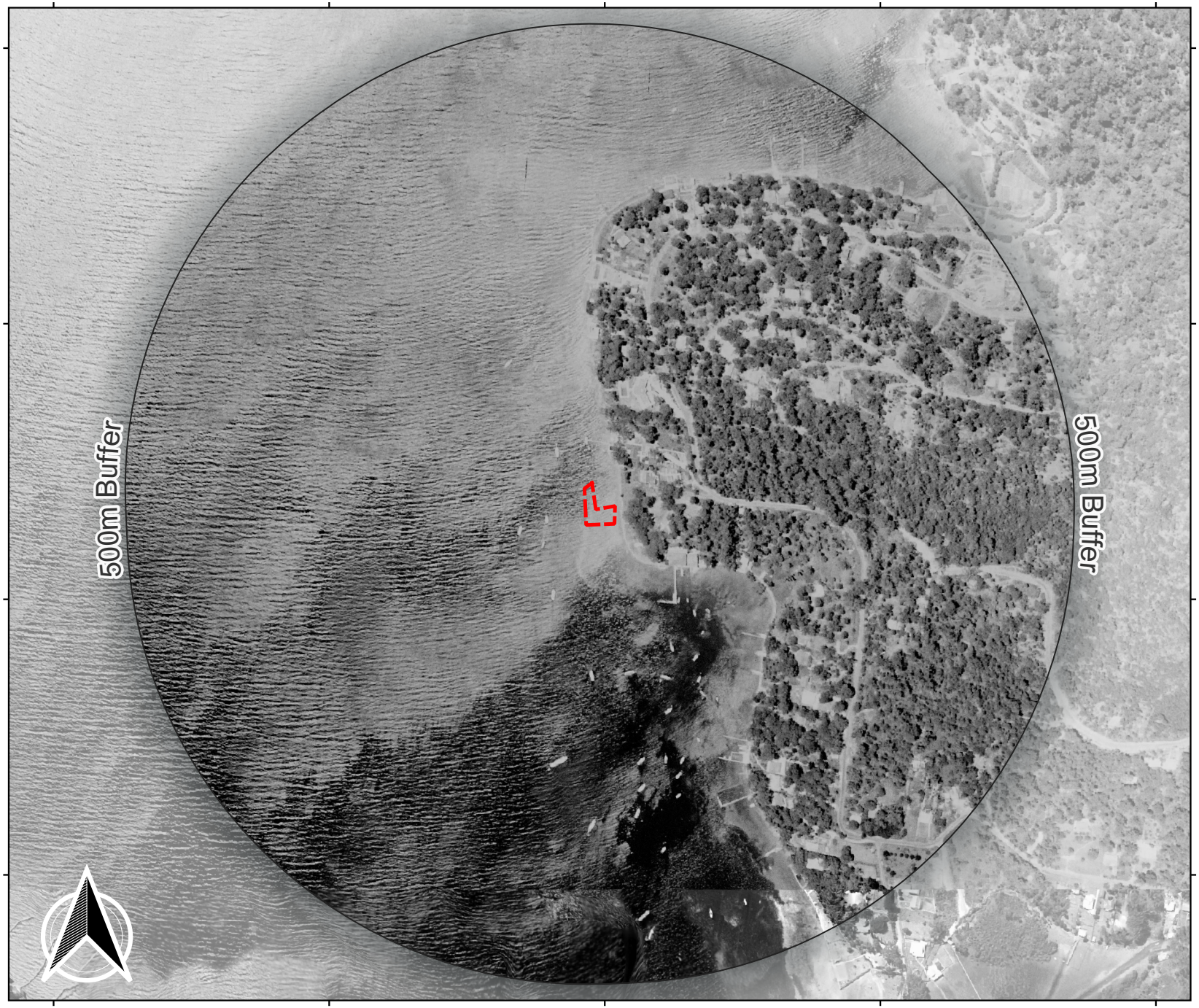
EPI - Acid Sulfate Soils

EPI Name	LGA Name	Class	EPI Type
Pittwater Local Environmental Plan 2014	NORTHERN BEACHES	Class 1	Local Environment Plan
Pittwater Local Environmental Plan 2014	NORTHERN BEACHES	Class 5	Local Environment Plan

Acid Sulfate Soil Risk Map

Tag	Probability	Landform Process	Landform Element	ASS Elevation
HEm	High probability of occurrence	Estuarine process	Bottom Sediments	na





JK ENVIRONMENTS

Title:	**Historical - 1955**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS16
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

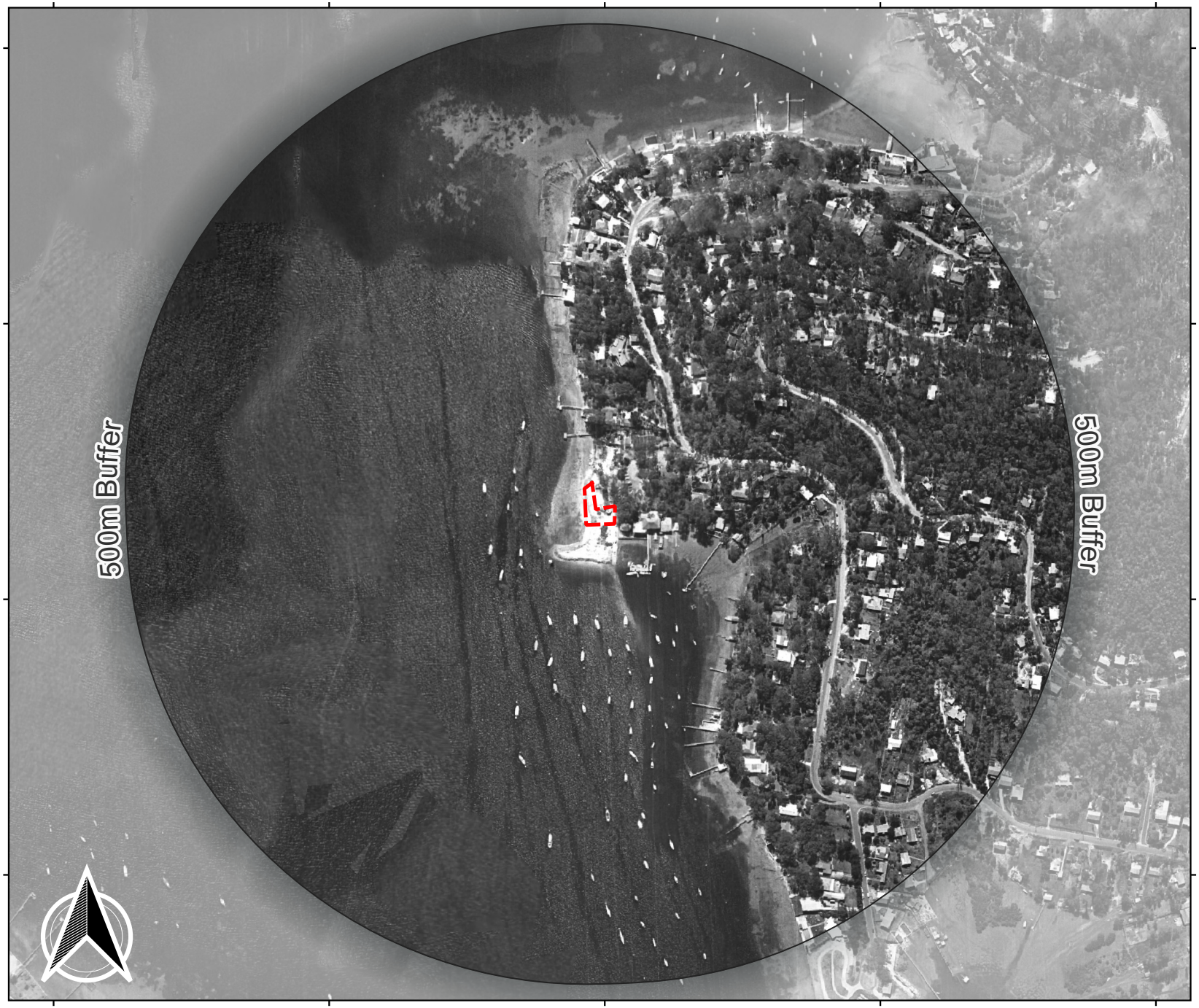
LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title:	**Historical - 1965**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS17
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

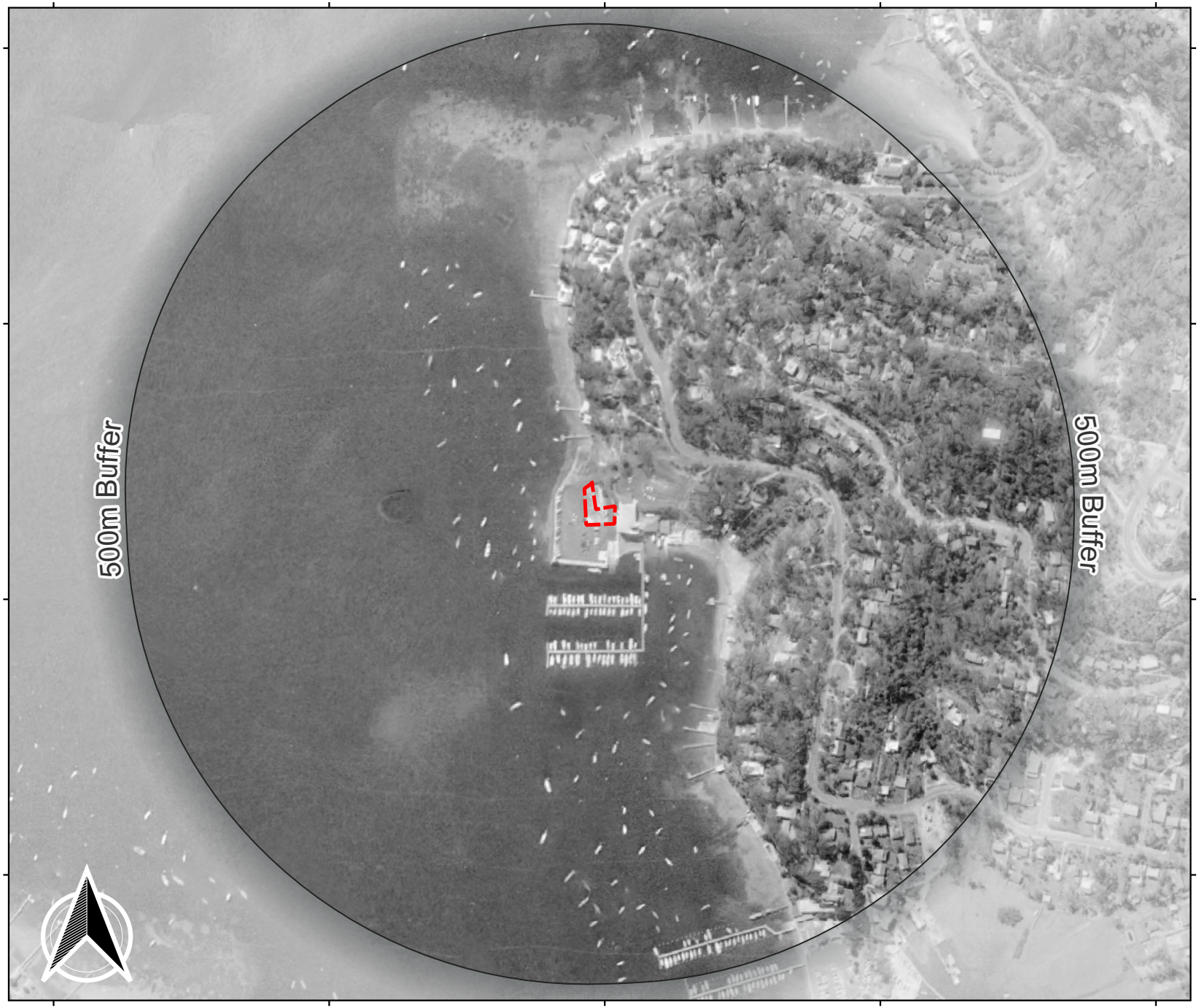
LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title:	**Historical - 1971**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS18
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

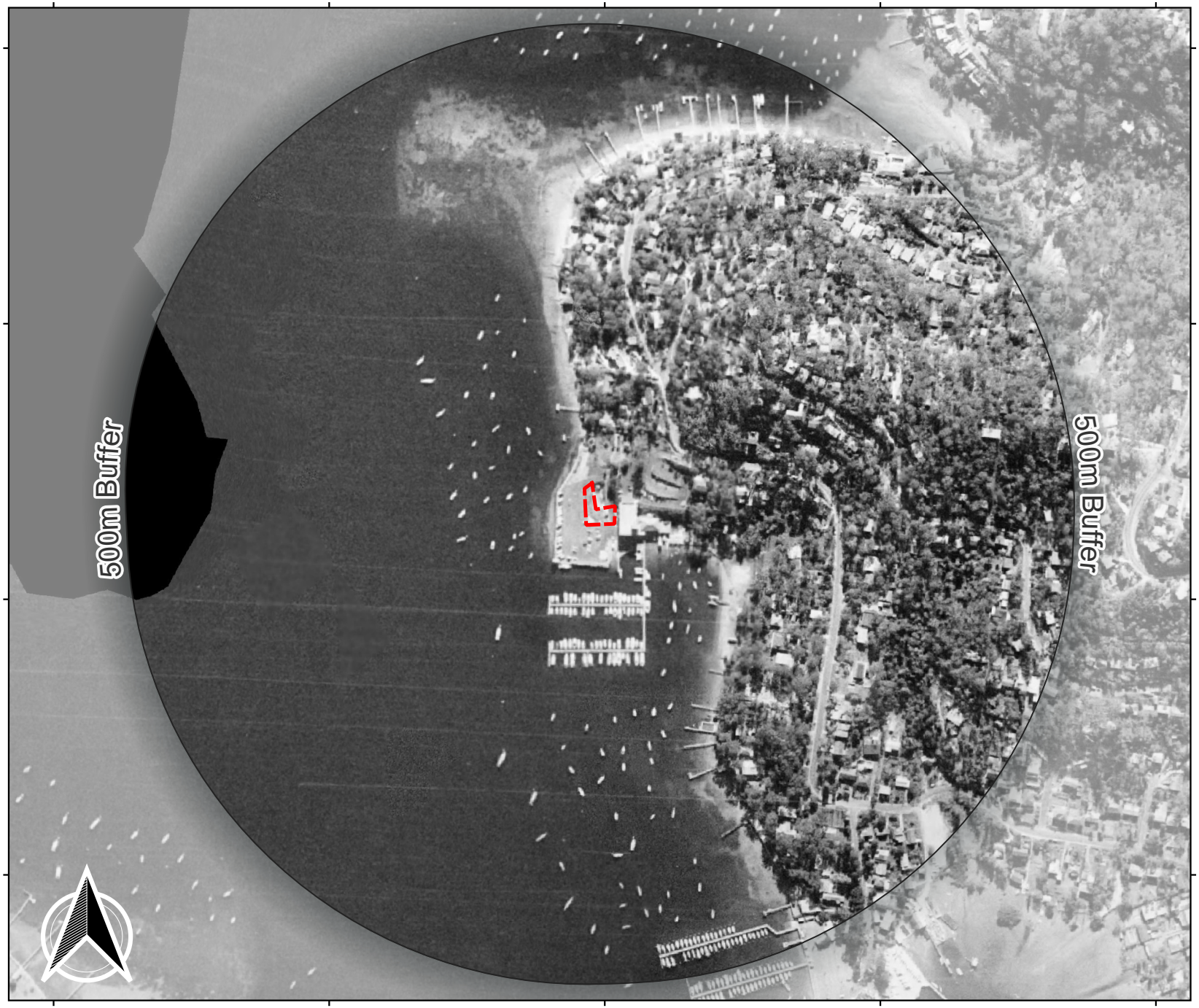
LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title:	**Historical - 1975**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS19
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

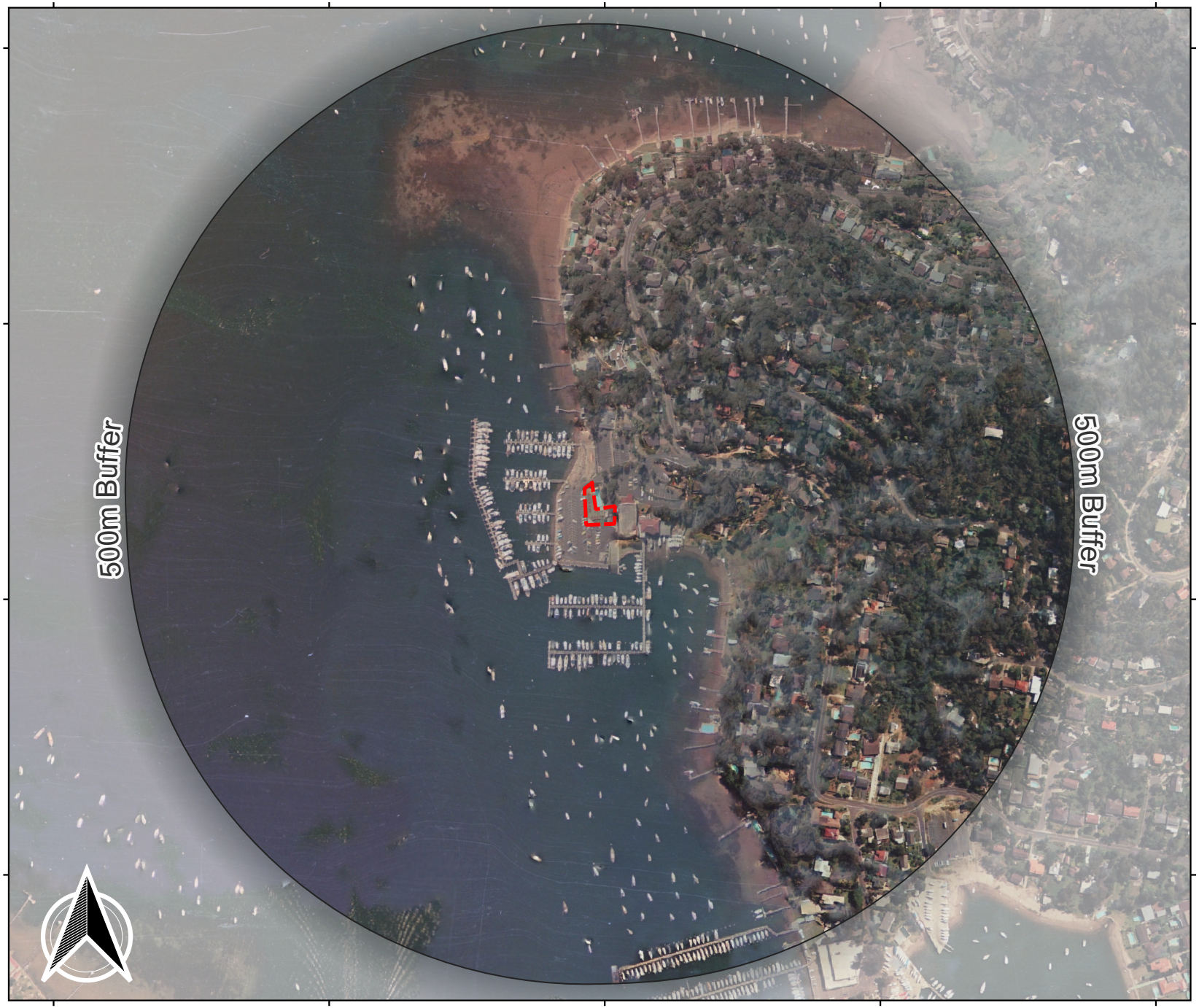
LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title:	**Historical - 1982**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS20
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

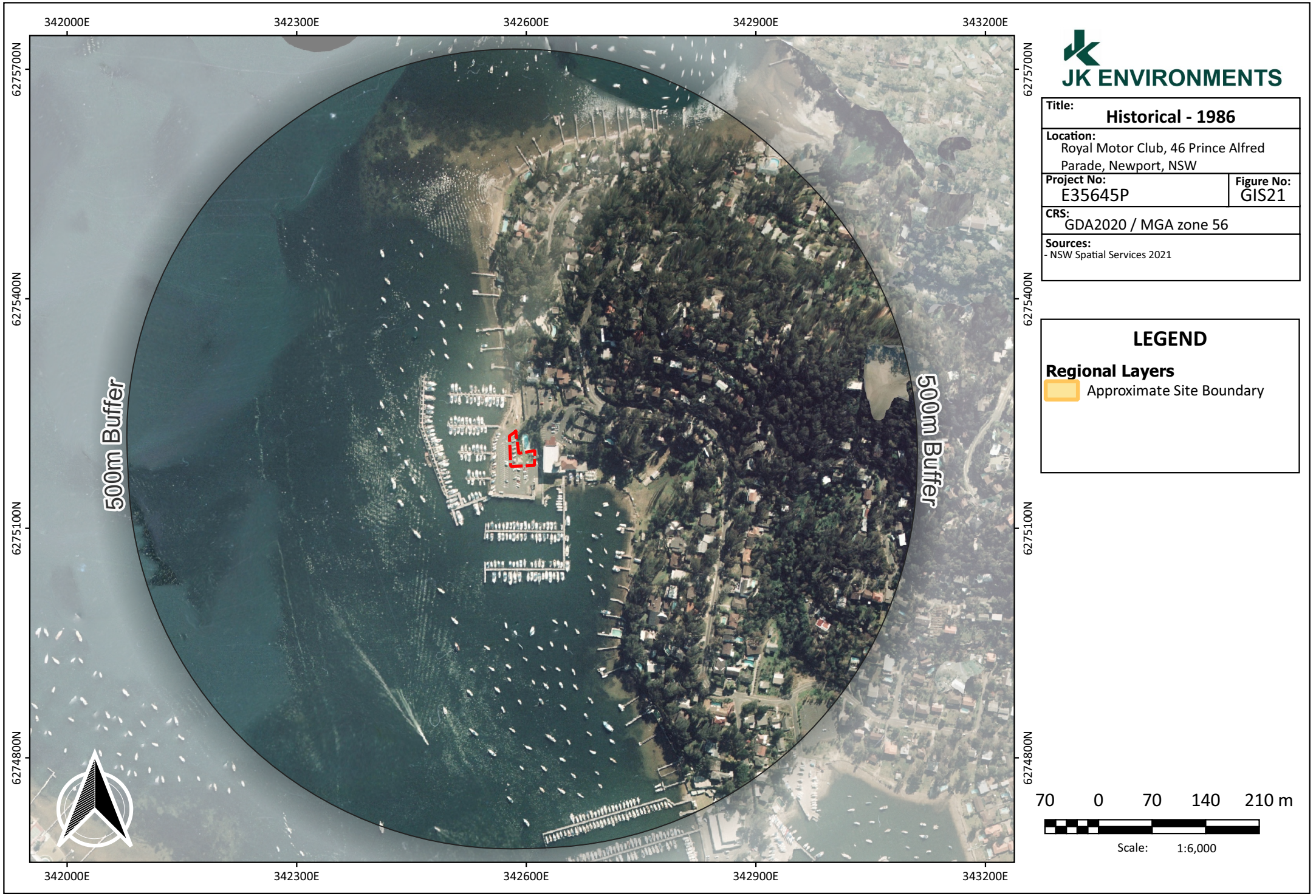
LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title:	**Historical - 1986**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS21
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

LEGEND

Regional Layers

Approximate Site Boundary

JK ENVIRONMENTS

Title:	**Historical - 1991**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS22
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

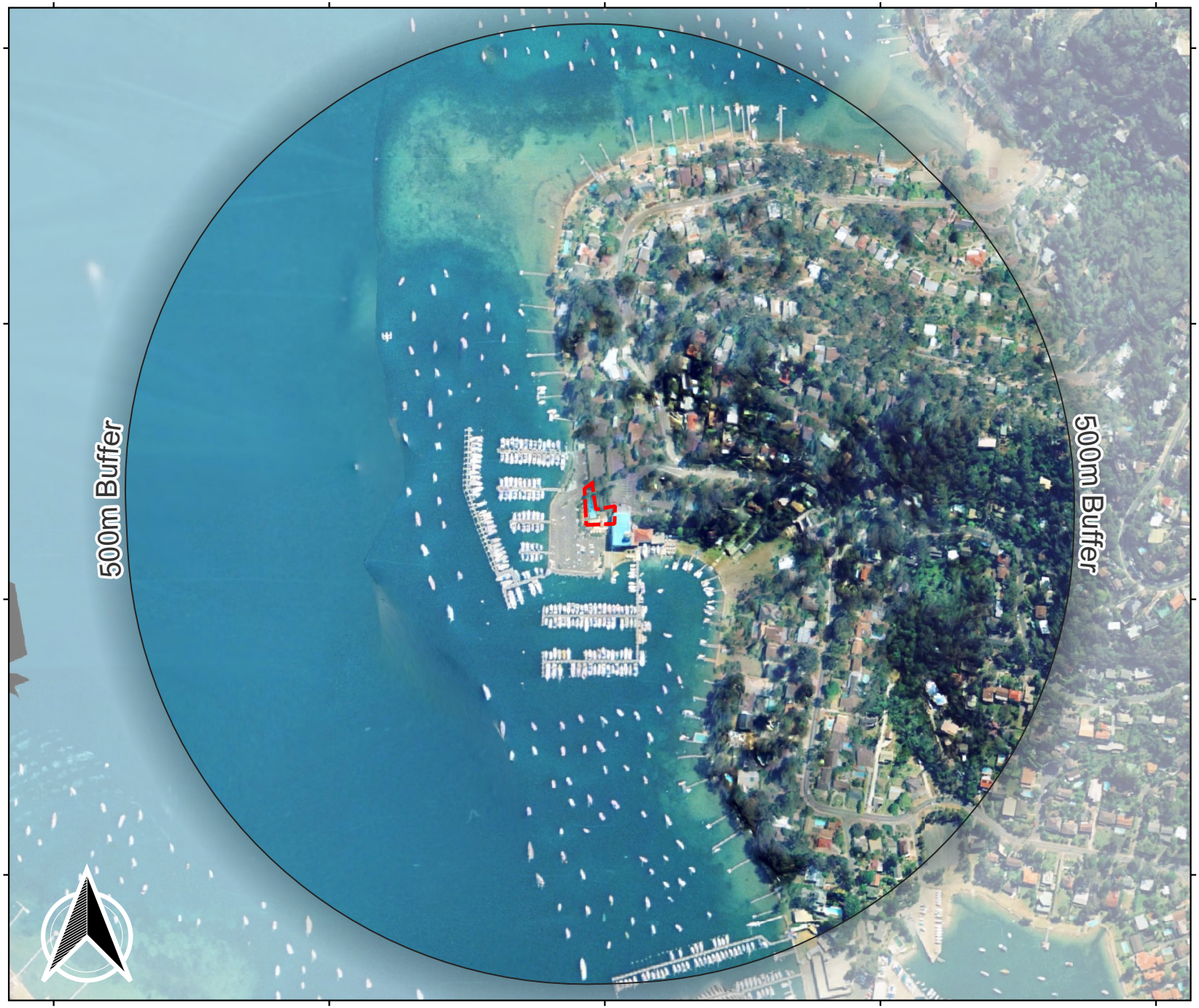
LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title:	**Historical - 1994**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS23
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000

JK ENVIRONMENTS

Title:	**Historical - 1996**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS24
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

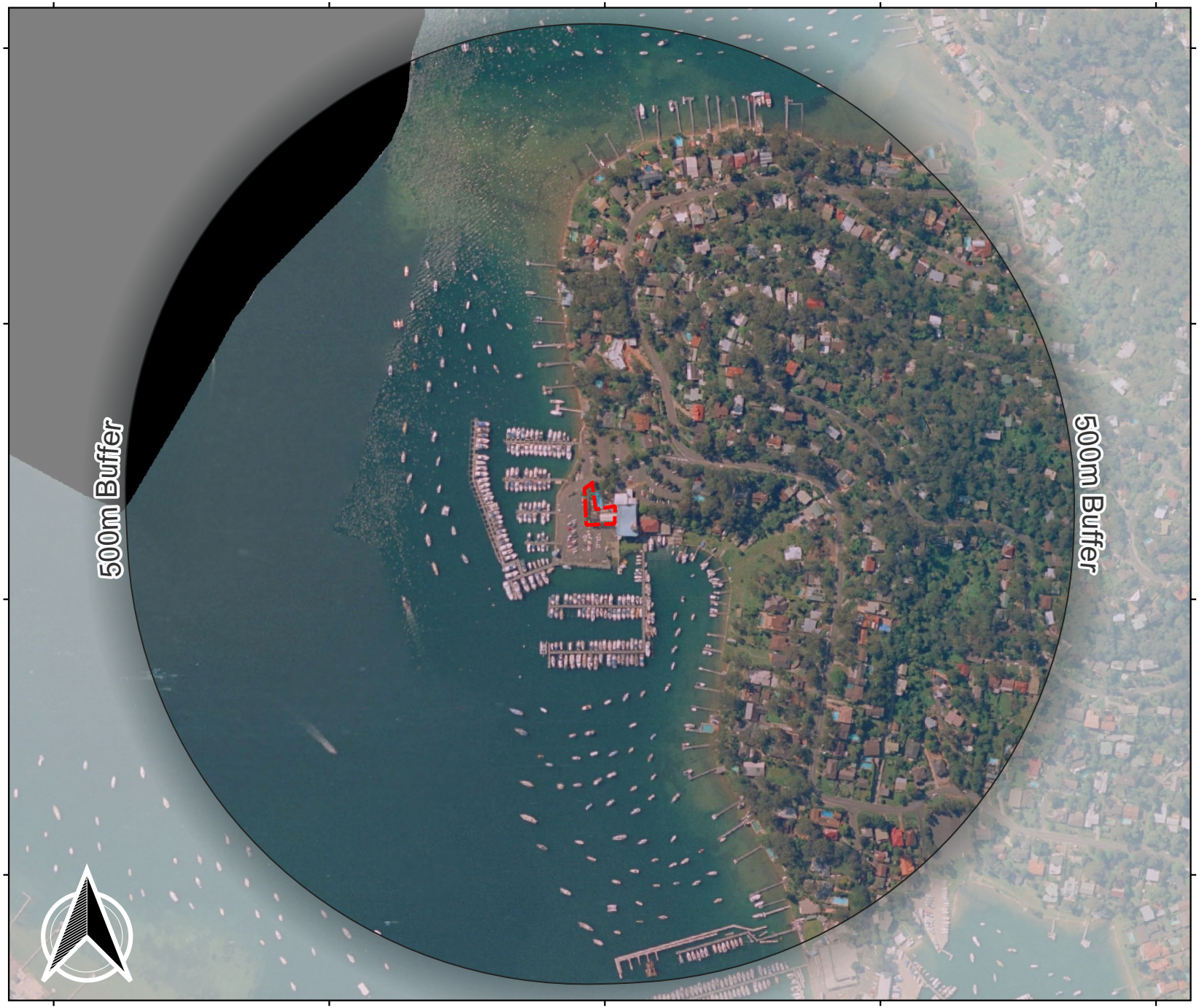
LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title:	**Historical - 1998**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS25
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

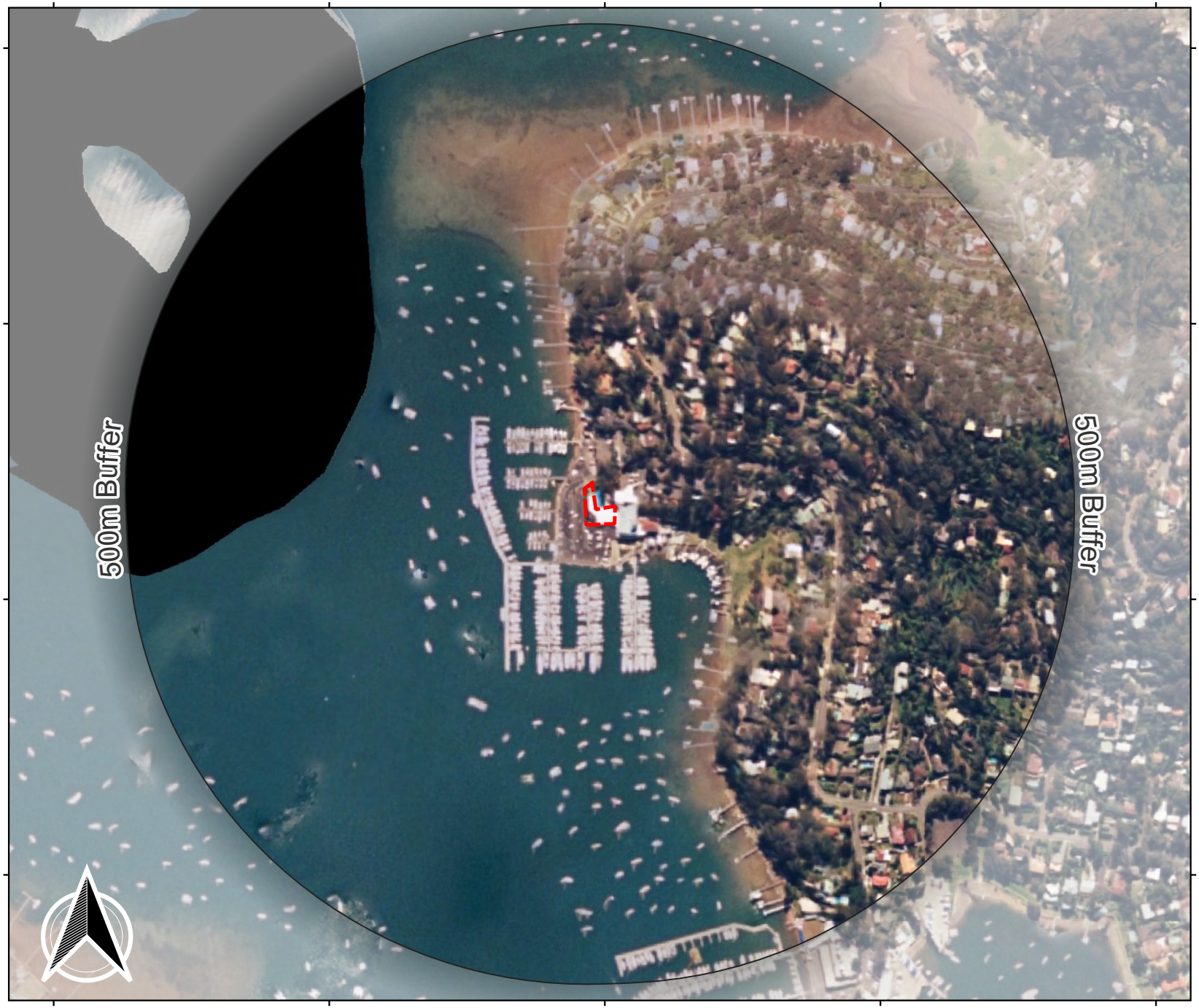
LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title:	**Historical - 2004**
Location:	[%"Address"%
Project No:	E35645P
Figure No:	GIS26
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

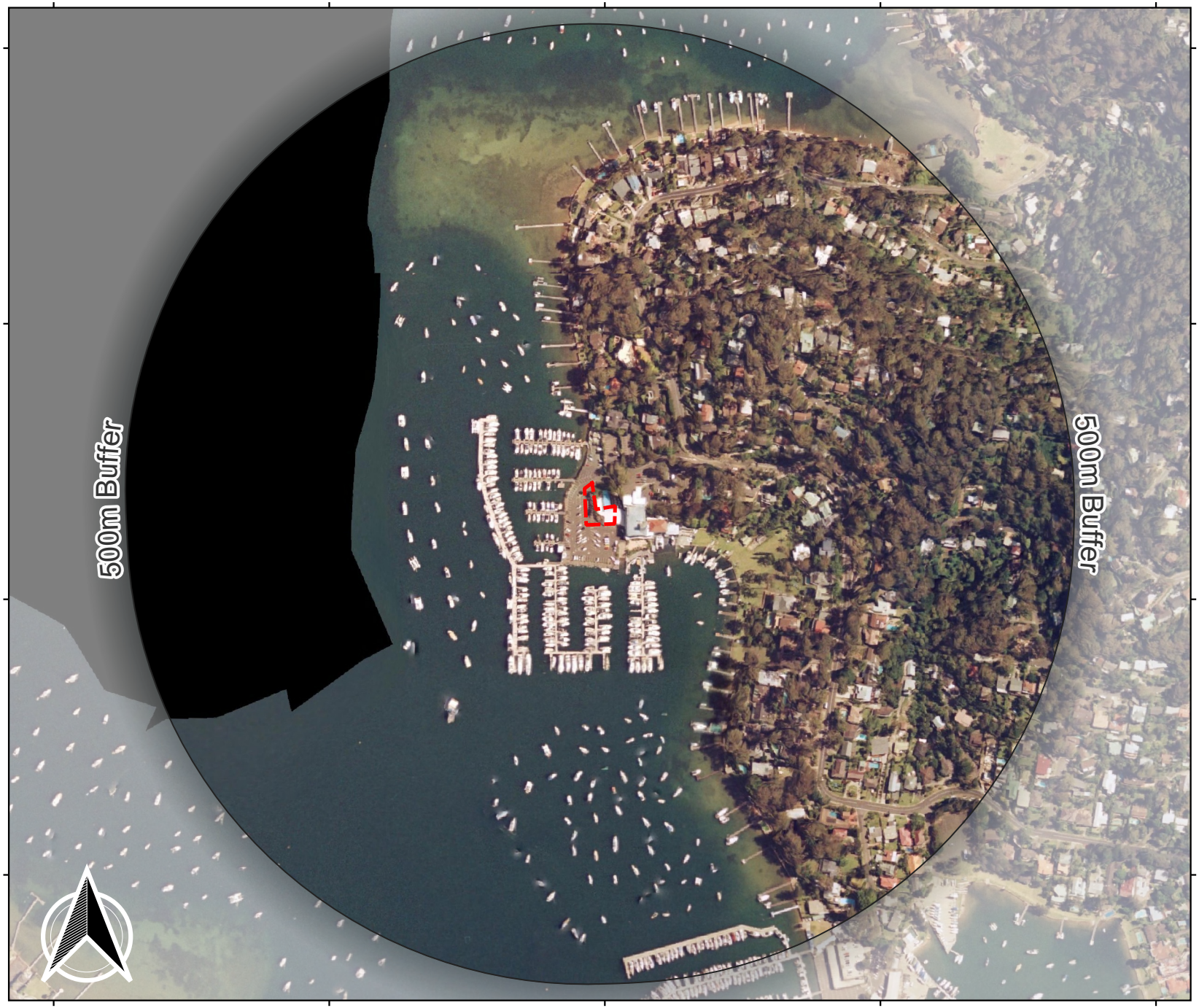
LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title:	**Historical - 2005**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS27
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Spatial Services 2021

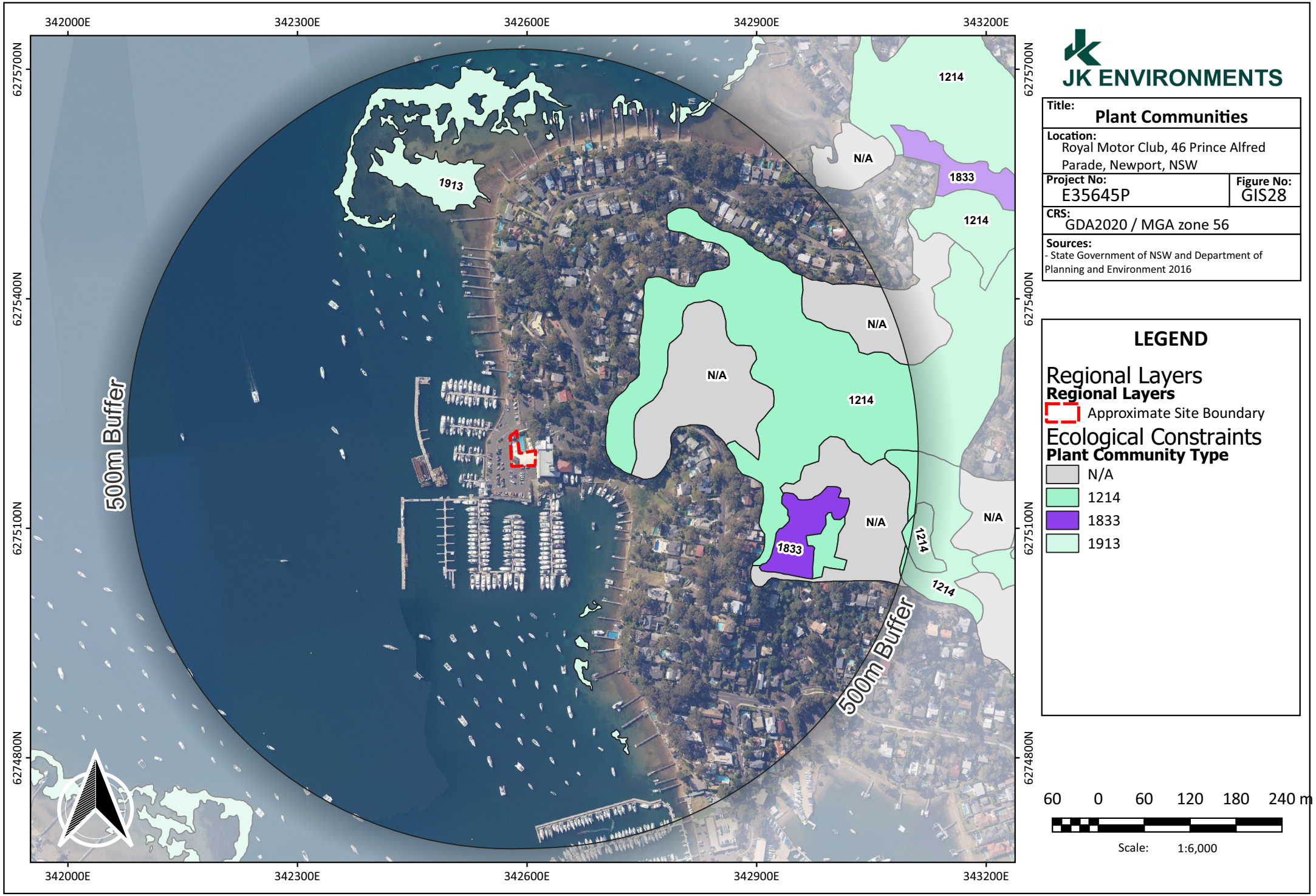
LEGEND

Regional Layers

Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000



JK ENVIRONMENTS

Title: Plant Communities

Location: Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW

Project No: E35645P

Figure No: GIS28

CRS: GDA2020 / MGA zone 56

Sources:
- State Government of NSW and Department of Planning and Environment 2016

LEGEND

Regional Layers
Regional Layers
- Approximate Site Boundary

Ecological Constraints
Plant Community Type
- N/A
- 1214
- 1833
- 1913

60 0 60 120 180 240 m

Scale: 1:6,000

Plant Community Types

Plant Community Type	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Disturbance	Understorey	Disturbance Index
1214	Pittwater Spotted Gum Forest		00: Not assessed	00: Not assessed	0: Not assessed
1214	Pittwater Spotted Gum Forest		24: Urban mixed use	24: Urban and hard surface	4: Very high
1833	Littoral Rainforest	Littoral Rainforest and Coastal Vine Thickets (possible)	00: Not assessed	00: Not assessed	0: Not assessed
1913			00: Not assessed	00: Not assessed	0: Not assessed
N/A			00: Not assessed	00: Not assessed	0: Not assessed

JK ENVIRONMENTS

Title: Groundwater Dependent Ecosystems

Location: Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW

Project No: E35645P

Figure No: GIS29

CRS: GDA2020 / MGA zone 56

Sources:
- Bureau of Meteorology
- Department of Finance, Services & Innovation

LEGEND

Regional Layers

Approximate Site Boundary

60 0 60 120 180 240 m

Scale: 1:6,000

JK ENVIRONMENTS

Title:	**Inflow Dependent Ecosystems**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No: E35645P	**Figure No:** GIS30
CRS:	GDA2020 / MGA zone 56
Sources:	- Bureau of Meteorology - Department of Finance, Services & Innovation

LEGEND

Regional Layers

Approximate Site Boundary

Inflow Rating

Likely to be an IDE

Highly Likely to be an IDE

Note: Features are assigned an IDE likelihood from 0 - 10. Features with a rating of 6+ are considered likely to be an IDE.

60 0 60 120 180 240 m

Scale: 1:6,000

JK ENVIRONMENTS

Title:	**Ramsar Wetlands**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS31
CRS:	GDA2020 / MGA zone 56
Sources:	- State Government of NSW and Department of Planning and Environment - Department of Finance, Services & Innovation

LEGEND

Regional Layers

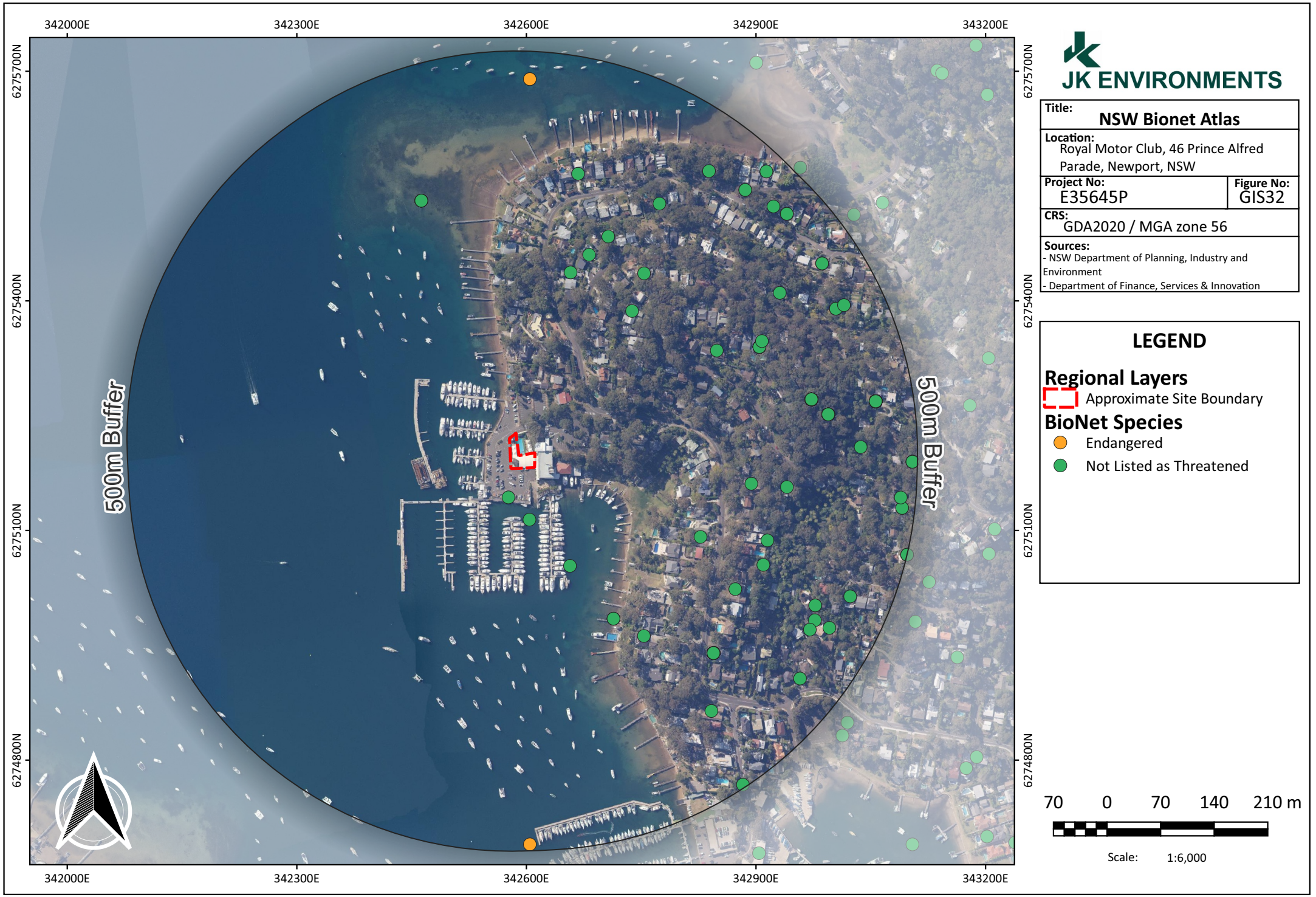
Approximate Site Boundary

70 0 70 140 210 m

Scale: 1:6,000

Groundwater & Inflow Dependent Ecosystems

Ecosystem Type	Eco-Hydrogeological Zone	Geomorphology	Landuse	IDE Potential	GDE Potential
No GDE or IDE Detected Within Buffer					



JK ENVIRONMENTS

Title:	**NSW Bionet Atlas**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS32
CRS:	GDA2020 / MGA zone 56
Sources:	- NSW Department of Planning, Industry and Environment - Department of Finance, Services & Innovation

LEGEND

Regional Layers

Approximate Site Boundary

BioNet Species

- Endangered
- Not Listed as Threatened

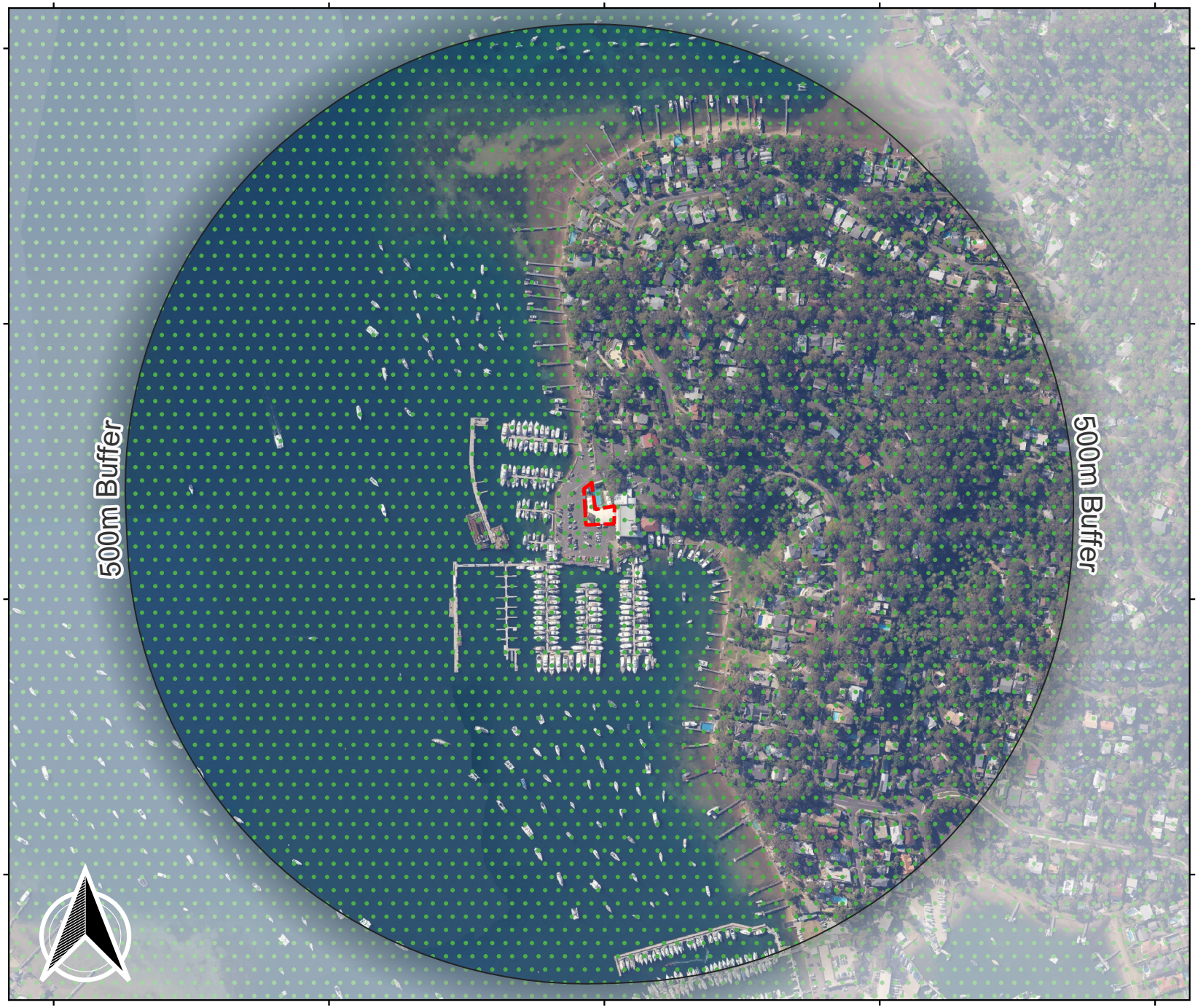
70 0 70 140 210 m

Scale: 1:6,000

Australian Bionet Atlas - Protected Species

Scientific Name	Common Name	Federal Conservation Status	State Conservation Status	Protected in NSW
Limnodynastes peronii	Brown-striped Frog	Not Listed	Not Listed	true
Litoria peronii	Peron's Tree Frog	Not Listed	Not Listed	true
Chroicocephalus novaehollandiae	Silver Gull	Not Listed	Not Listed	true
Isopogon anethifolius	Narrow-leaf Drumsticks	Not Listed	Not Listed	true
Asplenium australasicum	Bird's Nest Fern	Not Listed	Not Listed	true
Livistona australis	Cabbage Palm	Not Listed	Not Listed	true
Macrozamia communis	Burrawang	Not Listed	Not Listed	true
Trichoglossus haematodus	Rainbow Lorikeet	Not Listed	Not Listed	true
Strepera graculina	Pied Currawong	Not Listed	Not Listed	true
Persoonia linearis	Narrow-leaved Geebung	Not Listed	Not Listed	true
Xanthorrhoea spp.	NULL	Not Listed	Not Listed	true
Cacatua galerita	Sulphur-crested Cockatoo	Not Listed	Not Listed	true
Gymnorhina tibicen	Australian Magpie	Not Listed	Not Listed	true
Trichosurus vulpecula	Common Brushtail Possum	Not Listed	Not Listed	true
Egretta novaehollandiae	White-faced Heron	Not Listed	Not Listed	true
Vanellus miles	Masked Lapwing	Not Listed	Not Listed	true
Perameles nasuta	Long-nosed Bandicoot	Not Listed	Not Listed	true
Dacelo novaeguineae	Laughing Kookaburra	Not Listed	Not Listed	true
Pardalotus punctatus	Spotted Pardalote	Not Listed	Not Listed	true
Adiantum hispidulum	Rough Maidenhair	Not Listed	Not Listed	true
Corvus coronoides	Australian Raven	Not Listed	Not Listed	true
Xanthorrhoea arborea	NULL	Not Listed	Not Listed	true
Manorina melanocephala	Noisy Miner	Not Listed	Not Listed	true
Chenonetta jubata	Australian Wood Duck	Not Listed	Not Listed	true
Alisterus scapularis	Australian King-Parrot	Not Listed	Not Listed	true
Alectura lathami	Australian Brush-turkey	Not Listed	Not Listed	true
Chalinolobus gouldii	Gould's Wattled Bat	Not Listed	Not Listed	true
Eudyptula minor	Little Penguin	Not Listed	Not Listed	true
Phalacrocorax varius	Pied Cormorant	Not Listed	Not Listed	true
Platycercus elegans	Crimson Rosella	Not Listed	Not Listed	true
Austronomus australis	White-striped Freetail-bat	Not Listed	Not Listed	true
Vespadelus vulturnus	Little Forest Bat	Not Listed	Not Listed	true
Lampropholis delicata	Dark-flecked Garden Sunskink	Not Listed	Not Listed	true
Cracticus torquatus	Grey Butcherbird	Not Listed	Not Listed	true
Rattus fuscipes	Bush Rat	Not Listed	Not Listed	true
Pseudocheirus peregrinus	Common Ringtail Possum	Not Listed	Not Listed	true
Isoodon/Perameles sp.	unidentified Bandicoot	Not Listed	Not Listed	true
Porphyrio porphyrio	Purple Swamphen	Not Listed	Not Listed	true
Scythrops novaehollandiae	Channel-billed Cuckoo	Not Listed	Not Listed	true
Podargus strigoides	Tawny Frogmouth	Not Listed	Not Listed	true

Scientific Name	Common Name	Federal Conservation Status	State Conservation Status	Protected in NSW
Cacophis squamulosus	Golden-crowned Snake	Not Listed	Not Listed	true
Dendrelaphis punctulatus	Common Tree Snake	Not Listed	Not Listed	true
Petaurus breviceps	Sugar Glider	Not Listed	Not Listed	true
Phascolarctos cinereus	Koala	Endangered	Endangered	true



JK ENVIRONMENTS

Title:	**Heritage**
Location:	Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW
Project No:	E35645P
Figure No:	GIS33
CRS:	GDA2020 / MGA zone 56
Sources:	Australian Government Department of Agriculture, Water and the Environment

LEGEND

Regional Layers

- Approximate Site Boundary

Heritage Items

- National Heritage List

70 0 70 140 210 m

Scale: 1:6,000

Commonwealth Heritage List

ObjectID	Name	Class	Status	Address
No Heritage Items Detected Within Buffer				

National Heritage List

Name	Class	Status
Sydney Cultural Crescent Rock Art	Indigenous	Assessment initiated by AHC

Heritage Items - Environmental Planning Instrument

ObjectID	Heritage Item	EPI Name	Significance
No Heritage Items Detected Within Buffer			

JK ENVIRONMENTS

Title: PFAS Investigation Areas	
Location: Royal Motor Club, 46 Prince Alfred Parade, Newport, NSW	
Project No: E35645P	**Figure No:** GIS34
CRS: GDA2020 / MGA zone 56	
Sources: - State Government of NSW and Department of Planning and Environment 2016	

LEGEND

Regional Layers

- Approximate Site Boundary

60 0 60 120 180 240 m

Scale: 1:6,000

PFAS Investigations Areas in Buffer

Id	Investigation Area	Management Zone	Address
No PFAS Investigation Sites Within Buffer			

PFAS Investigations in Buffer - More Information

Id	Source
No PFAS Investigation Sites Within Buffer	

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

NSW LRS **Sydney**

Address: - 46 Prince Alfred Parade, Newport

Description: - Lot 6 D.P. 110670, Lot 5 Section 1 D.P. 4689 & Lot 262 D.P. 752046

As regards Lot 5 Section 1 D.P. 4689

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
29.01.1919 (1919 to 1925)	Harry Parsons Curtis (Solicitor)	Volume 1697 Folio 204
28.03.1925 (1925 to 1936)	George Curtis (Medical Practitioner) David Curtis (Clerk) (Transmission Application not investigated)	Volume 1697 Folio 204
11.11.1936 (1936 to 1937)	James Oswald Andrews (Funeral Director)	Volume 1697 Folio 204
13.02.1937 (1937 to 1973)	The Broken Bay Club-House Limited	Volume 1697 Folio 204 Now Volume 12042 Folio 103
26.03.1973 (1973 to date)	# Royal Motor Yacht Club of New South Wales Broek Bay Branch Now # Royal Motor Yacht Club Broken Bay New South Wales	Volume 12042 Folio 103 Then Volume 13460 Folio 225 Now Auto Consol 13460-225

# Denotes Current Registered Proprietor

As regards Lot 6 D.P. 110670

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
17.11.1927 (1927 to 1927)	Arnold Crescence Cooke (Company Director) Herbert James Fitzpatrick (Agent) Frederick Samuel Walton (Importer)	Volume 4079 Folio 76
26.10.1927 (1927 to 1973)	The Broken Bay Club-House Limited	Volume 4079 Folio 76 Now Volume 11063 Folio 99
26.03.1973 (1973 to date)	# Royal Motor Yacht Club of New South Wales Broek Bay Branch Now # Royal Motor Yacht Club Broken Bay New South Wales	Volume 11063 Folio 99 Then Volume 13460 Folio 225 Now Auto Consol 13460-225

# Denotes Current Registered Proprietor

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

As regards Lot 262 D.P. 752046

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
	This parcel is land that was below the former Mean High Water Mark	
11.05.1923	Crown Reserve No. 56146 from Sale or Lease Revoked 26.11.1965	
03.01.1969 (1969 to 1973)	The Broken Bay Club-House Limited	Volume 10947 Folio 150 (Grant)
26.03.1973 (1973 to date)	# Royal Motor Yacht Club of New South Wales Broek Bay Branch Now # Royal Motor Yacht Club Broken Bay New South Wales	Volume 10947 Folio 150 Then Volume 13460 Folio 225 Now Auto Consol 13460-225

Leases, excluding premises: -

- 29.12.1968 to Allan Gold Leslie (Transport Manager), Thomas Allen Lane (Hotel Broker) & Leonard Cecil Marjason (Investor) – now expired, circa 1980's. (Affecting Lot 5,
- 17.07.185 (V 784396) to Sydney County Council, of Substation premises No. 15654) together with a right of way and easement for electricity purposes – expires 31.12.2034.

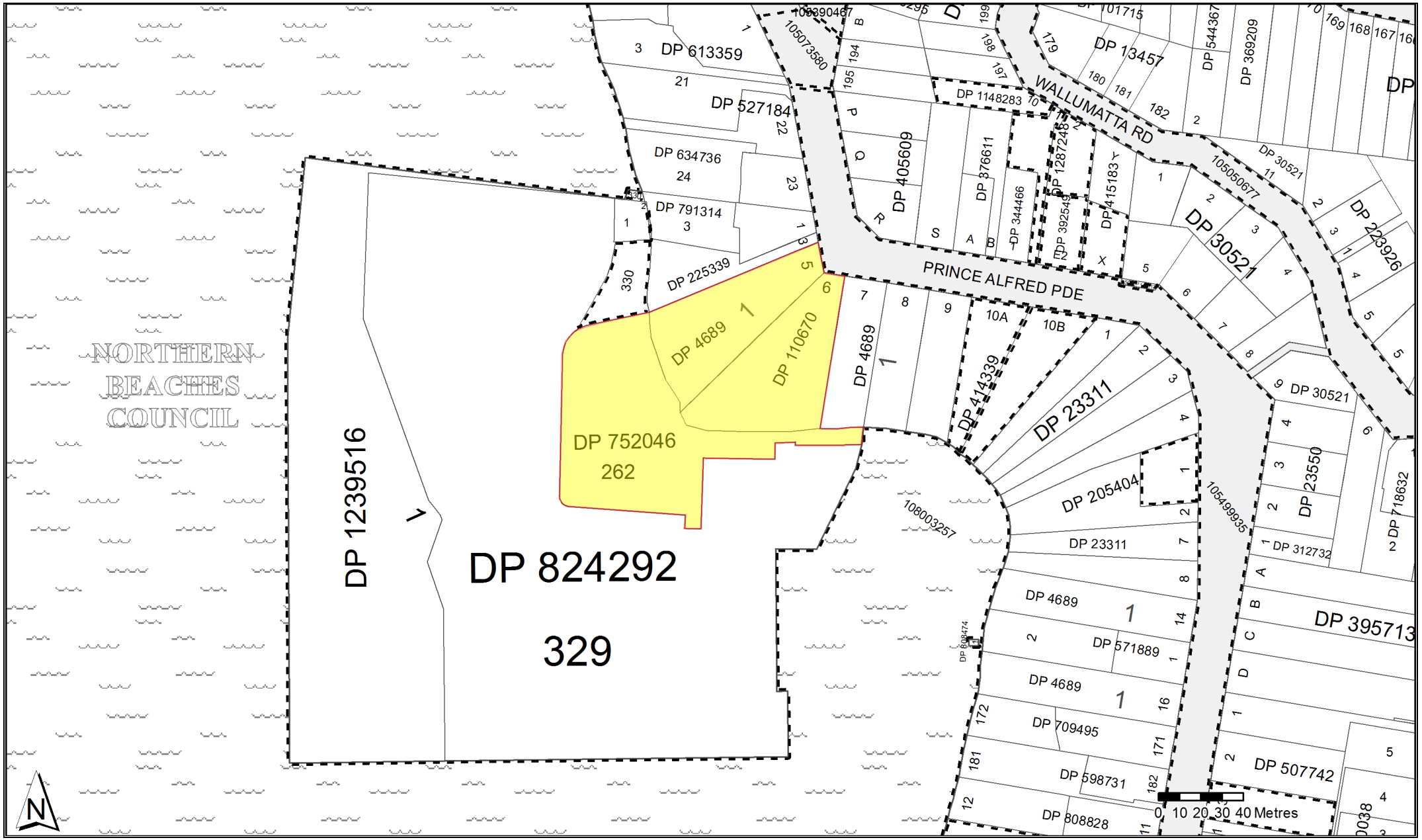
Easements: -

- (I 948063 & D.P. 791314) Easement for Electricity purposes 2 wide – affecting Lot 5 Section 1 D.P. 4689 and Lot 262 D.P. 752046.
- (I 948063 & D.P. 791314) Right of Way 6 wide and variable – affecting Lot 5 Section 1 D.P. 4689 and Lot 262 D.P. 752046.
- (I 948064 & D.P. 791314) Easement for Electricity purposes 3 wide – affecting Lot 5 Section 1 D.P. 4689 and Lot 6 D.P. 1100670.
- (I 948064 & D.P. 791314) Easement for Access, Electricity purposes & Services 6 wide and variable – affecting Lot 5 Section 1 D.P. 4689 and Lot 262 D.P. 752046.

Yours Sincerely
Mark Groll
21 December 2022

Cadastral Records Enquiry Report : Lot 262 DP 752046

Locality : NEWPORT
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

PLAN FORM 2

Plan Drawing only to appear in this space

*OFFICE USE ONLY

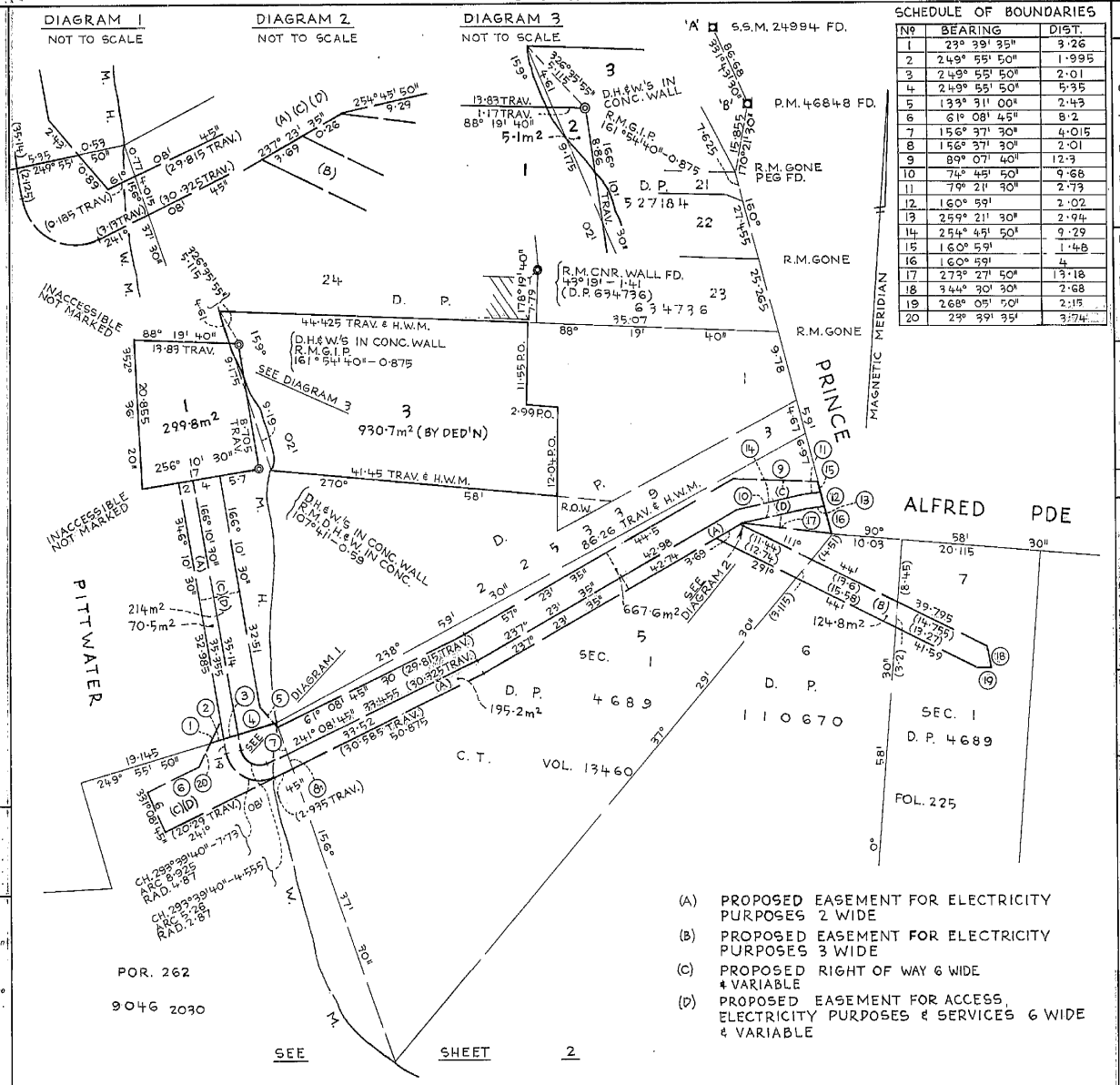
DP 791314

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

DIAGRAM 1 NOT TO SCALE

DIAGRAM 2 NOT TO SCALE

DIAGRAM 3 NOT TO SCALE



SCHEDULE OF BOUNDARIES

No	BEARING	DIST.
1	23° 39' 35"	3·26
2	249° 55' 50"	1·995
3	249° 55' 50"	2·01
4	249° 55' 50"	5·35
5	139° 31' 00"	2·43
6	61° 08' 45"	8·2
7	156° 37' 30"	4·015
8	156° 37' 30"	2·01
9	89° 07' 40"	12·9
10	74° 45' 50"	9·66
11	79° 21' 30"	2·73
12	160° 59'	2·02
13	259° 21' 30"	2·94
14	254° 45' 50"	9·29
15	160° 59'	1·48
16	160° 59'	4
17	273° 27' 50"	13·18
18	344° 30' 30"	2·68
19	268° 05' 50"	2·15
20	29° 39' 35"	3·74

(A) PROPOSED EASEMENT FOR ELECTRICITY PURPOSES 2 WIDE

(B) PROPOSED EASEMENT FOR ELECTRICITY PURPOSES 3 WIDE

(C) PROPOSED RIGHT OF WAY 6 WIDE & VARIABLE

(D) PROPOSED EASEMENT FOR ACCESS, ELECTRICITY PURPOSES & SERVICES 6 WIDE & VARIABLE

NOTE: SURVEY ONLY AS REGARDS LOT 1, LOT 2 & PROPOSED EASEMENTS LOT 3 COMPILED FROM D.P. 225339

Crown Lands Office Approval

PLAN APPROVED .....
Authorised Officer
Land District .....
Paper No. .....
Field Book ..... pages .....

Council Clerk's Certificate

I hereby certify that —

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

*(b) the requirements of Part 3 Division 2 of the † Water Board Act 1987 and † Water Supply Authorities Act 1987

have been complied with by the applicant in relation to the proposed .....
(Insert "new road", "subdivision" or "consolidated lot") set out herein

Subdivision No. .....

Date .....

(Signature) .....
Council Clerk

Council File No. .....

*This part of certificate is to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.

† Delete if inapplicable.

Registered 14-8-1989

C.A: —

Title System: TORRENS & CROWN LAND

Purpose: ACQUISITION

Ref. Map: U 2775-73

Last Plan: DP 225339

PLAN OF
LAND & EASEMENTS PROPOSED TO BE ACQUIRED FOR G.P.S. No 495

Lengths are in metres. Reduction Ratio 1: 400

Mun./Shire -City-: WARRINGAH

Locality: NEWPORT

Parish: NARRABEEN

County: CUMBERLAND

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

I, ROBERT STEPHEN CLARK of WATER BOARD (LT.O.DEL BOX 8897)

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate and has been made in accordance with the Survey Practice Regulations, 1933 and any special requirements of the Department of Lands, and was completed on

28TH APRIL 1989

Signature .....
Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth. 'A' - 'B'
#insert date of survey.

Plans used in preparation of survey/compilation.

D.P. 225339
D.P. 634736
D.P. 4689
D.P. 110670
D.P. 9046 2030

PANEL FOR USE ONLY for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

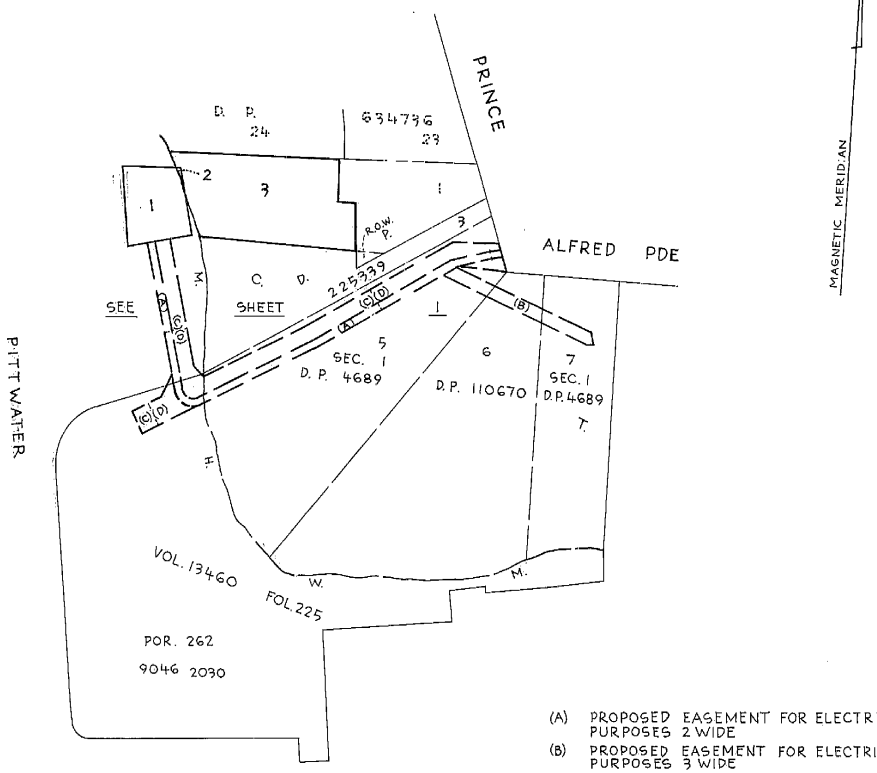
SURVEYOR'S REFERENCE: 1126310 87/815 R.A.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

1126310

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day. 15 August, 1989

PLAN FORM 3 To be used in conjunction with Plan Form 2 WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION * OFFICE USE ONLY



(A) PROPOSED EASEMENT FOR ELECTRICITY PURPOSES 2 WIDE
(B) PROPOSED EASEMENT FOR ELECTRICITY PURPOSES 3 WIDE
(C) PROPOSED RIGHT OF WAY 6 WIDE & VARIABLE
(D) PROPOSED EASEMENT FOR ACCESS, ELECTRICITY PURPOSES & SERVICES 6 WIDE & VARIABLE

DP 791314

Registered: 14-8-1989

This is sheet 2 of my plan in 2 sheets dated 28TH APRIL 1989

Surveyor registered under Surveyors Act 1929.

This is sheet of the plan of Sheets covered by my Certificate No. of

Council Clerk

Signatures and seals only.

Reduction Ratio 1: 800
Lengths are in metres

Plan Drawing only to appear in this space R.A.

SURVEYOR'S REFERENCE: 1126310 87/815

2

10 20 30 40 50 60 70 Table of mm 110 120 130 140

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day. 15 August, 1989

RPIC

V784396

LEASE

REAL PROPERTY ACT, 1900

(To be lodged in duplicate)

L A 1 of 1

$ 80

STAMP DUTY $ =0035

LAND of which LESSOR is registered proprietor

DESCRIPTION OF LAND
Note (a)

Torrens Title Reference	If Part or Premises, See Note (a) (ii)	Location
Volume 13460 Folio 225	~~WHOLE~~ PART being that part of the premises shown on the plan hereto annexed marked "A" and thereon described as "Substation Premises No. 15654" hereinafter called the "demised premises" together with right of way and easement referred to in clauses 1 and 2 hereof.	NEWPORT

LESSOR
Note (b)

ROYAL MOTOR YACHT CLUB OF NEW SOUTH WALES BROKEN BAY BRANCH

(the abovenamed LESSOR) hereby leases to the LESSEE

LESSEE
Note (b)

THE SYDNEY COUNTY COUNCIL of 570 George Street, Sydney

OFFICE USE ONLY

OVER

Note (c) ~~as joint tenants/tenants in common~~

PRIOR ENCUMBRANCES
Notes (d) and (h)

the ~~land~~ premises above described, subject to the following PRIOR ENCUMBRANCES 1. T402210 (Mortgage)

2. ~~T950269 (Mortgage)~~ 3.

TERM
Note (e)

for a TERM of Fifty (50) years

commencing on 1/1/1985 and TERMINATING on 31/12/2034.

OFFICE USE ONLY

31/12/2034

Purchase	Renewal
nil	nil

Note (f) ~~(which an OPTION TO PURCHASE and/or an OPTION OF RENEWAL as set forth in clause(s) of SCHEDULE TWO hereto,~~

Note (g) together with and reserving the rights and liberties set forth in SCHEDULE ONE hereto),

at a rental of Ten cents ($0.10) per annum payable at the expiration of the said term (if demanded)

RENT
Note (i)

Note (h) SUBJECT TO the covenants and provisions:

~~(i) implied by sections 84 and 85 of the Conveyancing Act, 1919, as are not expressly negatived or modified herein;~~

~~(ii) set forth in the Memorandum filed in the Registrar-General's Office as Number ; and~~

(iii) set forth in SCHEDULE TWO hereto, which covenants and provisions shall be deemed to be incorporated herein.

TO BE COMPLETED BY LODGING PARTY
Notes (j) and (k)

LODGED BY

BARTIER PERRY PURCELL
167 MACQUARIE ST.,
SYDNEY 221-3377
DX 109 102Q

Delivery Box Number

LOCATION OF DOCUMENTS

CT	OTHER	
		Herewith.
		In R.G.O. with
		Produced by

OFFICE USE ONLY

Checked	Passed	REGISTERED 17-7-1985
Ech	EF13	
Signed	Extra Fee	
		Registrar General

Secondary Directions	OFF	VM	$161344 cancelled
Delivery Directions	Dup	LP	1 @ 18/7/85.
	CT	37Y	1

ANNEXURE TO MEMORANDUM OF LEASE MADE THE DAY OF 19
BETWEEN ROYAL MOTOR YACHT CLUB OF NEW SOUTH WALES BROKEN BAY BRANCH AS LESSOR
and THE SYDNEY COUNTY COUNCIL AS LESSEE

SCHEDULE ONE HEREINBEFORE REFERRED TO

The Lessee shall have the benefit of the following rights and liberties;

1. The Lessee shall have full right and liberty for its officers servants workmen agents and contractors with or without tools materials plant and other apparatus and vehicles to pass and repass at all times of the day or night during the term hereby created over the land marked "Right of Way (4 Wide) (8.265 Wide) (Var.)" and "Right of Way and Easement for Electricity Purposes (1.17 Wide) (1.26 Wide)" on the plan hereto annexed marked "A" (hereinafter referred to as "right of way") and during such times as the Lessee considers necessary to park vehicles upon the said right of way PROVIDED HOWEVER that access for the Lessor its agents tenants or licensees is not unnecessarily impeded.

2. The Lessee shall have full right liberty and licence for its officers servants workmen agents and contractors during the term hereby created to construct lay down dismantle replace repair renew and maintain underground/overhead electricity cables through beneath or over the land marked "Right of Way and Easement for Electricity Purposes (1.17 Wide) (1.26 Wide)" and "Easement for Electricity Purposes (2 Wide)" on the plan hereto annexed marked "A" (hereinafter referred to as "easement") AND ALSO free and uninterrupted passage of electricity through the cables within the said easement.

SCHEDULE TWO HEREINBEFORE REFERRED TO

3. The covenants and powers implied in every Lease by virtue of Sections 84 and 85 of the Conveyancing Act 1919 shall not apply to or be implied in this Lease except insofar as the same or some part or parts thereof are included in the covenants hereinafter contained.

4. To the full effect of the covenants hereinafter shortly noted as the same are set forth in words at length in the second column of Part 2 of the Fourth Schedule to the Conveyancing Act 1919 (as amended):

1.	The Lessee covenants with the Lessor to pay rent.
16.	and will not assign or sublet without leave, no fine to be taken.
21.	and the Lessor covenants with the Lessee for quiet enjoyment.

5. The Lessee shall have full right and liberty with or without tools, materials, plant and other apparatus and vehicles for access to the demised premises for its officers, servants, workmen, agents and contractors at all times of the day and night during the term hereby created.

SIGNED FOR AND ON BEHALF OF
ROYAL MOTOR YACHT CLUB OF NEW SOUTH
WALES BROKEN BAY BRANCH

ROYAL MOTOR YACHT CLUB OF NEW SOUTH WALES BROKEN BAY BRANCH

SIGNED FOR AND ON BEHALF OF
THE SYDNEY COUNTY COUNCIL

Attorney

Witness

6. The Lessee may during the term hereby created install erect construct dismantle repair replace renew and maintain upon the demised premises such plant electricity conductors wires cables transformers and other apparatus for the transmission or storage of electric current or purposes incidental thereto and carry out such construction work therein as to effectively establish a substation for the supply and/or distribution of electricity.

7. The Lessee shall have the right to use the substation installation and easement for the purpose of supplying other customers PROVIDED HOWEVER that in approving the connection of electrical loads to the substation the Lessee shall give priority to electrical loads which are located within the premises of the Lessor.

8. The Lessee shall have the right at the expiration or sooner determination hereof to take remove and carry away from the demised premises and the easement all cables fixtures fittings plant machinery and other equipment laid erected or brought by it on under and about such premises.

9. The Lessee shall meet all reasonable legal expenses incurred by the Lessor in connection with the preparation, stamping and registration of the within lease including the costs of obtaining the consent of any mortgagee.

10. The Lessor shall pay any rates and taxes which may be levied in respect of the demised premises or of the premises of which the demised premises forms part.

11. The Lessor shall maintain in a serviceable condition the right of way (and/or Right of Way and Easement) referred to on the plan annexed and any drainage system which may affect the demised premises.

12. The Lessor shall take all reasonable precautions to ensure any ventilation provided for the demised premises is not obstructed or impaired.

13. The Lessor shall not alter existing ground levels on or adjacent to the easement or the demised premises or permit the erection of any structure on above or below the easement referred to in Clause 2 hereof, without first obtaining the written consent of the Lessee.

SIGNED FOR AND ON BEHALF OF
ROYAL MOTOR YACHT CLUB OF NEW SOUTH
WALES BROKEN BAY BRANCH

SIGNED FOR AND ON BEHALF OF
THE SYDNEY COUNTY COUNCIL

Attorney

Witness

T74/12491
1/10/82
Consent to Lease
(R.P.A.)

CONSENT TO LEASE

R.P.A.

WESTPAC BANKING CORPORATION (hereinafter called "the Bank") being the Mortgagee under Mortgage No. T602210 of the premises demised by the within Lease hereby consents to such Lease as from the registration thereof and not otherwise and subject to the following conditions and provisions namely:—

1. THAT this consent shall be without prejudice to the rights powers and remedies of the Bank and its assigns under the said Mortgage which shall remain in full force and effect as if this consent had not been given except that so long as the convenants conditions and provisions of the said Lease are duly observed and performed the Bank will in the event of the exercise of the power of sale or other power or remedy of the Bank or its assigns on default under the said mortgage exercise the same subject to the then subsisting rights of the Lessee his executors administrators and assigns under the said Lease.

2. THAT so long as the Bank or its assigns is or are registered as Mortgagee of the said premises the Lessee shall obtain the consent or approval of the Bank or its assigns in addition to the consent or approval of the Lessor in all cases where under the said Lease the consent or approval of the Lessor is required.

3. THAT upon the Bank or its assigns giving notice to the Lessee of demanding to enter into receipt of the rents and profits of the said premises the convenants on the part of the Lessee expressed or implied in the said Lease shall be deemed to have been entered into by the Lessee with the Bank and its assigns and all the rights powers and remedies of the Lessor under the said Lease shall vest in and be exercisable by the Bank and its assigns until such notice be withdrawn or the said Mortgage be discharged.

4. The Bank shall in no way be bound to perform and shall not incur any liability in respect of the covenants and agreements expressed or implied in the said Lease and on the part of the Lessor to be performed and observed.

5. The word "Lessee" when used herein shall mean and include the Lessee his executors administrators or permitted assigns.

DATED this 23rd day of APRIL 19 87

SIGNED for and on behalf of
WESTPAC BANKING CORPORATION

by Stephen George Shafer

its duly constituted
Attorney who is personally
known to me

WESTPAC BANKING CORPORATION
by its Attorney
who hereby states at the time of his executing this instrument he has no notice of the revocation of Power of Attorney registered in the office of the Registrar General
No. 734 Book 3518
under the authority
of which he has executed this instrument

Ag. Asst. to Manager, Legal, New South Wales Division

SIGNED in my presence by the within-named

who is personally known to me

Mortgagee

.....Lessor

SIGNED in my presence by the within-named

who is personally known to me

.....Lessee

SIGNED SEALED AND DELIVERED for and on behalf of THE SYDNEY COUNTY COUNCIL by BRIAN LARTER its duly constituted Attorney pursuant to Power of Attorney registered Book 3550 No. 148 AND I DECLARE that I have no notice of the revocation of the said Power of Attorney in the presence of:

B Larter
Attorney

Witness

T74/12491
1/10/82
Consent to Lease
(R.P.A.)

"A" V784396

SHIRE: WARRINGAH
LOCALITY: NEWPORT

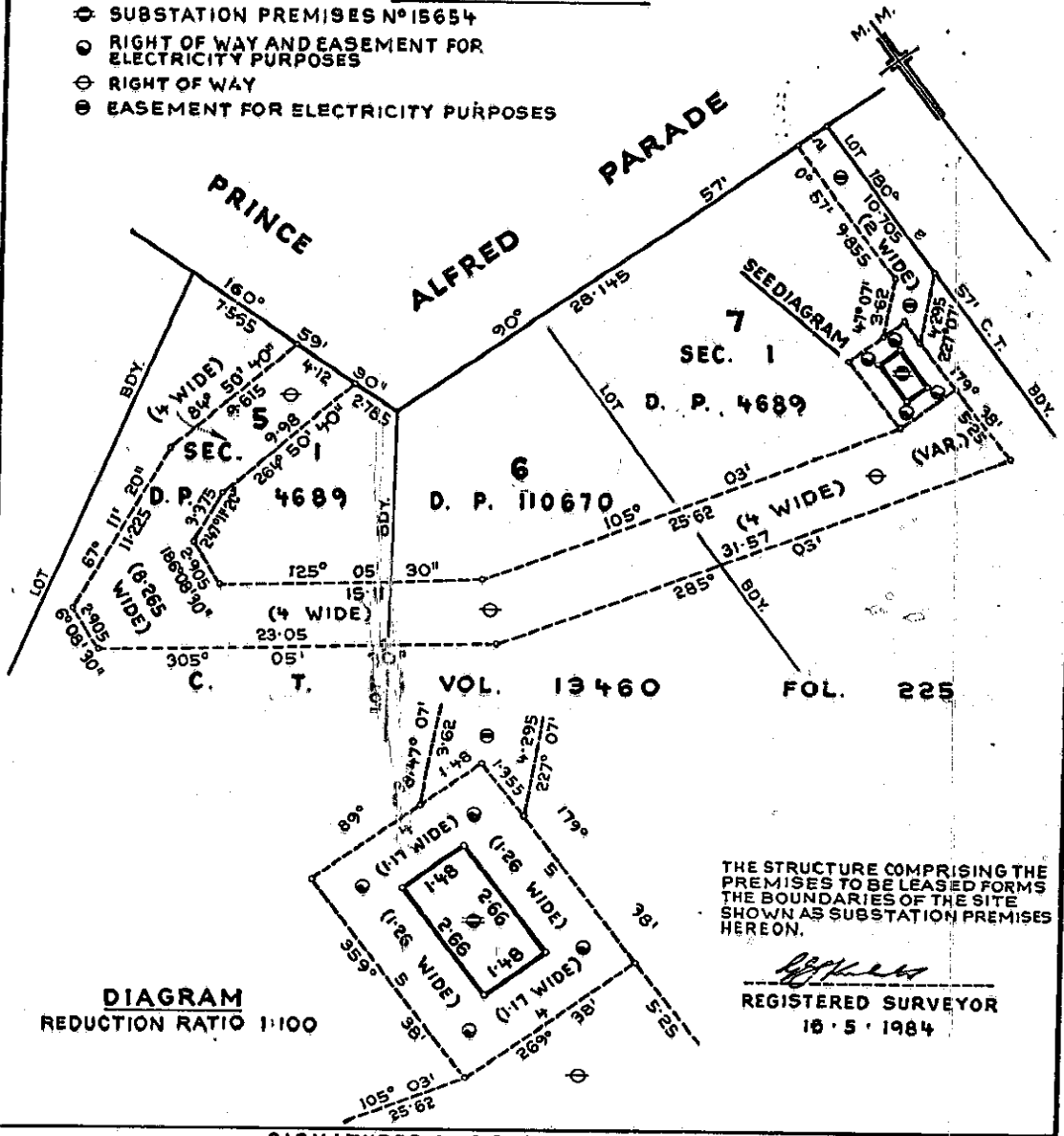
PLAN

SHOWING SUBSTATION PREMISES No 15654, RIGHT OF WAY AND EASEMENT FOR ELECTRICITY PURPOSES WITHIN C.T. VOL. 13460 FOL. 225

PARISH OF NARRABEEN COUNTY OF CUMBERLAND

REDUCTION RATIO 1:300

- SUBSTATION PREMISES No 15654
- RIGHT OF WAY AND EASEMENT FOR ELECTRICITY PURPOSES
- RIGHT OF WAY
- EASEMENT FOR ELECTRICITY PURPOSES



THIS MARGIN TO REMAIN FREE OF NOTATION

THE STRUCTURE COMPRISING THE PREMISES TO BE LEASED FORMS THE BOUNDARIES OF THE SITE SHOWN AS SUBSTATION PREMISES HEREON.

REGISTERED SURVEYOR
18 · 5 · 1984

DIAGRAM
REDUCTION RATIO 1:100

SIGNATURES AND SEALS OF PARTIES

THIS IS THE PLAN MARKED "A" REFERRED TO IN MEMORANDUM OF LEASE

BETWEEN THE SYDNEY COUNTY COUNCIL AND ROYAL MOTOR YACHT CLUB OF NEW SOUTH WALES BROKEN BAY BRANCH

DATED

Signed for and on behalf of
THE SYDNEY COUNTY COUNCIL

B. Larter
Attorney

Witness

Signed for and on behalf of
ROYAL MOTOR YACHT CLUB OF NEW SOUTH WALES
BROKEN BAY BRANCH

LODGE WITH DEALING

17/6/85.

W.B.S./MONA VALE 1/005/ /N18-11, S17-83/15654/K.R.S.

S7895

DATE 8th October 1984

EXECUTION

We hereby certify this lease to be correct for the purposes of the Real Property Act, 1900.

Note (o)

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

.....
Signature of Witness

.....
Name of Witness (BLOCK LETTERS)

.....
Address and occupation of Witness

.....
Signature of Lessor

Note (o)

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

.....
Signature of Witness

.....
Name of Witness (BLOCK LETTERS)

.....
Address and occupation of Witness

.....
Signature of Lessee

SIGNED SEALED AND DELIVERED for and on behalf of THE SYDNEY COUNTY COUNCIL by BRIAN LARTER its duly constituted Attorney pursuant to Power of Attorney registered Book 3550 No. 148 and I declare that I have no notice of the revocation of the said Power of Attorney in the presence of:

B. Larter
Attorney (8-10-1984)

Witness

RPIC

INSTRUCTIONS FOR COMPLETION

Form RPIC is to be used for leases of the fee simple and for sub-leases where a folio of the Register has issued for the leasehold estate.

Use form RPIA for sub-leases where a folio of the Register has *not* issued for the leasehold estate.

This dealing should be stamped by the Commissioner of Stamp Duties before lodgment at the Registrar General's Office.

Typewriting and handwriting should be clear, legible and in permanent black non-copying ink.

Alterations are not to be made by erasure; the words rejected are to be ruled through and initialled by the parties to the dealing

Rule up all blanks.

The following instructions relate to the side notes on the form.

(a) Description of land.

(i) TORRENS TITLE REFERENCE.—Insert the current Folio Identifier or Volume and Folio of the Certificate of Title/Crown Grant for the land being leased, e.g., 135/SP12345 or Vol. 8514 Fol. 126.

(ii) PART/WHOLE.—If part only of the land in the folio of the Register is being leased or the lease is of premises, delete the word "WHOLE" and insert the lot and plan number, reference to plan annexed, portion, &c., or adequate description of premises leased, e.g., all those premises known as 55 Numa Street, Ryde, erected on the said land. Evidence of council approval is not required to a subdivision by lease unless the term exceeds 5 years, or the lease contains an option of renewal which extends the term beyond a 5 years period. See also sections 327 and 327AA, Local Government Act, 1919.

(iii) LOCATION.—Insert the locality shown on the Certificate of Title/Crown Grant, e.g., at Ryde. If no locality is shown, insert the Parish and County, e.g., Ph. Lismore Co. Rous.

(b) Show the full name, address and occupation or description.

(c) Delete if only one lessee. If more than one lessee, delete either "joint tenants" or "tenants in common", and, if the lessees hold as tenants in common, state the shares in which they hold.

(d) In the memorandum of encumbrances, state only the registered number of any mortgage, lease or charge (except where the consent of the mortgagee, lessee or chargee is furnished), and of any writ to which this lease is subject.

(e) Insert the term of the lease, e.g., 4 years commencing on 11/11/1979 and TERMINATING on 10/11/1983.

(f) Strike out such words as are not applicable. If an option to purchase or an option of renewal is included in the lease, the relevant clause in SCHEDULE TWO, in which it appears, should be shown and the option should be set out in full in SCHEDULE TWO.

(g) Strike out such words as are not applicable.

(h) Strike out whichever does not apply.

(i) Show terms of rent and method of repayment.

(j) Insert the name, postal address, Document Exchange reference, telephone number and delivery box number of the lodging party.

(k) The lodging party is to complete the LOCATION OF DOCUMENTS panel. Place a tick in the appropriate box to indicate the whereabouts of the Certificate of Title and, where appropriate, duplicate registered Lease. List, in an abbreviated form, other documents lodged, e.g., stat. dec. for statutory declaration.

(l) Any easement, exception, right, &c., intended to be granted or reserved should be set out in full in SCHEDULE ONE. If not applicable, rule through this space.

(m) This space on the lease form may be used for the insertion of additional covenants.

(n) If the space is insufficient, use insert sheets of the same size and quality of paper and having the same margins as the lease form. Each such insert sheet must be signed by the parties and attesting witnesses.

(o) Execution.

GENERALLY (i) Should there be insufficient space on the form for execution of the lease, use an annexure sheet.
(ii) The certificate of correctness under the Real Property Act, 1900, must be signed by all parties to the lease, each party to execute the lease in the presence of an adult witness, not being a party to the lease, to whom he/she is personally known. The solicitor for the lessee may sign the certificate on behalf of the lessee, the solicitor's name (not that of his/her firm) to be typewritten or printed adjacent to his/her signature.
Any person falsely or negligently certifying is liable to the penalties provided by section 117 of the Real Property Act, 1900.

ATTORNEY (iii) If the lease is executed by an attorney for the lessor/lessee pursuant to a registered power of attorney, the form of attestation must set out the full name of the attorney, and the form of execution must indicate the source of his/her authority, e.g., "AB by his/her attorney (or receiver or delegate, as the case may be) XY pursuant to power of attorney registered Book No. ".

AUTHORITY (iv) If the lease is executed pursuant to an authority (other than specified in (iii)) the form of execution must indicate the statutory, judicial or other authority pursuant to which the lease has been executed.

CORPORATION (v) If the lease is executed by a corporation under seal, the form of execution should include a statement that the seal has been properly affixed, e.g., in accordance with the Articles of Association of the corporation. Each person attesting the affixing of the seal must state his/her position (e.g., director, secretary) in the corporation.

OFFICE USE ONLY

FIRST SCHEDULE DIRECTIONS

(A) FOLIO IDENTIFIER	(B) DIRECTION	(C) NAME

SECOND SCHEDULE AND OTHER DIRECTIONS

(D) FOLIO IDENTIFIER	(E) DIRECTION	(F) NOTFN TYPE	(G) DEALING NUMBER	(H) DETAILS
	ON	L	V784396	Lease to SYDNEY COUNTY COUNCIL of substation premises No. 15654 as shown in the plan with V784396 together with a right of way and Easement for Electricity Purposes (1.17 wide) (1.26 Wide) & 2 wide over another part of the land within described. Expires 31-12-2034. Regld.

LO 1143 D. WEST, GOVERNMENT PRINTER

12042103

CERTIFICATE OF TITLE

NEW SOUTH WALES — PROPERTY ACT, 1900

Appln. No.8845

Prior Title Vol.1697 Fol.204

Vol. 12042 Fol. 103

Edition issued 8-2-1973

N38654 CANCELLED

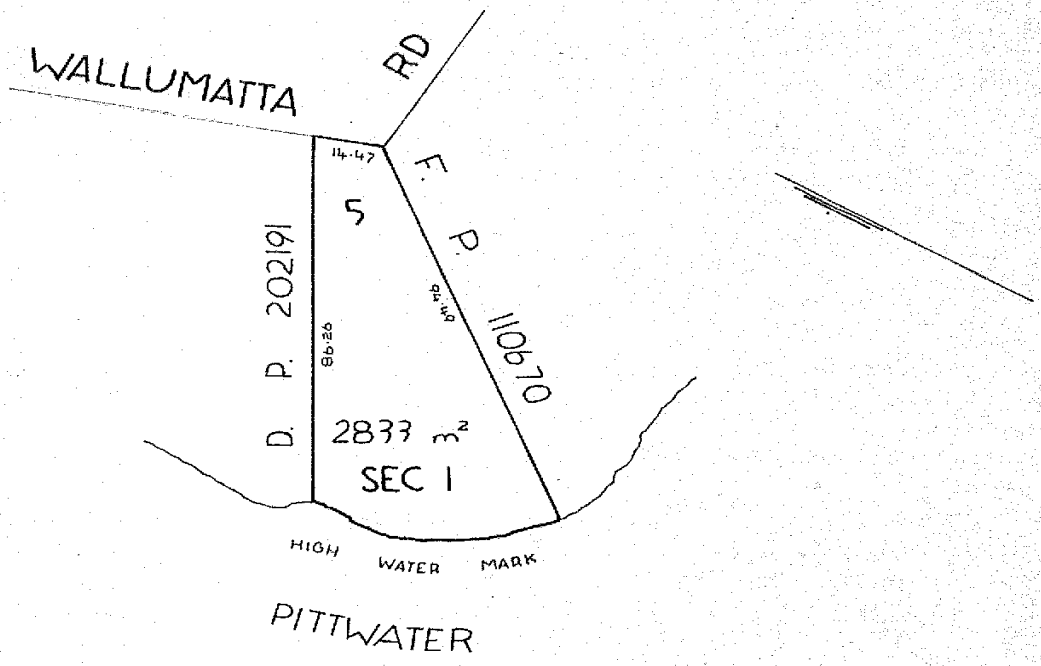
(Page 1) Vol. 12042 Fol. 103

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.

Registrar General.

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



N 38654

REDUCTION RATIO 1:1250

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 5 of Section 1 in Deposited Plan 4689 in the Shire of Warringah Parish of Narrabeen and County of Cumberland being part of Portion 36 granted to Robert Melville on 19-10-1831.

FIRST SCHEDULE

~~THE BROKEN BAY CLUB HOUSE PTY. LIMITED.~~

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Lease No.L321420 to Allan Gold Leslie of Taylors Point, Transport Manager, Thomas Allen Lane of Cammeray, Hotel Broker and Leonard Cecil Marjason of North Sydney, Investor. Entered 11-2-1969.
3. Mortgage No.L321423 to The Mutual Life and Citizens Assurance Company Limited. Entered 11-2-1969.

Registrar General.

Vol. 12042 Fol. 103

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
Royal Motor Yacht Club of New South Wales Broken Bay Branch	Transfer	N810060	26.3.1973	31.5.1974	

ET 11-4-74
N810060TE

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION
			This Deed is cancelled and Certificate of Title issued. Vol. 13460 Fol. 225 dated 21.9.1977 Vide 853905 Consolidation REGISTRAR GENERAL			

(Page 2 of 2 pages)

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

[redacted]

TIFICATE OF TITLE

NEW SOUTH WALES

[redacted]ERTY ACT, 1900, as amended.

11063099

Vol. 11063 Fol. 99

Appln. No.8845

AS Edition issued 5-6-1969

Prior Title Vol.4079 Fol. 76

L421447 CANCELLED

(Page 1) Vol. 11063 Fol. 99

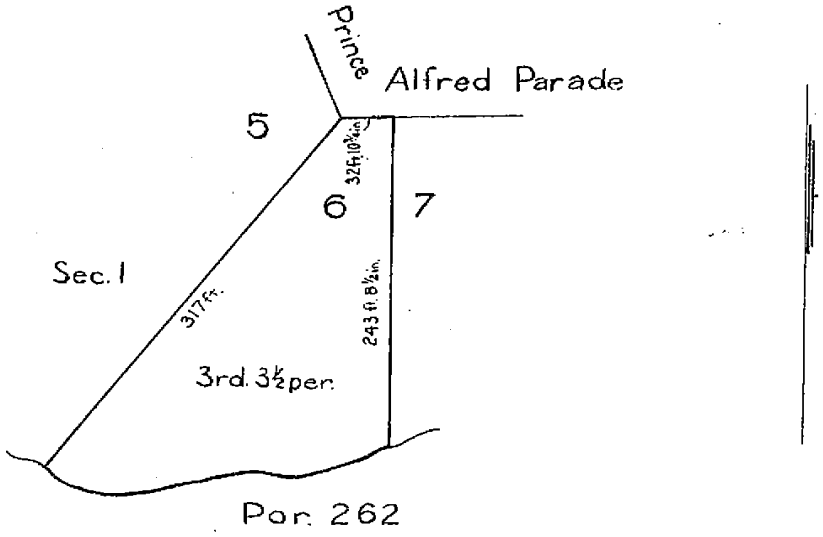
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness M Flint

Jan Watson
Registrar General.

REGISTRAR GENERAL NEW SOUTH WALES

PLAN SHOWING LOCATION OF LAND



L421447 W.I.

Scale: 100 feet to one inch.

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 6 of Section 1 in Deposited Plan 4689 as redefined as land in plan lodged with Order No.B582821 (Filed as F.P.110670) at Newport in the Shire of Warringah Parish of Narrabeen and County of Cumberland being part of Portion 36 granted to Robert Melville on 19-10-1831.

FIRST SCHEDULE

~~THE BROKEN BAY CLUB HOUSE PTY LIMITED.~~

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Lease No.L321420 to Allan Gold Leslie of Taylors Point, Transport Manager, Thomas Allen Lane of Cammeray, Hotel Broker and Leonard Cecil Marjason of North Sydney, Investor. Entered 11-2-1969.
3. Mortgage No.L321423 to The Mutual Life and Citizens Assurance Company Limited. Entered 11-2-1969.

Jan Watson
Registrar General

17 V.C.N. Blight, Government Printer

Vol. 11063 Fol 99

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
Royal Motor Yacht Club of New South Wales Broken Bay Branch	Transfer	N810060	26·3·1973	31·5·1974	

LT 11-4-74
N810060 Te
CT 19-12-76
Q53903

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION		
Mortgage	L409419	29·1·1969	to P.T. Limited	3·7·1969		Discharged	N38654	

This Deed is cancelled and Certificate of Title issued
Vol. 12460 Fol. 225 dated 21·10·1977
Vide Q53903 Consolidation

REGISTRAR GENERAL

(Page 2 of 2 pages)

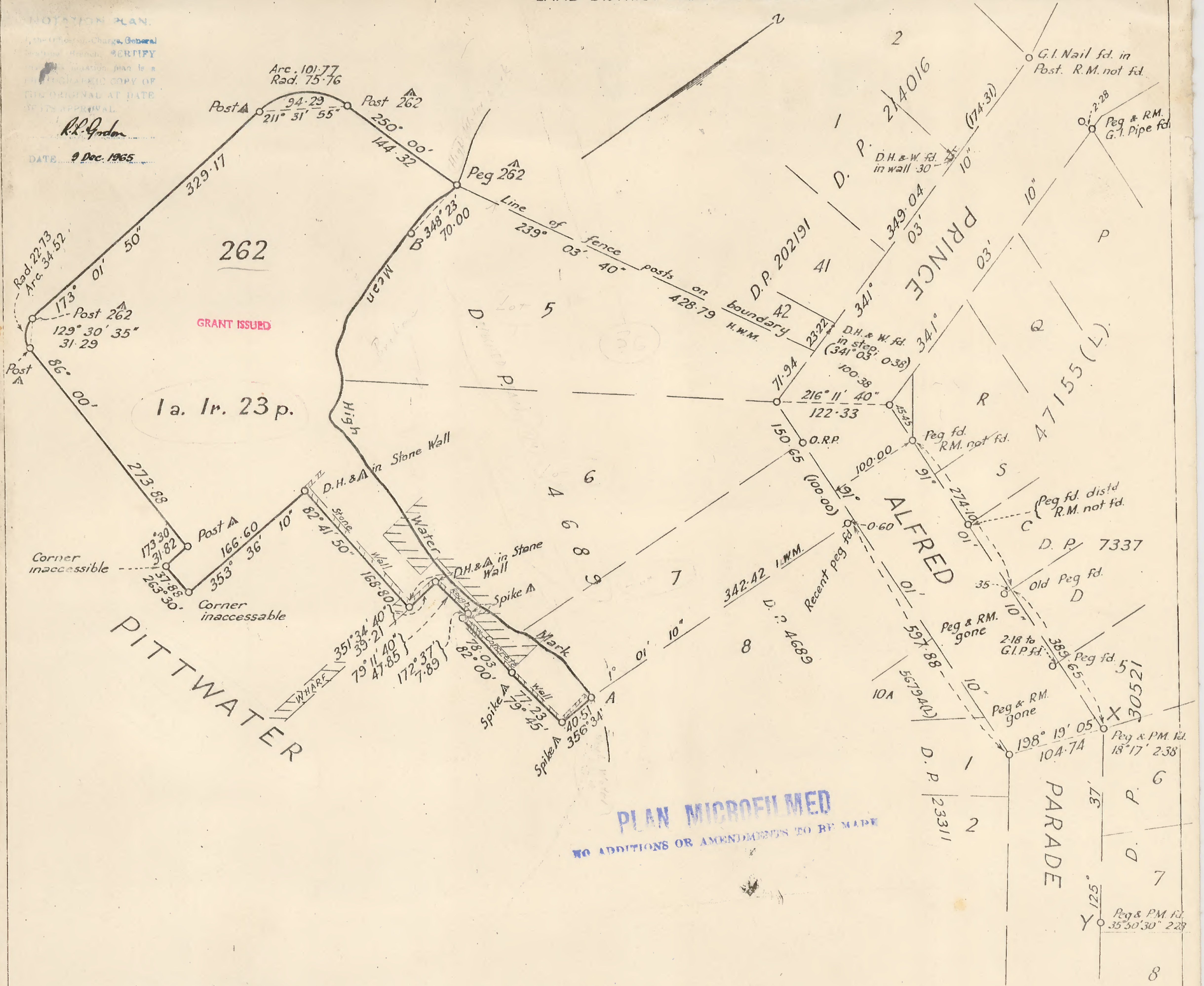
NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

A294

PLAN OF POR. 262

PARISH NARRABEEN COUNTY CUMBERLAND
LAND DISTRICT METROPOLITAN SHIRE WARRINGAH.

NOTATION PLAN.
I, the Officer-in-Charge, General ... Branch, CERTIFY that this notation plan is a photographic copy of the original at date of its approval.
R.L. Gordon
DATE 9 Dec. 1965



SCALE 1 CHAIN TO AN INCH. All measurements shown in links

Within ~~R56146 from sale or lease generally notified 11th May 1923~~ Revoked 26·11·1965.

Portion 262:- Sp Pur 61·47 Broken Bay Club House Pty Limited. Gaz. 25.2.66
Grant issued. D68 2955

This space for office use only.

GRANT ISSUED

PLAN MICROFILMED
NO ADDITIONS OR AMENDMENTS TO BE MADE

NOTATION PLAN

REFERENCE MARKS

CORNER	BEARING	FROM	DISTANCE	NO. ON TREE
A	Peg on corner			262
	22° 24'	Bolt & Wing in top of Wall	3·53	
B	D.H.& W. on conc. baths.			

AZIMUTH TAKEN FROM "X-Y"
FIELD BOOK 5665 PAGES 1-6.

I Edward Hall of F.P. Wallis & Moore 147 Macquarie St, Sydney a Surveyor registered under the Surveyors Act, 1929-1946, hereby certify that the survey represented in this plan is accurate and has been made by me ~~under my immediate supervision~~ in accordance with the Survey Practice Regulations, 1933, and the special requirements of the Department of Lands and was completed on 16th Aug., 1965

Signature Edward Hall

Surveyor registered under the Surveyors Act, 1929-1946.

CHECKED & CHARTED Michael Johnson 27.10.65.
PLAN APPROVED K.R. Tate
Authorised Officer 1st November 1965

PAPER NO. LB61·2151 Ten 65·2761 CAT. NO. C 9046·2030

(63-179)

NOTATION PLAN

New South Wales

10947150

No.68/2955

Vol. 10947 Fol. 150
Registered 3-1-1969

Registrar General.

(Page 1) Vol. 10947 Fol. 150

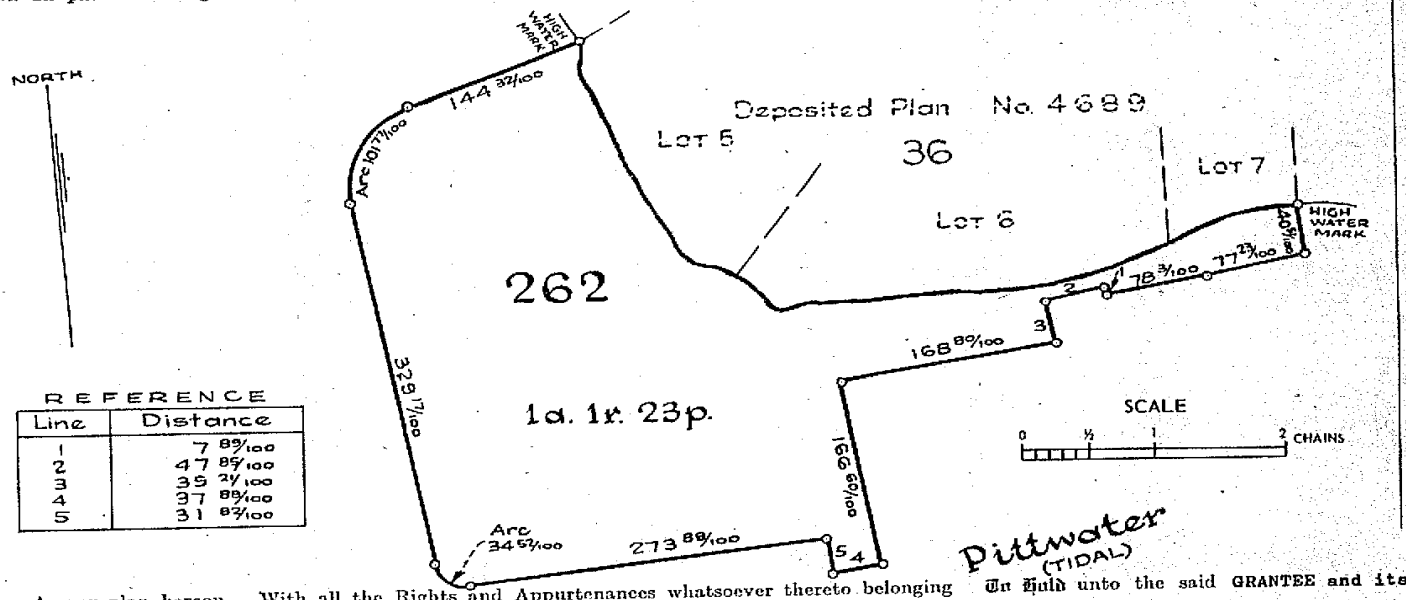
GRANT UPON PURCHASE OF RECLAIMED CROWN LANDS

CANCELLED ☑

ELIZABETH the SECOND, by the Grace of God of the United Kingdom, Australia and Her other Realms and Territories Queen, Head of the Commonwealth, Defender of the Faith:—

To All to whom these Presents shall come, Greeting:—

Whereas in accordance with the provisions of the Crown Lands Consolidation Act, 1913 THE BROKEN BAY CLUB-HOUSE PTY. LIMITED (hereinafter called the said GRANTEE) was authorised to reclaim the land hereinafter described subject to the terms and conditions hereinafter contained and such reclamation was completed to the satisfaction of the Minister for Lands of Our State of New South Wales And Whereas the sum of sixteen thousand dollars being the fair value of the said land as duly appraised has been paid and all the terms and conditions upon which the said land was authorised to be reclaimed have been complied with Now Know Ye That for and in consideration of the said sum for and on Our behalf well and truly paid into the Treasury of Our said State before these presents are issued and of all and singular the premises We have Granted and for Us Our Heirs and Successors Do Hereby Grant unto the said GRANTEE and its Assigns Subject to the Reservations Exceptions and Conditions hereinafter contained All that Piece or Parcel of Land in Our said State containing by Admeasurement one acre one rood twenty three perches be the same more or less situated in the County of Cumberland Parish of Narrabeen at Newport Portion 262 as shown in plan catalogued No. C.9046-2030 in the Department of Lands



REFERENCE

Line	Distance
1	7 89/100
2	47 89/100
3	35 21/100
4	37 89/100
5	31 89/100

As per plan hereon With all the Rights and Appurtenances whatsoever thereto belonging To Hold unto the said GRANTEE and its Assigns for ever Provided Nevertheless and We do hereby Reserve and Except unto Us Our Heirs and Successors all minerals which the said land contains with full power and authority for Us Our Heirs and Successors and such person or persons as shall from time to time be authorised by Us or Them to enter upon the said land and to search for mine dig and remove the said minerals And also all such parts and so much of the said land as may hereafter be required for public ways viaducts canals railways tramways dams sewers or drains in over and through the same to be set out by Our Governor for the time being of Our said State or some person by him authorised in that respect And also all sand clay stone gravel and indigenous timber and all other materials the natural produce of the said land which may be required at any time hereafter for the construction and repair of any public ways bridges or canals or for naval purposes or railways and tramways or any fences embankments viaducts dams sewers or drains necessary for the same together with the right of taking and removing all such materials by such person or persons as may be authorised in that behalf by the Governor aforesaid Provided Further and We do Hereby Reserve for Us Our Heirs and Successors and for Our Governor as aforesaid by such person or persons as shall be by Us Them or him authorised in that behalf full power to make and conduct through in under upon or over the said land or any portion thereof all public ways viaducts railways tramways canals and all common or public drains and sewers which may be deemed expedient And the right of full and free ingress egress and regress into out of and upon the said land for the several purposes aforesaid or any of them Provided Lastly and it is hereby declared that this Our grant is also made upon and subject to the condition that the said GRANTEE and its Assigns shall at all times hereafter maintain in thorough order and repair the Sea Wall on the land hereby granted to the satisfaction of Our Minister for Lands for the time being And also that the said land or any portion thereof may be resumed for public purposes by notification in the *Gazette* and that upon resumption the same shall vest in Us Our Heirs and Successors freed and discharged from all private rights interests titles and estates in and to the same and that no other compensation shall be payable than the value of any improvements upon the land resumed effected with the written approval of Our Minister for Lands first had and obtained together with a repayment of the purchase money and of the cost of reclamation or if the land resumed be a portion only of the said land of a fair proportion of such purchase money and cost as aforesaid In Testimony Whereof We have caused this Our Grant to be sealed with the Seal of Our said State

Witness Our Governor of Our State of New South Wales and its Dependencies in the Commonwealth of Australia, at Sydney in Our said State, this twentieth day of December in the seventeenth year of Our Reign and in the year of Our Lord one Thousand nine hundred and sixty eight

A. R. Butler
Governor

FOR ENDORSEMENTS SEE PAGE 2

V. C. N. Blight, Government Printer

C.T. 22/4/69

SCHEDULE OF REGISTERED PROPRIETORS

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar General
	NATURE	NUMBER	DATE		
Royal Motor Yacht Club of New South Wales Broken Bay Branch	Transfer	N810060	26·3·1973	31·5·1974	[signature]

L40 R.A.M.
N38654 0/m
CT 11-4-74
N810060 Te R
CT 29-12-76
Q53903 Appl. new CT

SCHEDULE OF ENCUMBRANCES ETC.

INSTRUMENT			PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
NATURE	NUMBER	DATE						
Lease	L321420	29·12·1968	to Allan Gold Leslie of Taylors Point, Transport Manager, Thomas Allen Lane of Cammeray, Hotel Broker and Leonard Cecil Marjason of North Sydney, Investor	11·2·1969	[signature]			
Mortgage	L321423	6·1·1969	to The Mutual Life and Citizens' Assurance Company Limited	11·2·1969	[signature]			
~~Mortgage~~	~~L409419~~	~~29·1·1969~~	~~to P.T. Limited~~	~~3·7·1969~~	[signature]	Discharged	N38654	[signature]

This Deed is cancelled and Certificate of Title issued.
Vol. 13460 Fol. 225 dated 21·10·1977
Vide Q53903 Consolidation

[signature]
REGISTRAR GENERAL

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

13460225

NEW SOUTH WALES

[redacted]ICATE OF TITLE

[redacted]L PROPERTY ACT, 1900

Vol. 13460 Fol. 225

Appln. No. 8845 (Part)

Prior Titles
Vol. 10947 Fol. 150
Vol. 10105 Fols. 142 & 143
Vol. 11063 Fol. 99
Vol. 12042 Fol. 103
Vol. 12499 Fol. 77

CANCELLED

EDITION ISSUED 24 10 1977

SEE AUTO FOLIO

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.

Registrar General.

(Page 1) Vol. 13460 Fol. 225

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in FIRSTLY Lots 5 and 7 of Section 1 in Deposited Plan 4689 Lot 6 in Deposited Plan 110670 and Lots 2 and 3 in Deposited Plan 225339 at Newport in the Shire of Warringah Parish of Narrabeen and County of Cumberland being parts of Portion 36 granted to Robert Melville on 19-10-1831 and SECONDLY Portion 262 situated as aforesaid granted by Crown Grant Volume 10947 Folio 150. EXCEPTING THEREOUT the minerals reserved by the Crown Grant of Portion 262.

FIRST SCHEDULE

ROYAL MOTOR YACHT CLUB OF NEW SOUTH WALES BROKEN BAY BRANCH.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grants above referred to.
2. Right of Way appurtenant to Lot 2 Deposited Plan 225339 affecting the part of Lot 1 Deposited Plan 225339 shown as "Variable Width" and the parts of Lot 3 Deposited Plan 225339 shown as "4.57 metres wide" and "Variable Width" in the plan hereon created by the registration of Deposited Plan 225339 - See K85794.
3. Right of Way appurtenant to Lot 3 Deposited Plan 225339 affecting the part of Lot 1 Deposited Plan 225339 shown as "Variable Width" in the plan hereon created by the registration of Deposited Plan 225339 - See K85794.
4. Covenant affecting ~~Lot 5 of Section 1~~ Lot 1 in Deposited Plan ~~4689~~ 225339 shown in the plan hereon. K814879
5. ~~L321420 Lease to Allan Gold Leslie of Taylor Point, Transport Manager, Thomas Allen Lane of Cammeray, Hotel Broker and [redacted]rd Cecil Marjason of North Sydney, Investor.~~ Expired S366[redacted]
6. ~~L321423 Mortgage to The Mutual [redacted]d Citizens Assurance Company Limited.~~ T950269.

1976M7

Reg. Gen. 1.6.1978

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE REGISTRAR GENERAL'S OFFICE.

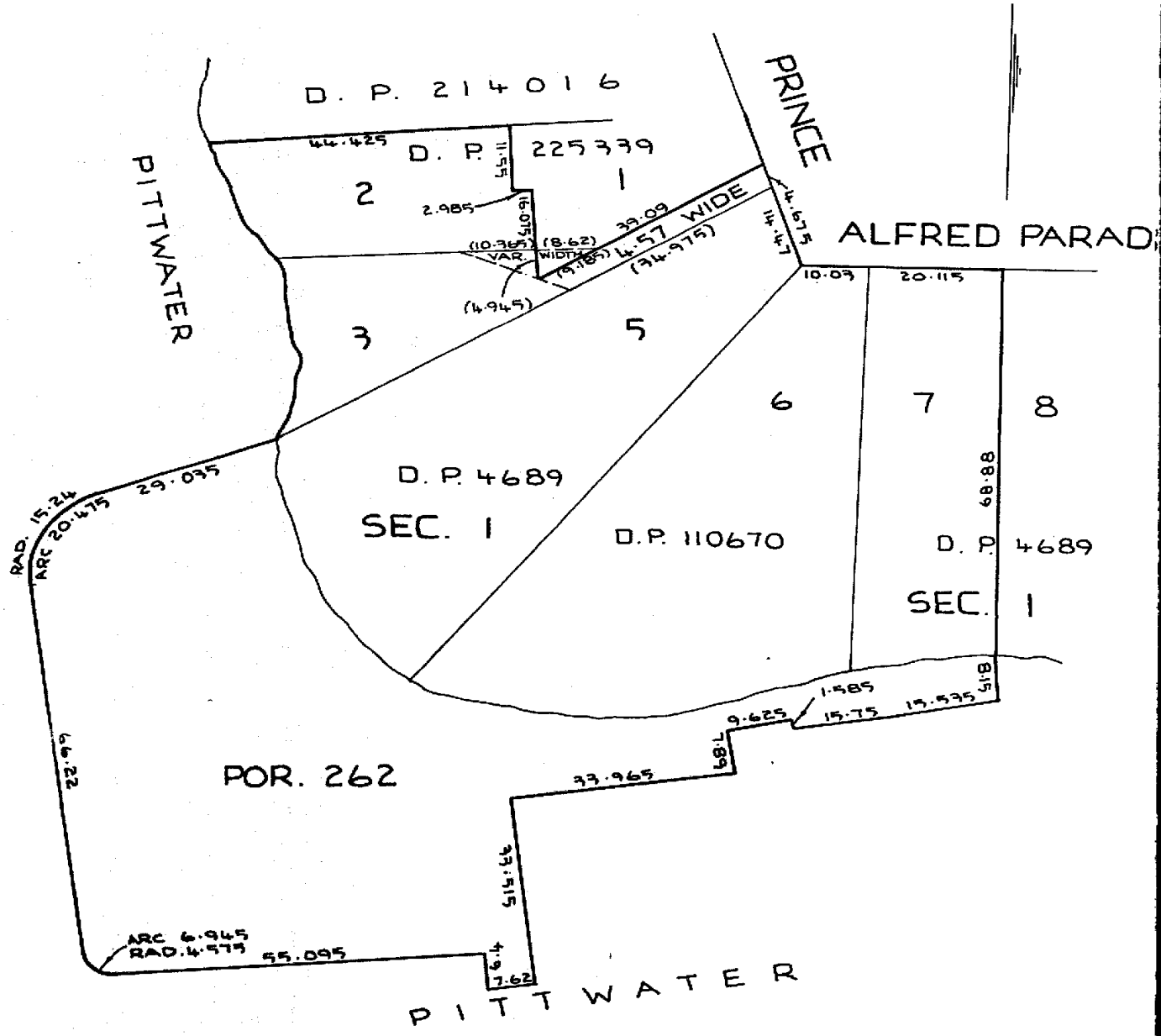
RG 2/68

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

Vol. 13460 Fol. 225

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



AREA : 1.504 ha

REDUCTION RATIO 1:800

Q53903 M.X.

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	REGISTERED	Signature of Registrar General
DP/SP Registered This folio is cancelled as to whole/part upon creation of computer folios for lots in the ~~abovementioned plan.~~				

Refer ~~S.D. 76M2 (278)~~
S161344 (L321423)
S366778
T402210 MR
T950269
CT 26 APR 19
V784396 L from Substation 15654
DP791314 Acquisition
DP791314 Ease. resumed for electr. purposes. Gaz. 2-11-90 Fol.

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	PARTICULARS	REGISTERED	Signature of Registrar General	CANCELLATION	
~~Mortgage~~	~~L321423~~	~~Affected by variation~~	~~15-12-1980~~		Cancelled	T950269
MX	T402210	Mortgage to Westpac Banking Corporation. registered 9-2-1983				
LS	V784396	Lease to Sydney County Council of substation premises No.15654 as shown in the plan with V784396 together with a right of way and easement for electricity purposes (1.17 wide) (1.26 wide) and 2 wide over another part of the land within described, expires 31-12-2034. Registered 17-7-1985				

CANCELLED

SEE AUTO FOLIO

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

(Page 3 of 4 pages)

Vol. 13460 Fol. 225

Vol. 13460 Fol 225

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT		REGISTERED	Signature of Registrar General
	NATURE	NUMBER		

CANCELLED

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

INSTRUMENT		PARTICULARS	REGISTERED	Signature of Registrar General	CANCELLATION	
NATURE	NUMBER					

(Page 4 of 4 pages)

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

LAND REGISTRY SERVICES Historical Search

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
21/12/2022 11:22AM

FOLIO: AUTO CONSOL 13460-225

Recorded	Number	Type of Instrument	C.T. Issue
17/1/1992		CONSOL HISTORY RECORD CREATED FOR AUTO CONSOL 13460-225 PARCELS IN CONSOL ARE: 5/1/4689, 7/1/4689, 6/110670, 2-3/225339, 262/752046.	
28/1/1994		3/791314 ADDED	
28/1/1994		2/225339 EXCISED	
31/1/1994	I984800	DEPARTMENTAL DEALING	
3/2/1994	I948062	TRANSFER RELEASING EASEMENT	
3/2/1994	I948063	TRANSFER GRANTING EASEMENT	
3/2/1994	I948064	TRANSFER GRANTING EASEMENT	EDITION 1
28/4/2006	AC265974	CHANGE OF NAME	EDITION 2
23/4/2008	AD829932	LEASE	
23/4/2008	AD829933	LEASE	EDITION 3
22/3/2012	AG879748	LEASE	EDITION 4
16/11/2012	AH240467	LEASE	
16/11/2012	AH240483	LEASE	EDITION 5
17/3/2014	AI447480	VARIATION OF LEASE	
5/4/2016	AK321899	SURRENDER OF LEASE	
5/4/2016	AK249164	LEASE	EDITION 6
31/7/2018	AN545195	DISCHARGE OF MORTGAGE	
31/7/2018	AN545196	MORTGAGE	EDITION 7 CORD ISSUED
18/10/2018	AN790930	CAVEAT	
21/2/2020	AP912237	LEASE	EDITION 8 CORD ISSUED

*** END OF SEARCH ***

46 Prince Alfred Parade, Newport PRINTED ON 21/12/2022

Received: 21/12/2022 11:22:30

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: AUTO CONSOL 13460-225

SEARCH DATE	TIME	EDITION NO	DATE
21/12/2022	11:21 AM	8	21/2/2020

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS
AT NEWPORT
LOCAL GOVERNMENT AREA NORTHERN BEACHES
PARISH OF NARRABEEN COUNTY OF CUMBERLAND
TITLE DIAGRAM SEE SCHEDULE OF PARCELS

FIRST SCHEDULE

ROYAL MOTOR YACHT CLUB BROKEN BAY NEW SOUTH WALES (CN AC265974)

SECOND SCHEDULE (14 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 LAND EXCLUDES MINERALS RESERVED BY THE CROWN GRANT OF LOT 262
3 K874879 COVENANT AFFECTING LOT 3
4 V784396 LEASE TO SYDNEY COUNTY COUNCIL OF SUBSTATION PREMISES NO.15654 SHOWN IN PLAN WITH V784396 WITH A RIGHT OF WAY & EASEMENT FOR ELECTRICITY PURPOSES (1.17 WIDE) (1.26 WIDE) & 2 WIDE OVER ANOTHER PART OF THE LAND WITHIN DESCRIBED. EXP 31.12.2034
5 DP225339 RIGHT OF WAY APPURTENANT TO 3/225339
6 I948063 EASEMENT FOR ELECTRICITY PURPOSES 2 WIDE AFFECTING PART OF 5/1/4689 & 262/752046 SHOWN SO BURDENED DESIGNATED (A) IN DP791314
7 I948063 RIGHT OF WAY 6 & VARIABLE WIDTH AFFECTING PART OF 5/1/4689 & 262/752046 SHOWN SO BURDENED DESIGNATED (C) IN DP791314
8 I948064 EASEMENT FOR ELECTRICITY PURPOSES 3 WIDE AFFECTING PART OF 5/1/4689, 7/1/4689 & 6/110670 SHOWN SO BURDENED DESIGNATED (B) IN DP791314
9 I948064 EASEMENT FOR ACCESS, ELECTRICITY PURPOSES & SERVICES 6 WIDE & VARIABLE AFFECTING PART OF 5/1/4689 & 262/752046 SHOWN SO BURDENED DESIGNATED (D) IN DP791314
10 AH240483 LEASE TO ANDREW MOORE MARINE PTY LIMITED AFFECTING LOT 262 IN DP752046 OF WORKSHOP TWO, HORSESHOE COVE BUILDING, 46A PRINCE ALFRED PARADE, NEWPORT. EXPIRES: 31/5/2017.
AI447480 VARIATION OF LEASE AH240483 EXPIRY DATE NOW 31/5/2022. OPTION OF RENEWAL: 5 YEARS.
11 AK249164 LEASE TO NEWPORT MARINE SERVICES PTY LIMITED

END OF PAGE 1 - CONTINUED OVER

FOLIO: AUTO CONSOL 13460-225 PAGE 2

SECOND SCHEDULE (14 NOTIFICATIONS) (CONTINUED)

AFFECTING PART LOT 6/110670 AND 262/752046, OF WORKSHOP 1 AND WORKSHOP 3, HORSESHOE COVE BUILDING, 46A PRINCE ALFRED PARADE, NEWPORT. EXPIRES: 31/8/2018. OPTION OF RENEWAL: 3 YEARS.

12 AN545196 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

* 13 AN790930 CAVEAT BY BLUE OP PARTNER PTY LIMITED, ERIC ALPHA OPERATOR CORPORATION 1 PTY LIMITED, ERIC ALPHA OPERATOR CORPORATION 2 PTY LIMITED, ERIC ALPHA OPERATOR CORPORATION 3 PTY LIMITED & ERIC ALPHA OPERATOR CORPORATION 4 PTY LIMITED

* AP912237 CAVEATOR CONSENTED

14 AP912237 LEASE TO NEWPORT MARINE SERVICES PTY LIMITED OF WORKSHOP 3, HORSESHOE COVE BUILDING, 46A PRINCE ALFRED PARADE, NEWPORT. EXPIRES: 31/8/2021. OPTION OF RENEWAL: 3 YEARS.

NOTATIONS

UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS	TITLE DIAGRAM
LOT 5 SEC. 1 IN DP4689	DP4689
LOT 7 SEC. 1 IN DP4689	DP4689
LOT 6 IN DP110670	DP110670
LOT 3 IN DP225339	DP225339
LOT 262 IN DP752046	CROWN PLAN 9046.2030
LOT 3 IN DP791314	DP791314.

*** 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: E35645P ad
Date: 21/11/2022
Certificate No. ePLC2022/08257

Address of Property: 46 Prince Alfred Parade NEWPORT NSW 2106
Description of Property: Lot 262 DP 752046

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) The name of each environmental planning instrument and development control plan that applies to the carrying out of development on the land:

(a) Local Environmental Plan

Pittwater Local Environmental Plan 2014

(b) State Environmental Planning Policies and Regional Environmental Plans

State Environmental Planning Policy (Housing) 2021

State Environmental Planning Policy (Primary Production) 2021
Chapters 1,2

State Environmental Planning Policy (Resources and Energy) 2021
Chapters 1, 2

State Environmental Planning Policy (Resilience and Hazards) 2021
Chapters 1, 3, 4

State Environmental Planning Policy (Industry and Employment) 2021
Chapters 1, 3

State Environmental Planning Policy (Transport and Infrastructure) 2021
Chapters 1, 2, 3

State Environmental Planning Policy (Biodiversity and Conservation) 2021
Chapters 1, 2, 3, 4, 6, 7

State Environmental Planning Policy (Planning Systems) 2021
Chapters 1, 2

State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021
Chapters 1, 2

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

SEPP 65 – Design Quality of Residential Apartment Development

SEPP (Building Sustainability Index: BASIX)

Wholly Affected - State Environmental Planning Policy (Resilience and Hazards) 2021
Chapter 2

State Environmental Planning Policy (Biodiversity and Conservation) 2021
Chapter 9

(c) Development Control Plans

Pittwater 21 Development Control Plan

(2) Draft Environmental Planning Instruments

The name of each proposed environmental planning instrument and draft development control plan, which is or has been subject to community consultation or public exhibition under the Act, that will apply to the carrying out of development on the land.

(a) Draft Local Environmental Plans

(b) Draft State Environmental Planning Policies

Draft State Environmental Planning Policy (Environment)

Draft Remediation of Land State Environmental Planning Policy (intended to replace State Environmental Planning Policy 55)

(c) Draft Development Control Plans

2. Zoning and land use under relevant planning instruments

The following matters for each environmental planning instrument or draft environmental planning instrument that includes the land in a zone, however described—

(1) Zoning and land use under relevant Local Environmental Plans

(a), (b)

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 RE2 Private Recreation

2 Permitted without consent

Nil

3 Permitted with consent

Aquaculture; Community facilities; Environmental facilities; Environmental protection works; Kiosks; Marinas; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Registered clubs; Roads; Signage

4 Prohibited

Any other development not specified in item 2 or 3.

Employment zones reform implementation

On 1 December 2022, Business and Industrial zones will be replaced by the new Employment zones under the Standard Instrument (Local Environmental Plans) Order 2006. The Department of Planning and Environment is currently exhibiting details of how each Local Environmental Plan that includes a current Business or Industrial zone will be amended to use the new Employment zones. The Explanation of Intended Effect (EIE) and a searchable web tool that displays the current and proposed zone for land covered in this public exhibition is available on the Planning Portal.

(c) 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

(d) 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.

(e) Outstanding biodiversity value

The land is not in an area of outstanding biodiversity value under the *Biodiversity Conservation Act 2016*

(f) Conservation areas

The land is not in a heritage conservation area.

(g) Item of environmental heritage

The land does not contain an item of environmental heritage.

(2) Zoning and land use under draft Local Environmental Plans

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

3. Contribution plans

(1) The name of each contributions plan under the Act, Division 7.1 applying to the land, including draft contributions plans.

Northern Beaches Section 7.12 Contributions Plan 2022 - in force 1 June 2022.

(2) If the land is in a special contributions area under the Act, Division 7.1, the name of the area.

Nil

4. Complying Development

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

Part 3 Housing Code

Coastal Waters
For the purposes of clause 1.17A (1) (e), complying development may not be carried out as the land is within an environmentally sensitive area being the coastal waters of the State.
Acid Sulfate Soils Class 1
For the purposes of clause 1.19 (1) (c) and (5) (c), complying development may not be carried out on that part of the land identified under *Pittwater Local Environmental Plan 2014* as identified on the Acid Sulfate Soils Map as being Class 1.
Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

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.

Part 3A Rural Housing Code

Coastal Waters
For the purposes of clause 1.17A (1) (e), complying development may not be carried out as the land is within an environmentally sensitive area being the coastal waters of the State.
Acid Sulfate Soils Class 1
For the purposes of clause 1.19 (1) (c) and (5) (c), complying development may not be carried out on that part of the land identified under *Pittwater Local Environmental Plan 2014* as identified on the Acid Sulfate Soils Map as being Class 1.
Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

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.

Part 3B Low Rise Housing Diversity Code

Coastal Waters
For the purposes of clause 1.17A (1) (e), complying development may not be carried out as the land is within an environmentally sensitive area being the coastal waters of the State.
Acid Sulfate Soils Class 1
For the purposes of clause 1.19 (1) (c) and (5) (c), complying development may not be carried out on that part of the land identified under *Pittwater Local Environmental Plan 2014* as identified on the Acid Sulfate Soils Map as being Class 1.
Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

Part 3C Greenfield Housing Code

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

Part 3D 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*.

Part 4 Housing Alterations Code

Coastal Waters
For the purposes of clause 1.17A (1) (e), complying development may not be carried out as the land is within an environmentally sensitive area being the coastal waters of the State.

Part 4A General Development Code

Coastal Waters
For the purposes of clause 1.17A (1) (e), complying development may not be carried out as the land is within an environmentally sensitive area being the coastal waters of the State.

Part 5 Industrial and Business Alterations Code

Coastal Waters
For the purposes of clause 1.17A (1) (e), complying development may not be carried out as the land is within an environmentally sensitive area being the coastal waters of the State.

Part 5A Industrial and Business Buildings Code

Coastal Waters
For the purposes of clause 1.17A (1) (e), complying development may not be carried out as the land is within an environmentally sensitive area being the coastal waters of the State.
Acid Sulfate Soils Class 1
For the purposes of clause 1.19 (1) (c) and (5) (c), complying development may not be carried out on that part of the land identified under *Pittwater Local Environmental Plan 2014* as identified on the Acid Sulfate Soils Map as being Class 1.
Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out

on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

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.

Part 5B Container Recycling Facilities Code

Coastal Waters
For the purposes of clause 1.17A (1) (e), complying development may not be carried out as the land is within an environmentally sensitive area being the coastal waters of the State.

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.

Part 6 Subdivisions Code

Coastal Waters
For the purposes of clause 1.17A (1) (e), complying development may not be carried out as the land is within an environmentally sensitive area being the coastal waters of the State.

Part 7 Demolition Code

Coastal Waters
For the purposes of clause 1.17A (1) (e), complying development may not be carried out as the land is within an environmentally sensitive area being the coastal waters of the State.

Part 8 Fire Safety Code

Coastal Waters
For the purposes of clause 1.17A (1) (e), complying development may not be carried out as the land is within an environmentally sensitive area being the coastal waters of the State.

(4) Complying Development Codes varied under Clause 1.12 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*

No complying codes are varied under this clause in relation to the land.

5. Exempt Development

If the land is land on which exempt development may or may not be carried out under each of the exempt development codes under *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*, because of that Policy, clause 1.16(1)(b1)–(d) or 1.16A.

Part 2 Exempt Development Codes

Exempt Development under the Exempt Development Codes may be carried out on all of the land.

(4) Exempt Development Codes varied under Clause 1.12 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*

No exempt development codes are varied under this clause in relation to the land.

6. Affected building notices and building product rectification orders

(a) There is not an affected building notice of which the council is aware that is in force in respect of the land.

(b) 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

(c) 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 section—

affected building notice has the same meaning the *Building Products (Safety) Act 2017, Part 4*.

building product rectification order has the same meaning as in the *Building Products (Safety) Act 2017*.

7. 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.

8. 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.

9. Flood related development controls

(1) The land is not within the flood planning area and subject to flood related development controls.

(2) The land or part of the land is not between the flood planning area and the probable maximum flood and subject to flood related development controls.

In this section—

flood planning area has the same meaning as in the Floodplain Development Manual.

Floodplain Development Manual means the Floodplain Development Manual (ISBN 0 7347 5476 0) published by the NSW Government in April 2005.

probable maximum flood has the same meaning as in the Floodplain Development Manual.

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

(a) Council has adopted policies that restrict the development of the land because of the likelihood of land slip, bush fire, tidal inundation, subsidence, acid sulfate soils, contamination, aircraft noise, salinity, coastal hazards, sea level rise or another risk, other than flooding (for flooding – see 9). The identified hazard or risk, if any, are listed below:

Estuarine Flood Hazard/Risk
On the information available to Council, the land in question is affected by estuarine processes. This land has been identified in Council's Estuarine Risk Management Policy for Development in Pittwater and Pittwater 21 Development Control Plan as having a current exposure to tidal inundation and erosion caused by tidal waters. The Estuarine Risk Management Policy for Development in Pittwater is based on a study adopted by Council on 6 October 2015 and reflects information available at the time. Contact Council for more information.

Geotechnical Risk (Landslide Hazard)
The Council has adopted by resolution, on 20.07.2009, a policy that has the effect of restricting development of the land (subject to satisfying the policy) because of the potential impact from geotechnical hazards. The policy is entitled "Geotechnical Risk Management Policy for Pittwater - 2009". A copy of the current policy can be obtained from Council.

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

Nil

11. Bush fire prone land

The land is not bush fire prone land.

12. 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.

13. Mine Subsidence

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

14. Paper subdivision information

There is no current paper subdivision, of which council is aware, in respect of this land according to Part 10 of the *Environmental Planning and Assessment Regulation 2021* and Schedule 7 of the *Environmental Planning & Assessment Act 1997 No 203*.

15. 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.

16. Biodiversity Stewardship Sites

The Council has not been notified by the Biodiversity Conservation Trust 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).

17. 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*).

18. 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.

19. 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).

Note—
Existing coastal protection works are works to reduce the impact of coastal hazards on land, such as seawalls, revetments, groynes and beach nourishment, that existed before 1 January 2011.

20. Western Sydney Aerotropolis

Under State Environmental Planning Policy (Precincts – Western Parkland City) 2021, Chapter 4 the land is –

(a) not in an ANEF or ANEC contour of 20 or greater, as referred to in that Chapter, section 4.17, or

(b) not shown on the Lighting Intensity and Wind Shear Map, or

(c) not shown on the Obstacle Limitation Surface Map, or

(d) not in the “public safety area” on the Public Safety Area Map, or

(e) not in the “3 kilometre wildlife buffer zone” or the “13 kilometre wildlife buffer zone” on the Wildlife Buffer Zone Map.

21. Development consent conditions for seniors housing

No condition of development consent granted after 11 October 2007 in relation to the land applies to the property that are of the kind set out in that Policy, section 88(2) of *State Environmental Planning Policy (Housing) 2021*.

22. Site compatibility certificate and conditions for affordable rental housing

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

(2) No condition of development consent in relation to the land applies to the property that are of the kind set out in section 21(1) or 40(1) of *State Environmental Planning Policy (Housing) 2021*.

(3) No condition of development consent in relation to the land applies to the property that are of the kind set out in clause 17(1) or 38(1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009*.

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

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's Local Strategic Planning Statement gives effect to the District Plan based on local characteristics and opportunities and Council's own priorities in the community. The Local Strategic Planning Statement came into effect on 26 March 2020.

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:

Geotechnical Planning Controls
Council is currently undertaking a study to review geotechnical planning controls across the Local Government Area. Information from a draft study indicates geotechnical considerations may affect a greater number of properties and may present an increased risk to properties than that shown on published hazard maps. Council's Development Engineering & Certification team can be contacted for further information.

General Information

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

Ray Brownlee PSM
Chief Executive Officer
21/11/2022

Northern Beaches Council Planning Certificate – Part 2&5

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

Reference: E35645P ad2
Date: 21/11/2022
Certificate No. ePLC2022/08258

Address of Property: 46 Prince Alfred Parade NEWPORT NSW 2106
Description of Property: Lot 5 Sec 1 DP 4689

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) The name of each environmental planning instrument and development control plan that applies to the carrying out of development on the land:

(a) Local Environmental Plan

Pittwater Local Environmental Plan 2014

(b) State Environmental Planning Policies and Regional Environmental Plans

State Environmental Planning Policy (Housing) 2021

State Environmental Planning Policy (Primary Production) 2021
Chapters 1,2

State Environmental Planning Policy (Resources and Energy) 2021
Chapters 1, 2

State Environmental Planning Policy (Resilience and Hazards) 2021
Chapters 1, 3, 4

State Environmental Planning Policy (Industry and Employment) 2021
Chapters 1, 3

State Environmental Planning Policy (Transport and Infrastructure) 2021
Chapters 1, 2, 3

State Environmental Planning Policy (Biodiversity and Conservation) 2021
Chapters 1, 2, 3, 4, 6, 7

State Environmental Planning Policy (Planning Systems) 2021
Chapters 1, 2

State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021
Chapters 1, 2

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

SEPP 65 – Design Quality of Residential Apartment Development

SEPP (Building Sustainability Index: BASIX)

Wholly Affected - State Environmental Planning Policy (Resilience and Hazards) 2021
Chapter 2

State Environmental Planning Policy (Biodiversity and Conservation) 2021
Chapter 9

(c) Development Control Plans

Pittwater 21 Development Control Plan

(2) Draft Environmental Planning Instruments

The name of each proposed environmental planning instrument and draft development control plan, which is or has been subject to community consultation or public exhibition under the Act, that will apply to the carrying out of development on the land.

(a) Draft Local Environmental Plans

(b) Draft State Environmental Planning Policies

Draft State Environmental Planning Policy (Environment)

Draft Remediation of Land State Environmental Planning Policy (intended to replace State Environmental Planning Policy 55)

(c) Draft Development Control Plans

2. Zoning and land use under relevant planning instruments

The following matters for each environmental planning instrument or draft environmental planning instrument that includes the land in a zone, however described—

(1) Zoning and land use under relevant Local Environmental Plans

(a), (b)

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 RE2 Private Recreation

2 Permitted without consent

Nil

3 Permitted with consent

Aquaculture; Community facilities; Environmental facilities; Environmental protection works; Kiosks; Marinas; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Registered clubs; Roads; Signage

4 Prohibited

Any other development not specified in item 2 or 3.

Employment zones reform implementation

On 1 December 2022, Business and Industrial zones will be replaced by the new Employment zones under the Standard Instrument (Local Environmental Plans) Order 2006. The Department of Planning and Environment is currently exhibiting details of how each Local Environmental Plan that includes a current Business or Industrial zone will be amended to use the new Employment zones. The Explanation of Intended Effect (EIE) and a searchable web tool that displays the current and proposed zone for land covered in this public exhibition is available on the Planning Portal.

(c) 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

(d) 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.

(e) Outstanding biodiversity value

The land is not in an area of outstanding biodiversity value under the *Biodiversity Conservation Act 2016*

(f) Conservation areas

The land is not in a heritage conservation area.

(g) Item of environmental heritage

The land does not contain an item of environmental heritage.

(2) Zoning and land use under draft Local Environmental Plans

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

3. Contribution plans

(1) The name of each contributions plan under the Act, Division 7.1 applying to the land, including draft contributions plans.

Northern Beaches Section 7.12 Contributions Plan 2022 - in force 1 June 2022.

(2) If the land is in a special contributions area under the Act, Division 7.1, the name of the area.

Nil

4. Complying Development

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

Part 3 Housing Code

Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

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.

Part 3A Rural Housing Code

Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

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.

Part 3B Low Rise Housing Diversity Code

Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

Part 3C Greenfield Housing Code

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

Part 3D 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*.

Part 4 Housing Alterations Code

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

Part 4A General Development Code

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

Part 5 Industrial and Business Alterations Code

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

Part 5A Industrial and Business Buildings Code

Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

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.

Part 5B 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.

Part 6 Subdivisions Code

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

Part 7 Demolition Code

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

Part 8 Fire Safety Code

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

(4) Complying Development Codes varied under Clause 1.12 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*

No complying codes are varied under this clause in relation to the land.

5. Exempt Development

If the land is land on which exempt development may or may not be carried out under each of the exempt development codes under *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*, because of that Policy, clause 1.16(1)(b1)–(d) or 1.16A.

Part 2 Exempt Development Codes

Exempt Development under the Exempt Development Codes may be carried out on all of the land.

(4) Exempt Development Codes varied under Clause 1.12 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*

No exempt development codes are varied under this clause in relation to the land.

6. Affected building notices and building product rectification orders

(a) There is not an affected building notice of which the council is aware that is in force in respect of the land.

(b) 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

(c) 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 section—

affected building notice has the same meaning the *Building Products (Safety) Act 2017, Part 4*.

building product rectification order has the same meaning as in the *Building Products (Safety) Act 2017*.

7. 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.

8. 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.

9. Flood related development controls

(1) The land is not within the flood planning area and subject to flood related development controls.

(2) The land or part of the land is not between the flood planning area and the probable maximum flood and subject to flood related development controls.

In this section—

flood planning area has the same meaning as in the Floodplain Development Manual.

Floodplain Development Manual means the Floodplain Development Manual (ISBN 0 7347 5476 0) published by the NSW Government in April 2005.

probable maximum flood has the same meaning as in the Floodplain Development Manual.

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

(a) Council has adopted policies that restrict the development of the land because of the likelihood of land slip, bush fire, tidal inundation, subsidence, acid sulfate soils, contamination, aircraft noise, salinity, coastal hazards, sea level rise or another risk, other than flooding (for flooding – see 9). The identified hazard or risk, if any, are listed below:

Geotechnical Risk (Landslide Hazard)
The Council has adopted by resolution, on 20.07.2009, a policy that has the effect of restricting development of the land (subject to satisfying the policy) because of the potential impact from geotechnical hazards. The policy is entitled "Geotechnical Risk Management Policy for Pittwater - 2009". A copy of the current policy can be obtained from Council.
Estuarine Flood Hazard/Risk
On the information available to Council, the land in question is affected by estuarine processes. This land has been identified in Council's Estuarine Risk Management Policy for Development in Pittwater and Pittwater 21 Development Control Plan as having a current exposure to tidal inundation and erosion caused by tidal waters. The Estuarine Risk Management Policy for Development in Pittwater is based on a study adopted by Council on 6 October 2015 and reflects information available at the time. Contact Council for more information.

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

Nil

11. Bush fire prone land

The land is not bush fire prone land.

12. 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.

13. Mine Subsidence

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

14. Paper subdivision information

There is no current paper subdivision, of which council is aware, in respect of this land according to Part 10 of the *Environmental Planning and Assessment Regulation 2021* and Schedule 7 of the *Environmental Planning & Assessment Act 1997 No 203*.

15. 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.

16. Biodiversity Stewardship Sites

The Council has not been notified by the Biodiversity Conservation Trust 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).

17. 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*).

18. 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.

19. 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).

Note—

Existing coastal protection works are works to reduce the impact of coastal hazards on land, such as seawalls, revetments, groynes and beach nourishment, that existed before 1 January 2011.

20. Western Sydney Aerotropolis

Under State Environmental Planning Policy (Precincts – Western Parkland City) 2021, Chapter 4 the land is –

(a) not in an ANEF or ANEC contour of 20 or greater, as referred to in that Chapter, section 4.17, or

(b) not shown on the Lighting Intensity and Wind Shear Map, or

(c) not shown on the Obstacle Limitation Surface Map, or

(d) not in the "public safety area" on the Public Safety Area Map, or

(e) not in the "3 kilometre wildlife buffer zone" or the "13 kilometre wildlife buffer zone" on the Wildlife Buffer Zone Map.

21. Development consent conditions for seniors housing

No condition of development consent granted after 11 October 2007 in relation to the land applies to the property that are of the kind set out in that Policy, section 88(2) of *State Environmental Planning Policy (Housing) 2021*.

22. Site compatibility certificate and conditions for affordable rental housing

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

(2) No condition of development consent in relation to the land applies to the property that are of the kind set out in section 21(1) or 40(1) of *State Environmental Planning Policy (Housing) 2021*.

(3) No condition of development consent in relation to the land applies to the property that are of the kind set out in clause 17(1) or 38(1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009*.

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

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's Local Strategic Planning Statement gives effect to the District Plan based on local characteristics and opportunities and Council's own priorities in the community. The Local Strategic Planning Statement came into effect on 26 March 2020.

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:

Geotechnical Planning Controls
Council is currently undertaking a study to review geotechnical planning controls across the Local Government Area. Information from a draft study indicates geotechnical considerations may affect a greater number of properties and may present an increased risk to properties than that shown on published hazard maps. Council's Development Engineering & Certification team can be contacted for further information.

General Information

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

Ray Brownlee PSM
Chief Executive Officer
21/11/2022

Northern Beaches Council Planning Certificate – Part 2&5

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

Reference: E35645P ad3
Date: 21/11/2022
Certificate No. ePLC2022/08259

Address of Property: 46 Prince Alfred Parade NEWPORT NSW 2106
Description of Property: Lot 6 DP 110670

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) The name of each environmental planning instrument and development control plan that applies to the carrying out of development on the land:

(a) Local Environmental Plan

Pittwater Local Environmental Plan 2014

(b) State Environmental Planning Policies and Regional Environmental Plans

State Environmental Planning Policy (Housing) 2021

State Environmental Planning Policy (Primary Production) 2021
Chapters 1,2

State Environmental Planning Policy (Resources and Energy) 2021
Chapters 1, 2

State Environmental Planning Policy (Resilience and Hazards) 2021
Chapters 1, 3, 4

State Environmental Planning Policy (Industry and Employment) 2021
Chapters 1, 3

State Environmental Planning Policy (Transport and Infrastructure) 2021
Chapters 1, 2, 3

State Environmental Planning Policy (Biodiversity and Conservation) 2021
Chapters 1, 2, 3, 4, 6, 7

State Environmental Planning Policy (Planning Systems) 2021
Chapters 1, 2

State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021
Chapters 1, 2

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

SEPP 65 – Design Quality of Residential Apartment Development

SEPP (Building Sustainability Index: BASIX)

Wholly Affected - State Environmental Planning Policy (Resilience and Hazards) 2021
Chapter 2

State Environmental Planning Policy (Biodiversity and Conservation) 2021
Chapter 9

(c) Development Control Plans

Pittwater 21 Development Control Plan

(2) Draft Environmental Planning Instruments

The name of each proposed environmental planning instrument and draft development control plan, which is or has been subject to community consultation or public exhibition under the Act, that will apply to the carrying out of development on the land.

(a) Draft Local Environmental Plans

(b) Draft State Environmental Planning Policies

Draft State Environmental Planning Policy (Environment)

Draft Remediation of Land State Environmental Planning Policy (intended to replace State Environmental Planning Policy 55)

(c) Draft Development Control Plans

2. Zoning and land use under relevant planning instruments

The following matters for each environmental planning instrument or draft environmental planning instrument that includes the land in a zone, however described—

(1) Zoning and land use under relevant Local Environmental Plans

(a), (b)

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 RE2 Private Recreation

2 Permitted without consent

Nil

3 Permitted with consent

Aquaculture; Community facilities; Environmental facilities; Environmental protection works; Kiosks; Marinas; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Registered clubs; Roads; Signage

4 Prohibited

Any other development not specified in item 2 or 3.

Employment zones reform implementation

On 1 December 2022, Business and Industrial zones will be replaced by the new Employment zones under the Standard Instrument (Local Environmental Plans) Order 2006. The Department of Planning and Environment is currently exhibiting details of how each Local Environmental Plan that includes a current Business or Industrial zone will be amended to use the new Employment zones. The Explanation of Intended Effect (EIE) and a searchable web tool that displays the current and proposed zone for land covered in this public exhibition is available on the Planning Portal.

(c) 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

(d) 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.

(e) Outstanding biodiversity value

The land is not in an area of outstanding biodiversity value under the *Biodiversity Conservation Act 2016*

(f) Conservation areas

The land is not in a heritage conservation area.

(g) Item of environmental heritage

The land does not contain an item of environmental heritage.

(2) Zoning and land use under draft Local Environmental Plans

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

3. Contribution plans

(1) The name of each contributions plan under the Act, Division 7.1 applying to the land, including draft contributions plans.

Northern Beaches Section 7.12 Contributions Plan 2022 - in force 1 June 2022.

(2) If the land is in a special contributions area under the Act, Division 7.1, the name of the area.

Nil

4. Complying Development

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

Part 3 Housing Code

Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

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.

Part 3A Rural Housing Code

Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

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.

Part 3B Low Rise Housing Diversity Code

Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

Part 3C Greenfield Housing Code

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

Part 3D 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*.

Part 4 Housing Alterations Code

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

Part 4A General Development Code

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

Part 5 Industrial and Business Alterations Code

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

Part 5A Industrial and Business Buildings Code

Foreshore Building Line Map
For the purposes of clause 1.19 (1) (g) and (5) (h), complying development may not be carried out on that part of the land within the foreshore area under Pittwater Local Environmental Plan 2014 as identified on the Foreshore Building Line Map.

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.

Part 5B 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.

Part 6 Subdivisions Code

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

Part 7 Demolition Code

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

Part 8 Fire Safety Code

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

(4) Complying Development Codes varied under Clause 1.12 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*

No complying codes are varied under this clause in relation to the land.

5. Exempt Development

If the land is land on which exempt development may or may not be carried out under each of the exempt development codes under *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*, because of that Policy, clause 1.16(1)(b1)–(d) or 1.16A.

Part 2 Exempt Development Codes

Exempt Development under the Exempt Development Codes may be carried out on all of the land.

(4) Exempt Development Codes varied under Clause 1.12 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*

No exempt development codes are varied under this clause in relation to the land.

6. Affected building notices and building product rectification orders

(a) There is not an affected building notice of which the council is aware that is in force in respect of the land.

(b) 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

(c) 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 section—

affected building notice has the same meaning the *Building Products (Safety) Act 2017, Part 4*.

building product rectification order has the same meaning as in the *Building Products (Safety) Act 2017*.

7. 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.

8. 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.

9. Flood related development controls

(1) The land is not within the flood planning area and subject to flood related development controls.

(2) The land or part of the land is not between the flood planning area and the probable maximum flood and subject to flood related development controls.

In this section—

flood planning area has the same meaning as in the Floodplain Development Manual.

Floodplain Development Manual means the Floodplain Development Manual (ISBN 0 7347 5476 0) published by the NSW Government in April 2005.

probable maximum flood has the same meaning as in the Floodplain Development Manual.

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

(a) Council has adopted policies that restrict the development of the land because of the likelihood of land slip, bush fire, tidal inundation, subsidence, acid sulfate soils, contamination, aircraft noise, salinity, coastal hazards, sea level rise or another risk, other than flooding (for flooding – see 9). The identified hazard or risk, if any, are listed below:

Geotechnical Risk (Landslide Hazard)
The Council has adopted by resolution, on 20.07.2009, a policy that has the effect of restricting development of the land (subject to satisfying the policy) because of the potential impact from geotechnical hazards. The policy is entitled "Geotechnical Risk Management Policy for Pittwater - 2009". A copy of the current policy can be obtained from Council.
Estuarine Flood Hazard/Risk
On the information available to Council, the land in question is affected by estuarine processes. This land has been identified in Council's Estuarine Risk Management Policy for Development in Pittwater and Pittwater 21 Development Control Plan as having a current exposure to tidal inundation and erosion caused by tidal waters. The Estuarine Risk Management Policy for Development in Pittwater is based on a study adopted by Council on 6 October 2015 and reflects information available at the time. Contact Council for more information.

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

Nil

11. Bush fire prone land

The land is not bush fire prone land.

12. 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.

13. Mine Subsidence

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

14. Paper subdivision information

There is no current paper subdivision, of which council is aware, in respect of this land according to Part 10 of the *Environmental Planning and Assessment Regulation 2021* and Schedule 7 of the *Environmental Planning & Assessment Act 1997 No 203*.

15. 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.

16. Biodiversity Stewardship Sites

The Council has not been notified by the Biodiversity Conservation Trust 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).

17. 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*).

18. 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.

19. 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).

Note—

Existing coastal protection works are works to reduce the impact of coastal hazards on land, such as seawalls, revetments, groynes and beach nourishment, that existed before 1 January 2011.

20. Western Sydney Aerotropolis

Under State Environmental Planning Policy (Precincts – Western Parkland City) 2021, Chapter 4 the land is –

(a) not in an ANEF or ANEC contour of 20 or greater, as referred to in that Chapter, section 4.17, or

(b) not shown on the Lighting Intensity and Wind Shear Map, or

(c) not shown on the Obstacle Limitation Surface Map, or

(d) not in the "public safety area" on the Public Safety Area Map, or

(e) not in the "3 kilometre wildlife buffer zone" or the "13 kilometre wildlife buffer zone" on the Wildlife Buffer Zone Map.

21. Development consent conditions for seniors housing

No condition of development consent granted after 11 October 2007 in relation to the land applies to the property that are of the kind set out in that Policy, section 88(2) of *State Environmental Planning Policy (Housing) 2021*.

22. Site compatibility certificate and conditions for affordable rental housing

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

(2) No condition of development consent in relation to the land applies to the property that are of the kind set out in section 21(1) or 40(1) of *State Environmental Planning Policy (Housing) 2021*.

(3) No condition of development consent in relation to the land applies to the property that are of the kind set out in clause 17(1) or 38(1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009*.

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

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's Local Strategic Planning Statement gives effect to the District Plan based on local characteristics and opportunities and Council's own priorities in the community. The Local Strategic Planning Statement came into effect on 26 March 2020.

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:

Geotechnical Planning Controls
Council is currently undertaking a study to review geotechnical planning controls across the Local Government Area. Information from a draft study indicates geotechnical considerations may affect a greater number of properties and may present an increased risk to properties than that shown on published hazard maps. Council's Development Engineering & Certification team can be contacted for further information.

General Information

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

Ray Brownlee PSM
Chief Executive Officer
21/11/2022

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 low 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-D: 'Commercial/Industrial'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	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)			3000	900	3600	240000	1500	730	6000	400000	4000	40	80	2000	2500	45	530	3600	50	2000	7	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH1	0.1-0.2	F: Clayey Gravelly Sand	<4	<0.4	**70**	**43**	**10**	<0.1	**44**	**45**	**31**	**4.4**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH1 [LAB DUP]	0.1-0.2	Lab Duplicate	<4	<0.4	**66**	**35**	**11**	<0.1	**45**	**37**	**22**	**3.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH1	0.2-0.4	F: Silty Sandy Clay	<8	<0.4	**38**	<1	**4**	<0.1	**2**	**3**	**0.72**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH2	0.1-0.2	F: Clayey Gravelly Sand	<4	<0.4	**71**	**32**	**5**	<0.1	**47**	**30**	**8.3**	**1.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH3	0.08-0.2	F: Clayey Gravelly Sand	<4	<0.4	**50**	**8**	**6**	<0.1	**12**	**10**	**12**	**2.6**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH4	0.05-0.2	F: Clayey Gravelly Sand	<4	<0.4	**68**	**36**	**6**	<0.1	**56**	**34**	**5.4**	**1.3**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH4	1.3-1.6	Silty Clay	<4	<0.4	**33**	**7**	**4**	<0.1	**3**	**3**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP1	0.1-0.2	Duplicate of BH2	<4	<0.4	**68**	**31**	**6**	<0.1	**44**	**29**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP2	0.1-0.2	Duplicate of BH1	<4	<0.4	**50**	**43**	**14**	<0.1	**40**	**30**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			9	9	9	9	9	9	9	9	7	7	7	7	7	7	7	7	7	7	7	4
Maximum Value			<PQL	<PQL	71	43	14	<PQL	56	45	31	4.4	<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-D: COMMERCIAL/INDUSTRIAL**							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH1	0.1-0.2	F: Clayey Gravelly Sand	0m to <1m	Sand	<25	**72**	<0.2	<0.5	<1	<1	<1	3.3
BH1 [LAB DUP]	0.1-0.2	Lab Duplicate	0m to <1m	Sand	<25	**64**	<0.2	<0.5	<1	<1	<1	NA
BH1	0.2-0.4	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.9
BH2	0.1-0.2	F: Clayey Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	6
BH3	0.08-0.2	F: Clayey Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.7
BH4	0.05-0.2	F: Clayey Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2
BH4	1.3-1.6	Silty Clay	1m to <2m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.2
SDUP2	0.1-0.2	Duplicate of BH1	0m to <1m	Sand	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples					7	7	7	7	7	7	7	6
Maximum Value					<PQL	72	<PQL	<PQL	<PQL	<PQL	<PQL	6

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: Clayey Gravelly Sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH1 [LAB DUP]	0.1-0.2	Lab Duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH1	0.2-0.4	F: Silty Sandy Clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH2	0.1-0.2	F: Clayey Gravelly Sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH3	0.08-0.2	F: Clayey Gravelly Sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH4	0.05-0.2	F: Clayey Gravelly Sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH4	1.3-1.6	Silty Clay	1m to <2m	Sand	370	NL	3	NL	NL	NL	NL
SDUP2	0.1-0.2	Duplicate of BH1	0m to <1m	Sand	NA	NA	NA	NA	NA	NA	NA

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			**COMMERCIAL/INDUSTRIAL**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH1	0.1-0.2	Coarse	<25	**72**	**800**	**460**
BH1 [LAB DUP]	0.1-0.2	Coarse	<25	**64**	**790**	**540**
BH1	0.2-0.4	Coarse	<25	<50	<100	<100
BH2	0.1-0.2	Coarse	<25	<50	**300**	**380**
BH3	0.08-0.2	Coarse	<25	<50	**330**	**320**
BH4	0.05-0.2	Coarse	<25	<50	**290**	**500**
BH4	1.3-1.6	Coarse	<25	<50	<100	<100
SDUP2	0.1-0.2	Coarse	NA	NA	NA	NA
Total Number of Samples			7	7	7	7
Maximum Value			<PQL	72	800	540

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	3500	10000
BH1 [LAB DUP]	0.1-0.2	Coarse	700	1000	3500	10000
BH1	0.2-0.4	Coarse	700	1000	3500	10000
BH2	0.1-0.2	Coarse	700	1000	3500	10000
BH3	0.08-0.2	Coarse	700	1000	3500	10000
BH4	0.05-0.2	Coarse	700	1000	3500	10000
BH4	1.3-1.6	Coarse	700	1000	3500	10000
SDUP2	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		26,000	20,000	27,000	38,000	430	99,000	27,000	81,000	11,000	
Site Use		**COMMERCIAL/INDUSTRIAL - DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH1	0.1-0.2	<25	**72**	**800**	**460**	<0.2	<0.5	<1	<1	<1	**3.3**
BH1 [LAB DUP]	0.1-0.2	<25	**64**	**790**	**540**	<0.2	<0.5	<1	<1	<1	NA
BH1	0.2-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**2.9**
BH2	0.1-0.2	<25	<50	**300**	**380**	<0.2	<0.5	<1	<1	<1	**6**
BH3	0.08-0.2	<25	<50	**330**	**320**	<0.2	<0.5	<1	<1	<1	**2.7**
BH4	0.05-0.2	<25	<50	**290**	**500**	<0.2	<0.5	<1	<1	<1	**2**
BH4	1.3-1.6	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**2.2**
SDUP2	0.1-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples		7	7	7	7	7	7	7	7	7	6
Maximum Value		<PQL	72	800	540	<PQL	<PQL	<PQL	<PQL	<PQL	6

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

TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HIL-D:Commercial/Industrial

FIELD DATA															LABORATORY DATA										
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample refeference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation %(w/w)	FA and AF Estimation %(w/w)
SAC			**No**					**0.05**			**0.001**			**0.001**											**0.05**	**0.001**
5/12/2022	BH1	0.2-1.3	NA		7,500	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	312387	BH1	0.1-0.2	165.13	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
5/12/2022	BH2	0.2-0.8	NA		7,360	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	312387	BH2	0.1-0.2	745.71	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
5/12/2022	BH3	0.3-1.1	NA		7,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	312387	BH3	0.08-0.2	661.2	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
5/12/2022	BH4	0.2-0.4	NA		4,160	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	312387	BH4	0.05-0.2	641.93	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
5/12/2022	BH4	0.4-1.3	NA		2,960	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Concentration above the SAC **VALUE**

TABLE S6
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category				COMMERCIAL/INDUSTRIAL																	
							AGED HEAVY METALS-EILs						EILs		ESLs								
				pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	8	18	104	5	77	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: Clayey Gravelly Sand	Coarse	NA	NA	NA	<4	**70**	**43**	**10**	**44**	**45**	<1	<0.1	<25	**72**	**800**	**460**	<0.2	<0.5	<1	<1	**3.1**
BH1 [LAB DUP]	0.1-0.2	Lab Duplicate	Coarse	NA	NA	NA	<4	**66**	**35**	**11**	**45**	**37**	<1	<0.1	<25	**64**	**790**	**540**	<0.2	<0.5	<1	<1	**2.2**
BH1	0.2-0.4	F: Silty Sandy Clay	Coarse	NA	NA	NA	<8	**38**	<1	**4**	**2**	**3**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	**0.1**
BH2	0.1-0.2	F: Clayey Gravelly Sand	Coarse	NA	NA	NA	<4	**71**	**32**	**5**	**47**	**30**	<1	<0.1	<25	<50	**300**	**380**	<0.2	<0.5	<1	<1	**1.1**
BH3	0.08-0.2	F: Clayey Gravelly Sand	Coarse	NA	NA	NA	<4	**50**	**8**	**6**	**12**	**10**	<1	<0.1	<25	<50	**330**	**320**	<0.2	<0.5	<1	<1	**1.9**
BH4	0.05-0.2	F: Clayey Gravelly Sand	Coarse	NA	NA	NA	<4	**68**	**36**	**6**	**56**	**34**	<1	<0.1	<25	<50	**290**	**500**	<0.2	<0.5	<1	<1	**0.92**
BH4	1.3-1.6	Silty Clay	Fine	NA	NA	NA	<4	**33**	**7**	**4**	**3**	**3**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP1	0.1-0.2	Duplicate of BH2	Coarse	NA	NA	NA	<4	**68**	**31**	**6**	**44**	**29**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP2	0.1-0.2	Duplicate of BH1	Coarse	NA	NA	NA	<4	**50**	**43**	**14**	**40**	**30**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples				0	0	0	9	9	9	9	9	9	7	7	7	7	7	7	7	7	7	7	7
Maximum Value				NA	NA	NA	<PQL	71	43	14	56	45	<PQL	<PQL	<PQL	72	800	540	<PQL	<PQL	<PQL	<PQL	3.1

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)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH1	0.1-0.2	F: Clayey Gravelly Sand	Coarse	NA	NA	NA	160	320	100	1900	60	190	370	640	215	170	1700	3300	75	135	165	180	72
BH1 [LAB DUP]	0.1-0.2	Lab Duplicate	Coarse	NA	NA	NA	160	320	100	1900	60	190	370	640	215	170	1700	3300	75	135	165	180	72
BH1	0.2-0.4	F: Silty Sandy Clay	Coarse	NA	NA	NA	160	320	100	1900	60	190	370	640	215	170	1700	3300	75	135	165	180	72
BH2	0.1-0.2	F: Clayey Gravelly Sand	Coarse	NA	NA	NA	160	320	100	1900	60	190	370	640	215	170	1700	3300	75	135	165	180	72
BH3	0.08-0.2	F: Clayey Gravelly Sand	Coarse	NA	NA	NA	160	320	100	1900	60	190	370	640	215	170	1700	3300	75	135	165	180	72
BH4	0.05-0.2	F: Clayey Gravelly Sand	Coarse	NA	NA	NA	160	320	100	1900	60	190	370	640	215	170	1700	3300	75	135	165	180	72
BH4	1.3-1.6	Silty Clay	Fine	NA	NA	NA	160	320	100	1900	60	190	370	640	215	170	2500	6600	95	135	185	95	72
SDUP1	0.1-0.2	Duplicate of BH2	Coarse	NA	NA	NA	160	320	100	1900	60	190	--	--	--	--	--	--	--	--	--	--	--
SDUP2	0.1-0.2	Duplicate of BH1	Coarse	NA	NA	NA	160	320	100	1900	60	190	--	--	--	--	--	--	--	--	--	--	--

ABBREVIATIONS AND EXPLANATIONS FOR ACID SULFATE SOIL TABLE

Abbreviations used in the Tables:

ANC_{BT}	Acid Neutralising Capacity - Back Titration
ANCE	Excess Acid Neutralising Capacity
$CaCO_3$	Calcium Carbonate
kg	kilogram
mol H^+/t	moles hydrogen per tonne
pHF	Field pH
pHFOX	Field peroxide pH
pH_{KCl}	Pottasium chloride pH
S	Sulfur
SCr	The symbol given to the result from the Chromium Reducible Sulfur method
S_{NAS}	Net Acid Soluble Sulfur
% w/w	Percentage by mass

Results have been assessed against the criteria specified in Table 1.1 of National Acid sulfate Soil Guidance - National acid sulfate soil identification and laboratory method manual. Water Quality Australia. June 2018

JKEnvironments

TABLE S7

SUMMARY OF LABORATORY RESULTS - ACID SULFATE SOIL ANALYSIS

Soil Texture: Coarse		Analysis	pH_F and pH_{FOX}				pH_{KCL}	Actual Acidity (Titratable Actual Acidity - TAA)	Potential Sulfidic Acidity		Retained Acidity	Acid Neutralising Capacity (ANC_{BT})	a-Net Acidity without ANCE	s-Net Acidity without ANCE	Liming Rate - without ANCE
			pH_F	pH_{FOX}	Reaction	pH_F - pH_{FOX}		(mol H^+/t)	(% SCr)	(mol H^+/t)	(%S_{NAS})	(% $CaCO_3$)	(mol H^+/t)	(%w/w S)	(kg $CaCO_3$/tonne)
National Acid Sulfate Soils Guidance (2018)			-	-	-	-	-	-	-	-	-	-	18	0.03	-
Sample Reference	**Sample Depth (m)**	**Sample Description**													
BH1	0.1-0.2	F: Clayey Gravelly Sand	10.4	10.8	Extreme reaction	-0.4	--	--	--	--	--	--	--	--	--
BH1	1.3-1.4	F: Sandy Clay	7.7	7.3	Volcanic reaction	0.4	7.7	<5	0.007	4	[NT]	1.6	<5	0.0070	<0.75
BH2	0.1-0.2	F: Clayey Gravelly Sand	10.7	10.6	High reaction	0.1	--	--	--	--	--	--	--	--	--
BH2	0.4-0.5	F: Silty Sandy Clay	8.5	2.8	High reaction	5.7	5.0	8	0.05	32	[NT]	[NT]	40	0.063	3.0
BH3	0.5-1.0	F: Sandy Clay	8.5	6	High reaction	2.5	--	--	--	--	--	--	--	--	--
BH3	1.7-2.0	Sandy Clay	7.7	6.1	Extreme reaction	1.6	--	--	--	--	--	--	--	--	--
BH3	2.0-2.3	Silty Clay	7.2	3.4	Volcanic reaction	3.8	5.5	<5	0.06	39	[NT]	[NT]	43	0.069	3.2
BH3	2.5-2.6	Silty Clay	7.7	5.3	Low reaction	2.4	--	--	--	--	--	--	--	--	--
BH4	0.2-0.4	F: Silty Sandy Clay	7.1	3.6	Medium reaction	3.5	5.7	<5	<0.005	<3	[NT]	[NT]	<5	0.0060	<0.75
BH4	0.8-1.0	F: Silty Sandy Clay	4.8	2.3	Low reaction	2.5	4.3	27	0.01	8	0.005	[NT]	39	0.062	2.9
BH4	2.0-2.3	XW Sandstone	6.5	3.1	Extreme reaction	3.4	--	--	--	--	--	--	--	--	--
BH4	2.3-2.5	XW Sandstone	6.8	4.8	Low reaction	2	--	--	--	--	--	--	--	--	--
Total Number of Samples			12	12	--	12	5	5	5	5	1	1	5	5	5
Minimum Value			4.8	2.3	--	-0.4	4.3	8	0.007	4	0.005	1.6	39	0.0060	2.9
Maximum Value			10.7	10.8	--	5.7	7.7	27	0.06	39	0.005	1.6	43	0.069	3.2

Values Exceeding Action Criteria

JKEnvironments

TABLE Q1
SOIL QA/QC SUMMARY

			TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene	Acenaphthylene	Acenaph-thene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,j+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthra-cene	Benzo(g,h,i)perylene
	PQL Envirolab SYD		*25*	*50*	*100*	*100*	*0.2*	*0.5*	*1*	*2*	*1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.05*	*0.1*	*0.1*	*0.1*
	PQL Envirolab VIC		*25*	*50*	*100*	*100*	*0.2*	*0.5*	*1*	*2*	*1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*
Intra	BH2	0.1-0.2	<25	<50	300	380	<0.2	<0.5	<1	<2	<1	0.3	0.1	<0.1	<0.1	0.6	0.1	0.7	1.4	0.5	0.5	2.3	1.1	0.3	<0.1	0.5
laboratory	SDUP1	0.1-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	BH1	0.1-0.2	<25	72	800	460	<0.2	<0.5	<1	<2	<1	0.7	0.3	0.4	0.4	2.5	0.5	2.9	5.6	2	2.4	6.8	3.1	1.3	0.2	1.6
laboratory	SDUP2	0.1-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Trip	TS-S1		-	-	-	-	100%	100%	99%	99%	99%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	5/12/22																									

			HCB	alpha- BHC	gamma- BHC	beta- BHC	Heptachlor	delta- BHC	Aldrin	Heptachlor Epoxide	Gamma- Chlordane	alpha- chlordane	Endosulfan I	pp- DDE	Dieldrin	Endrin	pp- DDD	Endosulfan II	pp- DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
	PQL Envirolab SYD		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
	PQL Envirolab VIC		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Intra	BH2	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP1	0.1-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	BH1	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP2	0.1-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Trip	TS-S1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	5/12/22																					

			Azinphos-methyl (Guthion	Bromophos-ethyl	Chlorpyriphos	Chlorpyriphos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Parathion	Ronnel	Total PCBS	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*4*	*0.4*	*1*	*1*	*1*	*0.1*	*1*	*1*
	PQL Envirolab VIC		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*4*	*0.4*	*1*	*1*	*1*	*0.1*	*1*	*1*
Intra	BH2	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	71	32	5	<0.1	47	30
laboratory	SDUP1	0.1-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<4	<0.4	68	31	6	<0.1	44	29
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	69.5	31.5	5.5	nc	45.5	29.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	4%	3%	18%	nc	7%	3%
Intra	BH1	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	70	43	10	<0.1	44	45
laboratory	SDUP2	0.1-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<4	<0.4	50	43	14	<0.1	40	30
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	60	43	12	nc	42	37.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	33%	0%	33%	nc	10%	40%
Trip	TS-S1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	5/12/22																						

Result outside of QA/QC acceptance criteria

Appendix D: Borehole Logs

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH1 1/1

SDUP2: 0.1-0.2m

Client: ROYAL MOTOR YACHT CLUB BROKEN BAY

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: ROYAL MOTOR YACHT CLUB, 46 PRINCE ALFRED PARADE, NEWPORT, NSW

Job No.: E35645P **Method:** PUSHTUBE / SPIRAL AUGER **R.L. Surface:** N/A

Date: 5/12/22 **Datum:** -

Plant Type: EZIPROBE **Logged/Checked by:** A.D./B.P.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			ASPHALT: 100mm.t				
									-	FILL: Clayey gravelly sand, fine to medium grained, dark grey, fine to medium grained igneous gravel, trace of asphalt.	M			ROADBASE
											w<PL			INSUFFICIENT RETURN FOR BULK SCREEN
							0.5			FILL: Silty sandy clay, medium to high plasticity, red brown, orange brown and light grey, fine to medium grained sand, trace of ash.				SCREEN: 7.50kg 0.2-1.3m NO FCF
							1							
										FILL: Sandy clay, low to medium plasticity, brown and orange brown, trace of sandstone and ironstone gravel and ash.	w≈PL			INSUFFICIENT RETURN FOR BULK SCREEN
							1.5		-	Extremely Weathered sandstone: silty CLAY, medium to high plasticity, yellow brown mottled grey and red, trace of ironstone gravel.	XW			NEWPORT FORMATION
							2			SANDSTONE: fine to medium grained, yellow brown.	DW			
							2.5							
										END OF BOREHOLE AT 2.6m				EZIPROBE REFUSAL ON SANDSTONE BEDROCK
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH2 1/1

SDUP1: 0.1-0.2m

Client: ROYAL MOTOR YACHT CLUB BROKEN BAY

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: ROYAL MOTOR YACHT CLUB, 46 PRINCE ALFRED PARADE, NEWPORT, NSW

Job No.: E35645P **Method:** PUSHTUBE / SPIRAL AUGER **R.L. Surface:** N/A

Date: 5/12/22 **Datum:** -

Plant Type: EZIPROBE **Logged/Checked by:** A.D./B.P.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			ASPHALT: 100mm.t				
									-	FILL: Clayey gravelly sand, fine to medium grained, dark grey, fine to medium grained igneous gravel, trace of asphalt.	M			ROADBASE
											w<PL			INSUFFICIENT RETURN FOR BULK SCREEN
							0.5			FILL: Silty sandy clay, medium to high plasticity, red brown and light grey, trace of ironstone gravel.				SCREEN: 7.36kg 0.2-0.8m NO FCF
									-	SANDSTONE: fine to medium grained, light grey.	DW			NEWPORT FORMATION
							1			END OF BOREHOLE AT 0.9m				EZIPROBE REFUSAL ON SANDSTONE BEDROCK (POSSIBLE BOULDER)
							1.5							
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH3** **1/1**

Client: ROYAL MOTOR YACHT CLUB BROKEN BAY

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: ROYAL MOTOR YACHT CLUB, 46 PRINCE ALFRED PARADE, NEWPORT, NSW

Job No.: E35645P **Method:** PUSHTUBE / SPIRAL AUGER **R.L. Surface:** N/A

Date: 5/12/22 **Datum:** -

Plant Type: EZIPROBE **Logged/Checked by:** M.J. & A.D./B.P.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
							0			ASPHALT: 80mm.t				
									-	FILL: Clayey gravelly sand, fine to medium grained, orange brown and red brown, fine to medium grained igneous gravel, trace of ironstone gravel and asphalt.	w<PL			ROADBASE
											w<PL			INSUFFICIENT RETURN FOR BULK SCREEN
											w<PL			
							0.5			FILL: Silty clay, medium to high plasticity, red brown and light grey, trace of sandstone and ironstone gravel.				INSUFFICIENT RETURN FOR BULK SCREEN
										FILL: Sandy clay, medium to high plasticity, brown and red brown, trace of ironstone and sandstone gravel and shell fragments.				SCREEN: 7.30kg 0.3-1.1m NO FCF
							1							
									CL-CI	Sandy CLAY: low to medium plasticity, dark grey and red brown, trace of ironstone gravel and shell fragments.	w≈PL			ALLUVIAL ORGANIC ODOUR
							1.5							
							2			Silty CLAY: low to medium plasticity, dark grey, trace of sand and sandstone gravel.	w≈PL			ALLUVIAL ORGANIC ODOUR
▼ ON COMPLET-ION											w>PL			
							2.5							
										END OF BOREHOLE AT 2.6m				EZIPROBE REFUSAL ON SANDSTONE BEDROCK OR BOULDER
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH4** **1/1**

Client: ROYAL MOTOR YACHT CLUB BROKEN BAY

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: ROYAL MOTOR YACHT CLUB, 46 PRINCE ALFRED PARADE, NEWPORT, NSW

Job No.: E35645P **Method:** PUSHTUBE / SPIRAL AUGER **R.L. Surface:** N/A

Date: 5/12/22 **Datum:** -

Plant Type: EZIPROBE **Logged/Checked by:** A.D./B.P.

Groundwater Record	SAMPLES (ES / ASS / ASB / SAL / DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
			0			ASPHALT: 50mm.t				
					-	FILL: Clayey gravelly sand, fine to medium grained, dark grey, fine to medium grained igneous gravel, trace of ironstone gravel and asphalt.	M			ROADBASE INSUFFICIENT RETURN FOR BULK SCREEN
						FILL: Silty sandy clay, medium to high plasticity, red brown, yellow brown and light grey, fine to medium grained sand, trace of ironstone gravel.	w<PL			SCREEN: 4.16kg 0.2-0.4m NO FCF
			0.5			as above, but yellow brown and grey.	w<PL			SCREEN: 2.96kg 0.4-1.3m NO FCF
			1							
			1.5		CL-CI	Silty CLAY: low to medium plasticity, red brown mottled yellow and grey, trace of sand and ironstone gravel.	w≈PL			POSSIBLY RESIDUAL
▼ 5 MINS AFTER COMPLETION			2		-	Extremely Weathered sandstone: silty CLAY, low to medium plasticity, yellow brown mottled grey.	XW			NEWPORT FORMATION
			2.5			END OF BOREHOLE AT 2.5m				EZIPROBE REFUSAL ON SANDSTONE BEDROCK
			3							
			3.5							

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
ine 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:

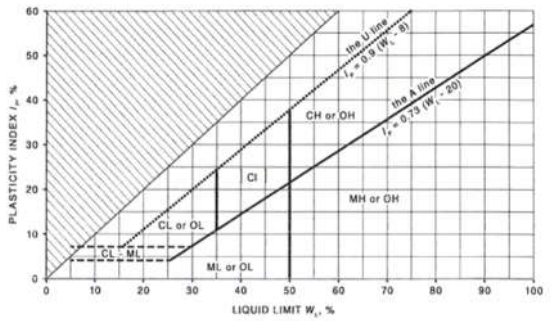
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

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.
	PFAS	Soil sample taken over depth indicated, for analysis of Per- and Polyfluoroalkyl Substances.
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.

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

Classification of Material Weathering

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

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

Rock Material Strength Classification

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

Appendix E: Laboratory Reports & COC Documents

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 312387

Client Details

Client	JK Environments
Attention	Alexis Diodati
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E35645P, Newport**
Number of Samples	24 Soil
Date samples received	06/12/2022
Date completed instructions received	06/12/2022

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	13/12/2022
Date of Issue	13/12/2022

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

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

Asbestos Approved By
Analysed by Asbestos Approved Analyst: Stuart Chen
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Hannah Nguyen, Metals Supervisor
Liam Timmins, Organic Instruments Team Leader
Lucy Zhu, Asbestos Supervisor
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		312387-1	312387-2	312387-6	312387-10	312387-16
Your Reference	UNITS	BH1	BH1	BH2	BH3	BH4
Depth		0.1-0.2	0.2-0.4	0.1-0.2	0.08-0.2	0.05-0.2
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/12/2022	08/12/2022	08/12/2022	08/12/2022	08/12/2022
Date analysed	-	12/12/2022	12/12/2022	12/12/2022	12/12/2022	12/12/2022
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	107	69	108	105	117

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		312387-19	312387-24
Your Reference	UNITS	BH4	TS-S1
Depth		1.3-1.6	-
Date Sampled		05/12/2022	05/12/2022
Type of sample		Soil	Soil
Date extracted	-	08/12/2022	08/12/2022
Date analysed	-	12/12/2022	12/12/2022
TRH C_6 - C_9	mg/kg	<25	[NA]
TRH C_6 - C_{10}	mg/kg	<25	[NA]
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	[NA]
Benzene	mg/kg	<0.2	100%
Toluene	mg/kg	<0.5	100%
Ethylbenzene	mg/kg	<1	99%
m+p-xylene	mg/kg	<2	99%
o-Xylene	mg/kg	<1	99%
Naphthalene	mg/kg	<1	[NT]
Total +ve Xylenes	mg/kg	<1	[NT]
Surrogate aaa-Trifluorotoluene	%	63	110

svTRH (C10-C40) in Soil						
Our Reference		312387-1	312387-2	312387-6	312387-10	312387-16
Your Reference	UNITS	BH1	BH1	BH2	BH3	BH4
Depth		0.1-0.2	0.2-0.4	0.1-0.2	0.08-0.2	0.05-0.2
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	08/12/2022
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	480	<100	140	150	110
TRH C_{29} - C_{36}	mg/kg	440	<100	250	250	280
Total +ve TRH (C10-C36)	mg/kg	920	<50	390	400	390
TRH >C_{10} -C_{16}	mg/kg	72	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	72	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	800	<100	300	330	290
TRH >C_{34} -C_{40}	mg/kg	460	<100	380	320	500
Total +ve TRH (>C10-C40)	mg/kg	1,300	<50	680	650	790
Surrogate o-Terphenyl	%	89	85	87	99	94

svTRH (C10-C40) in Soil		
Our Reference		312387-19
Your Reference	UNITS	BH4
Depth		1.3-1.6
Date Sampled		05/12/2022
Type of sample		Soil
Date extracted	-	07/12/2022
Date analysed	-	07/12/2022
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	90

PAHs in Soil						
Our Reference		312387-1	312387-2	312387-6	312387-10	312387-16
Your Reference	UNITS	BH1	BH1	BH2	BH3	BH4
Depth		0.1-0.2	0.2-0.4	0.1-0.2	0.08-0.2	0.05-0.2
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Naphthalene	mg/kg	0.7	<0.1	0.3	<0.1	<0.1
Acenaphthylene	mg/kg	0.3	<0.1	0.1	0.1	0.1
Acenaphthene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	2.5	<0.1	0.6	0.2	0.2
Anthracene	mg/kg	0.5	<0.1	0.1	<0.1	<0.1
Fluoranthene	mg/kg	2.9	0.1	0.7	0.6	0.2
Pyrene	mg/kg	5.6	0.1	1.4	2.1	0.7
Benzo(a)anthracene	mg/kg	2.0	<0.1	0.5	0.6	0.2
Chrysene	mg/kg	2.4	<0.1	0.5	0.8	0.3
Benzo(b,j+k)fluoranthene	mg/kg	6.8	0.4	2.3	3.8	2
Benzo(a)pyrene	mg/kg	3.1	0.1	1.1	1.9	0.92
Indeno(1,2,3-c,d)pyrene	mg/kg	1.3	<0.1	0.3	0.8	0.4
Dibenzo(a,h)anthracene	mg/kg	0.2	<0.1	<0.1	0.2	<0.1
Benzo(g,h,i)perylene	mg/kg	1.6	<0.1	0.5	1	0.5
Total +ve PAH's	mg/kg	31	0.72	8.3	12	5.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	4.4	<0.5	1.4	2.6	1.2
Benzo(a)pyrene TEQ calc(half)	mg/kg	4.4	<0.5	1.4	2.6	1.2
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	4.4	<0.5	1.5	2.6	1.3
Surrogate p-Terphenyl-d14	%	95	111	102	107	97

PAHs in Soil		
Our Reference		312387-19
Your Reference	UNITS	BH4
Depth		1.3-1.6
Date Sampled		05/12/2022
Type of sample		Soil
Date extracted	-	07/12/2022
Date analysed	-	07/12/2022
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	100

Organochlorine Pesticides in soil						
Our Reference		312387-1	312387-2	312387-6	312387-10	312387-16
Your Reference	UNITS	BH1	BH1	BH2	BH3	BH4
Depth		0.1-0.2	0.2-0.4	0.1-0.2	0.08-0.2	0.05-0.2
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	106	92	97	98	90

Organochlorine Pesticides in soil		
Our Reference		312387-19
Your Reference	UNITS	BH4
Depth		1.3-1.6
Date Sampled		05/12/2022
Type of sample		Soil
Date extracted	-	07/12/2022
Date analysed	-	07/12/2022
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	88

Organophosphorus Pesticides in Soil						
Our Reference		312387-1	312387-2	312387-6	312387-10	312387-16
Your Reference	UNITS	BH1	BH1	BH2	BH3	BH4
Depth		0.1-0.2	0.2-0.4	0.1-0.2	0.08-0.2	0.05-0.2
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	106	92	97	98	90

Organophosphorus Pesticides in Soil		
Our Reference		312387-19
Your Reference	UNITS	BH4
Depth		1.3-1.6
Date Sampled		05/12/2022
Type of sample		Soil
Date extracted	-	07/12/2022
Date analysed	-	07/12/2022
Dichlorvos	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Parathion	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Ethion	mg/kg	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1
Surrogate TCMX	%	88

PCBs in Soil						
Our Reference		312387-1	312387-2	312387-6	312387-10	312387-16
Your Reference	UNITS	BH1	BH1	BH2	BH3	BH4
Depth		0.1-0.2	0.2-0.4	0.1-0.2	0.08-0.2	0.05-0.2
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	106	92	97	98	90

PCBs in Soil		
Our Reference		312387-19
Your Reference	UNITS	BH4
Depth		1.3-1.6
Date Sampled		05/12/2022
Type of sample		Soil
Date extracted	-	07/12/2022
Date analysed	-	07/12/2022
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	88

Acid Extractable metals in soil						
Our Reference		312387-1	312387-2	312387-6	312387-10	312387-16
Your Reference	UNITS	BH1	BH1	BH2	BH3	BH4
Depth		0.1-0.2	0.2-0.4	0.1-0.2	0.08-0.2	0.05-0.2
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	12/12/2022	12/12/2022	12/12/2022	12/12/2022	12/12/2022
Arsenic	mg/kg	<4	<8	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	70	38	71	50	68
Copper	mg/kg	43	<1	32	8	36
Lead	mg/kg	10	4	5	6	6
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	44	2	47	12	56
Zinc	mg/kg	45	3	30	10	34

Acid Extractable metals in soil				
Our Reference		312387-19	312387-22	312387-23
Your Reference	UNITS	BH4	SDUP1	SDUP2
Depth		1.3-1.6	-	-
Date Sampled		05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	12/12/2022	12/12/2022	12/12/2022
Arsenic	mg/kg	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	33	68	50
Copper	mg/kg	7	31	43
Lead	mg/kg	4	6	14
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	3	44	40
Zinc	mg/kg	3	29	30

Moisture						
Our Reference		312387-1	312387-2	312387-6	312387-10	312387-16
Your Reference	UNITS	BH1	BH1	BH2	BH3	BH4
Depth		0.1-0.2	0.2-0.4	0.1-0.2	0.08-0.2	0.05-0.2
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	08/12/2022	08/12/2022	08/12/2022	08/12/2022	08/12/2022
Moisture	%	9.7	13	10	12	9.4

Moisture				
Our Reference		312387-19	312387-22	312387-23
Your Reference	UNITS	BH4	SDUP1	SDUP2
Depth		1.3-1.6	-	-
Date Sampled		05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	08/12/2022	08/12/2022	08/12/2022
Moisture	%	20	10	8.8

Asbestos ID - soils NEPM - ASB-001					
Our Reference		312387-1	312387-6	312387-10	312387-16
Your Reference	UNITS	BH1	BH2	BH3	BH4
Depth		0.1-0.2	0.1-0.2	0.08-0.2	0.05-0.2
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil
Date analysed	-	08/12/2022	08/12/2022	08/12/2022	08/12/2022
Sample mass tested	g	165.13	745.71	661.2	641.93
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Red coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	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
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–
FA and AF Estimation*	g	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001

sPOCAS field test						
Our Reference		312387-1	312387-3	312387-6	312387-7	312387-12
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.1-0.2	1.3-1.4	0.1-0.2	0.4-0.5	0.5-1.0
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022
Date analysed	-	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022
pH_F (field pH test)	pH Units	10.4	7.7	10.7	8.5	8.5
pH_{FOX} (field peroxide test)	pH Units	10.8	7.3	10.6	2.8	6.0
Reaction Rate*	-	Extreme reaction	Volcanic reaction	High reaction	High reaction	High reaction

sPOCAS field test						
Our Reference		312387-13	312387-14	312387-15	312387-17	312387-18
Your Reference	UNITS	BH3	BH3	BH3	BH4	BH4
Depth		1.7-2.0	2.0-2.3	2.5-2.6	0.2-0.4	0.8-1.0
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022
Date analysed	-	13/12/2022	13/12/2022	13/12/2022	13/12/2022	13/12/2022
pH_F (field pH test)	pH Units	7.7	7.2	7.7	7.1	4.8
pH_{FOX} (field peroxide test)	pH Units	6.1	3.4	5.3	3.6	2.3
Reaction Rate*	-	Extreme reaction	Volcanic reaction	Low reaction	Medium reaction	Low reaction

sPOCAS field test			
Our Reference		312387-20	312387-21
Your Reference	UNITS	BH4	BH4
Depth		2.0-2.3	2.3-2.5
Date Sampled		05/12/2022	05/12/2022
Type of sample		Soil	Soil
Date prepared	-	13/12/2022	13/12/2022
Date analysed	-	13/12/2022	13/12/2022
pH_F (field pH test)	pH Units	6.5	6.8
pH_{FOX} (field peroxide test)	pH Units	3.1	4.8
Reaction Rate*	-	Extreme reaction	Low reaction

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.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
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.
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.

Method ID	Methodology Summary
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.
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-9	312387-2
Date extracted	-			08/12/2022	1	08/12/2022	08/12/2022		08/12/2022	08/12/2022
Date analysed	-			12/12/2022	1	12/12/2022	12/12/2022		12/12/2022	12/12/2022
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	109	79
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	109	79
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	123	89
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	124	89
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	96	70
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	102	74
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	100	75
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	110	1	107	108	1	114	79

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	312387-2
Date extracted	-			07/12/2022	1	07/12/2022	07/12/2022		07/12/2022	07/12/2022
Date analysed	-			07/12/2022	1	07/12/2022	07/12/2022		07/12/2022	07/12/2022
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	91	101
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	480	450	6	88	98
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	440	450	2	101	113
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	72	64	12	91	101
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	800	790	1	88	98
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	460	540	16	101	113
Surrogate o-Terphenyl	%		Org-020	81	1	89	99	11	81	91

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	312387-2
Date extracted	-			07/12/2022	1	07/12/2022	07/12/2022		07/12/2022	07/12/2022
Date analysed	-			07/12/2022	1	07/12/2022	07/12/2022		07/12/2022	07/12/2022
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	0.7	0.5	33	95	97
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	0.3	0.2	40	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	0.4	0.3	29	91	93
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	0.4	0.2	67	95	97
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	2.5	1.6	44	104	102
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	0.5	0.3	50	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	2.9	2.1	32	112	100
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	5.6	4.1	31	113	107
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	2.0	1.7	16	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	2.4	1.6	40	73	73
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	6.8	4.6	39	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	3.1	2.2	34	86	128
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	1.3	0.9	36	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.2	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	1.6	1	46	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	102	1	95	111	16	98	96

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	312387-2
Date extracted	-			07/12/2022	1	07/12/2022	07/12/2022		07/12/2022	07/12/2022
Date analysed	-			07/12/2022	1	07/12/2022	07/12/2022		07/12/2022	07/12/2022
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	112
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	120	126
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	99	107
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	109	109
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	100
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	117	119
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	124
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	111	127
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	98	116
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	96	120
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	89	1	106	85	22	102	104

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	312387-2
Date extracted	-			07/12/2022	1	07/12/2022	07/12/2022		07/12/2022	07/12/2022
Date analysed	-			07/12/2022	1	07/12/2022	07/12/2022		07/12/2022	07/12/2022
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	115	127
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	93	102
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	85	119
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	103	134
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	106	124
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	128
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	113	125
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	89	1	106	85	22	102	104

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	312387-2
Date extracted	-			07/12/2022	1	07/12/2022	07/12/2022		07/12/2022	07/12/2022
Date analysed	-			07/12/2022	1	07/12/2022	07/12/2022		07/12/2022	07/12/2022
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	128	120
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	89	1	106	85	22	102	104

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	312387-2
Date prepared	-			07/12/2022	1	07/12/2022	07/12/2022		07/12/2022	07/12/2022
Date analysed	-			12/12/2022	1	12/12/2022	12/12/2022		12/12/2022	12/12/2022
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	103	#
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	100	83
Chromium	mg/kg	1	Metals-020	<1	1	70	66	6	114	94
Copper	mg/kg	1	Metals-020	<1	1	43	35	21	107	108
Lead	mg/kg	1	Metals-020	<1	1	10	11	10	108	89
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	93	90
Nickel	mg/kg	1	Metals-020	<1	1	44	45	2	109	87
Zinc	mg/kg	1	Metals-020	<1	1	45	37	20	109	87

QUALITY CONTROL: sPOCAS field test						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			13/12/2022	[NT]	[NT]	[NT]	[NT]	13/12/2022	[NT]
Date analysed	-			13/12/2022	[NT]	[NT]	[NT]	[NT]	13/12/2022	[NT]
pH_F (field pH test)	pH Units		Inorg-063	[NT]	[NT]	[NT]	[NT]	[NT]	100	[NT]
pH_{FOX} (field peroxide test)	pH Units		Inorg-063	[NT]	[NT]	[NT]	[NT]	[NT]	100	[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.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

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

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Note: All samples analysed as received. However, sample 312387-1 was below the minimum recommended 500mL sample volume as per National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

8 metals in soil:
- # Low spike recovery was obtained for this sample. Sample matrix interference is suspected. However, an acceptable recovery was obtained for the LCS.
- The PQL for As for 312387-2 has been raised due to the low spike recovery. This may reflect other samples where similar in matrix and similar analytical interferences occur.

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	Alexis Diodati

Sample Login Details

Your reference	E35645P, Newport
Envirolab Reference	312387
Date Sample Received	06/12/2022
Date Instructions Received	06/12/2022
Date Results Expected to be Reported	13/12/2022

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	24 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14
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:

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	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	sPOCAS field test	On Hold
BH1-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH1-0.2-0.4	✓	✓	✓	✓	✓	✓	✓			
BH1-1.3-1.4									✓	
BH1-1.7-2.0										✓
BH1-2.4-2.6										✓
BH2-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH2-0.4-0.5									✓	
BH2-0.6-0.8										✓
BH2-0.8-0.9										✓
BH3-0.08-0.2	✓	✓	✓	✓	✓	✓	✓	✓		
BH3-0.2-0.3										✓
BH3-0.5-1.0									✓	
BH3-1.7-2.0									✓	
BH3-2.0-2.3									✓	
BH3-2.5-2.6									✓	
BH4-0.05-0.2	✓	✓	✓	✓	✓	✓	✓	✓		
BH4-0.2-0.4									✓	
BH4-0.8-1.0									✓	
BH4-1.3-1.6	✓	✓	✓	✓	✓	✓	✓			
BH4-2.0-2.3									✓	
BH4-2.3-2.5									✓	
SDUP1							✓			
SDUP2							✓			
TS-S1	✓									

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

Additional Info

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

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E35645P Date Results Required: STANDARD Page: 1 of 1	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Alexis Diodati adiodati@jkenvironments.com.au

Location:	Newport						Sample Preserved in Esky on Ice												
Sampler:	AD						Tests Required												
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6	Asbestos (500mL WA)	8 Metals	BTEX	pH field test (pHF apHFOX)								
5/12/2022	1	BH1	0.1-0.2	G, A, P	3.3	Soil	X	X			X								
5/12/2022	2	BH1	0.2-0.4	G, A, P	2.9	Soil	X												
5/12/2022	3	BH1	1.3-1.4	G, A, P	2	Soil					X								
5/12/2022	4	BH1	1.7-2.0	G, P	–	Soil													
5/12/2022	5	BH1	2.4-2.6	G, A, P	2.2	Soil													
5/12/2022	6	BH2	0.1-0.2	G, A, P	6	Soil	X	X			X								
5/12/2022	7	BH2	0.4-0.5	P	–	Soil					X								
5/12/2022	8	BH2	0.6-0.8	G, A, P	2.8	Soil													
5/12/2022	9	BH2	0.8-0.9	G, P	1	Soil													
5/12/2022	10	BH3	0.08-0.2	G, A, P	2.7	Soil	X	X											
5/12/2022	11	BH3	0.2-0.3	G, P	2	Soil													
5/12/2022	12	BH3	0.5-1.0	G, A, P	2.4	Soil					X								
5/12/2022	13	BH3	1.7-2.0	G, A, P	1.7	Soil					X								
5/12/2022	14	BH3	2.0-2.3	G, A, P	1.7	Soil					X								
5/12/2022	15	BH3	2.5-2.6	P	–	Soil					X								
5/12/2022	16	BH4	0.05-0.2	G, A, P	2	Soil	X	X											
5/12/2022	17	BH4	0.2-0.4	G, A, P	1.7	Soil					X								
5/12/2022	18	BH4	0.8-1.0	G, A, P	3.7	Soil					X								
5/12/2022	19	BH4	1.3-1.6	G, A, P	2.2	Soil	X												
5/12/2022	20	BH4	2.0-2.3	G, A, P	3.9	Soil					X								
5/12/2022	21	BH4	2.3-2.5	P	–	Soil					X								
5/12/2022	22	SDUP1	–	G	–	Soil Duplicate			X										
5/12/2022	23	SDUP2	–	G	–	Soil Duplicate			X										
5/12/2022	24	TS-S1	–	V	–	Trip Spike				X									

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

ENVIROLAB GROUP

Job No: 312387
Date Received: 06/12/22
Time Received: 1615
Received By: AY
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 V- Vial			
Relinquished By: NF	Date: 6/12/22 11:00AM	Time: 1615	Received By:	Date: 06/12/22

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 312387-A

Client Details

Client	JK Environments
Attention	Brendan Page
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E35645P, Newport**
Number of Samples	additional analysis
Date samples received	06/12/2022
Date completed instructions received	16/12/2022

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

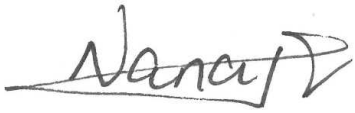
Date results requested by	03/01/2023
Date of Issue	03/01/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

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

Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

Chromium Suite						
Our Reference		312387-A-3	312387-A-7	312387-A-14	312387-A-17	312387-A-18
Your Reference	UNITS	BH1	BH2	BH3	BH4	BH4
Depth		1.3-1.4	0.4-0.5	2.0-2.3	0.2-0.4	0.8-1.0
Date Sampled		05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/01/2023	03/01/2023	03/01/2023	03/01/2023	03/01/2023
Date analysed	-	03/01/2023	03/01/2023	03/01/2023	03/01/2023	03/01/2023
pH $_{kcl}$	pH units	7.7	5.0	5.5	5.7	4.3
s-TAA pH 6.5	%w/w S	<0.01	0.01	<0.01	<0.01	0.04
TAA pH 6.5	moles H^+ /t	<5	8	<5	<5	27
Chromium Reducible Sulfur	%w/w	0.007	0.05	0.06	<0.005	0.01
a-Chromium Reducible Sulfur	moles H^+ /t	4	32	39	<3	8
S_{HCl}	%w/w S	[NT]	[NT]	[NT]	[NT]	0.007
S_{KCl}	%w/w S	[NT]	[NT]	[NT]	[NT]	<0.005
S_{NAS}	%w/w S	[NT]	[NT]	[NT]	[NT]	0.005
ANC_{BT}	% $CaCO_3$	1.6	[NT]	[NT]	[NT]	[NT]
s-ANC_{BT}	%w/w S	0.50	[NT]	[NT]	[NT]	[NT]
s-Net Acidity	%w/w S	<0.005	0.063	0.069	0.0060	0.062
a-Net Acidity	moles H^+ /t	<5	40	43	<5	39
Liming rate	kg $CaCO_3$ /t	<0.75	3	3	<0.75	3
a-Net Acidity without ANCE	moles H^+ /t	<5	40	43	<5	39
Liming rate without ANCE	kg $CaCO_3$ /t	<0.75	3.0	3.2	<0.75	2.9
s-Net Acidity without ANCE	%w/w S	0.0070	0.063	0.069	0.0060	0.062

Method ID	Methodology Summary
Inorg-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Net acidity including ANC has a safety factor of 1.5 applied. Neutralising value (NV) of 100% is assumed for liming rate. Based on National acid sulfate soils identification and laboratory methods manual June 2018. The recommendation that the SHCL concentration be multiplied by a factor of 2 to ensure retained acidity is not underestimated, has not been applied in the SHCL results reported.

QUALITY CONTROL: Chromium Suite						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			03/01/2023	[NT]	[NT]	[NT]	[NT]	03/01/2023	[NT]
Date analysed	-			03/01/2023	[NT]	[NT]	[NT]	[NT]	03/01/2023	[NT]
pH $_{kcl}$	pH units		Inorg-068	[NT]	[NT]	[NT]	[NT]	[NT]	100	[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]	111	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	111	[NT]
a-Chromium Reducible Sulfur	moles H^+ /t	3	Inorg-068	<3	[NT]	[NT]	[NT]	[NT]	[NT]	[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.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

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	Brendan Page

Sample Login Details

Your reference	E35645P, Newport
Envirolab Reference	312387-A
Date Sample Received	06/12/2022
Date Instructions Received	16/12/2022
Date Results Expected to be Reported	03/01/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	additional analysis
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14
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:

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		✓
BH1-0.2-0.4		✓
BH1-1.3-1.4	✓	
BH1-1.7-2.0		✓
BH1-2.4-2.6		✓
BH2-0.1-0.2		✓
BH2-0.4-0.5	✓	
BH2-0.6-0.8		✓
BH2-0.8-0.9		✓
BH3-0.08-0.2		✓
BH3-0.2-0.3		✓
BH3-0.5-1.0		✓
BH3-1.7-2.0		✓
BH3-2.0-2.3	✓	
BH3-2.5-2.6		✓
BH4-0.05-0.2		✓
BH4-0.2-0.4	✓	
BH4-0.8-1.0	✓	
BH4-1.3-1.6		✓
BH4-2.0-2.3		✓
BH4-2.3-2.5		✓
SDUP1		✓
SDUP2		✓
TS-S1		✓

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.

Ming To

Ref 312387-A
TAT: Standard.
Due: 03/01/2023
MT

From: Brendan Page <BPage@jkenvironments.com.au>
Sent: Friday, 16 December 2022 3:45 PM
To: Samplereceipt
Cc: Alexis Diodati
Subject: Additional analysis for Registration 312387 (JKE Ref E35645P Newport)

Categories: Additional

Hi,

Could we please order the SCr (extended) suite analysis on the samples below. Standard TAT. Thanks

3	BH1	1.3-1.4
7	BH2	0.4-0.5
14	BH3	2.0-2.3
17	BH4	0.2-0.4
18	BH4	0.8-1.0

Regards
Brendan Page
Principal Associate | Environmental Scientist
CEnvP (Site Contamination Specialist)

Our offices with be closed from COB on 23 Dec 2022 to 2 Jan 2023

The Principals and Staff of the JK Group wish you a safe and joyful festive season and a wonderful New Year!

T: +612 9888 5000
D: 0424 193 922
E: BPage@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)[18] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[19]. The NEPM (2013) is consistent with these documents.

A. Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection Limit for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations: *"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit*" (Keith, 1991).

B. Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD).

C. Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured (i.e. the proximity of an averaged result to the true value, where all random errors have been statistically removed). The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes. Accuracy is typically reported as percent recovery.

D. Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

E. Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;

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

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

- All blank data reported;
- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

F. Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

G. Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

H. Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{\text{(Spike Sample Result – Sample Result) x 100}}{\text{Concentration of Spike Added}}$$

I. Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

J. Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$

Appendix G: Data (QA/QC) Evaluation

Data (QA/QC) Evaluation

A. INTRODUCTION

This Data (QA/QC) Evaluation forms part of the validation process for the DQOs documented in Section 6.1 of this report. Checks were made to assess the data in terms of precision, accuracy, representativeness, comparability and completeness. These 'PARCC' parameters are referred to collectively as DQIs and are defined in the Report Explanatory Notes attached in the report appendices.

1. Field and Laboratory Considerations

The quality of the analytical data produced for this project has been considered in relation to the following:

- Sample collection, storage, transport and analysis;
- Laboratory PQLs;
- Field QA/QC results; and
- Laboratory QA/QC results.

2. Field QA/QC Samples and Analysis

A summary of the field QA/QC samples collected and analysed for this investigation is provided in the following table:

Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Intra-laboratory duplicate (soil)	SDUP1 (primary sample BH2 0.1-0.2m)	Approximately 33% of primary samples	Heavy metals
Intra-laboratory duplicate (soil)	SDUP2 (primary sample BH1 0.1-0.2m)		
Trip spike (soil)	TS-S1 (05/12/22)	One for the investigation to demonstrate adequacy of preservation, storage and transport methods	BTEX

The results for the field QA/QC samples are detailed in the laboratory summary tables (Table Q1) 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.

Trip Spikes

Acceptable targets for trip spike samples in this report will be 70% to 130%.

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 14°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 is of the opinion that the temperatures reported on the Sample Receipts are unlikely to be reliable or representative of the overall batch. This is further supported by the trip spike recovery results (discussed further below) which reported adequate recovery in the range of 99% to 100%.

Envirolab noted that the asbestos results were reported to be consistent with the recommendations in NEPM (2013), however this level of reporting is outside the scope of their NATA accreditation. In the absence of other available analytical methods for asbestos, this was found to be acceptable for the purpose of this investigation.

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. RPD non-conformances were reported for chromium, lead and zinc in the BH1/SDUP2 sample. Values outside the acceptable limits have been attributed to minor sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogeneous matrices. As both the primary and duplicate sample results were all significantly less than the SAC, the exceedances are not considered to have had an adverse impact on the data set as a whole.

Trip Spikes

The results ranged from 99% to 100% and indicated that field preservation methods were appropriate.

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. Low matrix spike recovery occurred for some samples/analytes, however, acceptable recovery was obtained for the laboratory control samples which suggested there was likeley some matrix interference within the primary sample.

The PQL for arsenic was also raised for one sample due to matrix interreference. This was not significant in terms of the data accuracy as the raised PQL was still below the SAC.

C. DATA QUALITY SUMMARY

JKE is of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

Non-conformances were reported for some field QA/QC samples and laboratory QA/QC analysis. These non-conformances were considered to be sporadic and minor, and were not considered to be indicative of systematic sampling or analytical errors. On this basis, these non-conformances are not considered to materially impact the report findings.

Appendix H: Guidelines and Reference Documents

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

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

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

Contaminated Land Management Act 1997 (NSW)

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

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

NSW EPA, (1995). Contaminated Sites Sampling Design Guidelines

NSW EPA, (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

Protection of the Environment Operations Act 1997 (NSW)

State Environmental Planning Policy (Resilience and Hazards) 2021 (NSW)

Water Quality Australia, (2018). National Acid Sulfate Soils Guidance: National acid sulfate soils sampling and identification methods manual

Western Australia Department of Health, (2021). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia