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ENVIRONMENTAL SITE ASSESSMENT REPORT
BUNGARRIBEE SUPER PARK, EASTERN CREEK, NSW
PREPARED FOR SYDNEY ZOO AND WESTERN SYDNEY PARKLANDS TRUST
REPORT ID: CES150404-EXC-AB

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LIST OF ABBREVIATIONS

AHD	Australian Height Datum
ASS	Acid Sulfate Soil
BTEX	Benzene, Toluene, Ethylbenzene and Total Xylenes
CES	Consulting Earth Scientists Pty Ltd
CLM	Contaminated Land Management
COC	Chain of Custody
COPC	Chemicals of Potential Concern
DECCW	Department of Environment and Climate Change and Water
DLWC	Department of Land and Water Conservation
DQO	Data Quality Objectives
EIL	Ecologically-based Investigation Level
EPA	Environment Protection Authority
ESA	Environmental Site Assessment
GIL	Groundwater Investigation Level
ha	Hectares
HIL	Health-based Investigation Level
km	Kilometre
LGA	Local Government Area
LPI	Land and Property Information Division
LEP	Local Environmental Plan
m	Metre
mm	Millimetre
mbgl	Metres Below Ground Level
mbTOC	Metres Below Top of Casing
mAHD	metres Australian Height Datum
NEPM	National Environment Protection Measure
NSW	New South Wales
OCP	Organochlorine Pesticide
OEH	Office of Environment and Heritage
PAH	Polycyclic Aromatic Hydrocarbon
PSP	Project Safety Plan
QA / QC	Quality Assurance and Quality Control
RPD	Relative Percentage Difference
TRH	Total Recoverable Hydrocarbons

1 INTRODUCTION

Consulting Earth Scientists Pty Ltd (CES) was commissioned by Sydney Zoo to carry out an Environmental Site Assessment (ESA) of the property located at Bungarribee Super Park, Eastern Creek, New South Wales (NSW) (the site).

It is understood that Sydney Zoo intends to lease the site from West Sydney Parklands Trust and this assessment forms part of the pre-lease agreement to establish baseline environmental conditions at the site and assess the suitability of the soil and groundwater for development as a zoo.

This report has been prepared in accordance the CES proposal dated 29 April 2015 (Reference: CES150404-EXC-AA) and is in general accordance with the requirements published by the NSW Environment Protection Authority (EPA) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (NSW EPA), 2011 and the National Environmental Protection Measure (NEPM) *Guidelines on Site Characterisation* (Schedule B2) 1999, as amended 2013.

The site covers an area of approximately 16.5 hectares (ha) and is located within the Local Government Area (LGA) of Blacktown City Council within Lot 101 of Deposited Plan (DP) 1195067. As part of the development, Sydney Zoo intends to subdivide the lot.

The site location is presented in **Figure 1** and a site layout plan is presented in **Figure 2**.

2 OBJECTIVES

The objectives of this assessment were to:

- Establish the baseline environmental conditions at the site with respect to soil and groundwater;
- Confirm the suitability of the soil and groundwater for the zoo development; and
- Determine the soil fertility status to inform the tree acquisition process.

3 SCOPE OF WORKS

To achieve the objectives, CES has completed the following scope of works:

- Identification of the site, including location, address, boundaries, zoning and title descriptions;
- Comprehensive research to enable documentation of the site history and assessment of potential sources of contamination;
- Preparation of a Sampling and Analysis Quality Plan (SAQP);
- A site inspection to visually identify potential sources of contamination; and
- Preparation of specific Project Safety Plan (PSP);
- Obtain Dial Before You Dig Plans for the site followed by location of underground and above ground services in proposed intrusive investigation areas;
- Excavation of test pits across the site;
- Borehole drilling and installation of two groundwater monitoring wells;
- Logging of encountered geology including depth to bedrock;
- Collection of soil samples and submission to an accredited laboratory for the following suite of analytes:
    - Heavy Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn);
    - Polycyclic Aromatic Hydrocarbons (PAHs);
    - Total Recoverable Hydrocarbons (TRHs);
    - Monocyclic Aromatic Hydrocarbons (BTEX);
    - Polychlorinated Biphenyls (PCBs);
    - Organochlorine Pesticides (OCPs);
    - Asbestos;
    - Salinity; and
    - Nutrient testing (including; potassium, calcium, magnesium, chloride, nitrate, sulphate, boron, electrical conductivity and pH).
- Collection of two groundwater samples and submission to an accredited laboratory for the following suite of analytes:
    - Heavy Metals;
    - PAHs;
    - TRHs;
    - BTEX;
    - PCBs; and
    - OCPs.
- Implementation of a Quality Assurance / Quality Control (QA / QC) program to confirm data quality; and
- Preparation of this ESA report.

4 SITE INFORMATION

4.1 SITE IDENTIFICATION

The site is accessed via the Great Western Highway and is located at Bungarribee Super Park, Eastern Creek, NSW (**Figure 1)**. The area identified as the site covers approximately 16.5 ha and is located within the LGA of Blacktown City Council within the southern portion of Lot 101 within DP 1195067. It is understood that the proposed development does not include the whole lot and the intention is to subdivide as illustrated in **Figure 2**.

4.2 SITE ZONING AND LANDUSE

The Bankstown Local Environmental Plan (LEP) 2015 indicates that the site is not currently zoned (**Appendix A**) since development is regulated by the State Environmental Planning Policy (SEPP) (Western Sydney Parklands) 2009. The following development may be carried out without consent, but only if carried out by or on behalf of a public authority; cafes; community facilities, entertainment facilities, environmental facilities, kiosks, landscaping, maintenance depots, public administration buildings, recreation areas, recreation facilities.

4.3 TOPOGRAPHY AND DRAINAGE

The site has an approximate average elevation of 80 metres Australian Height Datum (mAHD) (Department of Land and Property, 19 June 2015).

The site has undulations and slopes towards Eastern Creek which is located to the immediate west of the site. Surface water is expected to drain towards Eastern Creek.

4.4 REGIONAL SOIL LANDSCAPE, GEOLOGY AND HYDROGEOLOGY

4.4.1 Soil Landscape

Reference to the 1:100 000 Soil Landscapes of the Penrith Sheet indicates that the site includes two soil landscapes which are summarised below.

Blacktown Soil Landscape – present over 95% of the site and is characterised by a topography of *"low hills and rises on Wianamatta Group Shale, with local relief of 10-50 m and slopes usually 0-9%"*. This is a residual landscape and comprises up to four soil horizons that range from shallow red-brown hard setting sandy clay soils on crests and upper slopes to deep brown to yellow sand and clay soils overlying grey plastic mottled clay on mid to lower slopes. These soils are typically of low to moderate fertility, are moderately reactive and have a generally low wet bearing strength.

South Creek Soil Landscape – present along approximately 5% of the site along the western site boundary and is characterised by a topography of *"floodplain on Quaternary Alluvium (alluvium, shale and silt) in the Cumberland Plain with local relief of 0-10 m and slopes usually 0-10 m.* This is a fluvial landscape and often includes very deep layered sediments. Where pedogenesis has occurred, developed soils include sandy to sandy clay loams, clay loams and

brown clays. These soils are typically of low fertility, may be of moderate reactivity and are subject to waterlogging.

4.4.2 Geology

Reference to the Penrith 1:100 000 Geological Series Sheet indicates that the site is underlain by Bringelly Shale of the Wianamatta Group of Triassic Age. This formation typically comprises shale, carbonaceous claystone, laminate and some minor coal bands. These rock units typically weather to form clays of medium to high plasticity. The bedrock is mantled by Quaternary alluvium within valley floors of Eastern Creek.

4.4.3 Surface Water

The nearest surface water feature is Eastern Creek which runs approximately 10-15 metres parallel to the west of the site boundary.

4.4.4 Hydrogeology

It is expected that groundwater would follow the natural topography and flow towards Eastern Creek in a westerly direction.

A groundwater bore search of the NSW Department of Primary Industries – Office of Water / Water Administration Ministerial Corporation (http://allwaterdata.water.nsw.gov.au/water.stm accessed 21 May 2015) was completed for an area covering a one kilometre (km) radius from the site. No registered bores were identified during the search (**Appendix A**).

4.5 ACID SULFATE SOILS

The site is not located within an Acid Sulfate Soil zone (**Appendix A**).

4.6 DRYLAND SALINITY

The site is located within an area classified as high salinity hazard or risk defined for all years (2000, 2020 and 2050) (**Appendix A**).

4.7 METEOROLOGY

Information on meteorology has been obtained from the Bureau of Meteorology website (http://www.bom.gov.au accessed 17 June 2015).

- Mean annual maximum temperature – 23.2 degrees Celsius;
- Mean annual lowest temperature – 12.3 degrees Celsius; and
- Mean annual rainfall – 871.9 millimetres (mm).

4.8 SENSITIVE LOCAL ENVIRONMENTS

The site is located within an Underground Petroleum Storage System (UPSS) Environmentally Sensitive Zone (**Appendix A**).

4.9 SITE HISTORY

Information pertaining to the history of the site was obtained through a review of information available from external sources including historical title searches, aerial photographs, WorkCover NSW Dangerous Goods files and council records.

4.9.1 Property Title Information

A title deeds search was conducted by Lot Search. A summary of the results is provided in **Table 1**. Where available, the original title and lease documents are provided in **Appendix B**.

Table 1: Summary of Proprietors

Date	Proprietor
2002 – to present	Western Sydney Parklands Trust
2000 – 2002	The Minister Administering the Environmental Planning and Assessment Act, 1979
1991 – 2000	Telstra Corporation Limited
1964 – 1991	Overseas Telecommunications Commission (Australia)
1957 – 1964	Overseas Telecommunications Commission (Australia)
1953 – 1957	The Commonwealth of Australia
1920 – 1953	Edith Anne Learmouth, spinster Florence Murray Learmouth, spinster Clarice Dessie Learmouth, spinster Matilda Elizabeth Learmouth, spinster
1919 – 1920	Lindsay Victor Learmouth, contractor
1919 – 1919	Susannah Jane Learmouth, widow
	(Part Portion 196 Parish Prospect – Area 472 Acres – CTVol 5538 Fol's 5 & 6)
1945 – 1953	Thomas Russell Cleaver, farmer Arthur John Cleaver, farmer
	(Part Portion 196 Parish Prospect – Area 472 Acres – CTVol 1911 Fol 164)
1929 – 1945	Thomas Russell Cleaver, farmer
(1929 – 1945)	(various leases relating to dairy farms & farming shown on CTVol 1911 Fol 164)
1927 – 1929	Charles William Hopkins, journalist
1927 – 1927	Ellen Gertrude Davey, married woman John Hansell Roe, gentleman
1921 – 1927	Ellen Gertrude Davey, married woman George Arthur Davey, miller
1915 – 1921	Maurice Charles Davey, miller
1908 – 1915	Eleanor Walter, married woman
	(Portion 196 Parish Prospect – Area 2130 Acres 2 Roods 3 ¾ Perches – CTVol 1776 Fol 125)
1908 – 1908	Robert Campbell Oatley, gentleman
1907 – 1908	Robert Crawford, grazier Robert Campbell Oatley, gentleman

Based on the information above, the use of the site for telecommunications between 1957 and 2000 has the potential to have adversely impacted soil and groundwater conditions at the site. Contaminants of potential concern (COPC) include:

- Heavy metals sourced from imported fill (if present); and
- PCBs and Asbestos sourced from electrical installations

4.9.2 Historical Aerial Photograph Interpretation

Aerial photographs taken from 1956 to 2014 were obtained from Lot Search and reviewed to assess the history of development of the site and indications of potential sources of contamination. **Table 2** presents a summary of the review. The photographs are included in **Appendix B**.

Table 2: Aerial Photograph Interpretation

Date	Description
1956	**Site:** appears to form part of a large field likely used for grazing. A track leads from the Great Western Highway and transects the site from north to south. **Surrounds:** predominantly undeveloped and, like the site, likely used for grazing. A large building is located to the north of the site and accessed via the track that leads from the Great Western Highway. The building appears to be commercial / industrial in function (telecommunications). A creek (possibly dry) runs from east to west above the building. Beyond the creek there appears to be a former runway. To the east of the site is Eastern Creek which is fringed with trees.
1961	**Site:** many poles now evident across the site. These may either be for telecommunications (broadcasting masts) or telegraph / electricity poles. Four large scars now branch off the track that transects the site. **Surrounds:** with the exception of many masts / electrical poles / telegraph poles, the surrounds appear largely unchanged.
1965	**Site:** appears largely unchanged. **Surrounds:** appear largely unchanged.
1970	**Site:** track that transects the site is no longer as clearly defined. **Surrounds:** appear largely unchanged.
1981	**Site:** appears largely unchanged. **Surrounds:** appear largely unchanged.
1991	**Site:** poles formerly across the site are no longer visible. Unpaved track now evident along the west site boundary. **Surrounds:** poles formerly across the surrounds are no longer visible.
2009	**Site:** appears largely unchanged. **Surrounds:** building to the north of the site has been demolished / removed. The rest of the surrounds appear largely unchanged.
2014	**Site:** appears largely unchanged. **Surrounds:** general increase in density of trees that border Eastern Creek.

Based on the information presented within Table 2, the following key site features have been identified:

- Multiple poles / masts; and
- Track that transects the site from north to south.

Typical COPC associated with these features include:

- Heavy metals sourced from imported fill (for development of the track and levelling of the site for the masts / poles); and
- PCBs and asbestos sourced from electrical installations (associated with the poles / masts).

4.9.3 WorkCover NSW Records

A search of the WorkCover NSW Stored Chemical Information Database and microfiche records was undertaken to identify any dangerous goods storage licences held for the site. Neither of these searches located records pertaining to the site. The WorkCover NSW letter and results of the searches are provided in **Appendix C**.

4.9.4 Section 149 Planning Certificates

Review of Planning Certificates under Section 149 of the Environmental Planning and Assessment Act (1979) indicates the following for the subject site:

- The land has not been proclaimed as within a Mine Subsidence District;
- The land is not biodiversity certified land;
- The land does not include or comprise critical habitat;
- The land is not in a conservation area;
- The land has not been identified as Category 2 bush fire prone land; and
- Development on the land may be subject to flood related development controls.

The following matters are prescribed under section 59 (2) of the Contaminated Land Management Act (1997):

- The land is not significantly contaminated;
- The land is not subject to a management order;
- The land is not subject of an approved voluntary management proposal;
- The land is not subject to an on-going maintenance order; and
- The land is not subject to an audit statement.

A copy of the Section 149 certificates is provided in **Appendix D**.

4.10 PREVIOUS ENVIRONMENTAL REPORTS

Land Capability Study: Precincts 2.5 and 2.6, Western Sydney Parklands, Douglas Partners, 29 March 2009 (reference Project 71065).

The objective of this investigation was to determine the suitability of the site for redevelopment and identify potential constraints and actions required to address the constraints. The investigation covered two areas identified as Precincts 2.5 and 2.6 the latter of which is relevant to this CES investigation area. The report presented the following key findings:

- Historic contamination sourced from the former Telstra site has been remediated, validated and the site has been deemed suitable for residential use;
- Soil analytical testing indicated slight to moderate saline conditions across the site;

- High concentrations of copper and zinc were detected within soils and for the purposes of future landscaping, tolerant plants should be selected; and
- Overall soil contamination risk across the site was considered low.

4.11 SEWER AND SERVICE PLANS

A review of Dial-Before-You-Dig (DBYD) plans indicate no significant underground services on the site. As such, no preferential pathways have been identified. Plans are provided in **Appendix E**.

4.12 CURRENT OCCUPIER, FEATURES AND OPERATIONS

The site description is based on observations made during an inspection undertaken by CES on 21 April 2015.

At the time of the investigation, the site was devoid of any buildings. The only structures observed were former concrete / steel anchor points associated with telecommunication masts previously located across the site. The site was largely covered with long grass with occasional trees and a dense collective of trees along the banks of the Eastern Creek. As such, no contaminant sources (mounds or suspicious 'fly-tipped' material at the surface) were identified.

The Photographic Log is provided in **Appendix F**.

4.13 SURROUNDING LAND USE

At the time of the site inspection, the immediate surroundings comprised the following:

- **North:** soils being excavated to the immediate north (unknown purpose) with open fields beyond;
- **East:** undeveloped bushland;
- **South:** Great Western Highway with commercial properties immediately opposite which included distribution depots and an operational Shell-branded service station; and
- **West**: Eastern Creek and undeveloped bushland beyond.

With regard the proposed zoo, the commercial properties and Shell-branded service station located to the south of the site are considered the most likely potential future contamination sources.

5 INVESTIGATION METHODOLOGIES

5.1 SOIL SAMPLING METHODOLOGY

Soil sampling took place between 2 and 4 June 2015. The soil samples were collected by means of test pits, using an excavator (TP1 – TP14) and boreholes, using a drill rig (MW1, MW3 and BH1). Upon completion of each test pit and BH1, the soils were reinstated to surface grade whilst MW1 and MW2 were fitted with groundwater monitoring wells.

Soil samples were placed in laboratory prepared jars, labelled and placed on ice in a cool-box for transport. A chain of custody (COC) form was prepared to accompany the cool-boxes to a NATA Accredited Laboratory for the analysis of COPC.

The sampling regime is provided in **Table 3**.

Table 3: Sampling Regime

Sampling ID	Location	Rationale	Sampling Methodology
TP1	Northwest	Soil assessment - general coverage.	Test pit
TP2 / MW03	North	Soil and groundwater assessment - general coverage.	Test pit / borehole
TP3	North	Soil assessment - general coverage.	Test pit
TP4	North	Soil assessment - general coverage.	Test pit
TP5	Northeast	Soil assessment - general coverage.	Test pit
TP6	West	Soil assessment - general coverage.	Test pit
TP7	Central	Soil assessment - general coverage.	Test pit
TP8	Central	Soil assessment - general coverage.	Test pit
TP9	Central	Soil assessment - general coverage.	Test pit
TP10	Central	Soil assessment - general coverage.	Test pit
TP11	East	Soil assessment - general coverage.	Test pit
TP12	Central	Soil assessment - general coverage.	Test pit
TP13	South	Soil assessment - general coverage.	Test pit
TP14	South	Soil assessment - general coverage.	Test pit
BH1	South	Soil assessment - general coverage. The intention was to install a groundwater monitoring well in this location however groundwater was not intercepted so the borehole was backfilled and an alternative location was identified.	Borehole
MW01	West	Soil and groundwater assessment - general coverage.	Borehole

Soil sample locations are presented on **Figure 3**. As far as practicable, the sample locations were evenly distributed across the site. The presence of soft ground and dense population of trees within the vicinity of Eastern Creek imposed some limitations to the sampling distribution.

Note that BH1 was originally intended to be a groundwater monitoring well however groundwater was not encountered within this location (maximum drill depth of eight metres). Test pit, TP10 was subsequently changed into a groundwater monitoring well location (MW3). Test pit and borehole logs are provided in **Appendix G**.

5.2 GROUNDWATER SAMPLING METHODOLOGY

Two groundwater wells (MW1 and MW3) were installed in accordance with *Minimum Requirements for Water Bores in Australia* (LWBC, 2003). The wells were constructed with three-metres of slotted PVC casing. A sand filter pack extended from the base of the borings to 0.5 m above the top of the slotted PVC casing and was sealed with 0.5 m of hydrated bentonite pellets above the sand pack. A cement grout was used to seal the borehole annulus to surface. The wells were finished with end caps and were developed on the day of installation by a surge

and purge method utilising disposable bailers. Well construction details are presented in boring logs (**Appendix G**) and summarised in the **Table 4**.

Table 4: Groundwater Monitoring Well Details

Well Identification	Total Depth (m)	Screened Interval (mbgl)	Depth to Water (mBTOC)
MW1	8.8	8.8 – 2.0	5.05
MW3	6.5	6.5 – 2.0	4.09

mbgl = Metres Below Ground Level
mBTOC = Metres Below Top of Well Casing

Groundwater wells were sampled one week after installation. The samples were collected using dedicated LDPE tubing into each well and placed in 0.5 litre glass amber bottles. The samples were then labelled, placed on ice and transported with a chain of custody form to a NATA Accredited Laboratory.

5.3 QUALITY ASSURANCE / QUALITY CONTROL

Quality assurance procedures adopted for soil assessment included:

- Appropriately trained field personnel;
- Selecting soil samples that had not come into direct contact with sampling equipment;
- Cleaning sampling equipment of soil debris between each sample location;
- Changing disposable gloves between sample locations;
- Placing samples immediate on ice following sampling; and
- Ensuring analysis was performed within recommended holding times.

Quality assurance procedures for groundwater sampling included:

- Dedicated LDPE sample tubing to each well;
- Decontamination of interface probe between samples using fresh water;
- Placing samples immediately on ice following sampling;
- Ensuring correct sample containers and preservation techniques were employed for contaminants being analysed; and
- Ensuring analysis was performed within recommending holding times.

Quality control (QC) sampling was undertaken in general accordance with specifications outlined in AS4482.1. *Guide to Sampling and Investigation of Potentially Contaminated Soil*. Field QC samples are presented in **Table 5**.

Table 5: Field Quality Control Samples

Sample Identification	Sample Type	Sample Matrix	Rate of Collection
QC101	Field duplicate of TP9-0.1-0.15m	Soil	1 in 10 samples
QA/QC1	Field duplicate of MW1	Water	1 in 2 samples

5.4 LABORATORIES

The following NATA Accredited laboratories were engaged to conduct sample analysis:

- Primary laboratory – Envirolab Sydney Laboratory; and
- Secondary laboratory – ALS Sydney Laboratory.

6 ASSESSMENT CRITERIA

6.1 ANALYTICAL TESTING

The following analytical tests were performed:

Soil

- Heavy Metals;
- PAHs;
- TRHs;
- BTEX;
- PCBs;
- OCPs;
- Asbestos;
- Salinity; and
- Nutrient testing.

Groundwater

- Heavy Metals;
- PAHs;
- TRHs;
- BTEX;
- PCBs; and
- OCPs.

6.2 SOIL ASSESSMENT CRITERIA

The following were adopted as Assessment Criteria for soil:

Health investigation levels (HILs) have been developed for a broad range of metals and organic substances. The HILs are applicable for assessing human health risk via all relevant pathways of exposure and are generic to all soil types. For this site the results have been compared against the public open space (HIL C) values.

Health screening levels (HSLs) have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation and direct contact pathways. The HSLs depend on specific soil physicochemical properties, land use scenarios, and

the characteristics of building structures. They apply to different soil types and for this site the results have been compared against the recreational / open space (HSL D) values.

Ecological investigation and screening levels (EILs and ESLs) have been developed for selected metals and organic substances and are applicable for assessing risk to terrestrial ecosystems. EILs depend on specific soil physicochemical properties, whereas ESLs do not, and both are relevant to land use scenarios and apply to the top two metres of soil. EILs take into account depth of contamination, soil texture and age of the impacts, whereas ESLs account only for soil texture.

For the purpose of this investigation, data will be assessed in the context of public open space.

Asbestos Assessment Criteria apply to the assessment of known and suspected asbestos contamination in soil and address friable and non-friable forms of asbestos. The screening levels are scenario-specific likely exposure levels, are based on the proposed recreational end use setting. As such, the HSL for bonded asbestos containing materials (ACM) is 0.05% and 0.001% for asbestos fines and fibrous asbestos and no visible asbestos to be present at the surface.

6.3 GROUNDWATER ASSESSMENT CRITERIA

The following were adopted as Assessment Criteria for groundwater:

Groundwater Investigation Levels (GILS) are adopted from the Australian Drinking Water Guidelines and ANZECC 2000 Guidelines for Fresh and Marine Water Quality. They are not acceptance criteria they are used to trigger further consideration of groundwater contamination when GILS are exceeded.

Fresh water GILs were considered given the nearest point of groundwater discharge is likely to be Eastern Creek (fresh water system) 10-15 metres west of the site. Drinking water GILs were not considered based on no registered abstraction bores within a 500 m radius of the site and the region is surrounded by a reticulated water supply.

7 INVESTIGATION RESULTS

7.1 ENCOUNTERED GROUND CONDITIONS

All sampling locations were found to comprise grass covered, dark brown, topsoil (to a maximum depth of 0.3 mbgl) overlying orange / brown soft to firm shaley CLAY (to a maximum confirmed depth of 1.5 mbgl). The clay was underlain by (weathered) Bringelly Shale of varying depths across the site.

Borehole logs are presented in **Appendix F**.

7.2 VISUAL / OLFACTORY OBSERVATIONS

There were no visual or olfactory indications of contamination within the sample locations.

7.3 SOIL ANALYTICAL RESULTS

7.3.1 Assessment Criteria Screening

The laboratory certificates for the full set of results are presented in **Appendix G**. Comparison of the soil analytical results with the adopted assessment criteria are presented in **Appendix H**.

Heavy Metals

Arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc were not detected in any soil samples at concentrations in excess of the adopted assessment criteria.

Petroleum Hydrocarbons

Petroleum hydrocarbons were not detected in any soil sample at concentrations in excess of the adopted assessment criteria.

Polycyclic Aromatic Hydrocarbons

PAHs were not detected in any soil sample at concentrations in excess of the adopted assessment criteria.

Organochlorine Pesticides

OCPs were not detected in any soil sample at concentrations in excess of the adopted assessment criteria.

Asbestos

Asbestos was not detected in any of the soil samples tested.

7.3.2 Baseline Conditions

Baseline soil analytical results are summarised in **Table 6**.

Table 6: Baseline Soil Analytical Results Summary

Analyte	Minimum	Maximum	Average
TRH C_6-C_9 (mg/kg)	< 25	< 25	< 25
TRH C_6-C_{10} (mg/kg)	< 25	< 25	< 25
TRH C_{10}-C_{14} (mg/kg)	< 50	< 50	< 50
TRH C_{10}-C_{16} (mg/kg)	< 100	< 100	< 100
TRH C_{15}-C_{28} (mg/kg)	< 100	< 100	< 100
TRH C_{29}-C_{36} (mg/kg)	< 100	< 100	< 100
TRH C_{16}-C_{34} (mg/kg)	< 100	< 100	< 100
vTPH C_6-C_{10} less BTEX (F1) (mg/kg)	< 25	< 25	< 25
TRH C_{10}-C_{16} less Naphthalene (F2) (mg/kg)	< 50	< 50	< 50
Benzene (mg/kg)	< 0.2	< 0.2	< 0.2

Analyte	Minimum	Maximum	Average
Toluene (mg/kg)	< 0.5	< 0.5	< 0.5
Ethylbenzene (mg/kg)	< 1	< 1	< 1
Xylenes (mg/kg)	< 3	< 3	< 3
Naphthalene (mg/kg)	< 1	< 1	< 1
Lead (mg/kg)	< 4	22	14
Arsenic (mg/kg)	< 4	10	6
Cadmium (mg/kg)	< 0.4	< 0.4	< 0.4
Chromium (mg/kg)	3	25	14
Copper (mg/kg)	5	32	16
Mercury (mg/kg)	< 0.1	< 0.1	< 0.1
Nickel (mg/kg)	3	27	7
Zinc (mg/kg)	7	66	29
OCPs (mg/kg)	< 0.1	< 0.1	< 0.1
PCBs (mg/kg)	< 0.1	< 0.1	< 0.1

7.3.3 Fertility / Salinity

Soil fertility and salinity results are summarised in **Table 7** below.

Table 7: Soil Fertility Results Summary

Parameter / Analyte	Minimum	Maximum	Average
pH	5.2	7.1	5.9
Total Organic Carbon	1,300	20,000	5,650
Electrical Conductivity (µS/cm)	29	880	431
Chloride (mg/kg)	< 10	1,000	527.5
Sulphate (mg/kg)	< 10	370	189
Phosphate (mg/kg)	< 0.5	< 0.5	< 0.5
Nitrate (mg/kg)	< 0.5	< 0.5	< 0.5
Total Nitrogen (mg/kg)	290	1,200	560
Boron (mg/kg)	< 3	< 3	< 3
Ammonia as N (mg/kg)	0.6	9.0	2.9
Estimated Salinity (mg/kg)	97	2,500	1,457
Calcium (mg/kg)	8	470	122
Potassium (mg/kg)	410	830	658
Magnesium (mg/kg)	450	3,400	2,023
Sodium (mg/kg)	100	2,600	1,571
Lead (mg/kg)	< 4	22	14
Arsenic (mg/kg)	< 4	10	6
Cadmium (mg/kg)	< 0.4	< 0.4	< 0.4
Chromium (mg/kg)	3	25	14
Copper (mg/kg)	5	32	16
Mercury (mg/kg)	< 0.1	< 0.1	< 0.1
Nickel (mg/kg)	3	27	7
Zinc (mg/kg)	7	66	29
Phosphorus (mg/kg)	40	1,800	424
Estimated Salinity (mg/kg)	97	2,500	1,457

To be considered healthy, plants need a steady supply of nutrients from the soil. Required in relatively large quantities are macronutrients (nitrogen, phosphorus, potassium, sulphur, calcium

and magnesium). Other nutrients are required in smaller quantities and are known as micronutrients or trace elements (copper, zinc, iron and boron). A shortage or absence of any of these essential nutrients can severely affect plant growth. The average encountered concentrations presented in **Table 7** indicate that the soils at the site are fertile.

Consideration of pH is required when planning nutrient management programmes. With an average pH of 5.9 soils at the site can be described as slightly acidic. Soils of this type can be managed with the addition of lime. Alternatively, plant species that are not sensitive to acidic conditions should be selected.

7.4 GROUNDWATER ANALYTICAL RESULTS

7.4.1 Assessment Criteria Screening

The laboratory certificates for the full set of results are presented in **Appendix G**. Comparison of the groundwater analytical results with the adopted assessment criteria are presented in **Appendix H**.

Heavy Metals

Arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc were not detected in any groundwater samples at concentrations in excess of Tier 1 Assessment Criteria.

Petroleum Hydrocarbons

Petroleum hydrocarbons were not detected in any groundwater samples at concentrations in excess of Tier 1 Assessment Criteria.

Polycyclic Aromatic Hydrocarbons

PAHs were not detected in any groundwater samples at concentrations in excess of Tier 1 Assessment Criteria.

7.4.2 Baseline Conditions

Baseline groundwater analytical results are summarised in **Table 8**.

Table 8: Baseline Groundwater Analytical Results Summary

Analyte	Minimum	Maximum	Average
TRH C_6-C_9 (mg/kg)	< 10	< 10	< 10
TRH C_6-C_{10} (mg/kg)	< 10	< 10	< 10
TRH C_{10}-C_{14} (mg/kg)	< 50	< 50	< 50
TRH C_{10}-C_{16} (mg/kg)	< 50	< 50	< 50
TRH C_{15}-C_{28} (mg/kg)	< 100	< 100	< 100
TRH C_{29}-C_{36} (mg/kg)	< 100	< 100	< 100
TRH C_{16}-C_{34} (mg/kg)	< 100	< 100	< 100
vTPH C_6-C_{10} less BTEX (F1) (mg/kg)	< 10	< 10	< 10
TRH C_{10}-C_{16} less Naphthalene (F2) (mg/kg)	< 50	< 50	< 50

Analyte	Minimum	Maximum	Average
Benzene (mg/kg)	< 1	< 1	< 1
Toluene (mg/kg)	< 1	< 1	< 1
Ethylbenzene (mg/kg)	< 1	< 1	< 1
Xylenes (mg/kg)	< 1	< 1	< 1
Naphthalene (mg/kg)	< 1	< 1	< 1
Lead (mg/kg)	7	< 1	6
Arsenic (mg/kg)	4	3	3
Cadmium (mg/kg)	< 0.1	0.2	0.1
Chromium (mg/kg)	< 1	6	4
Copper (mg/kg)	1	18	11
Mercury (mg/kg)	< 0.05	< 0.05	< 0.05
Nickel (mg/kg)	7	10	9
Zinc (mg/kg)	30	51	42
OCPs (mg/kg)	< 0.2	< 0.2	< 0.2
PCBs (mg/kg)	< 2	< 2	< 2

7.5 QUALITY ASSURANCE / QUALITY CONTROL RESULTS

Soil and groundwater duplicate results are within the adopted acceptance criteria of 30-50% (AS4482.1). CES accepts the integrity of the data.

8 SUMMARY AND RECOMMENDATIONS

On the basis of the findings of this assessment:

- The site covers an area of approximately 16.5 hectares and is undeveloped and largely covered in long grass and a scattering of trees;
- The nearest surface water receptor is Eastern Creek located to the west of the site;
- The site is located within a UPSS environmentally sensitive zone, as such it is recommended that robust environmental management measures are implemented during construction, operation and maintenance in the event that underground storage tanks are installed;
- All sampling locations were found to comprise grass covered, dark brown, topsoil (to a maximum depth of 0.3 mbgl) overlying orange / brown soft to firm shaley CLAY (to a maximum confirmed depth of 1.5 mbgl). The clay was underlain by (weathered) Shale of varying depths across the site;
- Groundwater was encountered at depths of between 4.09 and 5.05 mbTOC;
- All soil samples collected and analysed reported concentrations of COPCs below the site screening levels, ILs and/or laboratory limit of reporting (LOR); and
- All groundwater samples collected and analysed reported concentrations of COPCs below the site screening levels, ILs and/or LOR.

The soil and groundwater concentrations detected by the laboratory within this investigation are representative of baseline environmental conditions. Generally, the site is not contaminated, based on the low levels of COPC detected by the laboratory in the locations subjected to investigation.

Based on the results of this investigation, the site is suitable for redevelopment as a zoo without the need for further assessment or remediation.

The soils have been assessed for a standard nutrient/soil fertility suite and are presented in **Table 7** and can be used to describe the for soil matching purposes as part of the tree acquisition process.

9 LIMITATIONS OF THIS REPORT

This report has been prepared for use by the client who commissioned the works in accordance with the project brief and based on information provided by the client. The advice contained in this report relates only to the current project and all results, conclusions and recommendations should be reviewed by a competent person with experience in geotechnical and environmental investigations before being used for any other purpose. CES accepts no liability for use or interpretation by any person or body other than the client. This report must not be reproduced except in full and must not be amended in any way without prior approval by the client and CES.

This report does not provide a complete assessment of the environmental status of the site and is limited to the scope defined therein. It is noted that areas of the site could not be investigated due to the presence of structures including the residential property and presence of ponds. Should information become available regarding conditions at the site including previously unknown sources of contamination, CES reserves the right to review the report in the context of the additional information.

10 REFERENCES

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NEPC, 1999: National Environment Protection Council (1999*).* National Environment Protection (Assessment of Site Contamination) Measure. *Schedule B(2) Guideline on Site Characterisation.*

NEPC, 1999: National Environment Protection Council (1999*).* National Environment Protection (Assessment of Site Contamination) Measure. *Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils.*

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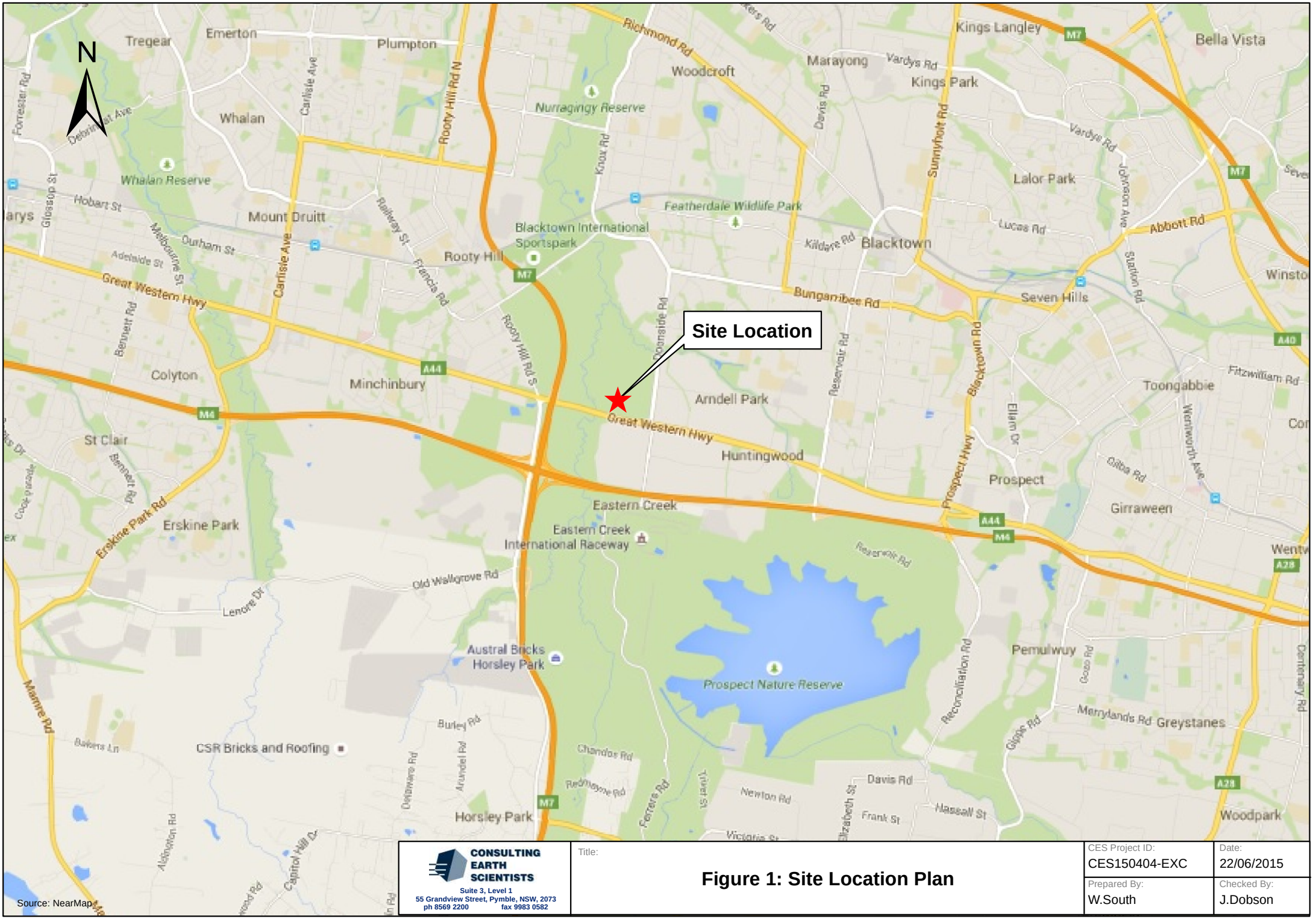
New South Wales Natural Resource Atlas, (www.nratlas.nsw.gov.au)

Figures



CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble, NSW, 2073
ph 8569 2200 fax 9983 0582

Title:

Figure 1: Site Location Plan

CES Project ID:	Date:
CES150404-EXC	22/06/2015
Prepared By: W.South	Checked By: J.Dobson

CONSULTING EARTH SCIENTISTS
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Title:

Figure 2: Site Layout Plan

Source: NearMaps 2015

CES Project ID:	Date:
CES150404-EXC	23/06/2015
Prepared By:	Checked By:
W.South	J.Dobson

Legend

- Lot 11 (Site Boundary)
- Eastern Creek

CONSULTING EARTH SCIENTISTS
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Title:

Figure 3: Site Invesitgation Plan

0 25 50 75 100
Meters

Source: NearMaps 2015

CES Project ID:	Date:
CES150404-EXC	23/06/2015
Prepared By:	Checked By:
W.South	J.Dobson

Appendix A
Lot Search

Lotsearch

Environmental Risk and Planning Report

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Report Buffer: 1000m

Report Date: 21 May 2015 12:28:38

Disclaimer:
The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features.
In the preparation of this report, Lotsearch has relied on data provided by third parties and while all reasonable care to ensure that the information in this report is reasonable, it does not warrant or represent that it is free from errors or omissions or that it is exhaustive, or that it is the most current available.
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You should obtain independent advice before you make any decision based on the information within the report. You accept sole responsibility and risk associated with the use and results of information displayed in this report.

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Location Confidences

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

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

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	No. Features Onsite	No. Features within 100m	No. Features in Report Buffer
Cadastre Boundaries	Land and Property Information	14/01/2015	14/01/2015	As required	-	-	-
Topographic Data	Land and Property Information	10/04/2015	01/04/2015	As required	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	11/05/2015	04/05/2015	Monthly	0	0	0
Contaminated Land: Records of Notice	Environment Protection Authority	24/04/2015	24/04/2015	Monthly	0	0	0
Former Gasworks	Environment Protection Authority	24/04/2015	10/05/2013	Monthly	0	0	0
National Waste Management Site Database	Geoscience Australia	08/04/2015	16/11/2014	Quarterly	0	0	0
UPSS Environmentally Sensitive Zones	Department of Environment, Climate Change and Water (NSW)	14/04/2015	12/01/2010	As required	1	1	1
Tanks (Areas)	Land and Property Information	10/04/2015	01/04/2015	As required	0	0	0
Tanks (Points)	Land and Property Information	10/04/2015	01/04/2015	As required	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	24/04/2015	24/04/2015	Monthly	0	2	7
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	24/04/2015	24/04/2015	Monthly	0	0	4
Former POEO Licenced Activities now revoked or surrendered	Environment Protection Authority	24/04/2015	24/04/2015	Monthly	3	3	5
Points of Interest	Land and Property Information	10/04/2015	01/04/2015	As required	1	1	28
Easements	Land and Property Information	14/01/2015	14/01/2015	As required	0	0	5
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1	1	1
Groundwater Boreholes	NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation	16/09/2014	22/11/2012	Every 2 Years	0	0	0
Geological Units 1:100,000	NSW Department of Trade and Investment, Regional Infrastructure and Services	20/08/2014		None planned	2	-	3
Geological Structures 1:100,000	NSW Department of Trade and Investment, Regional Infrastructure and Services	20/08/2014		None planned	0	-	1
Soil Landscapes	NSW Office of Environment and Heritage	12/08/2014		None planned	2	0	2
Acid Sulfate Soils	NSW Planning and Environment	19/06/2014	11/09/2013	Quarterly	0	-	-
Dryland Salinity Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1	0	2
Mining Subsidence Districts	Land and Property Information	14/01/2015	14/01/2015	As required	0	-	0
SEPP 14 - Coastal Wetlands	NSW Planning and Environment	01/07/2014	24/10/2008	Annually	0	0	0
SEPP 26 - Littoral Rainforest	NSW Planning and Environment	01/07/2014	01/01/1986	Annually	0	0	0
SEPP 71 - Coastal Protection	NSW Planning and Environment	01/07/2014	30/11/2005	Annually	0	0	0
SEPP Major Developments 2005	NSW Planning and Environment	09/03/2013	25/05/2005	Under Review	0	2	2
SEPP Strategic Land Use Areas	NSW Planning and Environment	04/05/2015	01/05/2015	Annually	0	0	0
Local Environmental Plan - Land Zoning	NSW Planning and Environment	16/05/2015	15/05/2015	Weekly	0	0	0
Local Environmental Plan - Minimum Subdivision Lot Size	NSW Planning and Environment	16/05/2015	15/05/2015	Weekly	0	-	-
Local Environmental Plan - Height of Building	NSW Planning and Environment	16/05/2015	15/05/2015	Weekly	0	-	-
Local Environmental Plan - Floor Space Ratio	NSW Planning and Environment	16/05/2015	15/05/2015	Weekly	0	-	-
Local Environmental Plan - Land Application	NSW Planning and Environment	16/05/2015	15/05/2015	Weekly	0	-	-
Local Environmental Plan - Land Reservation Acquisition	NSW Planning and Environment	16/05/2015	15/05/2015	Weekly	0	-	-

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	No. Features Onsite	No. Features within 100m	No. Features in Report Buffer
State Heritage Items	NSW Planning and Environment	16/05/2015	28/03/2014	Quarterly	0	1	2
Local Heritage Items	NSW Planning and Environment	16/05/2015	15/05/2015	Weekly	0	0	0
Remnant Vegetation of the Cumberland Plain	NSW Office of Environment and Heritage	07/10/2014	04/08/2011	Unknown	11	19	98
RAMSAR Wetlands	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	0	0	0
ATLAS of NSW Wildlife	NSW Office of Environment and Heritage	21/05/2015	21/05/2015	Daily	-	-	-

Site Location - Aerial Imagery 2014

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Contaminated Land

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

List of NSW contaminated sites notified to EPA

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

Map Id	Site	Address	Suburb	Activity	EPA site management class	Status	Dist	Direction	LC
N/A	No records in buffer								

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

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

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Contaminated Land

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Contaminated Land: Record of Notices

Record of Notices within the report buffer:

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

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

Former Gasworks

Former Gasworks within the report buffer:

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

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

Waste Management Facilities

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

National Waste Management Site Database

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

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

Wate Management Facilities Data Source: Australian Governement Geoscience Australia
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Tanks & Underground Storage

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Underground Petroleum Storage Systems

Is the site within a UPSS Regulation Environmentally Sensitive Zone?

Yes

UPSS Data Source: Environment Protection Authority
© Department of Environment, Climate Change and Water (NSW)

Tanks (Areas)

What are the Tank Areas located within the report buffer?

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

Tanks (Points)

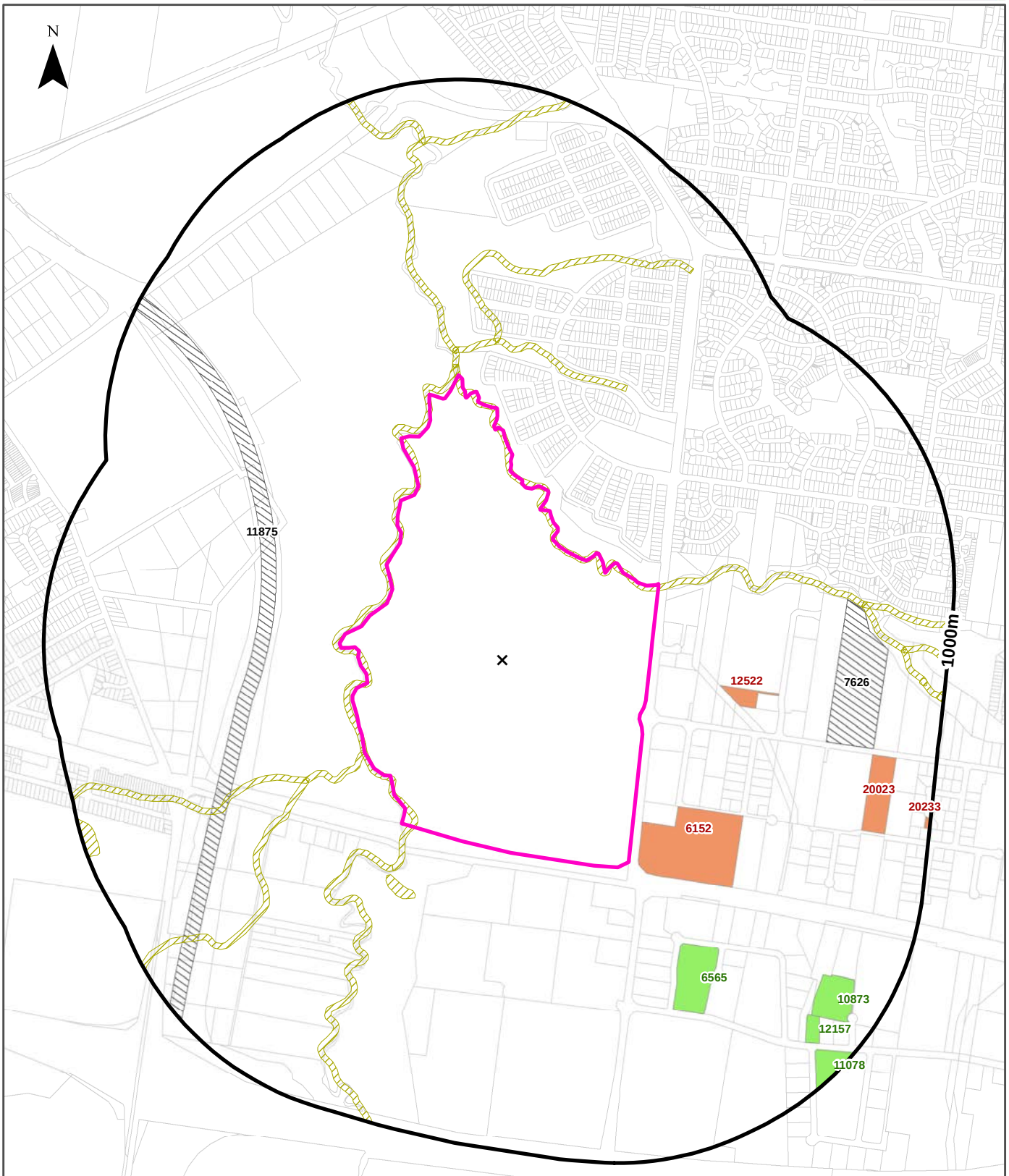
What are the Tank Points located within the report buffer?

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

Tanks Data Source: © Land and Property Information (2015)
Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

EPA Activities

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



EPA Activities

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Licensed Activities under the POEO Act 1997

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

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
6152	TOLL NORTH PTY LTD	TOLL CHEMICAL LOGISTICS	616 GREAT WESTERN HIGHWAY	ARNDELL PARK	General chemicals storage	1	31m	South East
6152	TOLL NORTH PTY LTD	TOLL CHEMICAL LOGISTICS	616 GREAT WESTERN HIGHWAY	ARNDELL PARK	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	1	31m	South East
12522	ONESTEEL COIL COATERS PTY LTD	Coil Coaters Pty Ltd	3A Contaplas Street	ARNDELL PARK	Metal coating	1	243m	East
12522	ONESTEEL COIL COATERS PTY LTD	Coil Coaters Pty Ltd	3A Contaplas Street	ARNDELL PARK	Metal waste generation	1	243m	East
20023	ELGAS LTD	Elgas	22 Holbeche Road	ARNDELL PARK	Petroleum products storage	1	770m	East
20233	STATE WASTE SERVICES (NSW) PTY LIMITED	9 Kenoma Place, Arndell Park NSW 2148	9 Kenoma Place	ARNDELL PARK	Non-thermal treatment of hazardous and other waste	1	980m	East
20233	STATE WASTE SERVICES (NSW) PTY LIMITED	9 Kenoma Place, Arndell Park NSW 2148	9 Kenoma Place	ARNDELL PARK	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	1	980m	East

POEO Licence Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Delicensed Activities still regulated by the EPA

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

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
6565	SONY DADC AUSTRALIA PTY LIMITED	SONY DADC	60 HUNTINGWOOD DRIVE	HUNTINGWOOD	Hazardous, Industrial or Group A Waste Generation or Storage	1	330m	South East
10873	SIGMA COACHAIR GROUP PTY LTD	SIGMA COACHAIR GROUP PTY LTD	3 Distillers Place	HUNTINGWOOD	Hazardous, Industrial or Group A Waste Generation or Storage	1	759m	South East
12157	WARTSILA AUSTRALIA PTY LTD	Wartsila Australia Pty Ltd	48 Huntingwood Drive	HUNTINGWOOD	Hazardous, Industrial or Group A Waste Generation or Storage	1	795m	South East
11078	SCIENTIFIC GAMES PRODUCTS (AUSTRALIA) PTY LTD	SCIENTIFIC GAMES PRODUCTS (AUSTRALIA) PTY LTD	4 Ford Street	HUNTINGWOOD	Hazardous, Industrial or Group A Waste Generation or Storage	2	896m	South East

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

EPA Activities

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

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

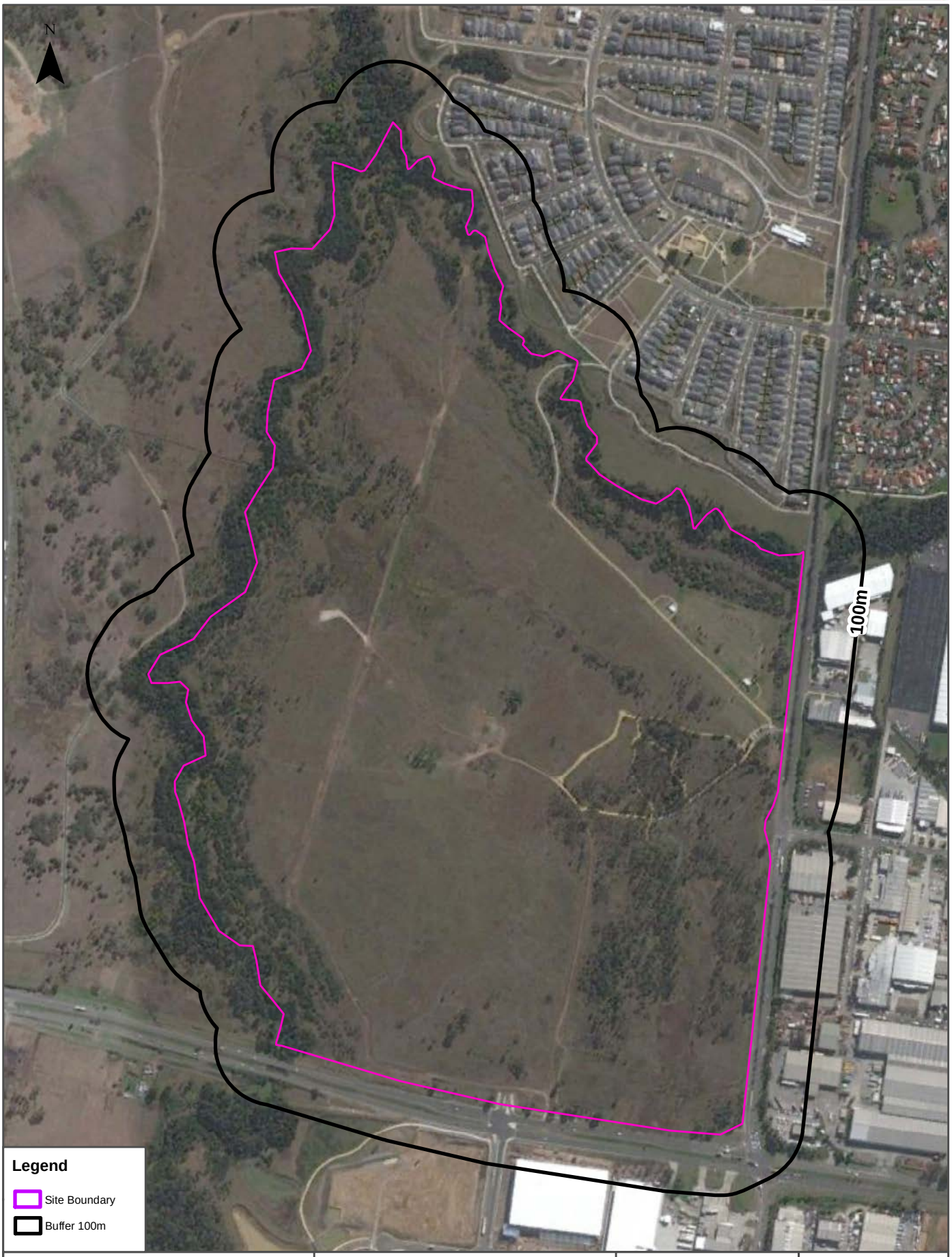
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the report buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	0m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	0m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	0m	-
11875	LEND LEASE ENGINEERING PTY LIMITED	FROM CONNECTION WITH M5 AT CAMDEN VALLEY WAY TO CONNECTION WITH M2 AT BAULKHAM HILLS, BLACKTOWN, NSW 2148	Surrendered	10/04/2003	Crushing, grinding or separating, Road construction, Concrete works	3	233m	South
7626	VERSACOLD LOGISTICS LIMITED	21 HOLBECHE ROAD, ARNDELL PARK, NSW 2148	Surrendered	11/09/2000	Hazardous, Industrial or Group A Waste Generation or Storage	1	621m	East

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

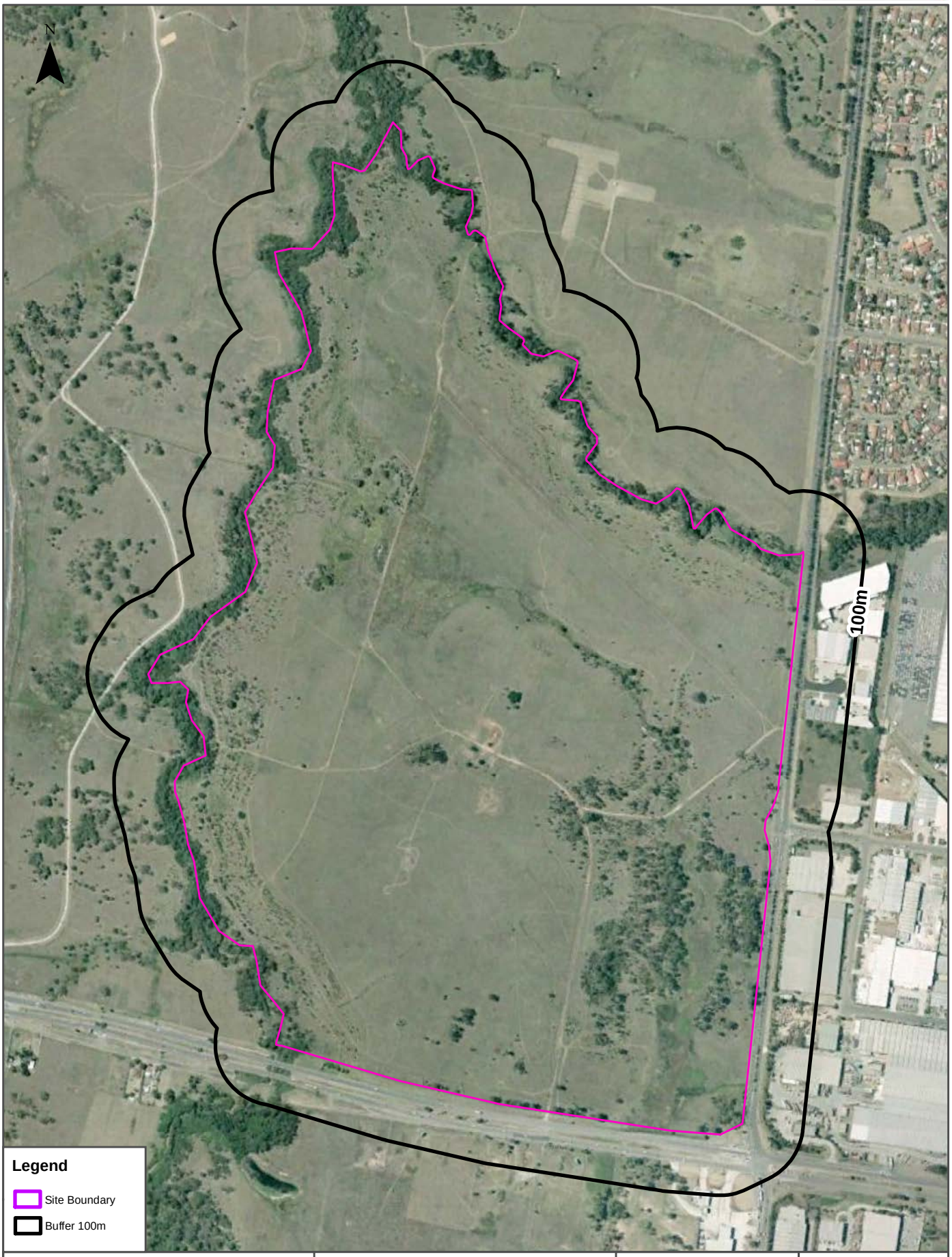
Aerial Imagery 2014

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



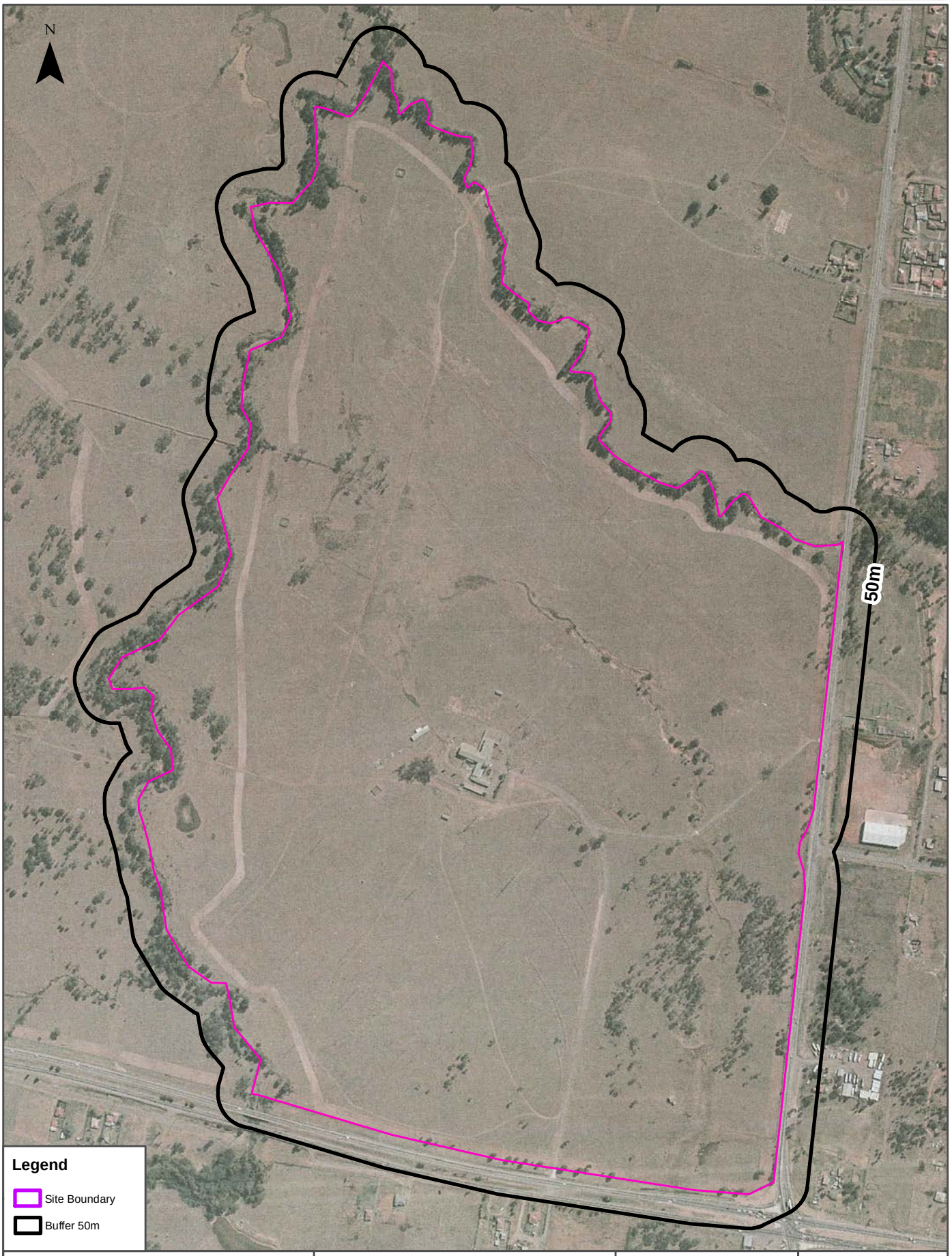
Aerial Imagery 2009

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



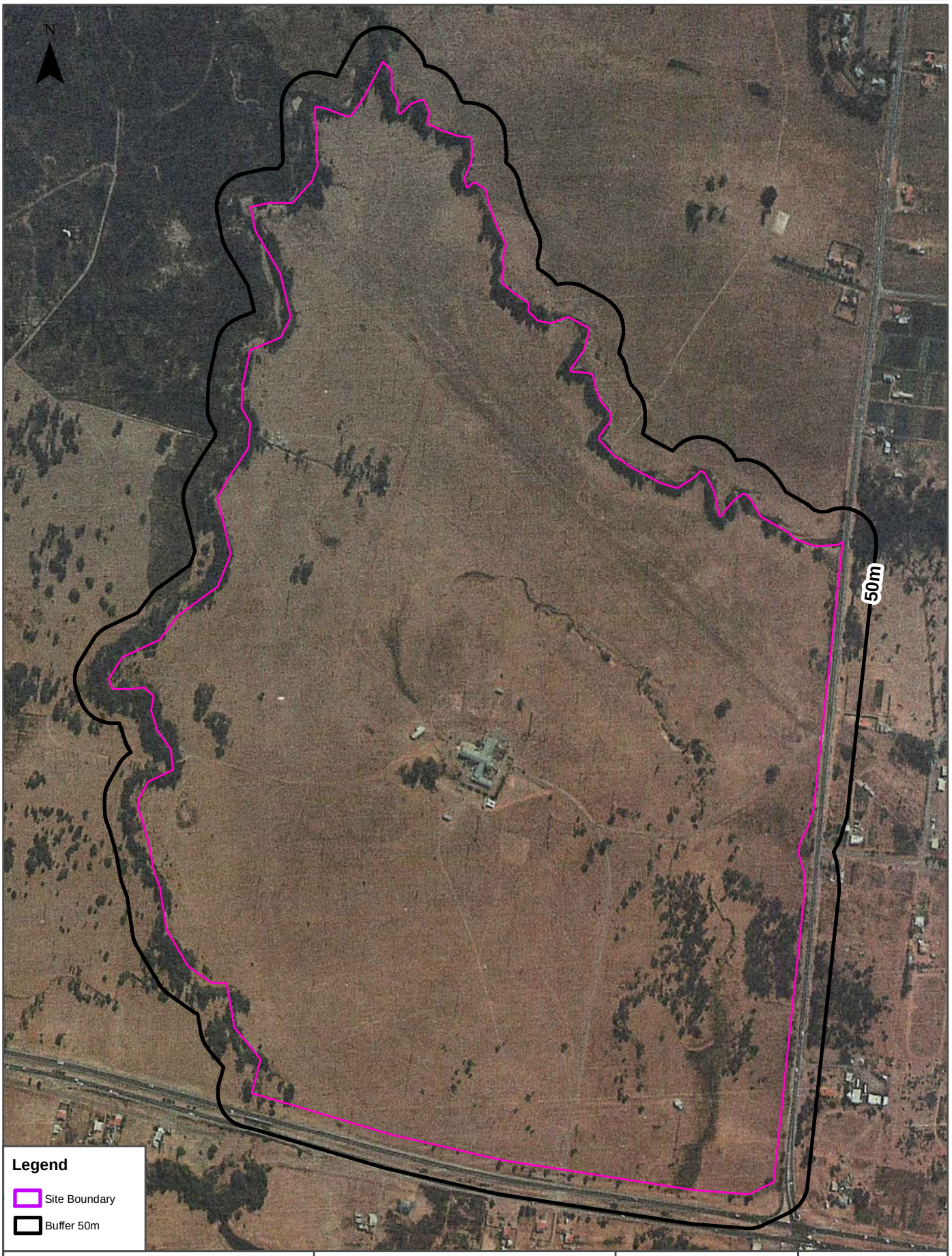
Aerial Imagery 1991

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



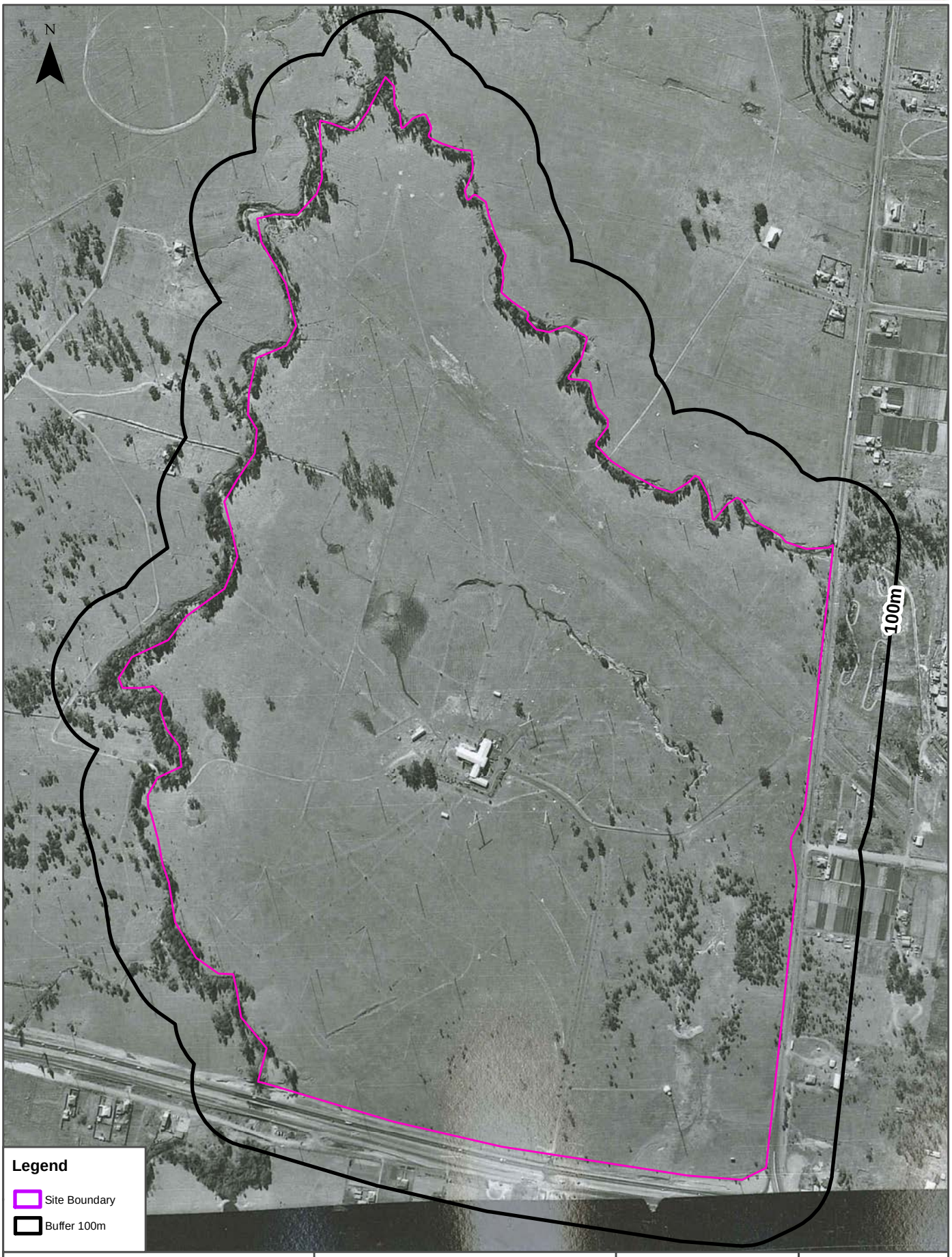
Aerial Imagery 1982

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



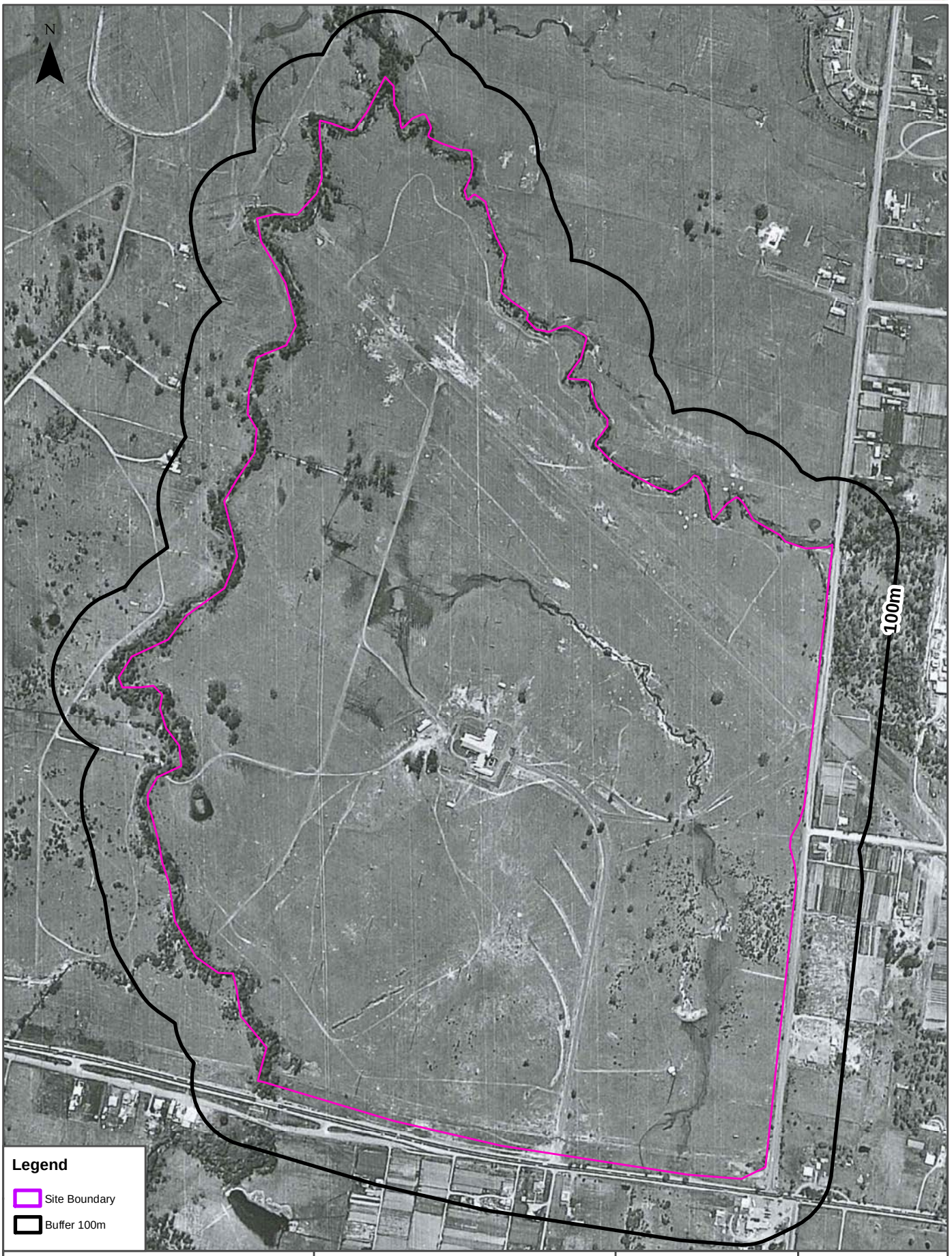
Aerial Imagery 1970

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



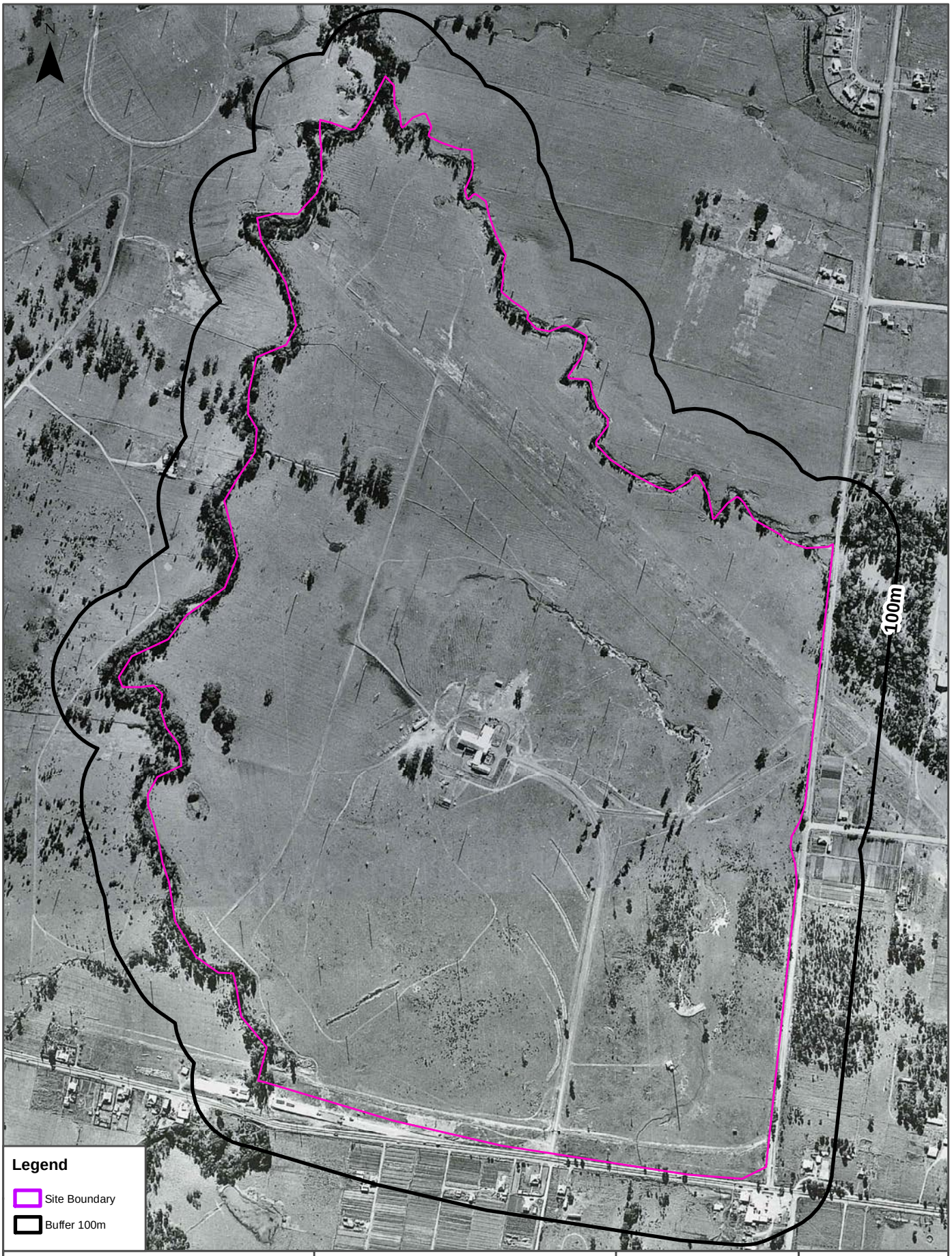
Aerial Imagery 1965

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



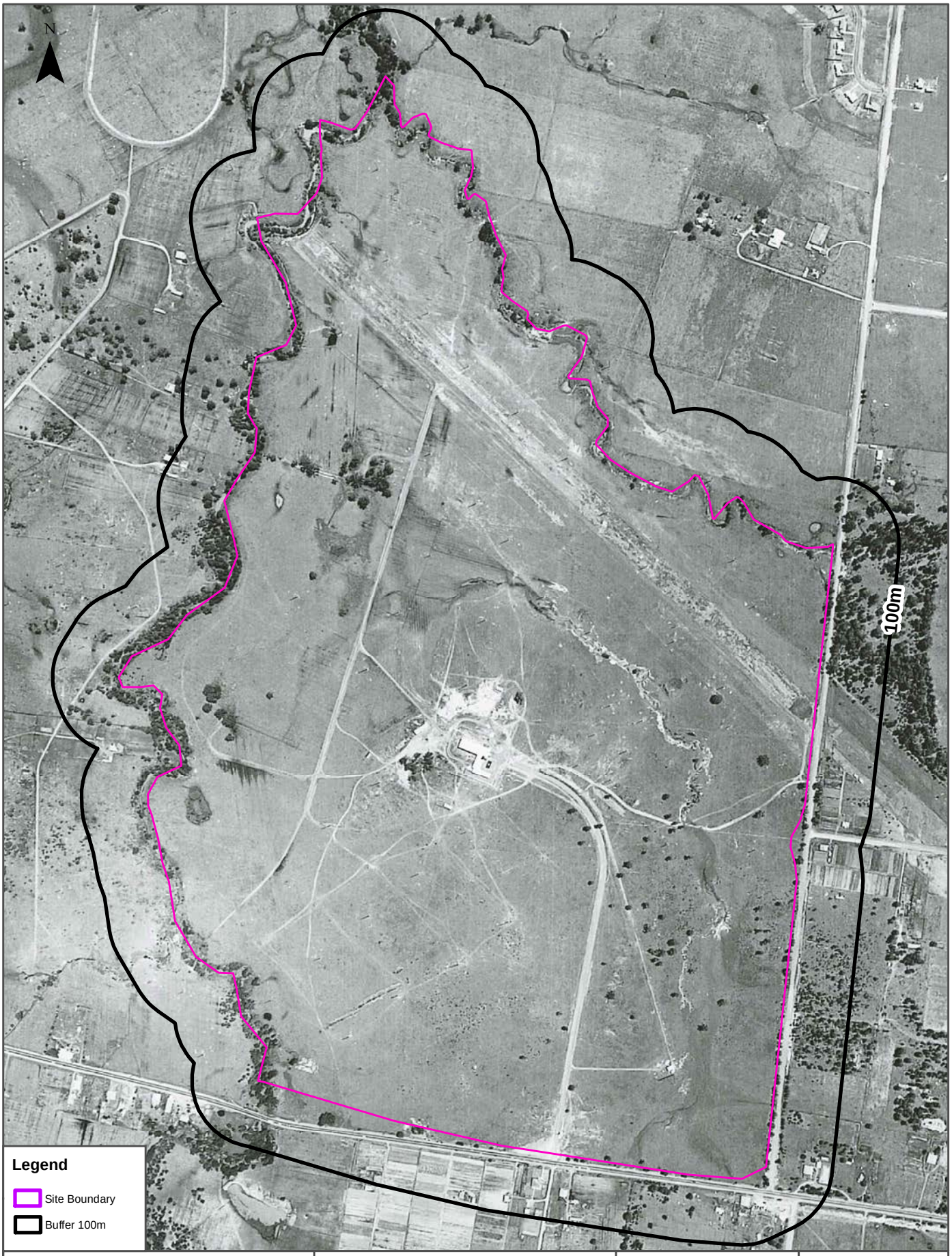
Aerial Imagery 1961

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



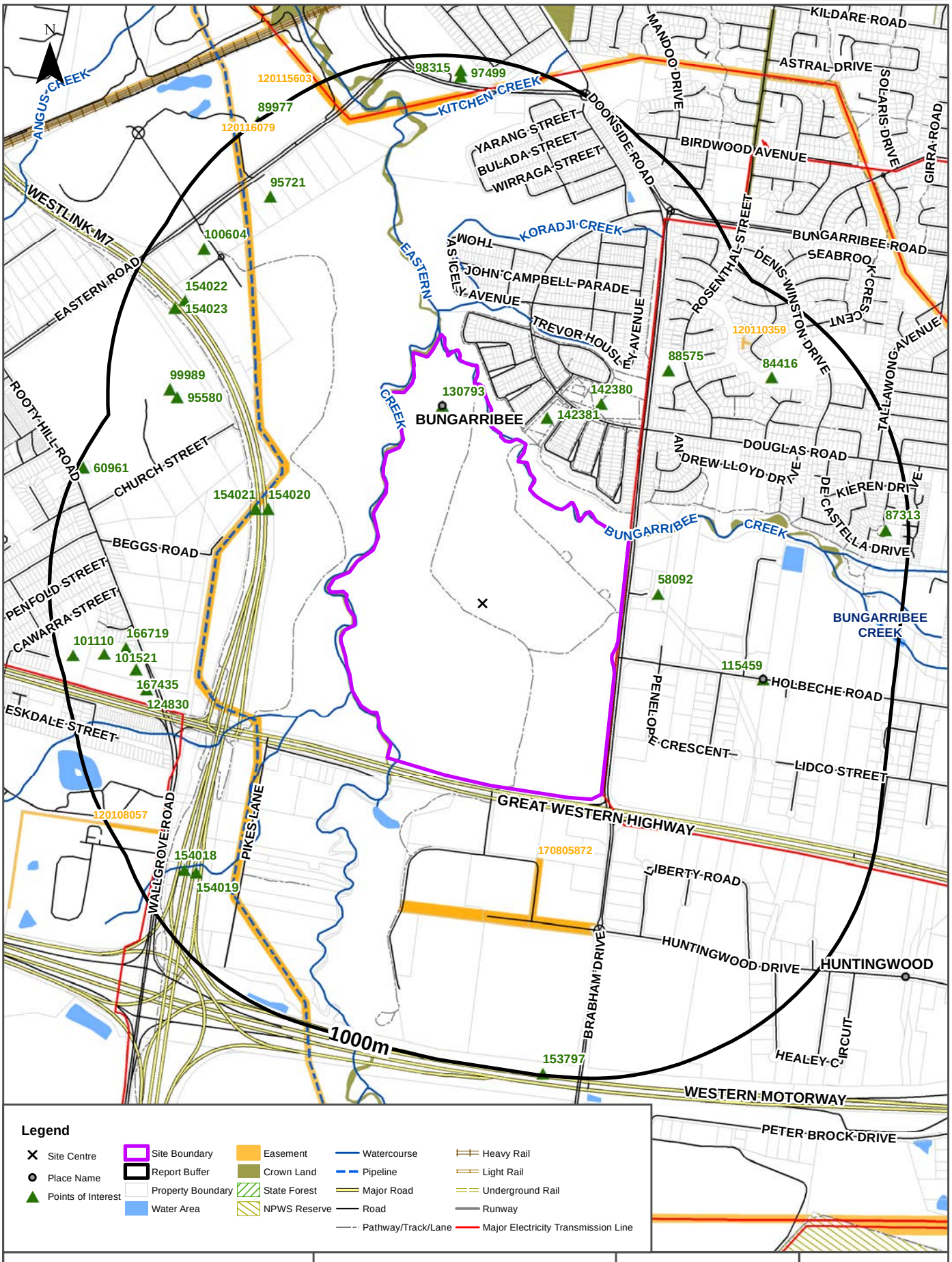
Aerial Imagery 1956

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



Topographic Data

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



Legend

Site Centre	Site Boundary	Easement	Watercourse	Heavy Rail
Place Name	Report Buffer	Crown Land	Pipeline	Light Rail
Points of Interest	Property Boundary	State Forest	Major Road	Underground Rail
	Water Area	NPWS Reserve	Road	Runway
			Pathway/Track/Lane	Major Electricity Transmission Line

Scale: 0 100 200 400 Meters

Data Sources: Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2014

Coordinate System: GDA 1994 MGA Zone 56

Date: 21/05/2015

Topographic Data

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Points of Interest

What Points of Interest exist within the report buffer?

Map Id	Feature Type	Label	Distance	Direction
130793	Suburb	BUNGARRIBEE	0m	North
142381	Park	WAWARRAWARRI PARK	122m	North
58092	Place Of Worship	Place Of Worship	124m	East
142380	Park	BUNGARRIBEE HOMESTEAD PARK	307m	North East
154020	Roadside Emergency Telephone	METS46S1	345m	North West
154021	Roadside Emergency Telephone	METS46N1	378m	North West
115459	Suburb	ARNDELL PARK	533m	East
88575	Park	Park	575m	North East
124830	Rural Firestation	ROOTY HILL RFB	715m	West
167435	Primary School	EASTERN CREEK PUBLIC SCHOOL	740m	West
84416	Park	Park	751m	North East
95580	Park	MORREAU RESERVE	751m	North West
166719	Preschool	EASTERN CREEK PUBLIC SCHOOL PRESCHOOL	756m	West
95721	Park	ANNE AQUILINA RESERVE	759m	North West
99989	Sports Field	Sports Field	777m	North West
154022	Roadside Emergency Telephone	METS48S1	797m	North West
154019	Roadside Emergency Telephone	METS43S1	798m	South West
154023	Roadside Emergency Telephone	METS48N1	819m	North West
154018	Roadside Emergency Telephone	METS43N1	829m	South West
100604	Sports Field	Sports Field	836m	North West
101521	Sports Field	Sports Field	837m	West
87313	Park	Park	917m	East
97499	Sports Court	BASKETBALL COURT	928m	North
101110	Sports Field	COR BROUWER RESERVE	946m	West
98315	Sports Court	TENNIS COURTS	950m	North
60961	Place Of Worship	PRESBYTERIAN CHURCH	978m	West
153797	Roadside Emergency Telephone	366	993m	South
89977	Park	AQUILINA RESERVE	999m	North West

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

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Easements

What Easements exist within the report buffer?

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
170805872	Primary	Right of way	Var	234m	South
120116079	Primary	Undefined		338m	South West
120110359	Primary	Undefined		769m	North East
120115603	Primary	Undefined		805m	East
120108057	Primary	Undefined		844m	South West

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

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the report buffer:

Description
Porous, extensive aquifers of low to moderate productivity

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

Groundwater Boreholes

Boreholes within the report buffer:

GW No.	Licence No	Work Type	Owner Type	Contractor	Completed Date	Final Depth	Drilled Depth	Salinity	SWL	Yield	Elevation	Dist	Direction
N/A	No records in buffer												

Borehole and Drill Log Data Source : NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation

Hydrogeology & Groundwater

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Driller's Logs

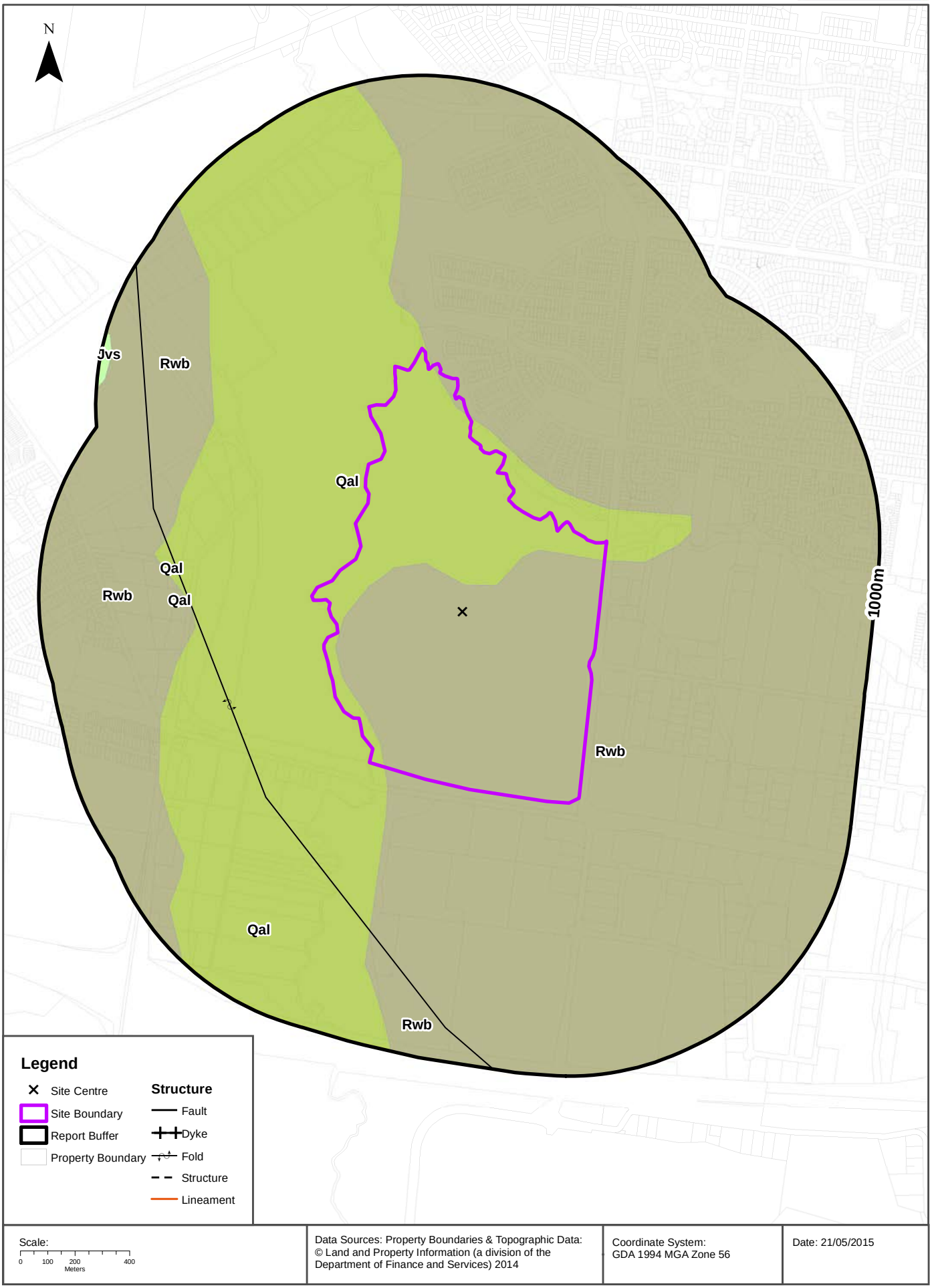
Drill log data relevant to the boreholes within the report buffer:

Groundwater No	Drillers Log	Distance	Direction
No related drill log data			

Borehole and Drill Log Data Source : NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation

Geology 1:100,000

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



Geology

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Age	Dom Lith	Map Sheet	Dataset
Qal	Fine-grained sand, silt and clay			Quaternary		Penrith	1:100,000
Rwb	Shale, carbonaceous claystone,claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff	Bringelly Shale	Wianamatta Group (undifferentiated)	Middle Triassic		Penrith	1:100,000

What are the Geological Units within the report buffer?

Symbol	Description	Unit Name	Group	Age	Dom Lith	Map Sheet	Dataset
Jvs	Volcanics			Cretaceous		Penrith	1:100,000
Qal	Fine-grained sand, silt and clay			Quaternary		Penrith	1:100,000
Rwb	Shale, carbonaceous claystone,claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff	Bringelly Shale	Wianamatta Group (undifferentiated)	Middle Triassic		Penrith	1:100,000

Geological Structures

What are the Geological Structures onsite?

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

What are the Geological Structures within the report buffer?

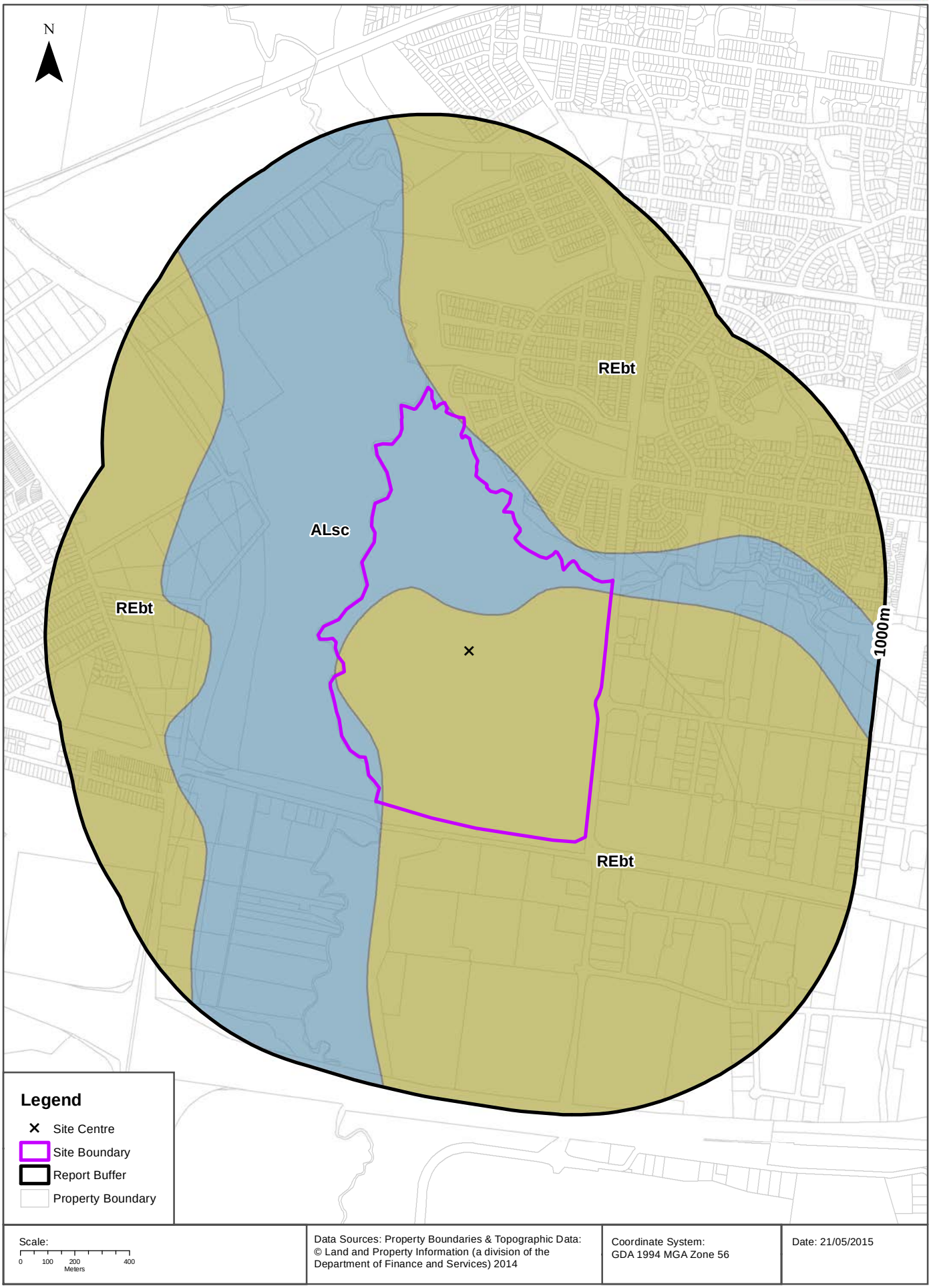
Feature	Name	Description	Map Sheet	Dataset
Fold	Penrith Basin	Fold, position accurate	Penrith	1:100,000

Geological Data Source : NSW Department of Trade and Investment

© State of New South Wales through the Department of Trade and Investment, Regional Infrastructure and Services

Soil Landscapes

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



Soils

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALsc	SOUTH CREEK		ALLUVIAL	Penrith	1:100,000
REbt	BLACKTOWN		RESIDUAL	Penrith	1:100,000

What are the Soil Landscapes within the report buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALsc	SOUTH CREEK		ALLUVIAL	Penrith	1:100,000
REbt	BLACKTOWN		RESIDUAL	Penrith	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage
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Acid Sulfate Soils

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Acid Sulfate Soils

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

Soil Class	Description
N/A	

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

Soil Class	Description	Distance	Direction
N/A			

Acid Sulfate Data Source Accessed 13/01/2015: NSW Crown Copyright - Planning and Environment
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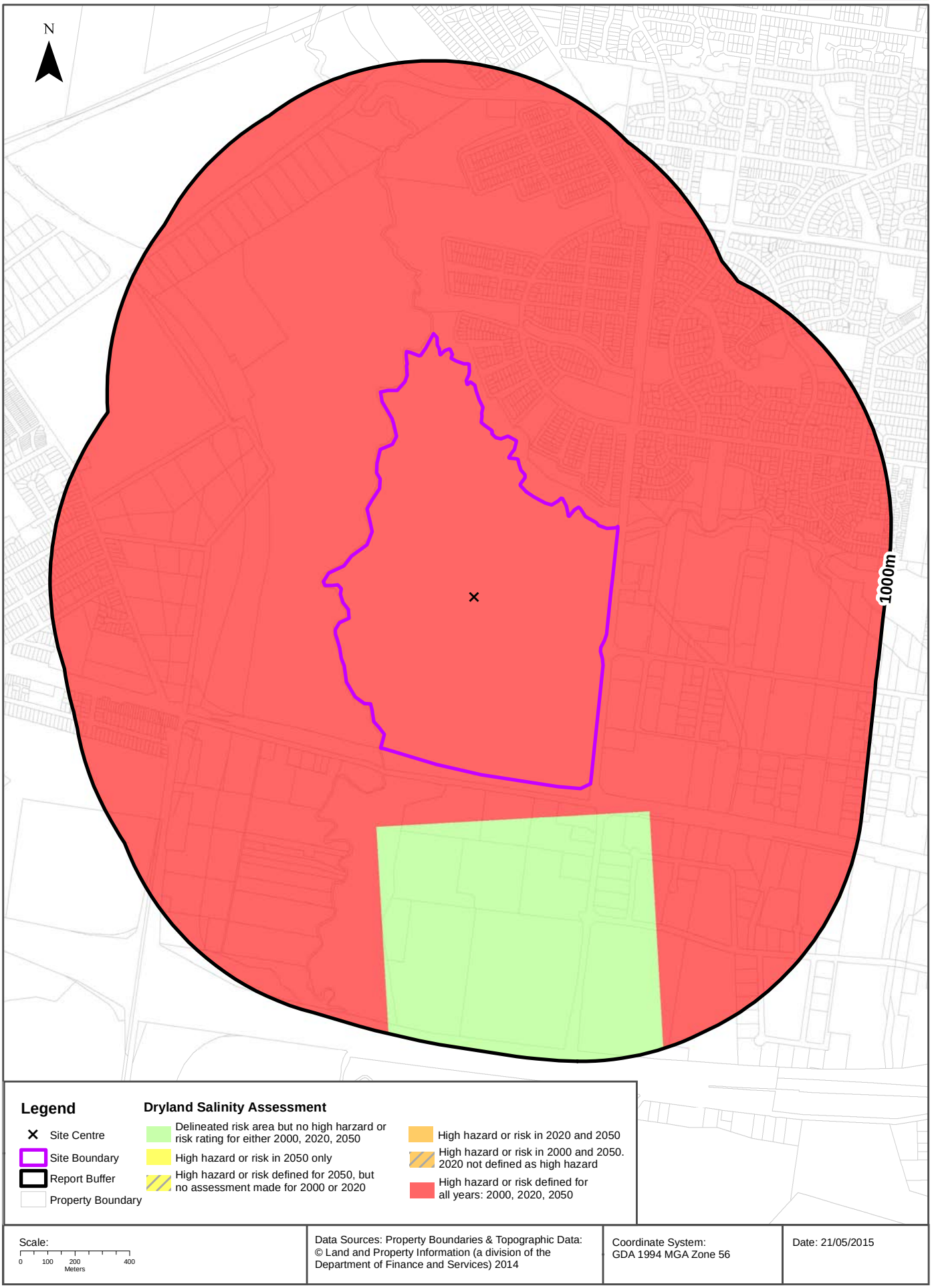
Dryland Salinity

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



Dryland Salinity

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Dryland Salinity

Is there onsite Dryland Salinity data?

Yes

If yes, what Dryland Salinity assessments are given?

Map Id	Assessment 2000	Assessment 2020	Assessment 2050
51573	High hazard or risk	High hazard or risk	High hazard or risk

Is there Dryland Salinity data within the report buffer?

Yes

If yes, what Dryland Salinity assessments are given?

Map Id	Assessment 2000	Assess2020	Assessment 2050
51573	High hazard or risk	High hazard or risk	High hazard or risk
51902	Delineated risk area but no high harzard or risk rating	Delineated risk area but no high harzard or risk rating	Delineated risk area but no high harzard or risk rating

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

Mining Subsidence Districts

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Mining Subsidence Districts

Mining Subsidence Districts onsite:

District
The site is not within a Mining Subsidence District

Mining Subsidence Districts within the report buffer?

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

Mining Subsidence District Data Source: © Land and Property Information (2015)
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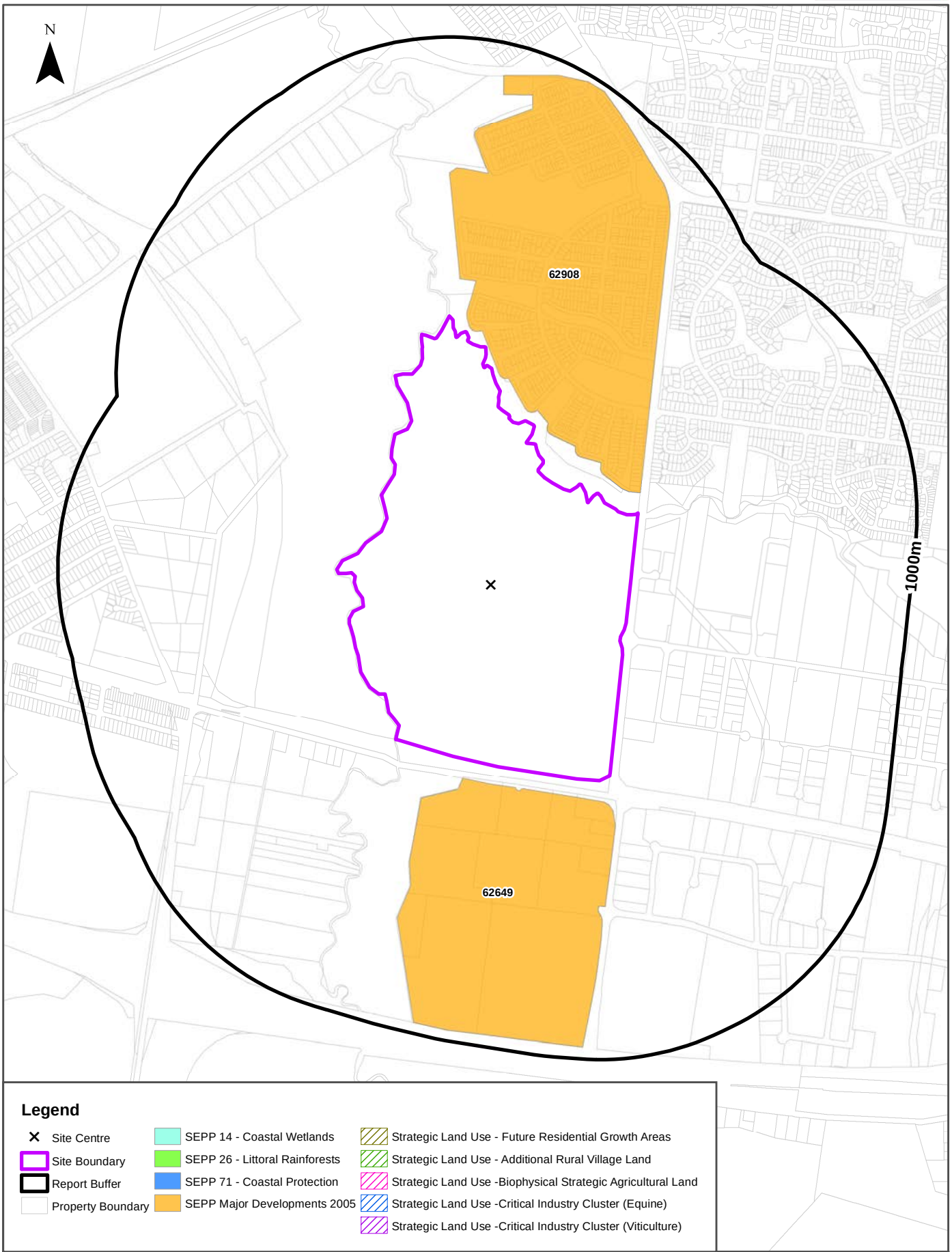
State Environmental Planning Policy

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



Environmental Zoning

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

State Environmental Planning Policy Protected Areas

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

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

SEPP Protected Areas Data Source: NSW Department of Planning & Environment
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State Environmental Planning Policy Major Developments (2005)

State Environmental Planning Policy Major Developments within the report buffer?

Map Id	Feature	Effective Date	Distance	Direction
62908	Doonside Residential Precinct	19/12/2008	10m	North
62649	Huntingwood West Precinct	11/05/2007	65m	South

SEPP Major Development Data Source: NSW Department of Planning & Environment
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State Environmental Planning Policy Strategic Land Use Areas

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

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

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

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Land Zoning

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

Zone	Description	Purpose	LEP	Gazetted Date	Effective Date	Currency Date	Amendment	Distance	Direction
N/A	No Records in Buffer								

Local Environment Plan Data Source: NSW Department of Planning & Environment
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Local Environmental Plan

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Minimum Subdivision Lot Size

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

Symbol	Minimum Lot Size	LEP	Gazetted Date	Effective Date	Currency Date	Amendment	Info	Percentage of Site Area
No Data								

Maximum Height of Buildings

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

Symbol	Maximum Height of Building	LEP	Gazetted Date	Effective Date	Currency Date	Amendment	Info	Percentage of Site Area
No Data								

Floor Space Ratio

What are the onsite Local Environmental Plan Floor Space Ratios?

Symbol	Floor Space Ratio	LEP	Gazetted Date	Effective Date	Currency Date	Amendment	Info	Percentage of Site Area
No Data								

Land Applications

What are the onsite Local Environmental Plan Land Applications?

Application Type	LEP	Gazetted Date	Effective Date	Currency Date	Amendment	Percentage of Site Area
No Data						

Land Reservation Acquisitions

What are the onsite Local Environmental Plan Land Reservation Acquisitions?

Reservation	LEP	Gazetted Date	Effective Date	Currency Date	Amendment	Comments	Percentage of Site Area
No Data							

Local Environment Plan Data Source: NSW Department of Planning & Environment
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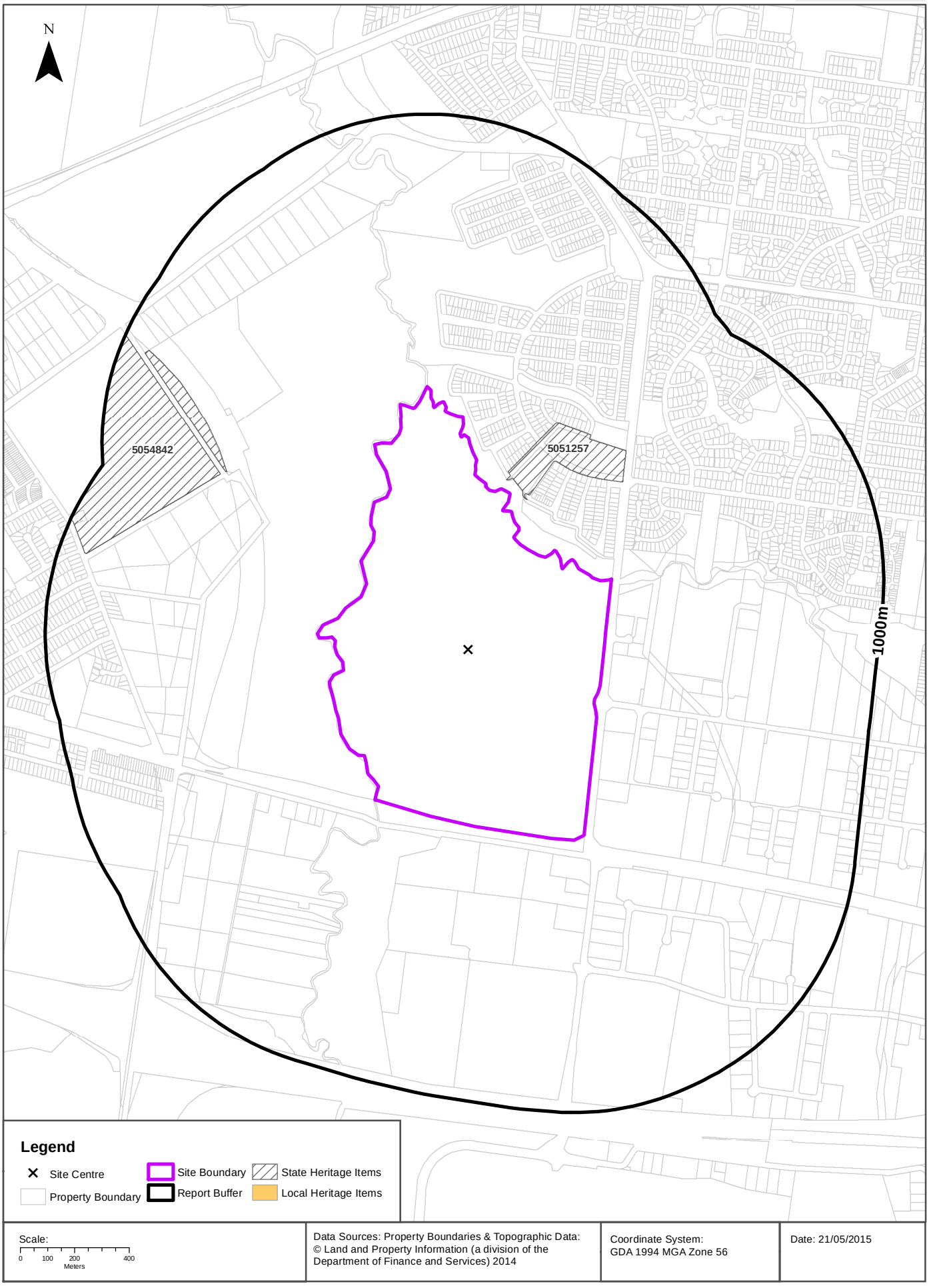
Heritage Items

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



Heritage

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

State Heritage Items

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

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
5051257	Bungarribee Homestead Complex - Archaeological Site		Blacktown	08/12/2000	01428	2298	37m	North East
5054842	Rooty Hill, The		Blacktown	13/06/2007	01756	2061	552m	North West

Heritage Data Source: NSW Department of Planning & Environment
Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Local Heritage Items

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

Map Id	Name	Type	Significance	LEP	Gazetted Date	Effective Date	Currency Date	Distance	Direction
N/A	No records in buffer								

Heritage Data Source: NSW Department of Planning & Environment
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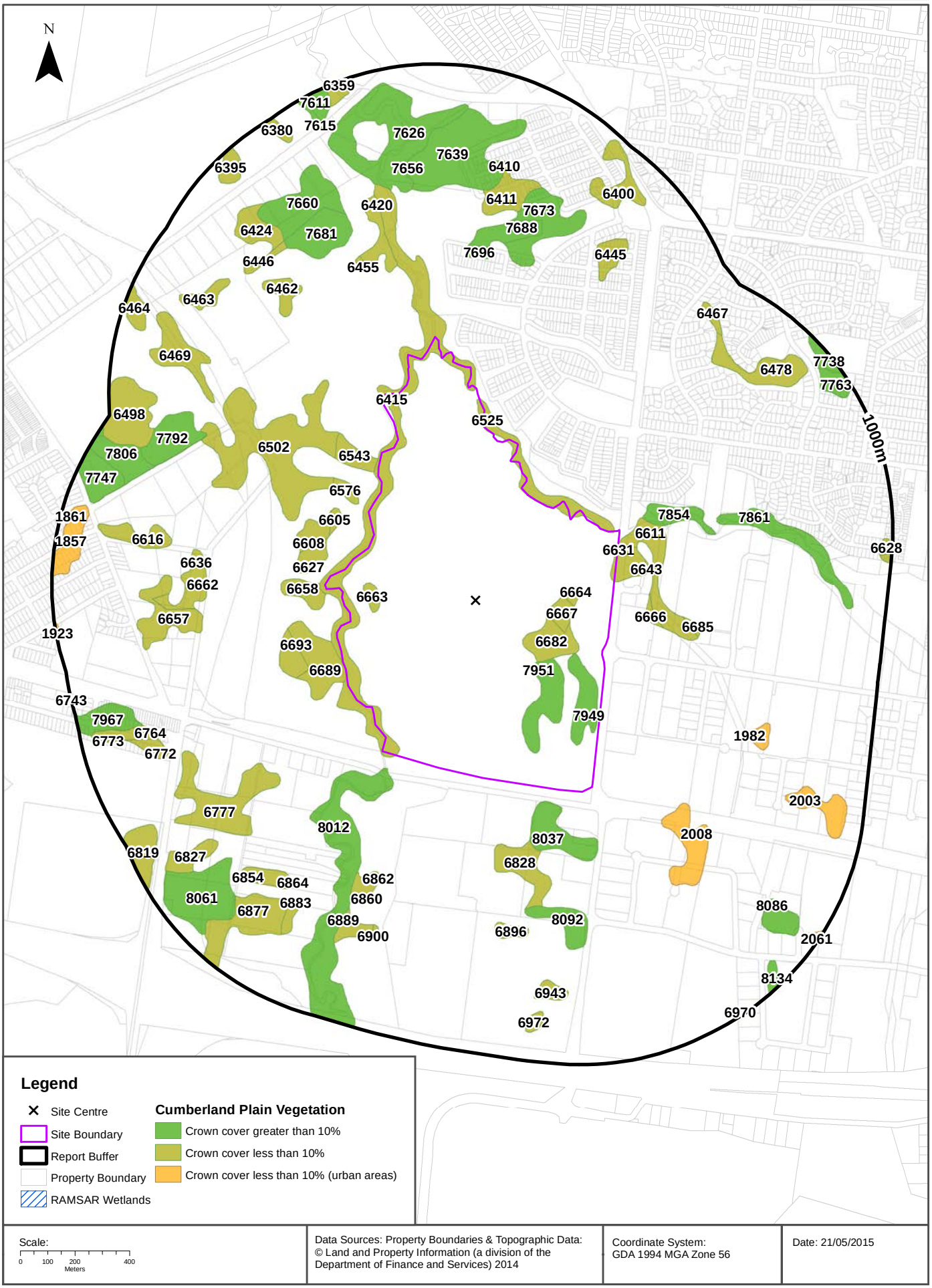
Remnant Vegetation of the Cumberland Plain

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767



Data Sources: Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2014

Coordinate System: GDA 1994 MGA Zone 56

Date: 21/05/2015

Ecological Constraints

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

Remnant Vegetation of the Cumberland Plain

What remnant vegetation of the Cumberland Plain exists within the report buffer?

Map Id	Crown Cover	Description	Distance	Direction
6415	Crown cover less than 10%	11 - Alluvial Woodland	0m	North West
6525	Crown cover less than 10%	11 - Alluvial Woodland	0m	North East
6611	Crown cover less than 10%	11 - Alluvial Woodland	0m	East
6631	Crown cover less than 10%	10 - Shale Plains Woodland	0m	East
6663	Crown cover less than 10%	10 - Shale Plains Woodland	0m	West
6664	Crown cover less than 10%	10 - Shale Plains Woodland	0m	East
6667	Crown cover less than 10%	11 - Alluvial Woodland	0m	East
6682	Crown cover less than 10%	10 - Shale Plains Woodland	0m	South East
6689	Crown cover less than 10%	11 - Alluvial Woodland	0m	West
7949	Crown cover greater than 10%	10 - Shale Plains Woodland	0m	South East
7951	Crown cover greater than 10%	10 - Shale Plains Woodland	0m	South East
6543	Crown cover less than 10%	11 - Alluvial Woodland	6m	North West
6658	Crown cover less than 10%	11 - Alluvial Woodland	16m	West
6576	Crown cover less than 10%	11 - Alluvial Woodland	46m	North West
8037	Crown cover greater than 10%	10 - Shale Plains Woodland	47m	South
8012	Crown cover greater than 10%	11 - Alluvial Woodland	55m	South West
6627	Crown cover less than 10%	11 - Alluvial Woodland	61m	West
7854	Crown cover greater than 10%	11 - Alluvial Woodland	93m	North East
6605	Crown cover less than 10%	11 - Alluvial Woodland	97m	North West
6643	Crown cover less than 10%	11 - Alluvial Woodland	101m	East
6608	Crown cover less than 10%	10 - Shale Plains Woodland	118m	North West
6693	Crown cover less than 10%	10 - Shale Plains Woodland	124m	West
6666	Crown cover less than 10%	10 - Shale Plains Woodland	126m	East
6502	Crown cover less than 10%	10 - Shale Plains Woodland	153m	North West
6828	Crown cover less than 10%	10 - Shale Plains Woodland	199m	South
6685	Crown cover less than 10%	10 - Shale Plains Woodland	260m	East
2008	Crown cover less than 10% (urban areas)	10 - Shale Plains Woodland	279m	South East
6420	Crown cover less than 10%	11 - Alluvial Woodland	288m	North
7696	Crown cover greater than 10%	10 - Shale Plains Woodland	316m	North
6455	Crown cover less than 10%	10 - Shale Plains Woodland	345m	North
7688	Crown cover greater than 10%	11 - Alluvial Woodland	347m	North
7861	Crown cover greater than 10%	11 - Alluvial Woodland	354m	East

Map Id	Crown Cover	Description	Distance	Direction
6777	Crown cover less than 10%	10 - Shale Plains Woodland	385m	South West
7673	Crown cover greater than 10%	10 - Shale Plains Woodland	395m	North
8092	Crown cover greater than 10%	10 - Shale Plains Woodland	426m	South
6860	Crown cover less than 10%	11 - Alluvial Woodland	427m	South
6862	Crown cover less than 10%	10 - Shale Plains Woodland	429m	South
6662	Crown cover less than 10%	11 - Alluvial Woodland	431m	West
6636	Crown cover less than 10%	10 - Shale Plains Woodland	433m	West
6462	Crown cover less than 10%	10 - Shale Plains Woodland	446m	North West
6657	Crown cover less than 10%	10 - Shale Plains Woodland	459m	West
7681	Crown cover greater than 10%	10 - Shale Plains Woodland	461m	North West
6411	Crown cover less than 10%	10 - Shale Plains Woodland	484m	North
6896	Crown cover less than 10%	10 - Shale Plains Woodland	510m	South
7639	Crown cover greater than 10%	10 - Shale Plains Woodland	530m	North
7626	Crown cover greater than 10%	11 - Alluvial Woodland	537m	North
1982	Crown cover less than 10% (urban areas)	11 - Alluvial Woodland	542m	South East
1976	Crown cover less than 10% (urban areas)	10 - Shale Plains Woodland	550m	South East
7660	Crown cover greater than 10%	11 - Alluvial Woodland	554m	North West
6854	Crown cover less than 10%	10 - Shale Plains Woodland	566m	South West
6445	Crown cover less than 10%	10 - Shale Plains Woodland	569m	North
6864	Crown cover less than 10%	11 - Alluvial Woodland	569m	South West
6616	Crown cover less than 10%	10 - Shale Plains Woodland	580m	West
6889	Crown cover less than 10%	11 - Alluvial Woodland	585m	South
7656	Crown cover greater than 10%	11 - Alluvial Woodland	587m	North
6446	Crown cover less than 10%	10 - Shale Plains Woodland	588m	North West
6469	Crown cover less than 10%	10 - Shale Plains Woodland	610m	North West
6424	Crown cover less than 10%	11 - Alluvial Woodland	614m	North West
6900	Crown cover less than 10%	10 - Shale Plains Woodland	616m	South
6883	Crown cover less than 10%	11 - Alluvial Woodland	631m	South West
7792	Crown cover greater than 10%	10 - Shale Plains Woodland	636m	North West
6877	Crown cover less than 10%	10 - Shale Plains Woodland	641m	South West
6410	Crown cover less than 10%	10 - Shale Plains Woodland	666m	North
8061	Crown cover greater than 10%	10 - Shale Plains Woodland	674m	South West
6827	Crown cover less than 10%	10 - Shale Plains Woodland	686m	South West
6463	Crown cover less than 10%	10 - Shale Plains Woodland	688m	North West
6943	Crown cover less than 10%	10 - Shale Plains Woodland	694m	South
6478	Crown cover less than 10%	9 - Shale Hills Woodland	697m	North East
6772	Crown cover less than 10%	10 - Shale Plains Woodland	700m	South West
2003	Crown cover less than 10% (urban areas)	10 - Shale Plains Woodland	704m	South East
6764	Crown cover less than 10%	11 - Alluvial Woodland	719m	West

Map Id	Crown Cover	Description	Distance	Direction
7806	Crown cover greater than 10%	10 - Shale Plains Woodland	752m	West
7967	Crown cover greater than 10%	11 - Alluvial Woodland	764m	West
8086	Crown cover greater than 10%	10 - Shale Plains Woodland	767m	South East
6400	Crown cover less than 10%	10 - Shale Plains Woodland	768m	North
6467	Crown cover less than 10%	10 - Shale Plains Woodland	802m	North East
6972	Crown cover less than 10%	10 - Shale Plains Woodland	813m	South
7747	Crown cover greater than 10%	10 - Shale Plains Woodland	816m	North West
6498	Crown cover less than 10%	10 - Shale Plains Woodland	819m	North West
6773	Crown cover less than 10%	10 - Shale Plains Woodland	840m	West
7615	Crown cover greater than 10%	10 - Shale Plains Woodland	868m	North
6819	Crown cover less than 10%	10 - Shale Plains Woodland	871m	South West
7611	Crown cover greater than 10%	11 - Alluvial Woodland	880m	North
6380	Crown cover less than 10%	10 - Shale Plains Woodland	886m	North West
6395	Crown cover less than 10%	10 - Shale Plains Woodland	889m	North West
6464	Crown cover less than 10%	10 - Shale Plains Woodland	897m	North West
1857	Crown cover less than 10% (urban areas)	10 - Shale Plains Woodland	898m	West
7763	Crown cover greater than 10%	9 - Shale Hills Woodland	898m	North East
8134	Crown cover greater than 10%	10 - Shale Plains Woodland	908m	South East
6359	Crown cover less than 10%	11 - Alluvial Woodland	925m	North
7738	Crown cover greater than 10%	10 - Shale Plains Woodland	941m	North East
6628	Crown cover less than 10%	10 - Shale Plains Woodland	951m	East
2061	Crown cover less than 10% (urban areas)	10 - Shale Plains Woodland	952m	South East
6638	Crown cover less than 10%	11 - Alluvial Woodland	954m	East
1861	Crown cover less than 10% (urban areas)	9 - Shale Hills Woodland	955m	West
1923	Crown cover less than 10% (urban areas)	10 - Shale Plains Woodland	979m	West
6970	Crown cover less than 10%	10 - Shale Plains Woodland	979m	South East
6743	Crown cover less than 10%	10 - Shale Plains Woodland	995m	West

Remnant Vegetation of the Cumberland Plain : NSW Office of Environment and Heritage
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Ecological Constraints

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

RAMSAR Wetlands

What RAMSAR Wetland areas exist within the report buffer?

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

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

Ecological Constraints

Part of Lot 101 DP 1195067, Bungarribee, NSW 2767

ATLAS of NSW Wildlife

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

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Amphibia	Hylidae	Litoria aurea	Green and Golden Bell Frog	No	Endangered, Protected	Vulnerable
Aves	Acanthizidae	Chthonicola sagittata	Speckled Warbler	No	Vulnerable, Protected	
Aves	Accipitridae	Hieraaetus morphnoides	Little Eagle	No	Vulnerable, Protected	
Aves	Accipitridae	Lophoictinia isura	Square-tailed Kite	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Cacatuidae	Callocephalon fimbriatum	Gang-gang Cockatoo	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Ciconiidae	Ephippiorhynchus asiaticus	Black-necked Stork	No	Endangered, Protected	
Aves	Falconidae	Falco subniger	Black Falcon	No	Vulnerable, Protected	
Aves	Meliphagidae	Anthochaera phrygia	Regent Honeyeater	No	Critically Endangered Species, Protected	Endangered
Aves	Meliphagidae	Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	No	Vulnerable, Protected	
Aves	Neosittidae	Daphoenositta chrysoptera	Varied Sittella	No	Vulnerable, Protected	
Aves	Petroicidae	Petroica boodang	Scarlet Robin	No	Vulnerable, Protected	
Aves	Petroicidae	Petroica phoenicea	Flame Robin	No	Vulnerable, Protected	
Aves	Psittacidae	Glossopsitta pusilla	Little Lorikeet	No	Vulnerable, Protected	
Aves	Psittacidae	Lathamus discolor	Swift Parrot	No	Endangered, Protected, Category 3 Sensitive Species	Endangered
Aves	Psittacidae	Neophema pulchella	Turquoise Parrot	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Strigidae	Ninox connivens	Barking Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Strigidae	Ninox strenua	Powerful Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Tytonidae	Tyto novaehollandiae	Masked Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Gastropoda	Camaenidae	Meridolum corneovirens	Cumberland Plain Land Snail	No	Endangered	
Mammalia	Dasyuridae	Dasyurus maculatus	Spotted-tailed Quoll	No	Vulnerable, Protected	Endangered
Mammalia	Emballonuridae	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	No	Vulnerable, Protected	
Mammalia	Molossidae	Mormopterus norfolkensis	Eastern Freetail-bat	No	Vulnerable, Protected	
Mammalia	Phascolarctidae	Phascolarctos cinereus	Koala	No	Vulnerable, Protected	Vulnerable
Mammalia	Pteropodidae	Pteropus poliocephalus	Grey-headed Flying-fox	No	Vulnerable, Protected	Vulnerable
Mammalia	Vespertilionidae	Chalinolobus dwyeri	Large-eared Pied Bat	No	Vulnerable, Protected	Vulnerable
Mammalia	Vespertilionidae	Falsistrellus tasmaniensis	Eastern False Pipistrelle	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Miniopterus australis	Little Bentwing-bat	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Myotis macropus	Southern Myotis	No	Vulnerable, Protected	

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Mammalia	Vespertilionidae	Scoteanax rueppellii	Greater Broad-nosed Bat	No	Vulnerable, Protected	
Flora	Apocynaceae	Cynanchum elegans	White-flowered Wax Plant	No	Endangered, Protected	Endangered
Flora	Apocynaceae	Marsdenia viridiflora subsp. viridiflora	Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	No	Endangered Population	
Flora	Fabaceae (Faboideae)	Dillwynia tenuifolia		No	Vulnerable, Protected	
Flora	Fabaceae (Faboideae)	Pultenaea parviflora		No	Endangered, Protected	Vulnerable
Flora	Fabaceae (Faboideae)	Pultenaea pedunculata	Matted Bush-pea	No	Endangered, Protected	
Flora	Fabaceae (Mimosoideae)	Acacia pubescens	Downy Wattle	No	Vulnerable, Protected	Vulnerable
Flora	Lobeliaceae	Hypsela sessiliflora		No	Endangered, Protected, Category 3 Sensitive Species	Extinct
Flora	Marsileaceae	Pilularia novae-hollandiae	Austral Pillwort	No	Endangered, Protected, Category 3 Sensitive Species	
Flora	Myrtaceae	Callistemon linearifolius	Netted Bottle Brush	No	Vulnerable, Protected, Category 3 Sensitive Species	
Flora	Myrtaceae	Eucalyptus nicholii	Narrow-leaved Black Peppermint	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Micromyrtus minutiflora		No	Endangered, Protected	Vulnerable
Flora	Myrtaceae	Syzygium paniculatum	Magenta Lilly Pilly	No	Endangered, Protected	Vulnerable
Flora	Orchidaceae	Pterostylis saxicola	Sydney Plains Greenhood	No	Endangered, Protected, Category 2 Sensitive Species	Endangered
Flora	Proteaceae	Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	No	Vulnerable, Protected	
Flora	Proteaceae	Grevillea parviflora subsp. parviflora	Small-flower Grevillea	No	Vulnerable, Protected	Vulnerable
Flora	Proteaceae	Persoonia nutans	Nodding Geebung	No	Endangered, Protected	Endangered
Flora	Thymelaeaceae	Pimelea curviflora var. curviflora		No	Vulnerable, Protected	Vulnerable
Flora	Thymelaeaceae	Pimelea spicata	Spiked Rice-flower	No	Endangered, Protected	Endangered

Data does not include records not defined as either endangered or vulnerable, and category 1 sensitive species are also excluded.
NSW Office of Environment and Heritage's Atlas of NSW Wildlife, which holds data from a number of custodians.
Data obtained 21/05/2015

Appendix B
Historical Title Information

Req:R583898 /Doc:CT 09890-212 CT /Rev:19-Jan-2011 /Sts:OK.SC /Prt:20-May-2015 19:32 /Pgs:ALL /Seq:1 of 4
Ref:als /Src:T

G. 2

NEW SOUTH WALES

14374 part.

[redacted]TIFICATE OF TITLE

[redacted]PERTY ACT, 1900, as amended.

Applications Nos. 9592 (part), [redacted]
20945 (part), 37829 (part)
Prior Title Vol. 6695 Fol. 235

Vol. 9890 Fol. 212

CANCELLED

[illegible] Issued 11-12-1964.

EH J729008

SEE AUTO FOLIO

I certify that the person described in the First Schedule is the registered proprieto[illegible]d estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness

Registrar General.

Vol. 9890 Fol. 212 (Page 1)

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 1 in Deposited Plan 511957 in the Municipality of Blacktown Parishes of Prospect and Rooty Hill and County of Cumberland being FIRSTLY the lands set out in the Schedule of Grants hereunder.

SCHEDULE OF GRANTS.

Parish	Number of Portion	Name of Grantee	Date of Grant	Grant Reference Volume	Folio
Prospect	Pt.196	John Campbell	30 - 6 - 1823	-	-
	Pt.102	William Deane	24 - 1 - 1817	-	-
	99	John Bartlett	16 - 8 - 1844	-	-
Rooty Hill	Pt.177		30 - 8 - 1866	39	137
	176		10 - 8 - 1869	89	87
	175		10 - 8 - 1869	89	130
	Pt.136		4 -11 - 1871	128	140
	Pt.134		4 -11 - 1871	129	44
	Pt.135		26 - 9 - 1872	147	41

SECONDLY part of the bed of Eastern Creek (Parishes of Prospect and Rooty Hill), Portion 125 (Parish of Rooty Hill) and the 2 acre 4½ perches and 1 acre 10 perches parcels (Parish of Rooty Hill) all of which are shown in plan in Application No. 37829 being lands for which no Crown Grants have issued.

FIRST SCHEDULE (continued overleaf)

OVERSEAS TELECOMMUNICATIONS COMMISSION (AUSTRALIA).

Registrar General.

GRN

SECOND SCHEDULE (continued overleaf)

EI)(x) 1. Easement for Drainage created by Transfer No.G642905P affecting the piece of land 15 feet wide shown in the plan hereon.

CJ 2. Covenant created by Transfer No.J613747.P

Registrar General.

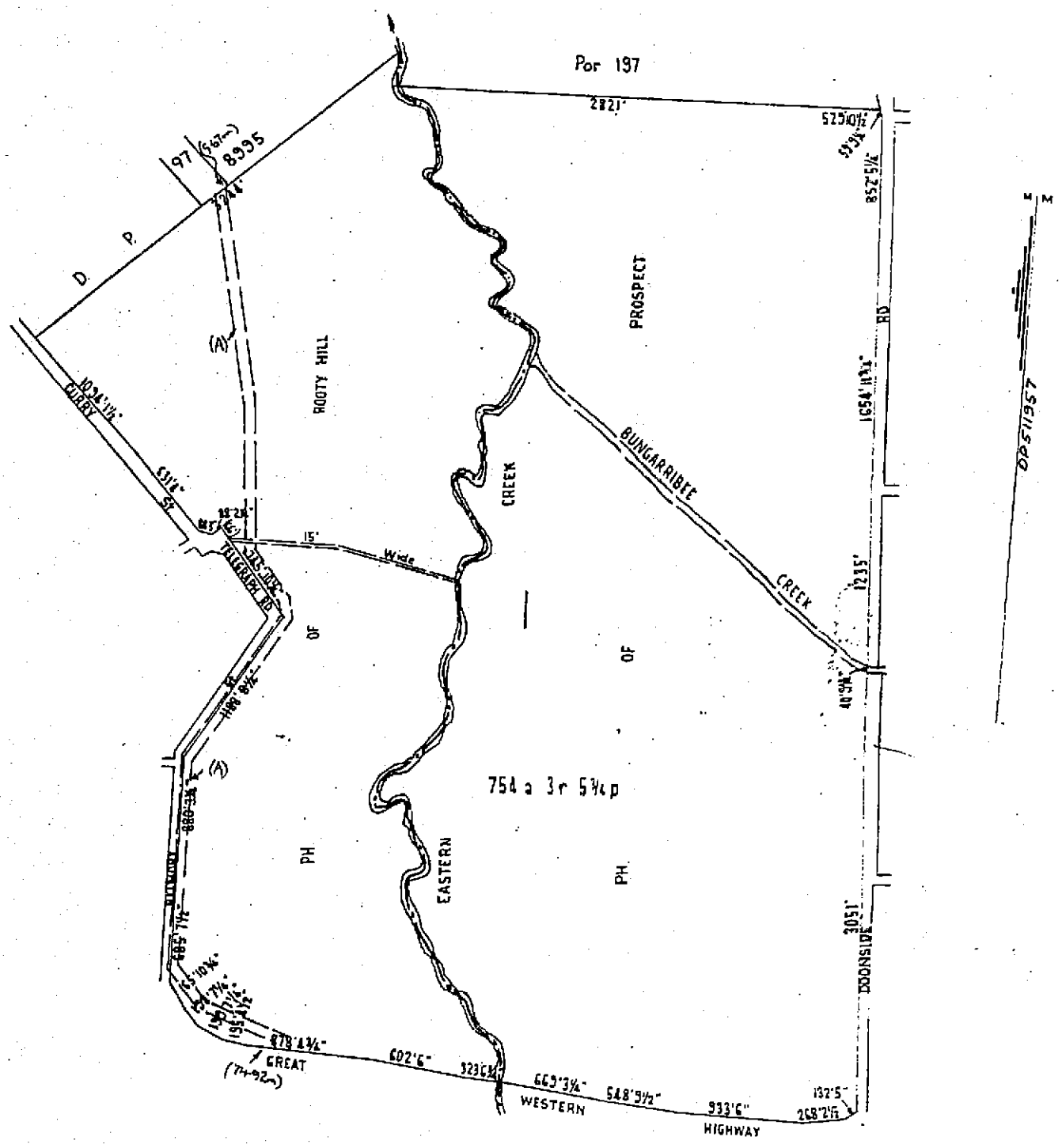
PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

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

Vol. 9890 Fol. 212

PLAN SHOWING LOCATION OF LAND.



(A) EASEMENT FOR PIPELINE 24·385 METRES WIDE-Q916928

Req:R583898 /Doc:CT 09890-212 CT /Rev:19-Jan-2011 /Sts:OK.SC /Prt:20-May-2015 19:32 /Pgs:ALL /Seq:2 of 4
Ref:als /Src:T

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General

CANCELLED

SEE AUTO FOLIO

DP499004 Lots 576 (Affects the E (Lot 6)" CT 5/10/76

Q916928P

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION
LP Transfer	Q916928P	—	Easement for Pipeline (as more fully set out in the said instrument) affecting that part of the land within described shown so bounded in the plan hereon	6.12.978		

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

Req:R583898 /Doc:CT 09890-212 CT /Rev:19-Jan-2011 /Sts:OK.SC /Prt:20-May-2015 19:32 /Pgs:ALL /Seq:3 of 4 /Ref:als /Src:T4 pages)

Vol. 7857D Fol. 212

Vol. 9890 Fol. 212

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
CANCELLED SEE AUTO FOLIO					

SECOND SCHEDULE (continued)

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

FORM No. 49 NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

Req:R583898 /Doc:CT 09890-212 CT /Rev:19-Jan-2011 /Sts:OK.SC /Prt:20-May-2015 19:32 /Pgs:ALL /Seq:4 of 4 Ref:als /Src:T

Req:R583907 /Doc:DL 7706642 /Rev:11-Jul-2001 /Sts:NO.OK /Prt:20-May-2015 19:32 /Pgs:ALL /Seq:1 of 4
Ref:Lotsearch - Bungarribee /Src:T

Form: 97-01TE
Licence: 026CN/0617/96

TRANSFER
including easement

New South Wales
Real Property Act 1900

7706642U

OFFICE OF STATE REVENUE (N.S.W. TREASURY) 1996/97 $3 NO STAMP DUTY IS PAYABLE ON THIS INSTRUMENT

Office of State Revenue use only

Title $58 paid

(A) **LAND TRANSFERRED**
If appropriate, specify the share transferred.

5/1010405

(B) **TENEMENTS**

Servient (land burdened)	Dominant (land benefited) **Authority Benefited**
5/1010405	TELSTRA CORPORATION LIMITED

(C) **LODGED BY**

LTO Box	name, address or dx and telephone
29X	HICKSON WISEWOULDS LAWYERS BOX 29X DX 309 REFERENCE (max. 15 characters): ~~938731~~ 993610 DEPT ENVIRO

(D) **TRANSFEROR** TELSTRA CORPORATION LIMITED

(E) acknowledges receipt of the consideration of $25,000,000 transfers to the transferee

(F) an estate in fee simple and the transferor -

(G) - reserves an easement as set out in Schedule Two hereto.

(H) Encumbrances (if applicable) 1. 2. 3. 4.

(I) **TRANSFEREE**

T	THE MINISTER ADMINISTERING THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

(J) **TENANCY:**

(K) We certify this dealing correct for the purposes of the Real Property Act 1900. **DATE** 16 JUNE 2000

Signed in my presence by the transferor who is personally known to me. ~~ATTORNEY~~ OF TELSTRA CORPORATION LIMITED

by its Attorney Adam John Treffry being the person for the time being holding or fulfilling the duties of the office of REGIONAL PROPERTY MANAGER TELECOM PROPERTY SERVICES NEW SOUTH WALES REGION of the said Telstra Corporation Limited (ACN 051 775 556) and the said Attorney states that at the date of the execution of the present instrument he has received no notice of revocation of Power of Attorney Registered No. 733 Book 3887 and produced at the Land Titles Office, Sydney by virtue of which he had executed the within document in the presence of:-

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness Sarah J Norgate

Signature of Transferor Sarah J Norgate

~~JUSTICE OF THE PEACE~~ SOLICITOR IN AND FOR THE STATE OF NEW SOUTH WALES

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

Signature of Witness

PETER GOWERS
SOLICITOR
Name of Witness (BLOCK LETTERS)
55 MARKET STREET
SYDNEY
Address of Witness

SIGNED by me VINCENT FERNANDEZ RAMOS as delegate of the Minister administering the Environmental Planning and Assessment Act, 1979, and I hereby certify that I have no notice of the revocation of such delegation.

Signature of Transferee

OFF X 6979798

CHECKED BY (LTO use) .....

(L)

SCHEDULE ONE
grant of easement

Complete the Tenements panel on the front

(M)

SCHEDULE TWO
reservation of easement

Complete the Tenements panel on the front

TERMS OF EASEMENT FOR TELECOMMUNICATIONS PURPOSES

In respect of the area marked "A- Telecommunications Facilities Variable Width" on the plan attached as annexure "**A**":

1. the Transferor and its officers, servants, workmen, contractors and agents is entitled to construct, lay down, erect, replace, extend, repair, renew, maintain, clean and remove:

   (a) underground telecommunications and electricity cables; and

   (b) cable ducts, tunnels, culverts, bridges, cable joints, permanent market posts, manholes, cable pits and other apparatus,

   for the transmission of telephone, television, radio and control signals and currents and for other incidental purposes under, over, through and beneath the surface of the area at such heights or depths as it thinks proper;

2. the Transferor and its officers, servants, workmen contractors and agents is entitled with or without vehicles, plant or machinery to enter into and upon the area for the purpose of carrying out any of the activities referred to in paragraph 1; and

3. the Transferor and its officers, servants, workmen, contractors and agents is entitled to:

   (a) bring and place upon the area and to remove from the area any materials, apparatus, instruments, machinery, tools, implements, appliances and articles; and

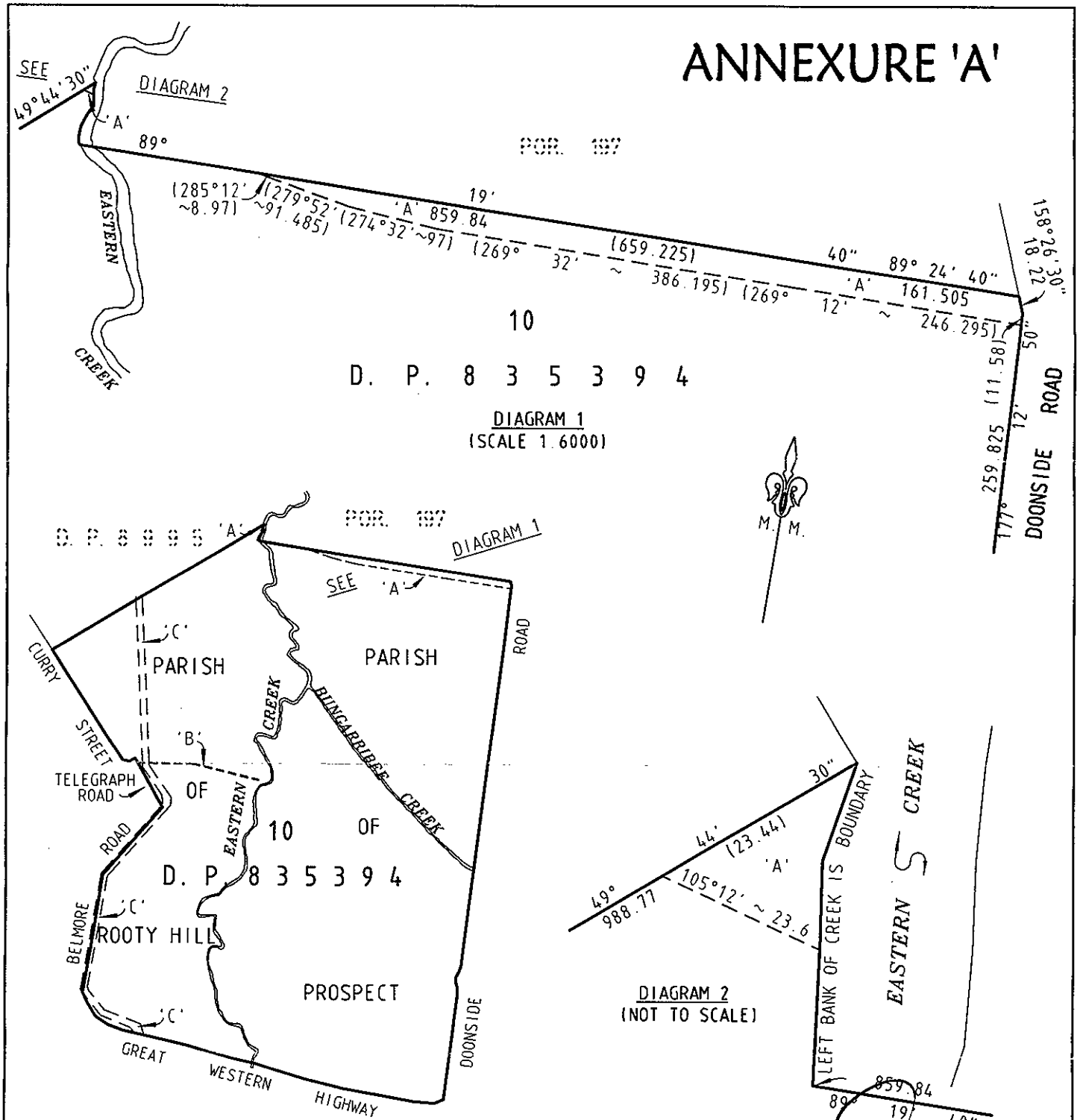
   (b) perform any other incidental acts and thing as may be reasonably necessary or required,

   for the purpose of carrying out any of the activities referred to in paragraph 1.

In exercising any right pursuant to this easement, the Transferor shall act reasonably to do as little damage possible to the servient tenement and shall make good any damage done to the servient tenement in the exercise of the right.

In addition to the rights referred to above, the Transferor shall be entitled to exercise and perform in and upon the servient tenement any of the rights, powers and authorities conferred on or vested in the Transferor under and by virtue of the Telecommunications Act 1997 as amended.

ANNEXURE 'A'



'A'-TELECOMMUNICATIONS FACILITIES VARIABLE WIDTH
PURSUANT TO TELECOMMUNICATIONS ACT 1997(COMMONWEALTH)
'B'-EASEMENT FOR DRAINAGE 4.57 WIDE VIDE G642905
'C'-EASEMENT FOR PIPELINE 24.385 WIDE & VARIABLE (VIDE Q916928)

NOTE COMPILED FROM D.P.109703, D.P.511957 & D.P.835394

Principal: TELSTRA CORPORATION LIMITED

Project: PLAN OF TELECOMMUNICATIONS FACILITIES VARIABLE WIDTH WITHIN LOT 10 D.P.835394

CRAIG & RHODES
SURVEYORS ENGINEERS PLANNERS
11 BRIDGE ST, EPPING
Mail P.O. BOX 233
EPPING 1710
DX 4408 , EPPING
Ph. (02) 9869-1855
A.C.N. 050 209 991

Datum N/A
Scale N.T.S. & AS SHOWN
Our Ref. 1625
Date 4/5/2001

Req:R583906 /Doc:DL 9073227 /Rev:27-Nov-2002 /Sts:NO.OK /Prt:20-May-2015 19:32 /Pgs:ALL /Seq:1 of 2
Ref:Lotsearch - Bungarribee /Src:T

Form: 01T
Release: 2
www.lpi.nsw.gov.au

(15)

TRANSFER

New South Wales
Real Property Act 1900

9073227G

PRIVACY NOTE: this information is legally required and will become part of the public record

STAMP DUTY Office of State Revenue use only

NEW SOUTH WALES DUTY
25-10-2002 0001157199-002
SECTION OTHR LEGN-ORIGINAL
NO DUTY PAYABLE

(A) **TORRENS TITLE** See annexure "A"

(B) **LODGED BY**

Delivery Box	Name, Address or DX and Telephone	CODES
556X	Roads & Traffic Authority of New South Wales Reference: F9 Blacktown TR	T TW (Sheriff)

(C) **TRANSFEROR** Minister Administering the Environmental Planning and Assessment Act, 1979

(D) **CONSIDERATION** The transferor acknowledges receipt of the consideration of $2,301,964.12 and as regards

(E) **ESTATE** the land specified above transfers to the transferee an estate in fee simple

(F) **SHARE TRANSFERRED**

(G) Encumbrances (if applicable):

(H) **TRANSFEREE** Roads and Traffic Authority of New South Wales

(I) **TENANCY:**

(J) **DATE** 27 September 2002

I certify that the person(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Signature of witness:

Name of witness: Stephen William Johnston
Address of witness: 2-10 Wentworth Street
Parramatta

Certified correct for the purposes of the Real Property Act 1900 by the authorised officer named below.

Signature of authorised officer:

Authorised officer's name:
Authority of officer:
Signing on behalf of:

SIGNED by the VINCENT FERNANDEZ RAMOS as delegate of the Minister administering the Environmental Planning and Assessment Act, 1979, and I hereby certify that I have no notice of the revocation of such delegation.

I certify that the person(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Signature of witness: Alan Flett

Name of witness: ALAN FLETT
Address of witness: 83 Fushcombe Rd.
Blacktown

Certified correct for the purposes of the Real Property Act 1900 by the authorised officer named below.

EXECUTED BY VALUATIONS AND ACQUISITIONS MANAGER PURSUANT TO DELEGATION BOOK 4238 NO. 360.

Signature of authorised officer:

Authorised officer's name: K. J. Burke
Authority of officer:
Signing on behalf of:

All handwriting must be in block capitals.

Land and Property Information NSW.

Req:R583906 /Doc:DL 9073227 /Rev:27-Nov-2002 /Sts:NO.OK /Prt:20-May-2015 19:32 /Pgs:ALL /Seq:2 of 2
Ref:Lotsearch - Bungarribee /Src:T

Annexure "A" to Transfer

Parties:

Minister Administering the Environmental Planning and Assessment Act, 1979 and Roads and Traffic Authority of New South Wales

Dated 27 September 2002

That part of Lot 5 DP 1010405 (5/1010405) being 7/1041487
That part of Lot 5 DP 1010405 (5/1010405) being 16/1041487
That part of Lot 3 DP 634220 (3/634220) being 14/1041877
That part of Lot 2 DP 499010 (2/499010 being 31/1041877
That part of Lot 5 DP 255574 (5/255574) being 30/1041877
That part of Lot 4 DP 255574 (4/255574) being 29/1041877
Those parts of Lot 2 DP 30505 (2/30505) being 17/1041877 and 27/1041877
Those parts of Lot 13 DP 30505 (13/30505) being 18/1041877 and 28/1041877
Those parts of Lot 14 DP 30505 (14/30505) being 19/1041877 and 26/1041877
Those parts of Lot 15 DP 30505 (15/30505) being 20/1041877 and 22/1041877
That part of Lot 1 DP 542465 (1/542465)being 2/1045770

Req:R583908 /Doc:DL 0089016 /Rev:09-Mar-2010 /Sts:OK.SC /Prt:20-May-2015 19:32 /Pgs:ALL /Seq:1 of 2
Ref:Lotsearch - Bungarribee /Src:T

97-01T

TRANSFER

Real Property Act, 1900

0
089016 G

enue use only

(A) **LAND TRANSFERRED**

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

Part of land contained in Volume 9890 Folio 212 part being the area of road widening described in DP735394 Part 1 SI1957.
NOW BEING

(B) **LODGED BY**

L.T.O. Box	Name, Address or DX and Telephone
296X	J Greenwood & Co Solicitors DX 8145 BLACKTOWN PH: 671 7211 REFERENCE (max. 15 characters): JLG.BCC.1429

(C) **TRANSFEROR** Telstra Corporation Limited (ACN 051 775 556)

(D) acknowledges receipt of the consideration of $15,000.00

and as regards the land specified above transfers to the Transferee an estate in fee simple

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

(F) **TRANSFEREE**

T

BLACKTOWN CITY COUNCIL
of 62 Flushcombe Road, Blacktown 2148

(G) **TENANCY:** OVER

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. **DATED** .....

Signed in my presence by ~~the Transferor who is personally known to me.~~
SIGNED FOR AND ON BEHALE OF TELSTRA CORPORATION LIMITED

by its Attorney LESLIE PATRICK WARL being the person for the time being holding or fulfilling the duties of the office of REGIONAL MANAGER TELECOM PROPERTY SERVICES NEW SOUTH WALES REGION of the said Telstra Corporation Limited (ACN 051 775 556) and the said Attorney states that at the date of the execution of the present instrument he has received no notice of revocation of Power of Attorney Registered No. 733 Book 3887 and produced at the Land Titles Office, Sydney by virtue of which he had executed the within document in the presence of:-

Signature of Witness

Name of Witness (BLOCK LETTERS) JAMES POULOS

Address of Witness

Signature of Transferor

JUSTICE OF THE PEACE IN AND FOR THE STATE OF NEW SOUTH WALES

Signed in my presence by the Transferee who is personally known to

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Solicitor for
J. Greenwood

Signature of Transferee

29/10

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

CHECKED BY (office use only)

mail. 40. Telstra.

Req:R583908 /Doc:DL 0089016 /Rev:09-Mar-2010 /Sts:OK.SC /Prt:20-May-2015 19:32 /Pgs:ALL /Seq:2 of 2
Ref:Lotsearch - Bungarribee /Src:T

RP88/ANNEX

REGISTRATION DIRECTION ANNEXURE

Use this side only for **First and Second Schedule** directions

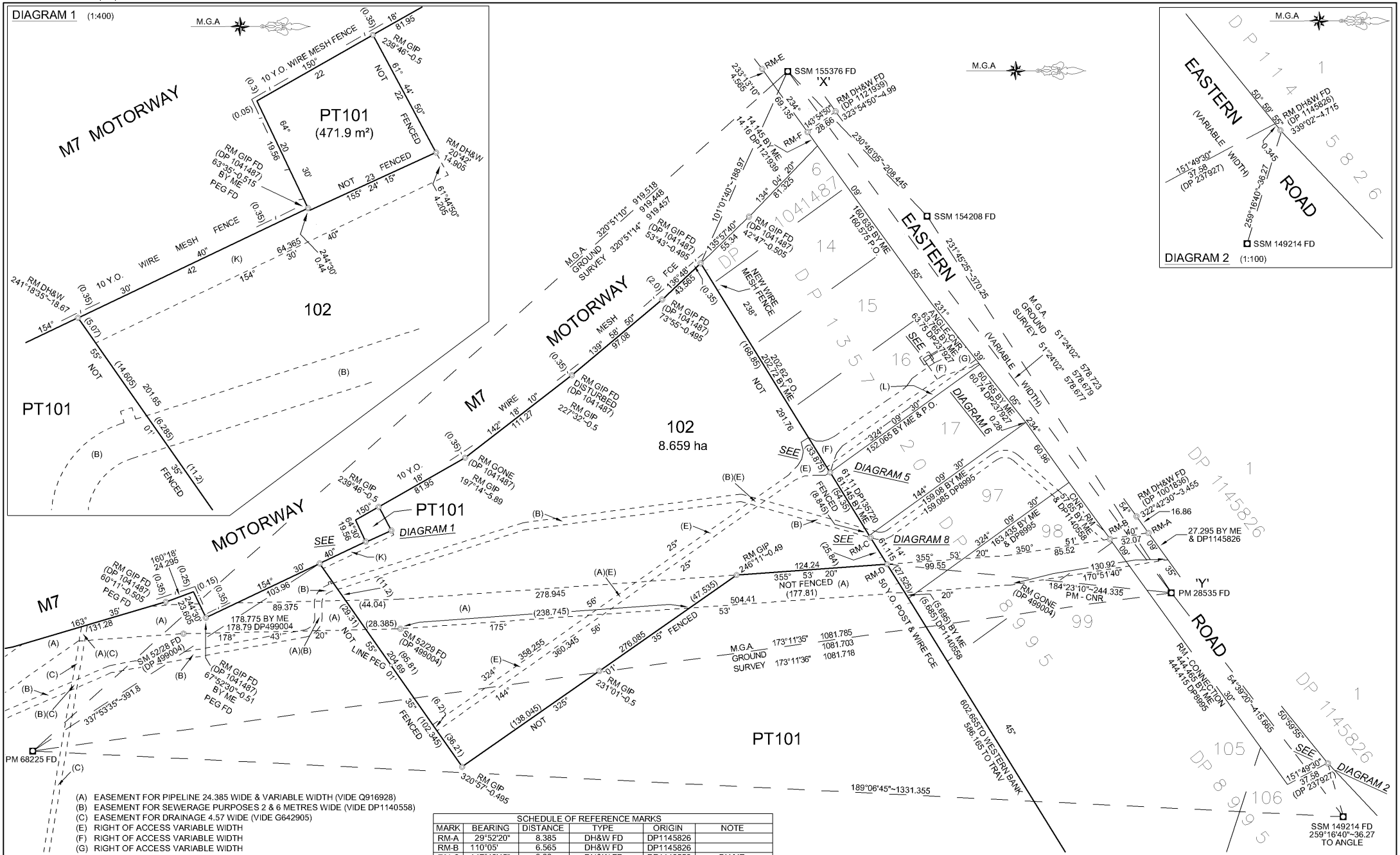
DO NOT USE BOTH SIDES OF THE FORM.

FIRST SCHEDULE DIRECTIONS

FOLIO IDENTIFIER	DIRECTION	DETAILS
	PROP	BLACKTOWN CITY COUNCIL AS REGARDS PART BEING
		ROAD WIDENING SHOWN IN DP835394 AND TELSTRA
		CORPORATION LIMITED AS REGARDS RESIDUE BEING
		LOT 10 IN DP 835394

SECOND SCHEDULE AND OTHER DIRECTIONS

FOLIO IDENTIFIER	DIRECTION	NOTFN TYPE	DEALING NUMBER	DETAILS



(A) EASEMENT FOR PIPELINE 24.385 WIDE & VARIABLE WIDTH (VIDE Q916928)
(B) EASEMENT FOR SEWERAGE PURPOSES 2 & 6 METRES WIDE (VIDE DP1140558)
(C) EASEMENT FOR DRAINAGE 4.57 WIDE (VIDE G642905)
(E) RIGHT OF ACCESS VARIABLE WIDTH
(F) RIGHT OF ACCESS VARIABLE WIDTH
(G) RIGHT OF ACCESS VARIABLE WIDTH
(K) RIGHT OF ACCESS VARIABLE WIDTH
(L) EASEMENT TO DRAIN WATER 5.18 WIDE (VIDE P7096)

SCHEDULE OF REFERENCE MARKS

MARK	BEARING	DISTANCE	TYPE	ORIGIN	NOTE
RM-A	29°52'20"	8.385	DH&W FD	DP1145826	
RM-B	110°05'	6.565	DH&W FD	DP1145826	
RM-C	147°43'45"	3.82	DH&W FD	DP1140552	BY ME
RM-D	1°19'	8.875	DH&W	PLACED	
RM-E	142°50'50"	4.445	DH&W FD	DP1121939	
RM-F	143°54'50"	4.67	DH&W FD	DP1121939	

SURVEYING & SPATIAL INFORMATION REGULATION 2006 : CLAUSE 35(1)(b) & CLAUSE 61(2)

MARK	M.G.A. EASTING	M.G.A. NORTHING	CLASS	ORDER	METHOD	ORIGIN
SSM 155376	301203.689	6260771.123	B	2	FROM SCIMS	SCIMS
PM 28535	301655.976	6261132.173	B	2	FROM SCIMS	SCIMS
PM 68225	301784.196	6260058.014	C	3	FROM SCIMS	SCIMS
SSM 149214	301995.05	6261372.67	D	4	FROM SCIMS	SCIMS
SSM 154208	301365	6260903	U	U	FROM SCIMS	SCIMS

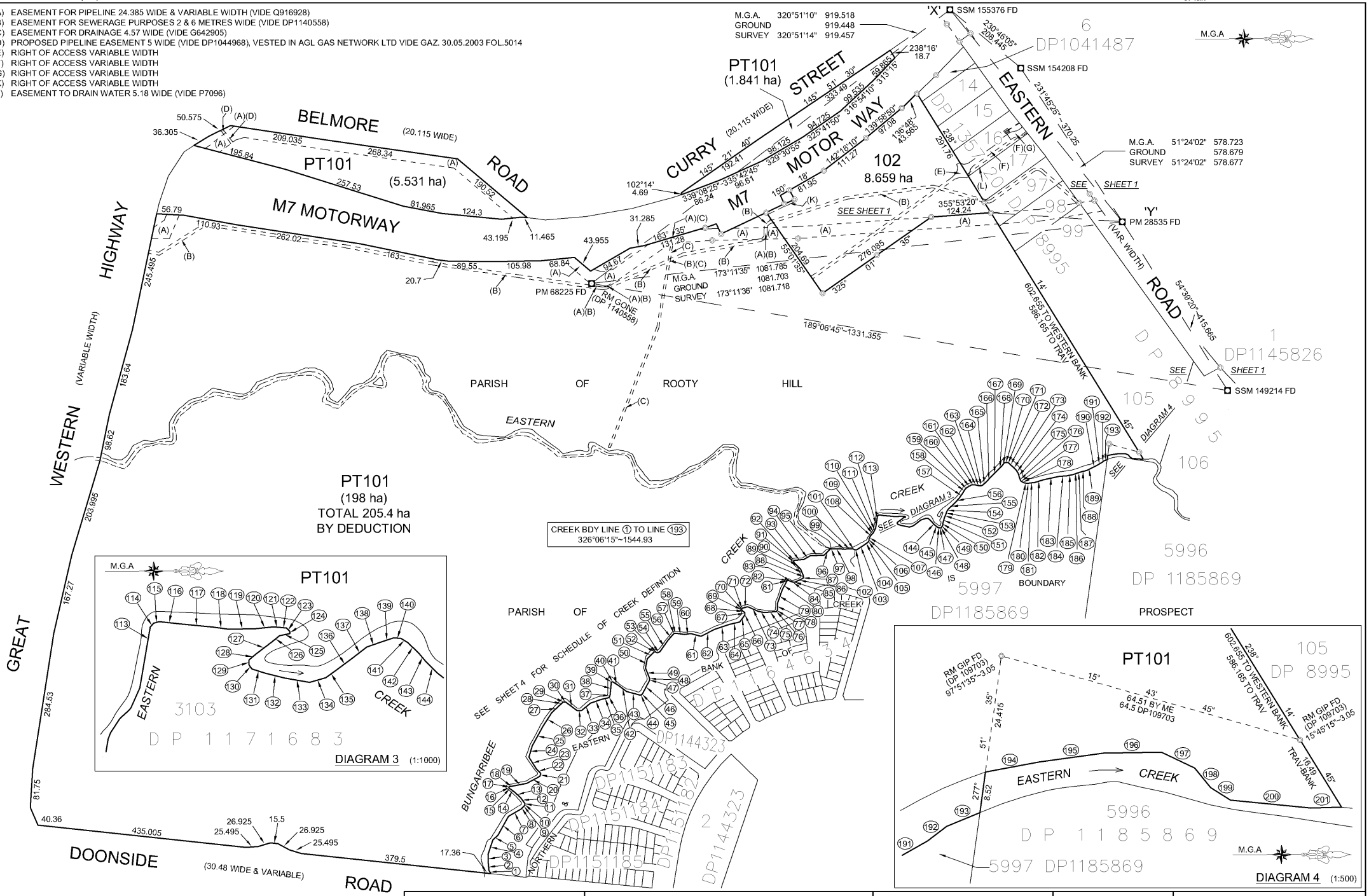
COMBINED SCALE FACTOR : 1.000076 ZONE : 56
M.G.A. CO-ORDINATES WERE ADOPTED FROM S.C.I.M.S ON 25.07.2012

Surveyor : STEPHEN J. SUTTON	PLAN OF SUBDIVISION OF LOT 1 DP 1103025 & EASEMENTS AFFECTING LOT 16 DP 135720	LGA: BLACKTOWN Locality : BUNGARRIBEE / ROOTY HILL EASTERN CREEK Subdivision No: 13053 Lengths are in metres. Reduction Ratio 1:2000	Registered 31.7.2014	DP1195067
Date of Survey : 23.08.2012				
Surveyor's Ref : SR1004 2011M7100 (581) PARTIAL SURVEY				

00 10 20 30 40 50 Table of mm 90 100 110 120 130 140

Req:R583874 /Doc:DP 1195067 P /Rev:31-Jul-2014 /Sts:SC.OK /Prt:20-May-2015 19:16 /Pgs:ALL /Seq:1 of 6
Ref:als /Src:T

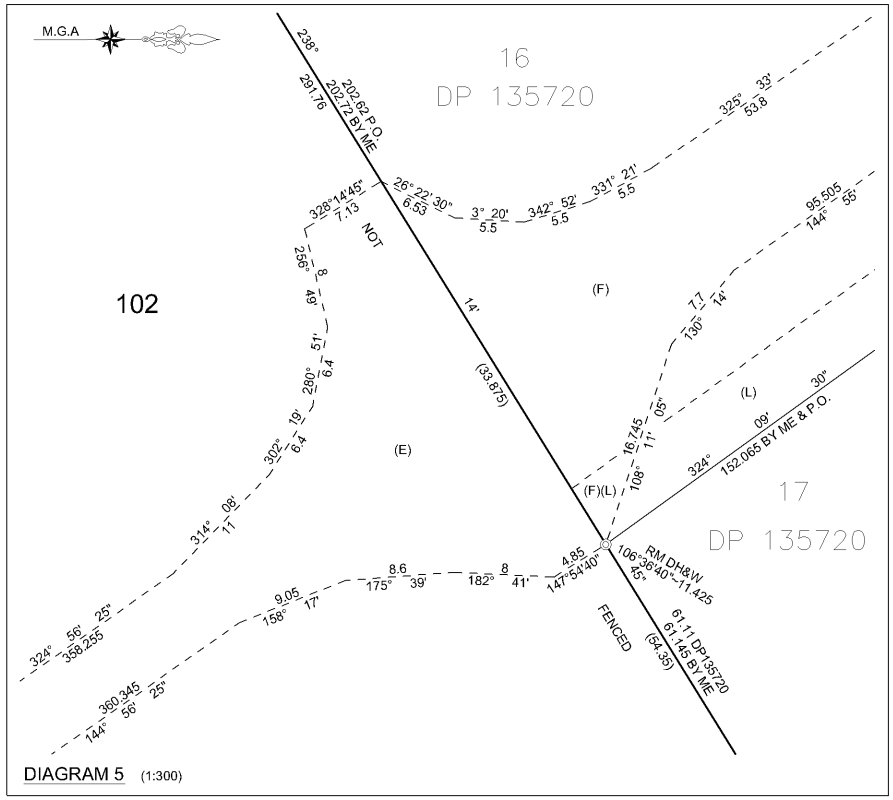
(A) EASEMENT FOR PIPELINE 24.385 WIDE & VARIABLE WIDTH (VIDE Q916928)
(B) EASEMENT FOR SEWERAGE PURPOSES 2 & 6 METRES WIDE (VIDE DP1140558)
(C) EASEMENT FOR DRAINAGE 4.57 WIDE (VIDE G642905)
(D) PROPOSED PIPELINE EASEMENT 5 WIDE (VIDE DP1044968), VESTED IN AGL GAS NETWORK LTD VIDE GAZ. 30.05.2003 FOL.5014
(E) RIGHT OF ACCESS VARIABLE WIDTH
(F) RIGHT OF ACCESS VARIABLE WIDTH
(G) RIGHT OF ACCESS VARIABLE WIDTH
(K) RIGHT OF ACCESS VARIABLE WIDTH
(L) EASEMENT TO DRAIN WATER 5.18 WIDE (VIDE P7096)

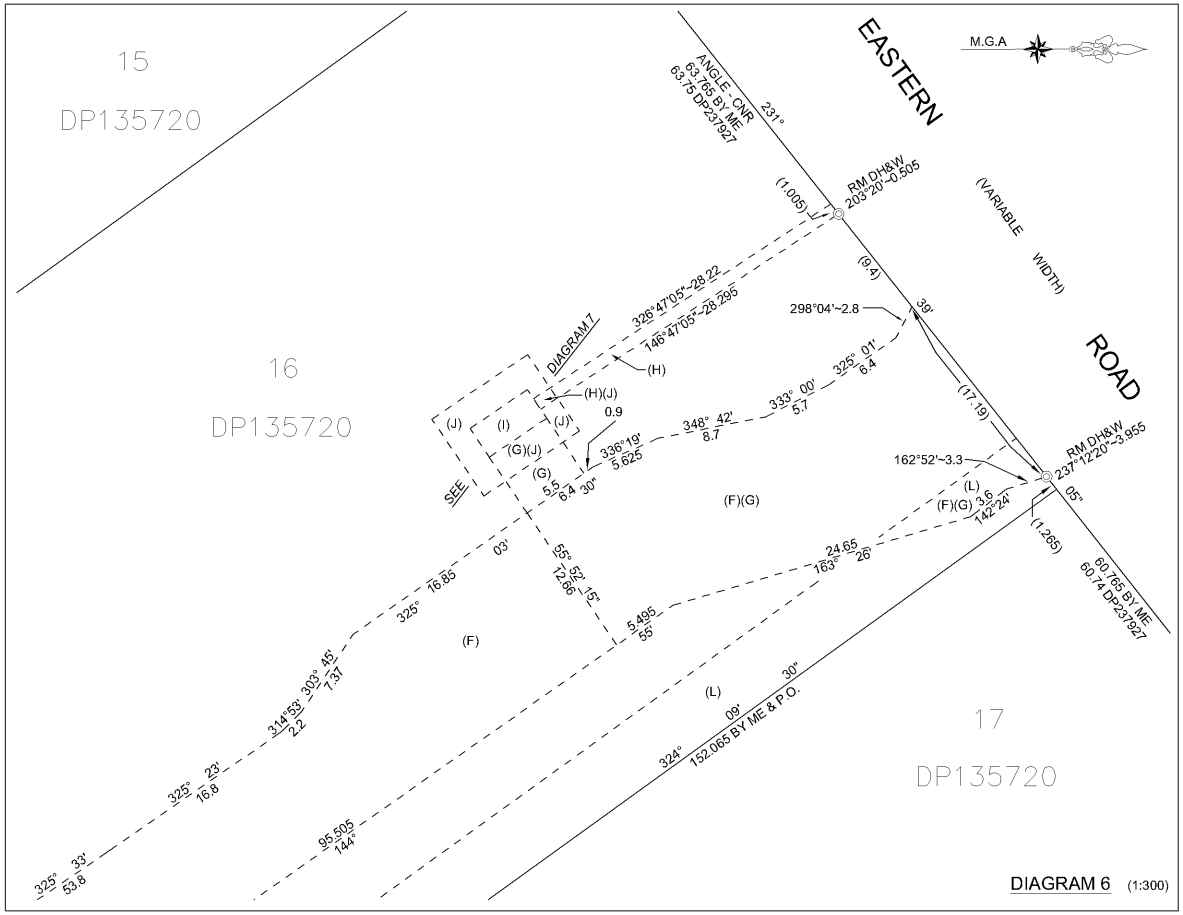


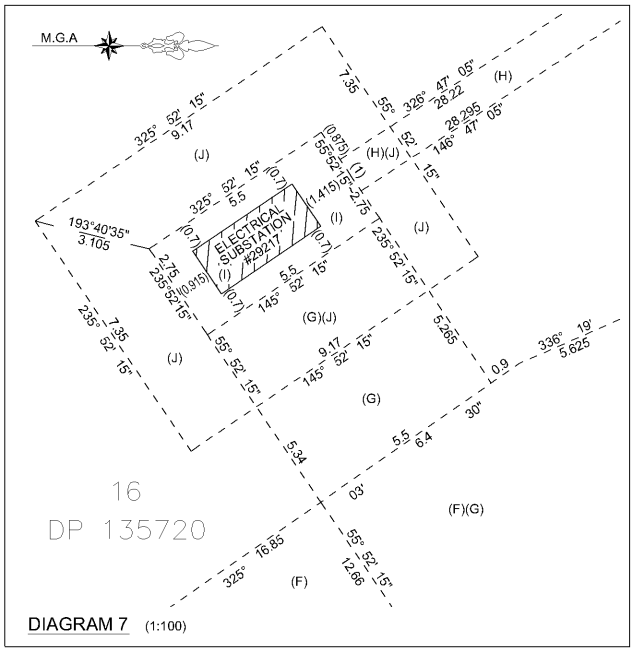
Surveyor : STEPHEN J. SUTTON Date of Survey : 23.08.2012 Surveyor's Ref : SR1004 2011M7100 (581) PARTIAL SURVEY	PLAN OF SUBDIVISION OF LOT 1 DP 1103025 & EASEMENTS AFFECTING LOT 16 DP 135720	LGA: BLACKTOWN Locality : BUNGARRIBEE / ROOTY HILL EASTERN CREEK Subdivision No: 13053 Lengths are in metres. Reduction Ratio 1:5000	Registered 31.7.2014	DP1195067

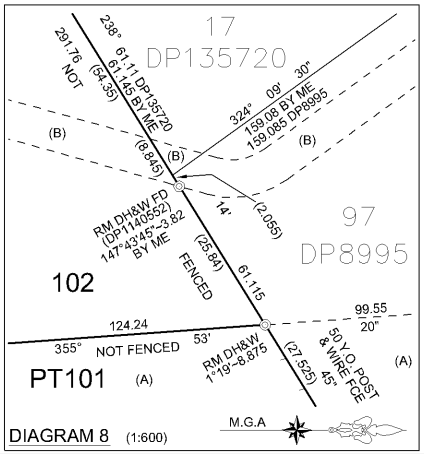
Req:R583874 /Doc:DP 1195067 P /Rev:31-Jul-2014 /Sts:SC.OK /Prt:20-May-2015 19:16 /Pgs:ALL /Seq:2 of 6
Ref:als /Src:T

00 10 20 30 40 50 Table of mm 90 100 110 120 130 140









(A) EASEMENT FOR PIPELINE 24.385 WIDE & VARIABLE WIDTH (VIDE Q916928)
(B) EASEMENT FOR SEWERAGE PURPOSES 2 & 6 METRES WIDE (VIDE DP1140558)
(E) RIGHT OF ACCESS VARIABLE WIDTH
(F) RIGHT OF ACCESS VARIABLE WIDTH
(G) RIGHT OF ACCESS VARIABLE WIDTH
(H) EASEMENT FOR UNDERGROUND CABLES 1 WIDE
(I) EASEMENT FOR PADMOUNT SUBSTATION
(J) RESTRICTION ON THE USE OF LAND
(L) EASEMENT TO DRAIN WATER 5.18 WIDE (VIDE P7096)

Surveyor : STEPHEN J. SUTTON Date of Survey : 23.08.2012 Surveyor's Ref : SR1004 2011M7100 (581) PARTIAL SURVEY	PLAN OF SUBDIVISION OF LOT 1 DP 1103025 & EASEMENTS AFFECTING LOT 16 DP 135720	LGA: BLACKTOWN Locality : BUNGARRIBEE / ROOTY HILL EASTERN CREEK Subdivision No: 13053 Lengths are in metres. Reduction Ratio 1:N/A	Registered 31.7.2014	DP1195067

Req:R583874 /Doc:DP 1195067 P /Rev:31-Jul-2014 /Sts:SC.OK /Prt:20-May-2015 19:16 /Pgs:ALL /Seq:3 of 6
Ref:als /Src:T

00 10 20 30 40 50 Table of mm 90 100 110 120 130 140

CREEK DEFINITION		
LINE	BEARING	DISTANCE
1	238°50'25"	7.715
2	265°21'25"	14.546
3	267°35'45"	18.95
4	288°54'55"	32.207
5	317°57'25"	13.153
6	299°41'05"	46.035
7	329°26'55"	29.023
8	318°08'35"	7.431
9	312°04'25"	4.261
10	286°10'15"	2.144
11	255°43'15"	2.419
12	234°15'55"	15.217
13	220°52'35"	16.684
14	219°11'05"	9.782
15	212°23'25"	3.592
16	258°24'55"	1.776
17	308°59'25"	1.587
18	350°03'45"	6.751
19	348°29'15"	29.569
20	332°34'25"	31.337
21	286°58'45"	6.421
22	223°57'25"	13.57
23	238°21'05"	29.074
24	287°07'45"	24.371
25	298°13'45"	46.345
26	303°32'25"	33.96
27	316°56'35"	23.516
28	313°49'45"	7.918
29	352°48'15"	3.229
30	12°46'35"	3.414
31	36°55'15"	28.027
32	0°20'25"	10.698
33	319°49'15"	23.891
34	341°06'05"	23.527
35	347°03'15"	16.276
36	310°32'25"	2.091
37	289°20'25"	3.999
38	275°02'45"	26.568
39	314°27'45"	1.547
40	9°30'35"	2.45
41	33°54'55"	15.656
42	36°15'05"	18.656
43	15°09'35"	29.433
44	351°42'45"	3.136
45	309°09'15"	3.983
46	297°45'55"	30.063
47	271°18'15"	3.094
48	258°21'15"	2.486
49	248°02'25"	22.263
50	281°25'35"	20.127
51	316°10'45"	20.264
52	8°52'55"	3.213
53	23°48'45"	3.203
54	344°31'35"	5.314
55	304°47'15"	28.953

CREEK DEFINITION		
LINE	BEARING	DISTANCE
56	311°20'25"	18.989
57	324°01'55"	1.732
58	3°12'35"	2.751
59	8°06'55"	18.893
60	351°33'35"	12.722
61	14°29'55"	21.829
62	333°25'25"	32.034
63	340°52'05"	32.697
64	346°58'25"	22.084
65	305°35'45"	17.176
66	287°59'55"	2.683
67	250°26'45"	3.25
68	221°36'25"	7.069
69	246°32'05"	1.865
70	270°39'45"	1.451
71	319°57'35"	1.708
72	344°01'55"	12.1
73	24°31'25"	23.16
74	11°06'35"	13.414
75	356°10'45"	24.726
76	320°49'35"	1.987
77	287°25'25"	2.404
78	272°54'35"	14.567
79	289°02'35"	28.856
80	296°46'25"	19.351
81	315°52'45"	3.071
82	7°07'55"	3.629
83	21°39'05"	7.722
84	8°06'55"	2.592
85	343°34'25"	3.157
86	336°08'45"	17.751
87	293°28'05"	2.28
88	270°12'25"	2.487
89	248°12'15"	16.209
90	224°57'45"	19.156
91	248°39'25"	3.071
92	329°36'15"	2.884
93	354°04'25"	19.23
94	329°42'35"	15.278
95	357°58'35"	28.484
96	317°01'25"	18.792
97	352°15'25"	2.995
98	1°09'45"	20.686
99	358°01'05"	8.747
100	359°28'05"	13.858
101	22°27'05"	3.698
102	358°45'45"	5.235
103	327°49'55"	19.357
104	321°31'25"	8.772
105	301°18'05"	2.35
106	280°16'35"	5.409
107	289°44'35"	2.839
108	302°57'25"	7.131
109	318°40'35"	5.196
110	305°46'25"	1.329

CREEK DEFINITION		
LINE	BEARING	DISTANCE
111	294°19'25"	8.914
112	279°17'25"	15.961
113	279°46'45"	9.654
114	311°09'	2.193
115	344°22'45"	2.553
116	6°35'05"	8.169
117	5°18'45"	14.341
118	7°57'25"	6.509
119	358°36'45"	11.347
120	354°25'25"	7.213
121	5°31'25"	2.936
122	5°55'55"	2.554
123	45°57'15"	1.962
124	82°06'45"	0.859
125	168°53'05"	4.4
126	141°22'45"	4.261
127	142°35'35"	7.957
128	140°30'05"	4.045
129	90°21'05"	2.106
130	54°08'55"	2.02
131	17°56'45"	5.823
132	14°25'15"	8.459
133	9°12'15"	10.365
134	344°14'55"	6.962
135	324°28'45"	5.693
136	324°06'05"	8.055
137	322°05'55"	7.615
138	340°54'45"	5.79
139	341°17'15"	6.004
140	4°12'05"	3.141
141	32°38'25"	3.045
142	42°24'35"	6.129
143	49°58'55"	5.463
144	44°12'25"	6.527
145	38°38'55"	6.993
146	18°25'55"	4.441
147	355°23'25"	1.971
148	324°18'35"	2
149	298°05'35"	5.303
150	277°48'15"	4.787
151	285°40'55"	12.325
152	294°01'15"	6.155
153	290°42'05"	6.16
154	298°57'45"	6.132
155	317°27'15"	17.896
156	312°27'25"	15.412
157	302°35'15"	12.417
158	302°10'25"	9.673
159	323°40'45"	4.8
160	330°23'15"	10.182
161	351°45'05"	6.916
162	15°45'35"	4.806
163	9°34'05"	7.042
164	346°29'35"	4.373
165	321°16'25"	10.955

CREEK DEFINITION		
LINE	BEARING	DISTANCE
166	311°00'15"	15.696
167	315°10'55"	19.036
168	313°34'05"	13.021
169	311°31'15"	8.123
170	359°59'25"	5.322
171	24°32'05"	4.7
172	44°34'55"	7.777
173	43°22'05"	11.698
174	57°48'25"	7.693
175	74°02'35"	10.911
176	66°31'25"	6.462
177	36°19'45"	2.259
178	28°12'15"	6.08
179	11°26'05"	7.085
180	350°05'55"	3.379
181	353°20'05"	11.103
182	342°09'35"	19.592
183	347°49'25"	32.888
184	354°38'45"	16.693
185	350°12'25"	12.828
186	341°49'25"	11.745
187	340°13'05"	2.03
188	343°54'55"	16.934
189	335°27'55"	9.95
190	331°27'55"	13.057
191	329°49'05"	12.096
192	322°47'55"	5.037
193	337°31'55"	7.505
194	349°27'55"	11.331
195	352°10'15"	13.576
196	359°08'55"	12.046
197	25°31'55"	7.661
198	51°05'55"	5.236
199	31°54'55"	4.851
200	5°35'55"	16.892
201	358°29'55"	6.352

Surveyor : STEPHEN J. SUTTON
Date of Survey : 23.08.2012
Surveyor's Ref : SR1004
2011M7100 (581)
PARTIAL SURVEY

PLAN OF SUBDIVISION OF LOT 1 DP 1103025
& EASEMENTS AFFECTING LOT 16
DP 135720

LGA: BLACKTOWN
Locality : BUNGARRIBEE / ROOTY HILL
EASTERN CREEK
Subdivision No: 13053
Lengths are in metres. Reduction Ratio 1:N/A

Registered
31.7.2014

DP1195067

Req:R583874 /Doc:DP 1195067 P /Rev:31-Jul-2014 /Sts:SC.OK /Prt:20-May-2015 19:16 /Pgs:ALL /Seq:4 of 6
Ref:als /Src:T

00 10 20 30 40 50 Table of mm 90 100 110 120 130 140

DEPOSITED PLAN ADMINISTRATION SHEET

Sheet 1 of 2 sheet(s)

Office Use Only

DP1195067

Office Use Only

Registered: 31.7.2014
Title System: TORRENS
Purpose: SUBDIVISION

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

PURSUANT TO SEC 88B OF THE CONVEYANCING ACT 1919 AND AS SET OUT IN THE ACCOMPANYING INSTRUMENT SIGNED BY THE AUTHORISED PERSON, IT IS INTENDED TO CREATE :

1. RIGHT OF ACCESS VARIABLE WIDTH (E)
2. RIGHT OF ACCESS VARIABLE WIDTH (F)
3. RIGHT OF ACCESS VARIABLE WIDTH (G)
4. EASEMENT FOR UNDERGROUND CABLES 1 WIDE (H)
5. EASEMENT FOR PADMOUNT SUBSTATION (I)
6. RESTRICTION ON THE USE OF LAND (J)
7. RIGHT OF ACCESS VARIABLE WIDTH (K)

If space is insufficient use PLAN FORM 6A annexure sheet

PLAN OF SUBDIVISION OF LOT 1 DP 1103025
& EASEMENTS AFFECTING LOT 16
DP 135720

LGA: BLACKTOWN
Locality: BUNGARRIBEE / ROOTY HILL / EASTERN CREEK
Parish: ROOTY HILL / PROSPECT
County: CUMBERLAND

Crown Lands NSW / Western Lands Office Approval

I.....in approving this plan certify
(Authorised Officer)
that all necessary approvals in regard to the allocation of the land shown herein have been given

Signature:.....
Date:.....
File Number:.....
Office:.....

Survey Certificate

I, STEPHEN J. SUTTON
of BLACKTOWN CITY COUNCIL - DX8117 BLACKTOWN
a surveyor registered under the Surveying and Spatial Information Act 2002, certify that the survey represented in this plan is accurate, has been made in accordance with the Surveying and Spatial Information Regulation 2006 and was completed on: 23-08-2012

The survey relates to LOT 102, PARTIAL SURVEY OF LOT 101 & EASEMENTS AFFECTING LOT 16 DP 135720
(specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)

Signature: Stephen Sutton Dated: 10-05-13
Surveyor registered under the Surveying and Spatial Information Act 2002

Datum Line: X - Y
Type: Urban / ~~Rural~~

Subdivision Certificate

I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to:

the proposed Subdivision set out herein
(insert 'subdivision' or 'new road')

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

Consent Authority: BLACKTOWN CITY COUNCIL
Date of Endorsement: 19 JUNE 2014
Accreditation no: N/A
Subdivision Certificate no: 13053
File no: DAP-13-1881

* Strike through inapplicable parts.

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

DP 869	DP 559158	DP 1144323
DP 8681	DP 835394	DP 1145826
DP 8995	DP 1010405	DP 1151182
DP 108067	DP 1029856	DP 1151183
DP 109703	DP 1041487	DP 1151184
DP 135720	DP 1044968	DP 1151185
DP 237927	DP 1103025	DP 1161499
DP 446473	DP 1111529	DP 1164634
DP 499004	DP 1121939	DP 1171683
DP 511957	DP 1140552	
DP 555519	DP 1140558	

(if space is insufficient use Plan Form 6A annexure sheet)

SURVEYORS REFERENCE: SR1004 — 2011M7100 (581) PARTIAL SURVEY

Req:R583874 /Doc:DP 1195067 P /Rev:31-Jul-2014 /Sts:SC.OK /Prt:20-May-201
Req:R583874 /Doc:DP 1195067 P /Rev:31-Jul-2014 /Sts:SC.OK /Prt:20-May-2015 14:16 /Pgs:ALL /Seq:6 of 6

DEPOSITED PLAN ADMINISTRATION SHEET

PLAN OF SUBDIVISION OF LOT 1 DP 1103025
& EASEMENTS AFFECTING LOT 16
DP 135720

Office Use Only

DP1195067

Office Use Only

Registered: 31.7.2014

Subdivision Certificate No: 13053

Date of Endorsement: 19/6/14

BLACKTOWN CITY COUNCIL BY ITS ATTORNEY
MICHAEL JOHN MAMO
PURSUANT TO POWER OF ATTORNEY
REGISTERED BOOK ~~4647~~ 4655 NO. ~~922~~ 18

WITNESS

KATRINA PARKER
WITNESS NAME

EXECUTED ON BEHALF OF THE BODY NAMED BELOW BY THE AUTHORISED DELEGATE(S) WHOSE SIGNATURE(S) APPEAR(S) BELOW PURSUANT TO THE AUTHORITY SPECIFIED.

BODY: WESTERN SYDNEY PARKLANDS TRUST (ABN 85 202 544 800)

AUTHORITY: S 8 OF THE WESTERN SYDNEY PARKLANDS ACT 2006

X Rocco Sergi
SIGNATURE OF WITNESS

X ROCCO SERGI
NAME OF WITNESS (PRINT)

X SNR PROGRAM OFFICER, LEASING & BUS. STRATEGY.
OCCUPATION OF WITNESS (PRINT)

Suellen Fitzgerald
SIGNATURE OF DELEGATE
NAME OF DELEGATE: SUELLEN FITZGERALD
POSITION: DIRECTOR

SURVEYORS REFERENCE: SR1004 2011M7100 (581) PARTIAL SURVEY

◄ RECENT ACTIVITY
Powered by triSearch
Advance Legal Searchers Pty Ltd Phone: 02 9644 1679
LPI On-Line

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

20/5/2015 7:27PM

FOLIO: 1/511957

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9890 FOL 212

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
17/5/1988		AMENDMENT: PARISH-COUNTY	
5/8/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
18/6/1991	Z721772	DEPARTMENTAL DEALING	
1/11/1993		AMENDMENT: LOCAL GOVT AREA	
24/3/1995	O89016	TRANSFER	
28/3/1995	DP835394	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS
18/8/1999	6105810	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

ANY ENTRIES PRECEDED BY AN ASTERISK DO NOT APPEAR ON THE CURRENT EDITION OF THE CERTIFICATE OF TITLE. WARNING: THE INFORMATION APPEARING UNDER NOTATIONS HAS NOT BEEN FORMALLY RECORDED IN THE REGISTER.

◄ RECENT ACTIVITY
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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

20/5/2015 7:24PM

FOLIO: 1/1041487

First Title(s): VOL 128 FOL 40 VOL 129 FOL 44
VOL 147 FOL 41 VOL 39 FOL 137
VOL 89 FOL 130 VOL 89 FOL 87
OLD SYSTEM
Prior Title(s): 5/1010405

Recorded	Number	Type of Instrument	C.T. Issue
5/6/2002	DP1041487	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
25/11/2002	9155842	DEPARTMENTAL DEALING	FOLIO CREATED EDITION 1
25/11/2002	9156018	DEPARTMENTAL DEALING	EDITION 2
20/1/2003	9267564	CAVEAT	
10/6/2003	9683942	DEPARTMENTAL DEALING	
8/6/2004	AA663422	LEASE	
8/6/2004	AA663423	LEASE	
8/6/2004	AA663424	LEASE	
8/6/2004	AA663425	LEASE	
8/6/2004	AA663426	LEASE	EDITION 3
3/10/2006	DP1103025	WITHDRAWN - PRE-EXAMINATION PLAN	
5/12/2006	DP1103025	RE-INSTATED - PRE-EXAMINATION PLAN	
1/8/2007	DP1103025	DEPOSITED PLAN	
29/5/2008	AD766661	APPLICATION	FOLIO CANCELLED

*** END OF SEARCH ***

ANY ENTRIES PRECEDED BY AN ASTERISK DO NOT APPEAR ON THE CURRENT EDITION OF THE CERTIFICATE OF TITLE. WARNING: THE INFORMATION APPEARING UNDER NOTATIONS HAS NOT BEEN FORMALLY RECORDED IN THE REGISTER.

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
20/5/2015 7:25PM

FOLIO: 5/1010405

First Title(s): VOL 128 FOL 40 VOL 129 FOL 44
VOL 147 FOL 41 VOL 39 FOL 137
VOL 89 FOL 130 VOL 89 FOL 87
OLD SYSTEM
Prior Title(s): 10/835394

Recorded	Number	Type of Instrument	C.T. Issue
15/2/2000	DP1010405	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
31/5/2000	6817957	TRANSFER	FOLIO CREATED EDITION 1
2/8/2000	6979798	CAVEAT	
23/1/2001	6888283	REJECTED - TRANSFER	
23/1/2001	6943015	REJECTED - CAVEAT	
7/6/2001	DP1029856	DEPOSITED PLAN	
9/7/2001	7706642	TRANSFER	EDITION 2
5/6/2002	DP1041487	DEPOSITED PLAN	
1/8/2002	7782764	REJECTED - LEASE	
16/10/2002	DP1044968	DEPOSITED PLAN	
22/11/2002	9073227	TRANSFER	FOLIO CANCELLED
10/6/2003	9683942	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

20/5/2015 7:26PM

FOLIO: 10/835394

First Title(s): OLD SYSTEM VOL 39 FOL 137
VOL 89 FOL 87 VOL 89 FOL 130
VOL 128 FOL 40 VOL 129 FOL 44
VOL 147 FOL 41
Prior Title(s): 1/511957

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1995	DP835394	DEPOSITED PLAN	FOLIO CREATED EDITION 1
24/5/1999	5836502	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	EDITION 2
15/2/2000	DP1010405	DEPOSITED PLAN	
31/5/2000	6817957	TRANSFER	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

20/5/2015 7:19PM

FOLIO: 1/1103025

First Title(s): VOL 128 FOL 40 VOL 129 FOL 44
VOL 147 FOL 41 VOL 39 FOL 137
VOL 89 FOL 130 VOL 89 FOL 87
OLD SYSTEM
Prior Title(s): 1/1041487

Recorded	Number	Type of Instrument	C.T. Issue
1/8/2007	DP1103025	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
29/5/2008	AD986062	DEPARTMENTAL DEALING	FOLIO CREATED EDITION 1
12/11/2009	DP1140558	DEPOSITED PLAN	EDITION 2
28/7/2014	AI771434	DEPARTMENTAL DEALING	
31/7/2014	DP1195067	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

20/5/2015 7:17PM

FOLIO: 101/1195067

First Title(s): VOL 128 FOL 40 VOL 129 FOL 44
VOL 147 FOL 41 VOL 39 FOL 137
VOL 89 FOL 130 VOL 89 FOL 87
OLD SYSTEM
Prior Title(s): 1/1103025

Recorded	Number	Type of Instrument	C.T. Issue
31/7/2014	DP1195067	DEPOSITED PLAN	FOLIO CREATED EDITION 1

*** END OF SEARCH ***

ANY ENTRIES PRECEDED BY AN ASTERISK DO NOT APPEAR ON THE CURRENT EDITION OF THE CERTIFICATE OF TITLE. WARNING: THE INFORMATION APPEARING UNDER NOTATIONS HAS NOT BEEN FORMALLY RECORDED IN THE REGISTER.

◄ RECENT ACTIVITY
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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 101/1195067

SEARCH DATE	TIME	EDITION NO	DATE
20/5/2015	7:15 PM	1	31/7/2014

LAND

LOT 101 IN DEPOSITED PLAN 1195067
AT BUNGARRIBEE AND OTHERS
LOCAL GOVERNMENT AREA BLACKTOWN
PARISH OF PROSPECT COUNTY OF CUMBERLAND
PARISH OF ROOTY HILL COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1195067

FIRST SCHEDULE

WESTERN SYDNEY PARKLANDS TRUST

SECOND SCHEDULE (7 NOTIFICATIONS)

---

1 G642905 EASEMENT FOR DRAINAGE 4.57 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
2 J613747 COVENANT
3 Q916928 EASEMENT FOR PIPELINE 24.385 METRE(S) WIDE AND VARIABLE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
4 DP1140558 EASEMENT FOR SEWERAGE PURPOSES 2 & 6 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1140558
5 DP1195067 RIGHT OF ACCESS VARIABLE WIDTH REFERRED TO AND NUMBERED (1) IN THE S.88B INSTRUMENT APPURTENANT TO THE LAND ABOVE DESCRIBED
6 DP1195067 RIGHT OF ACCESS VARIABLE WIDTH REFERRED TO AND NUMBERED (2) IN THE S.88B INSTRUMENT APPURTENANT TO THE LAND ABOVE DESCRIBED
7 DP1195067 RIGHT OF ACCESS VARIABLE WIDTH REFERRED TO AND NUMBERED (7) IN THE S.88B INSTRUMENT APPURTENANT TO THE LAND ABOVE DESCRIBED

NOTATIONS

DP1044968 NOTE: PLAN FOR PROPOSED EASEMENT PURPOSES SEE PIPELINES ACT,1967
9683942 NOTE: EASEMENTS FOR PIPELINE LICENCE NO.3 SHOWN IN DP1044968 VESTED IN AGL GAS NETWORK LTD. VIDE GAZ.30.5.2003 FOL.5014
UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Lotsearch - Bunga PRINTED ON 20/5/2015

ANY ENTRIES PRECEDED BY AN ASTERISK DO NOT APPEAR ON THE CURRENT EDITION OF THE CERTIFICATE OF TITLE. WARNING: THE INFORMATION APPEARING UNDER NOTATIONS HAS NOT BEEN FORMALLY RECORDED IN THE REGISTER.

Appendix C
WorkCover Dangerous Goods Search

NSW GOVERNMENT
WorkCover
Our Ref: D15/093807
Your Ref: Jack Dobson

WorkCover NSW
92–100 Donnison Street, Gosford, NSW 2250
Locked Bag 2906, Lisarow, NSW 2252
T 02 4321 5000 F 02 4325 4145
Customer Service Centre 13 10 50
DX 731 Sydney workcover.nsw.gov.au

16 June 2015

Attention: Jack Dobson
Consulting Earth Scientists Pty Ltd
Level 1 Suite 3
55 Grandview St
Pymble NSW 2073

Dear Mr Dobson,

RE SITE: Lot 101 DP 1195067 western Hwy Bungarribee NSW

I refer to your site search request received by WorkCover NSW on 4 June 2015 requesting information on licences to keep dangerous goods for the above site.

A search of the Stored Chemical Information Database (SCID) and the microfiche records held by WorkCover NSW has not located any records pertaining to the above mentioned premises.

If you have any further queries please contact the Dangerous Goods Licensing Team on (02) 4321 5500.

Yours Sincerely

Brent Jones
Senior Licensing Officer
Dangerous Goods Team

Appendix D
Planning Certificate under Section 149

Blacktown City Council

PLANNING CERTIFICATE UNDER SECTION 149

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

Certificate No.: **15-4229**
Date: **26 MAY 2015**
Page: **1 of 9**
Enquiries: **s149 Clerk**
Applicants Ref.: **LS000068**

Applicant LOTSEARCH PTY LTD
LEVEL 3, 68 ALFRED STREET
MILSONS POINT NSW 2061

Property LOT 101 DP 1195067

DOONSIDE ROAD,

Suburb BUNGARRIBEE

Parishes of Rooty Hill and Prospect

NOTE: **The land the subject of this Certificate is known to be located in the suburb of Bungarribee. For all correspondence and property transactions this suburb name is to be used.**

PART A
PRESCRIBED INFORMATION PROVIDED PURSUANT TO SECTION 149(2) OF THE *ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 (EP&A Act 1979)*

NOTE: The following information is provided pursuant to Section 149(2) of the EP&A Act 1979, as prescribed by Schedule 4 of the *Environmental Planning and Assessment Regulation 2000*, and is applicable as of the date of this certificate.

1. NAMES OF RELEVANT PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS

1.1 Environmental Planning Instruments

As at the date of this certificate the abovementioned land is not affected by Blacktown Local Environmental Plan 1988.

1.2 Development Control Plans

As at the date of this certificate the abovementioned land is not affected by Blacktown Development Control Plan 2006.

1.3 Relevant State Environmental Planning Policies (SEPPs), including draft policies, or Regional Environmental Plans deemed to be SEPPs

State Environmental Planning Policy No. 1 - Development Standards

The policy requires that variations to development standards must meet the objectives of local plans and controls. It makes development standards more flexible. It allows councils to approve a development proposal that does not comply with a set standard where this can be shown to be unreasonable or unnecessary.

State Environmental Planning Policy No. 6 - Number of Storeys in a Building

This policy sets out a method for determining the number of storeys in a building, to prevent possible confusion arising from the interpretation of various environmental planning instruments.

State Environmental Planning Policy No. 55 - Remediation of Land

This policy provides state-wide planning controls for the remediation of contaminated land. The policy states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable, remediation must take place before the land is developed. The policy makes remediation permissible across the State, defines when consent is required, requires all remediation to comply with standards, ensures land is investigated if contamination is suspected, and requires councils to be notified of all remediation proposals.

State Environmental Planning Policy No. 62 - Sustainable Aquaculture

This policy encourages the sustainable expansion of the industry in NSW. The policy implements the regional strategies already developed by creating a simple approach to identity and categorise aquaculture development on the basis of its potential environmental impact. The SEPP also identifies aquaculture development as a designated development only where there are potential environmental risks.

State Environmental Planning Policy - Affordable Rental Housing 2009

This policy establishes a consistent planning regime for the provision of affordable rental housing. The policy provides incentives for new affordable rental housing, facilitates the retention of existing affordable rentals, and expands the role of not-for-profit providers. It also aims to support local centres by providing housing for workers close to places of work, and facilitate development of housing for the homeless and other disadvantaged people.

State Environmental Planning Policy - Major Development 2005

The SEPP facilitates the development, redevelopment or protection of important urban, coastal and regional sites of economic, environmental or social significance to the State so as to facilitate the orderly use, development or conservation of those State significant sites for the benefit of the State. Schedule 3 of the SEPP identifies State significant sites and provides planning provisions for those sites. Note: This SEPP was formerly known as State Environmental Planning Policy (Major Projects) 2005.

State Environmental Planning Policy - Sydney Region Growth Centres 2006

This policy provides for the co-ordinated release of land for residential, employment and other urban development in the North West and South West Growth Centres of the Sydney Region (in conjunction with the Environmental Planning and Assessment Regulation relating to precinct planning). The policy identifies certain land as being within a residential, employment, environmental, recreation or infrastructure zone.

State Environmental Planning Policy - Basix

This SEPP operates in conjunction with Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004 to ensure the effective introduction of BASIX in NSW. The SEPP ensures consistency in the implementation of BASIX throughout the State by overriding competing provisions in other environmental planning instruments and development control plans, and specifying that SEPP 1 does not apply in relation to any development standard arising under BASIX. The draft SEPP was exhibited together with draft Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004.

State Environmental Planning Policy - Infrastructure 2007

This policy provides a consistent planning regime for infrastructure and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process. The SEPP supports greater flexibility in the location of infrastructure and service facilities along with improved regulatory certainty and efficiency.

State Environmental Planning Policy - Mining, Petroleum Production and Extractive Industries 2007

This policy aims to provide for the proper management and development of mineral, petroleum and extractive material resources for the social and economic welfare of the State. The policy establishes appropriate planning controls to encourage ecologically sustainable development.

State Environmental Planning Policy - Temporary Structures 2007

This policy provides for the erection of temporary structures and the use of places of public entertainment, while protecting public safety and local amenity. The SEPP supports the transfer of the regulation of places of public entertainment and temporary structures (such as tents, marquees and booths) from the Local Government Act 1993 to the Environmental Planning and Assessment Act 1979.

2. ZONING AND LAND USE UNDER RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS

(a) The land is unzoned under State Environmental Planning Policy (SEPP) (Western Sydney Parklands) 2009.

(b) In accordance with SEPP (Western Sydney Parklands) 2009 the following development may be carried out without development consent, but only if it is carried out by or on behalf of a public authority: cafes; community facilities; entertainment facilities; environmental facilities; environmental protection works; function centres; information and education facilities; kiosks; landscaping; maintenance depots; public administration buildings; recreation areas; recreation facilities (outdoors); signage (for directional, informative, or interpretive purposes); ticketing facilities.

(c) Any development not specified in (b) above may be carried out in the Western Parklands only with consent.

(d) Development for the purposes of residential accommodation is prohibited in the Western Parklands.

(e) The land does not include or comprise a critical habitat. Critical habitat refers to habitat that is critical to the survival of endangered species, populations or ecological communities. Areas of critical habitat are declared under Part 3 of the Threatened Species Conservation Act 1995 and Part 7A of the Fisheries Management Act 1994.

(f) The land is not within a conservation area.

(g) This land does not contain an item of environmental heritage under the protection of Blacktown Local Environmental Plan 1988.

3. COMPLYING DEVELOPMENT

Complying Development under the *General Housing Code* of the Codes SEPP may not be carried out on the land. The land is affected by specific land exemptions:

this Policy does not apply to land to which State Environmental Planning Policy (Western Sydney Parklands) 2009 applies.

Complying Development under the *Rural Housing Code* of the Codes SEPP may not be carried out on the land unless complying development is carried out on the part of the lot to which clause 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 does not apply. The land is affected by specific land exemptions:

this Policy does not apply to land to which State Environmental Planning Policy (Western Sydney Parklands) 2009 applies.

Complying Development under the *Housing Alterations Code* of the Codes SEPP may be carried out on the land.

Complying Development under the *General Development Code* of the Codes SEPP may be carried out on the land.

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

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

Complying Development under the *Subdivisions Code* of the Codes SEPP may be carried out on the land.

Complying Development under the *Demolition Code* of the Codes SEPP may be carried out on the land.

Complying Development under the *Fire Safety Code* of the Codes SEPP may be carried out on the land.

Note: Despite the above provisions, if only part of a lot is subject to an exclusion or exemption under Clause 1.17A or Clause 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 then complying development may be carried out on that part of the lot that is not affected by the exclusion or exemption.

Disclaimer: This information only addresses matters raised in Clauses 1.17A and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. It is your responsibility to ensure that you comply with the general requirements of the State Environmental Planning Policy (Exempt and Complying Codes) 2008. Failure to comply with these provisions may mean that a Complying Development Certificate issued under the provisions of State Environmental Planning Policy (Exempt and Complying Codes) 2008 is invalid.

4. COASTAL PROTECTION

The land is not affected by the operation of Sections 38 or 39 of the *Coastal Protection Act, 1979*.

5. MINE SUBSIDENCE

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

6. ROAD WIDENING AND ROAD REALIGNMENT

Blacktown Local Environmental Plan 1988 and Blacktown Development Control Plan 2006 nominate preferred road patterns throughout the City.

The land is not affected by road widening/road realignment under Division 2 of Part 3 of the Roads Act 1993 and/or environmental planning instrument.

7. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Council has not adopted any policies to restrict the development of the land by reason of the likelihood of landslip, bushfire, tidal inundation, subsidence or the occurrence of acid sulphate soils. Although the Council has not adopted a specific policy to restrict development on bush fire prone land, it is bound by statewide bush fire legislation that may restrict development. In this regard, refer to point 11 below.

Council has adopted a policy on contaminated land which may restrict the development of this land. The land contamination policy applies when zoning or land use changes are proposed on land which has previously been used for certain purposes or has the potential to be affected by such purposes undertaken on nearby lands. Council's records may not be sufficient to determine all previous uses on the land, or determine activities that may have taken place on this land. Consideration of Council's policy and the application of provisions under the relevant State legislation and guidelines is necessary.

7A. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

In respect of mainstream or backwater flood-related development controls, Council has adopted a Floodplain Management Policy which may restrict the development of the land subject to this Certificate, including development for the purposes of dwelling houses, dual occupancies, multi-dwelling housing, residential flat buildings and any other purpose that requires the placement or erection of any structure on the land. The Flood Risk Precinct Maps prepared under the policy are based on the results of Engineering Flood Studies commissioned by Government Authorities and Council. These maps indicate that the land subject to this Certificate lies partly within the Medium Flood Risk Precinct and partly within the High Flood Risk Precinct. The term Medium Flood Risk Precinct is defined as land below the 100-year flood level that is not within a High Flood Risk Precinct. This is land that is not subject to a high hydraulic hazard or where there are no significant evacuation difficulties. The term High Flood Risk Precinct is defined as the area of land below the 100-year flood event that is either subject to a high hydraulic hazard or where there are significant evacuation difficulties. Further details are provided in the NSW Government's Floodplain Development Manual and are available from Council. Council does not warrant that the information provided or made available to you is complete. Council strongly recommends that, in all cases, you seek independent professional advice to supplement your enquiries.

8. LAND RESERVED FOR ACQUISITION

For the purposes of Section 27 of the Act, the corporation will be the relevant authority to acquire land reserved for certain public purposes if the land is required to be acquired under Division 3 of Part 2 of the Land Acquisition (Just Terms Compensation) Act 1991 (the owner-initiated acquisition provisions).

9. CONTRIBUTIONS PLANS

Council currently levies contributions under Section 94 of the EP&A Act 1979 for facilities and services. The further development of the subject land may incur such contribution.

9A. BIODIVERSITY CERTIFIED LAND

The land has not been granted biodiversity certification within the meaning of the Threatened Species Conservation Act 1995.

10. BIOBANKING AGREEMENTS

Council has not been notified of the existence of a biodiversity agreement under the Threatened Species Conservation Act 1995.

11. BUSH FIRE PRONE LAND

The *Rural Fires and Environmental Assessment Legislation Amendment Act 2002*, which came into force on 1 August 2002, introduced development provisions for bush fire prone land as shown on a Bush Fire Prone Land Map. "Bush fire prone land" is land that has been designated by the Commissioner of the NSW Rural Fire Service as being bush fire prone due to characteristics of vegetation and topography. The land the subject of this certificate has been identified on Council's Bush Fire Prone Land Map as being:

Category 2 Type Vegetation

within 30m buffer around Category 2

On land that is bush fire prone, certain development may require further consideration under Section 79BA or Section 91 of the EP&A Act 1979 and under Section 100B of the *Rural Fires Act 1997*.

12. PROPERTY VEGETATION PLANS

Land to which this Certificate applies is not subject to a Property Vegetation Plan under the provisions of the *Native Vegetation Act 2003*.

13. ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Land to which this Certificate applies is not the subject of an order made under the *Trees (Disputes Between Neighbours) Act 2006*.

14. DIRECTIONS UNDER PART 3A

Land to which this Certificate applies is not subject to the above.

15. SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

Land to which this Certificate applies is not subject to the above.

16. SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE

Land to which this Certificate applies is not subject to the above.

17. SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR AFFORDABLE RENTAL HOUSING

Land to which this Certificate applies is not subject to the above.

18. MATTERS ARISING UNDER THE CONTAMINATED LAND MANAGEMENT ACT 1997 AND CONTAMINATED LAND MANAGEMENT AMENDMENT ACT 2008

(a) The land to which this certificate relates has not been declared to be significantly contaminated land at the date when the certificate was issued.

(b) The land to which the certificate relates is not subject to a management order at the date when the certificate was issued.

(c) The land to which this certificate relates is not the subject of an approved voluntary management proposal at the date when the certificate was issued.

(d) The land to which this certificate relates is not subject to an ongoing maintenance order as at the date when the certificate was issued.

(e) The land to which this certificate relates is not the subject of a site audit statement provided to the Council.

PART B
ADDITIONAL INFORMATION PROVIDED PURSUANT TO SECTION 149(5) OF THE *ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 (EP&A Act 1979)*

NOTE: When information pursuant to section 149(5) is requested the Council is under no obligation to furnish any of the information supplied herein pursuant to that section. Council draws your attention to section 149(6) which states that a Council shall not incur any liability in respect of any advice provided in good faith pursuant to sub-section (5). The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter not referred to in this Certificate.

This advice is provided in accordance with Section 149(5) and 149(6) of the EP&A Act 1979:

The land is affected by a tree preservation control under Blacktown Local Environmental Plan 1988. A person shall not ringbark, cut down, lop, top, remove, injure or wilfully destroy any tree, or cause any tree to be ringbarked, cut down, topped, lopped, injured or wilfully destroyed, except with the consent of the Council.

The provisions of any covenant, agreement or instrument applying to this land purporting to restrict or prohibit certain development may be inconsistent with the provisions of a Regional Environmental Plan, State Environmental Planning Policy or Blacktown Local Environmental Plan 1988, in which case the provisions of any such covenant, agreement or instrument may be overridden.

This land contains an Aboriginal archaeological site under the protection of the National Parks and Wildlife Service Act, 1974. Before any development can proceed in an area known to contain Aboriginal archaeological sites, a consent to destroy must be obtained from the Director of the National Parks and Wildlife Service.

This site contains a significant vegetation as identified by Blacktown City Council in its Significant Vegetation Register.

The *Threatened Species Conservation Act 1995* provides for the conservation of threatened species, populations and ecological communities of animals and plants. The *Threatened Species Conservation Act* amended the *Environmental Planning and Assessment Act 1979* to require, amongst other things, that:-

(a) a critical habitat (as defined in the *Threatened Species Conservation Act 1995)* be identified in environmental planning instruments;

(b) consent authorities and determining authorities must, when considering proposed development or an activity, assess whether it is likely to significantly affect threatened species, populations and ecological communities, or their habitats, and, if a significant effect is likely, to require the preparation of a species impact statement in accordance with the requirements of the *Threatened Species Conservation Act 1995;*

(c) consent authorities and determining authorities must, when considering proposed development or an activity, have regard to the relevant recovery plans and threat abatement plans; and

(d) a regime for concurrence and consultation between consent authorities and determining authorities and the Minister administering the *Threatened Species Conservation Act 1995* or the Director-General of the National Parks and Wildlife be instructed to aid the assessment process under the *Environmental Planning & Assessment Act 1979*.

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* provides protection for items of national significance. The Act requires a separate Commonwealth approval to be obtained where an action is likely to have significant impacts on items of national environmental significance. Items of national environmental significance include, amongst other things, nationally threatened animal and plant species and ecological communitites. The Commonwealth Department of the Environment and Water Resources should be contacted for further advice.

General Manager

Per: _____

End of Certificate

Appendix E
Dial Before You Dig Plans

Job No 9207136

Phone: 1100
www.1100.com.au

Caller Details

Contact:	Mr Jack Dobson	**Caller Id:** 1497810	**Phone:** 02 8569 2200
Company:	Consulting Earth Scientist	**Mobile:** 0427 110 715	**Fax:** Not Supplied
Address:	Suite 3, Level 1 55 Grandview Street Pymble NSW 2073	**Email:**	jack.dobson@consultingearth.com.au

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

User Reference: Not Supplied
Working on Behalf of: Private

Enquiry Date:	Start Date:	End Date:
22/05/2015	01/06/2015	03/06/2015

Address:
Holbeche Road
Arndell Park NSW 2148

Job Purpose: Excavation
Onsite Activity: Mechanical Excavation
Location of Workplace: Private Property
Location in Road: Not Supplied

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Notes/Description of Works:
Not Supplied

Your Responsibilities and Duty of Care

- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at **www.1100.com.au**
- **For more information on safe excavation practices, visit www.1100.com.au**

Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days. Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.
** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.
# Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
45669999	Endeavour Energy	0298534161	NOTIFIED
45670001	Jemena Gas West	1300880906	NOTIFIED
45670002	Sydney Water	132092	NOTIFIED
45670000	Telstra NSW, Central	1800653935	NOTIFIED

END OF UTILITIES LIST

If further clarification is required, please contact:
Endeavour Energy
Phone: (02) 9853 4161 (8:00am-4:30pm Mon-Fri)
Emergency Phone Number: 131 003

Endeavour Energy

DBYD Underground Search Report

Date: 22/05/2015

DBYD Sequence No: 45669999 **DBYD Job No:** 9207136

ENDEAVOUR ENERGY ASSETS NOT AFFECTED

To:	Mr Jack Dobson		Company:	Consulting Earth Scientist	
Address:	Suite 3, Level 1 55 Grandview Street, Pymble, NSW 2073				
Cust. ID:	1497810	Email:	jack.dobson@consultingearth.com.au		
Phone:	02 8569 2200	Mobile:	0427 110 715	Fax:	Not Supplied
Enquiry Location:	Holbeche Road, Arndell Park, NSW 2148				

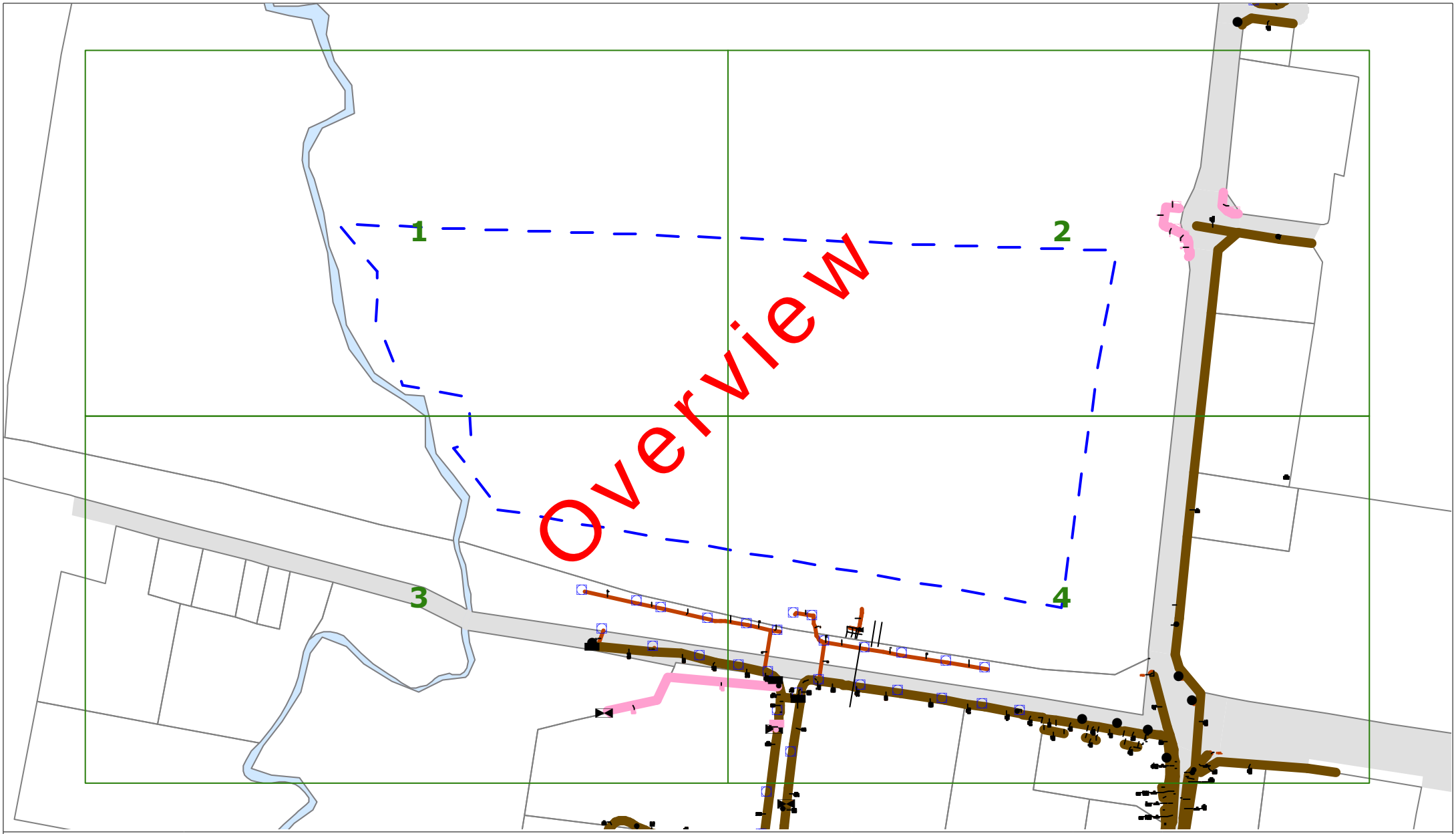
Our Search has shown that **NO UNDERGROUND ASSETS ARE PRESENT** on our plans within the nominated enquiry location. However all persons planning excavation shall read and understand the warnings below. This search is based on the graphical position of the excavation site as denoted in the DBYD customer confirmation sheet.

WARNING

- **All electrical apparatus shall be regarded as live until proved de-energised.** Contact with live electrical apparatus will cause severe injury or death.
- In accordance with the *Electricity Supply Act 1995*, you are obliged to report any damage to Endeavour Energy Assets immediately by calling **131 003**.
- The customer must obtain a new set of plans from Endeavour Energy if work has not been started or completed within twenty **(20)** working days of the original plan issue date.
- Endeavour Energy underground earth grids may exist and their location **may not** be shown on plans. Persons excavating are expected to exercise all due care, especially in the vicinity of padmount substations, pole mounted substations, pole mounted switches, transmission poles and towers.
- Endeavour Energy plans **do not** show any underground customer service mains or information relating to service mains within private property.
- Asbestos or asbestos-containing material may be present on or near Endeavour Energy's underground assets.
- Organo-Chloride Pesticides (OCP) may be present in some sub-transmission trenches.
- All plans must be printed and made available at the worksite where excavation is to be undertaken. Plans must be reviewed and understood by the crew on site prior to commencing excavation.

SUPPLEMENTARY MATERIAL

Material	Purpose	Location
DBYD Cover Letter	Endeavour Energy DBYD response Cover Letter	Attached
DBYD Important Information & Disclaimer	Endeavour Energy disclaimer, responsibilities and information on understanding plans	Attached
DBYD Response Plans	Endeavour Energy DBYD plans	Attached
Work Cover NSW *"Work near underground assets: Guide"*	Guideline for anyone involved in construction work near underground assets	Contact Work Cover NSW for a copy
Work Cover NSW *"Excavation work: Code of practice"*	Practical guidance on managing health and safety risks associated with excavation	URL [Click Here]
Safe Work Australia *"Working in the vicinity of overhead and underground electric lines guidance material"*	Provides information on how to manage risks when working in the vicinity of overhead and un-derground electric lines at a workplace	URL [Click Here]
Endeavour Energy Safety Brochures & Guides	To raise awareness of dangers of working on or near Endeavour Energy's assets	URL [Click Here]



Endeavour Energy

ENDEAVOUR ENERGY WARNING

This plan shows the approximate location of underground cables relative to fixtures existing when the cables were laid, and has been prepared solely for Endeavour Energy's own use. Endeavour Energy has taken all reasonable steps to ensure that the information is accurate as possible but will accept no liability for inaccuracies in the information shown on such plans from any cause whatsoever arising. Persons excavating are expected to exercise all due care in the vicinity where cables are indicated and will be held responsible for any damage caused to Endeavour Energy's property.

ALL ELECTRICAL APPARATUS SHALL BE CONSIDERED LIVE UNTIL PROVED DE-ENERGISED.
Contact with live electrical apparatus will cause severe injury or death.

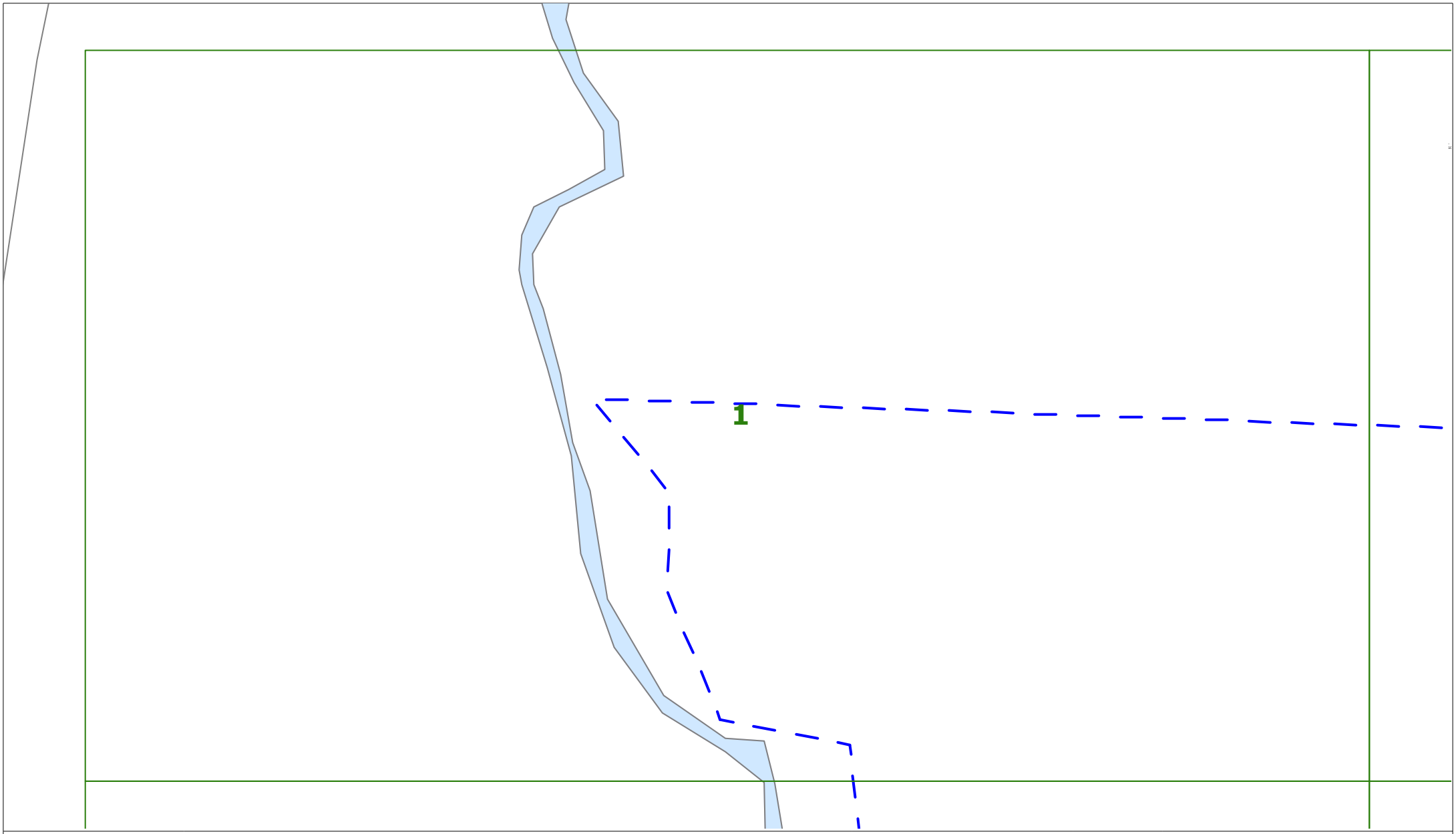
Those excavating near Endeavour Energy's cables should be aware that **ASBESTOS OR ASBESTOS - CONTAINING MATERIAL MAY BE PRESENT** in Endeavour Energy's underground assets and that Organo-Chloride Pesticides(OCP) may be present in some sub-transmission trenches.

WARNING
ASBESTOS

N

DO NOT SCALE

DBYD Sequence Number:	45669999
Issued Date:	22/05/2015



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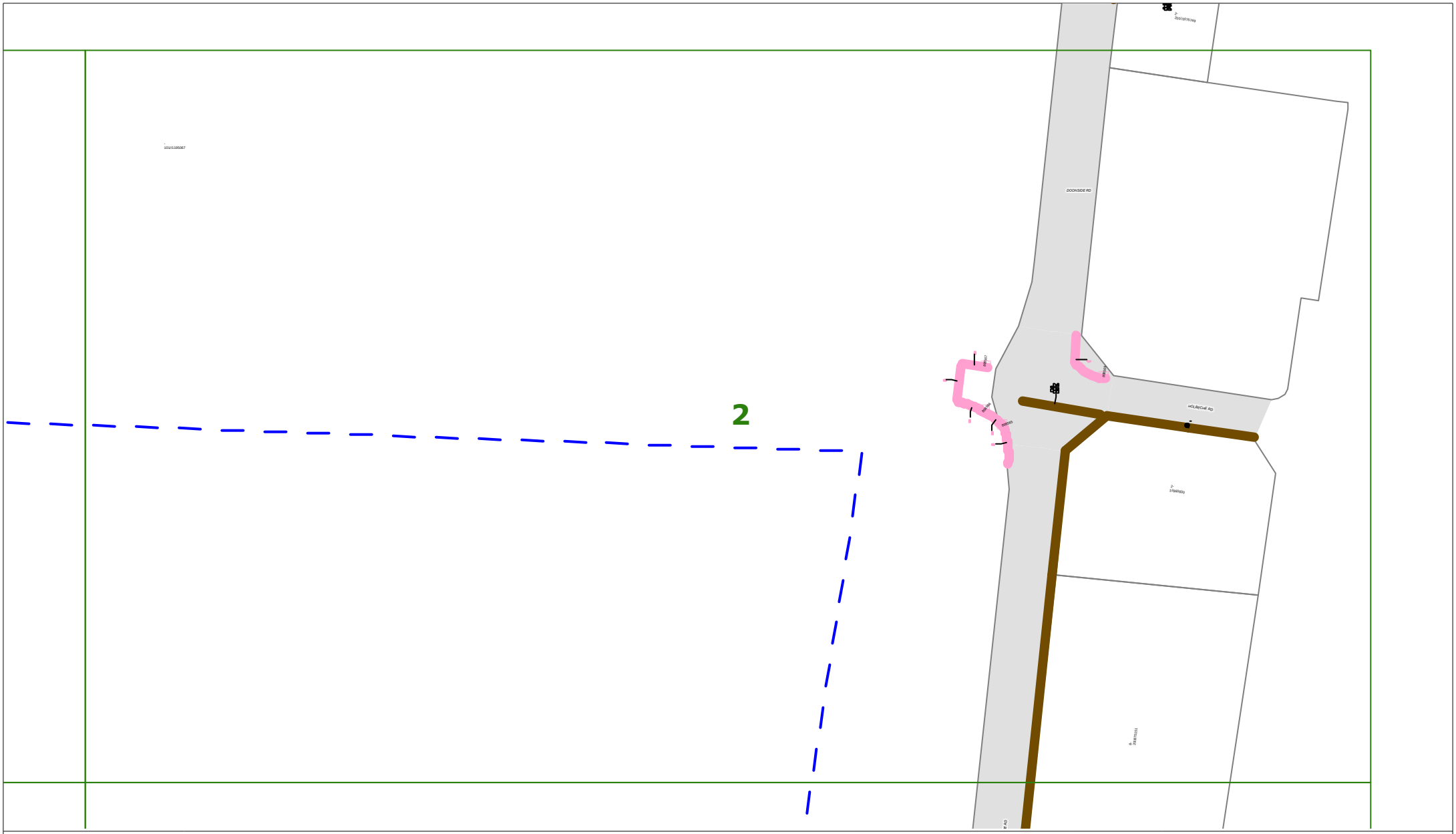
N

DO NOT SCALE

DBYD Sequence Number:	45669999
Issued Date:	22/05/2015



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N

DO NOT SCALE

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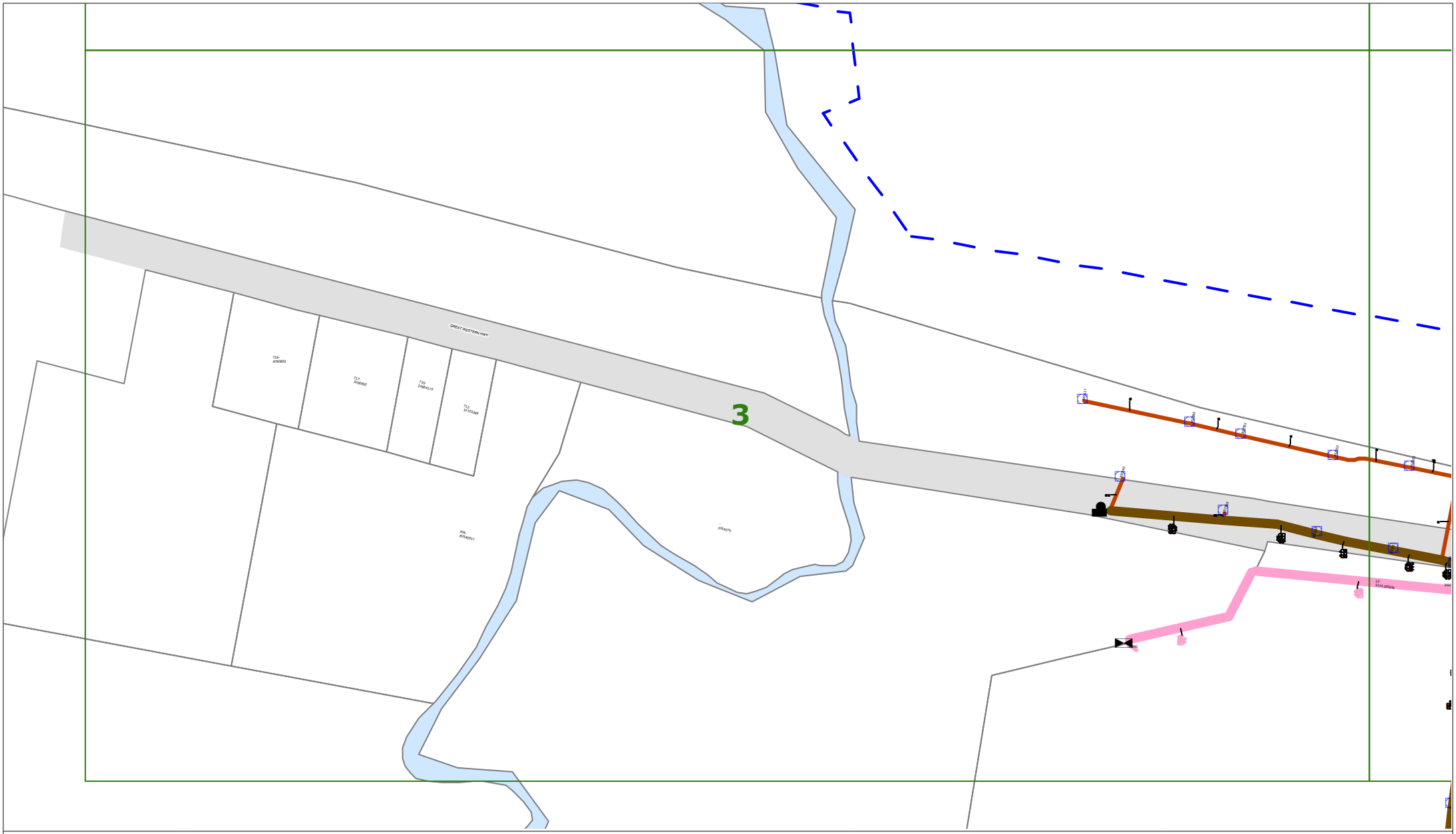

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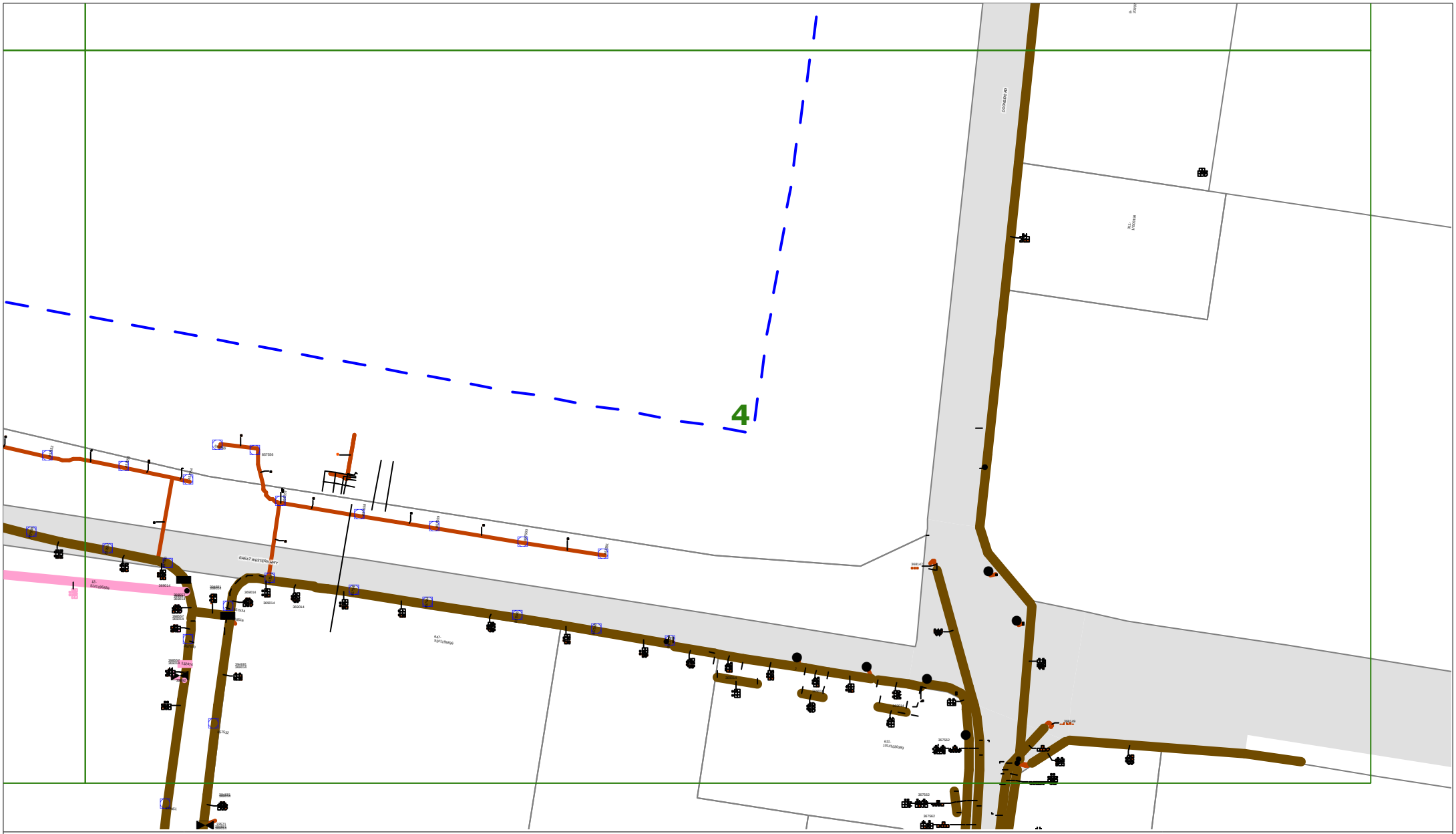
ASBESTOS

N

DO NOT SCALE

DBYD Sequence Number:	45669999
Issued Date:	22/05/2015



Endeavour Energy

WARNING
ASBESTOS

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N

DO NOT SCALE

DBYD Sequence Number:	45669999
Issued Date:	22/05/2015

HORSLEY PARK 2B

SCALE 1:2000

50 0 50 100 150 200

THIS MAP UPDATED ON 08/01/2015
THIS PLAN IS DIAGRAMATIC ONLY. DISTANCES SCALED FROM THIS PLAN MAY NOT BE ACCURATE.

RH8C	RH8D	RH9C
HP2A	HP2B	HP3A
HP2C	HP2D	HP3C

ADJOINING MAPS

554	BLACKTOWN
NETWORK AREA	MUNICIPALITY AREA

Jemena

KEY

		MAX ALLOWABLE OPERATING PRESSURE
T	TRUNK PIPELINE	7000 kPa
P	PRIMARY MAIN	3500 kPa
S	SECONDARY MAIN	1050 kPa
400	NETWORK MAIN	400 kPa
	NETWORK MAIN	300 kPa
	NETWORK MAIN	210 kPa
100	NETWORK MAIN	100 kPa
30	NETWORK MAIN	30 kPa
	NETWORK MAIN	7 kPa
	NETWORK MAIN	2 kPa
	PROPOSED MAINS	
PR 11-2 3	STEEL MAIN PROJECT NUMBER	
P	PRESSURE MONITORING STATION	
	VALVE	
	SYSTEM PRESSURE REGULATOR	
S	SIPHON	
123	NETWORK NODE	
123S	NETWORK VALVE NODE	
298	VALVE NUMBER	
6NB	6 INCH CAST IRON MAIN	
150MM	150MM STEEL MAIN	
110MM PE/NY	110MM POLYETHYLENE/NYLON MAIN	
6NB 50MM NY	50MM NYLON INSERTED INTO 6NB MAIN CAST IRON MAIN	
1.2MBL	DISTANCE IN METRES OF MAIN FROM BOUNDARY LINE	
1957	YEAR LAID	
	MUNICIPALITY BOUNDARY	
	NETWORK BOUNDARY	
123	HOUSE NUMBER	

HORSLEY PARK 2B

A0

DBYD Address:
n/a Holbeche Road
Arndell Park NSW 2148

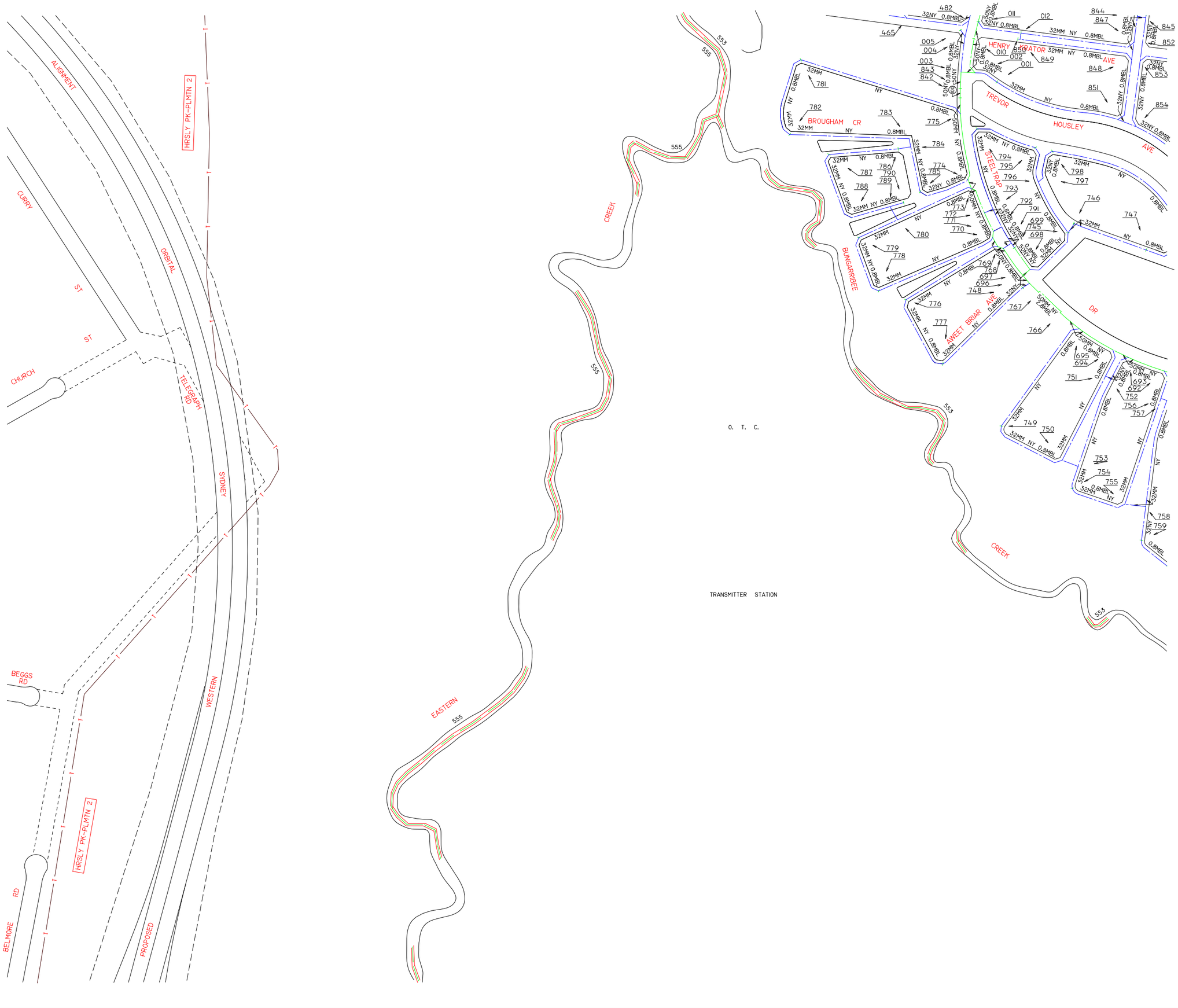
DBYD Job No: 9207136
DBYD Sequence No: 45670002

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

Copyright Reserved Sydney Water 2015

Scale: 1:2000
Date of Production: 22/05/2015 08:27:30

0m 40m 80m 120m 160m


ROOTY HILL 8D
SCALE 1:2000
50 0 50 100 150 200
THIS MAP UPDATED ON 05/11/2013
THIS PLAN IS DIAGRAMATIC ONLY. DISTANCES SCALED FROM THIS PLAN MAY NOT BE ACCURATE.
DATE ALTERED:..... BY:.....
RH8A RH8B RH9A
RH8C RH8D RH9C
HP2A HP2B HP3A
ADJOINING MAPS
555
553
NETWORK AREA
BLACKTOWN
MUNICIPALITY AREA
Jemena
KEY
MAX ALLOWABLE OPERATING PRESSURE
T TRUNK PIPELINE 7000 kPa
P PRIMARY MAIN 3500 kPa
S SECONDARY MAIN 1050 kPa
400 NETWORK MAIN 400 kPa
NETWORK MAIN 300 kPa
NETWORK MAIN 210 kPa
100 NETWORK MAIN 100 kPa
30 NETWORK MAIN 30 kPa
NETWORK MAIN 7 kPa
NETWORK MAIN 2 kPa
PROPOSED MAINS
PR 11-2 3 STEEL MAIN PROJECT NUMBER
P PRESSURE MONITORING STATION
VALVE
SYSTEM PRESSURE REGULATOR
S SIPHON
123 NETWORK NODE
123S NETWORK VALVE NODE
298 VALVE NUMBER
6NB 6 INCH CAST IRON MAIN
150MM 150MM STEEL MAIN
110MM PE/NY 110MM POLYETHYLENE/NYLON MAIN
6NB 50MM NY 50MM NYLON INSERTED INTO 6NB MAIN CAST IRON MAIN
1.2MBL DISTANCE IN METRES OF MAIN FROM BOUNDARY LINE
1957 YEAR LAID
MUNICIPALITY BOUNDARY
NETWORK BOUNDARY
123 HOUSE NUMBER
ROOTY HILL 8D
ALIGNMENT
HRSLY PK-PLMTN 2
CURRY
ORBITAL
ST
ST
CHURCH
TELEGRAPH RD
SYDNEY
BEGGS RD
WESTERN
HRSLY PK-PLMTN 2
BELMORE RD
PROPOSED
EASTERN
555
CREEK
553
555
555
O. T. C.
TRANSMITTER STATION
BUNGARRIBEE
HENRY KREATOR AVE
TREVOR HOUSLEY AVE
BROUGHAM CR
STEELRAP
SWEET BRIAR AVE
DR
CREEK
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465
005
004
003
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842
011
012
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Appendix F
Photographic Log

Photographic Log

Client Name:	Site Location:	Project Number:
Sydney Zoo	Bungarribee Super Park, Eastern Creek, NSW	CES150404-EXC

Date:	Plate No:
21/05/15	1

Description:

Site largely characterised by long grass.

Direction Photo Taken:

Northeast

Photographic Log

Client Name:	Site Location:	Project Number:
Sydney Zoo	Bungarribee Super Park, Eastern Creek, NSW	CES150404-EXC

Date:	Plate No:
21/05/15	2

Description:

Trees line the area that borders Eastern Creek.

Direction Photo Taken:

North

Photographic Log

Client Name:	Site Location:	Project Number:
Sydney Zoo	Bungarribee Super Park, Eastern Creek, NSW	CES150404-EXC

Date:	Plate No:
21/05/15	3

Description:

Eastern Creek borders the site to the west.

Direction Photo Taken:

West

Photographic Log

Client Name:	Site Location:	Project Number:
Sydney Zoo	Bungarribee Super Park, Eastern Creek, NSW	CES150404-EXC

Date:	Plate No:
21/05/15	4

Description:

Majority of the site is grassed with occasional trees (foreground). Area bordering Eastern Creek is tree-lined (background).

Direction Photo Taken:

West

Photographic Log

Client Name:	Site Location:	Project Number:
Sydney Zoo	Bungarribee Super Park, Eastern Creek, NSW	CES150404-EXC

Date:	Plate No:
21/05/15	5

Description:

Access track that transects the site from north to south.

Direction Photo Taken:

South

Photographic Log

Client Name:	Site Location:	Project Number:
Sydney Zoo	Bungarribee Super Park, Eastern Creek, NSW	CES150404-EXC

Date:	Plate No:
21/05/15	6

Description:

Former footing for telecommunications mast

Direction Photo Taken:

N/A

Photographic Log

Client Name:	Site Location:	Project Number:
Sydney Zoo	Bungarribee Super Park, Eastern Creek, NSW	CES150404-EXC

Date:	Plate No:
03/06/15	7

Description:

Test pit TP07

Direction Photo Taken:

N/A

Photographic Log

Client Name:	Site Location:	Project Number:
Sydney Zoo	Bungarribee Super Park, Eastern Creek, NSW	CES150404-EXC

Date:	Plate No:
03/06/15	8

Description:

Test pit TP07 arisings consistent with the other sample locations.

Direction Photo Taken:

South

CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
Sydney Zoo	Bungarribee Super Park, Eastern Creek, NSW	CES150404-EXC

Date:	Plate No:
03/06/15	9

Description:

Test pit TP05 arisings consistent with the other sample locations – dark brown topsoil (foreground) underlain by weathered shale (background).

Direction Photo Taken:

Northeast

CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
Sydney Zoo	Bungarribee Super Park, Eastern Creek, NSW	CES150404-EXC

Date:	Plate No:
03/06/15	10

Description:

Weathered shale.

Direction Photo Taken:

N/A

Appendix G
Test Pit and Borehole Logs

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: BH01

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Auger			Topsoil: Clayey, brown, low plasticity, moist, soft	MW02_0.1 - 0.15m			
1				Shaley Clay: Orange/brown, low plasticity, moist, soft				
2				Shaley Clay: Yellow/grey, high plasticity, dry, firm	MW02_1.0 - 1.2m			
3	Tricone			Shale: Brown/grey, clayey in part, highly weathered				
4								
5				Shale: Grey, weathered				
6								
7								
8								
9				End of Hole 8.3 m				
10								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: MW01

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Auger			Topsoil: Clayey shaley soil, brown, low plasticity, moist, soft	MW01_0.1 - 0.15m			
1				Shaley Clay: Orange/brown, low to medium plasticity, moist, soft to stiff				
				Shaley Clay: Yellow/grey, high plasticity, dry, firm	MW01_1.0 - 1.1m			
2				Shale: Brown, clayey in part, highly weathered				
5	Tricone			Shale: Grey, weathered				
9				**End of Hole 9.1 m**				

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 2 June 2015

Date Completed: 2 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

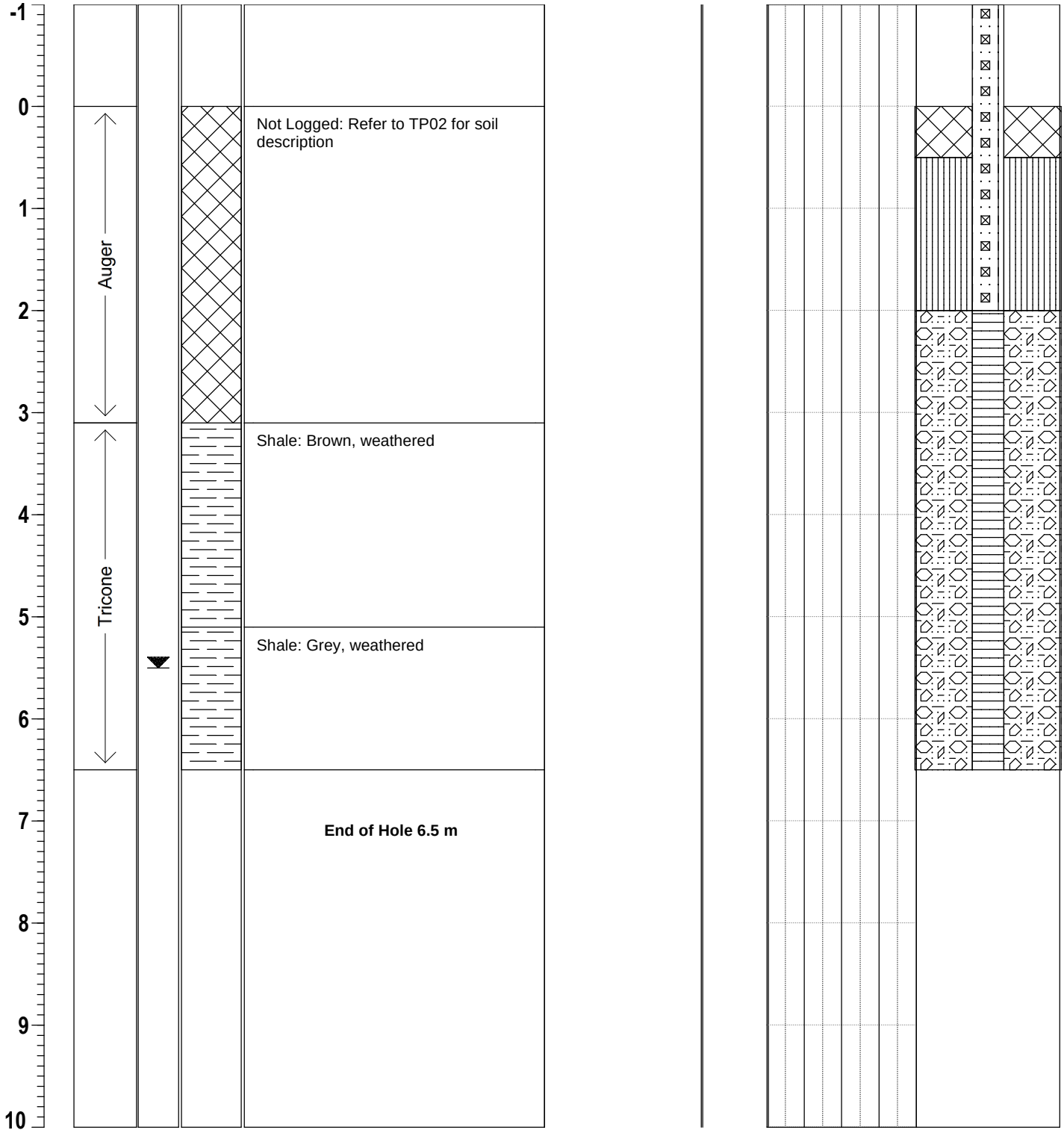
Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: MW03

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Auger			Not Logged: Refer to TP02 for soil description				
3	Tricone			Shale: Brown, weathered				
5				Shale: Grey, weathered				
6.5				**End of Hole 6.5 m**				



Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP01

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, brown, medium plasticity, moist, soft	TP01_0.1 - 0.15m			
				Shaley Clay: Orange/brown, low plasticity, moist to wet at base, soft				
1					TP01_1.0- 1.1m			
2								
3				End of Pit 3.0 m				
4								
5								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP02

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, brown, medium plasticity, moist, soft	TP02_0.1 - 0.15m B/S			
				Shaley Clay: Orange/brown, low plasticity, moist, soft to stiff				
1				Shaley Clay: Grey/brown, high plasticity, dry, firm	TP02_1.0- 1.2m			
				End of Pit 1.5 m				
2								
3								
4								
5								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP03

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, brown, medium plasticity, moist, soft	TP03_0.1 - 0.15m			
				Shaley Clay: Orange/brown, low plasticity, moist, soft to stiff				
1				Shaley Clay: Grey/brown, high plasticity, dry, stiff	TP03_1.0- 1.2m			
				Shale: Grey/brown, weathered				
2				**End of Pit 2.0 m**				
3								
4								
5								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP04

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, brown, medium plasticity, dry to moist, soft				
					TP04_0.1 - 0.3m			
				Shaley Clay: Orange/brown, medium plasticity, dry to moist, stiff				
1				Shaley Clay: Grey/red, low to medium plasticity, dry to moist, stiff to firm, drying with depth, shale fragments at base				
					TP04_1.0- 1.2m			
2								
3				End of Pit 2.8 m				
4								
5								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP05

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, brown, medium plasticity, dry to moist, soft	TP05_0.1 - 0.2m			
				Shaley Clay: Orange/brown, low to medium plasticity, moist, stiff				
1					TP05_1.0- 1.2m			
				Shaley Clay: Orange/brown/red, medium to high plasticity, dry to moist, stiff to firm				
2								
				Shale: Grey/brown, weathered				
3				End of Pit 2.8 m				
4								
5								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP06

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, brown, medium plasticity, dry to moist, soft	TP06_0.1 - 0.15m			
				Shaley Clay: Orange/brown, low to medium plasticity, moist, soft to stiff				
1				Shaley Clay: Orange/brown, medium plasticity, dry to moist, stiff	TP06_1.0- 1.2m			
2				**End of Pit 1.8 m**				
3								
4								
5								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP07

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, brown, medium plasticity, moist, soft	TP07_0.1 - 0.2m			
				Shaley Clay: Orange/brown, low plasticity, moist, stiff				
1				Shaley Clay: Grey/yellow high plasticity, dry, firm	TP07_1.0- 1.2m			
2								
3				Shale: Grey/brown, highly weathered				
				End of Pit 2.9 m				
4								
5								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP08

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, brown, medium plasticity, moist, soft	TP08_0.1 - 0.25m			
				Shaley Clay: Orange/brown, low to medium plasticity, moist, stiff				
1				Shaley Clay: Grey/brown, high plasticity, dry, firm	TP08_1.0- 1.2m			
				Shale: Grey/brown, highly weathered				
2				**End of Pit 1.5 m**				
3								
4								
5								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP09

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, brown, medium plasticity, moist, soft	TP09_0.1 - 0.3m			
				Shaley Clay: Orange/brown, medium plasticity, moist, stiff				
1					TP09_1.0- 1.2m			
				Shaley Clay: Grey/red, medium to high plasticity, dry to moist, stiff to firm				
2								
3				End of Pit 3.0 m				
4								
5								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP10

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Auger			Topsoil: Clayey, brown, low plasticity, moist, soft	TP10_0.1 - 0.15m			
1				Shaley Clay: Orange/brown, low plasticity, moist, soft				
2				Shaley Clay: Grey/brown/orange, medium to high plasticity, dry, firm	TP10_1.0 - 1.1m			
3								
4	Tricone			Shale: Brown, clayey in part, highly weathered				
5				Shale: Grey, weathered				
6								
7								
8								
9				End of Hole 8.0 m				
10								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 2 June 2015

Date Completed: 2 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP11

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, orange/brown, low plasticity, moist, soft	TP11_0.1 - 0.2m			
				Shaley Clay: Orange/brown, low plasticity, moist, stiff to firm				
				Shaley Clay: Brown/grey/red, medium to high plasticity, dry, stiff to firm				
1					TP11_0.9- 1.0m			
				End of Pit 1.0 m				
2								
3								
4								
5								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP12

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Auger			Topsoil: Clayey, brown, low plasticity, moist, soft	TP12_0.1 - 0.15m			
1				Silty Clay: Orange/brown, low plasticity, moist, stiff to firm				
				Shaley Clay: Brown/yellow, high plasticity, dry, firm	TP12_1.0- 1.2m			
2				Shaley Clay: Brown/grey, high plasticity, dry, firm				
				Shaley Clay: Brown/yellow, high plasticity, dry, firm				
3	Tricone			Shale: Brown/grey, clayey, hard, weathered				
4				Shale: Brown/grey, weathered				
5								
6				Shale: Dark brown/grey, soft, weathered				
7								
				Shale: Grey, hard, slightly weathered				
8								
9								
10								
11				**End of Hole 10.3 m**				
12								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 2 June 2015

Date Completed: 2 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

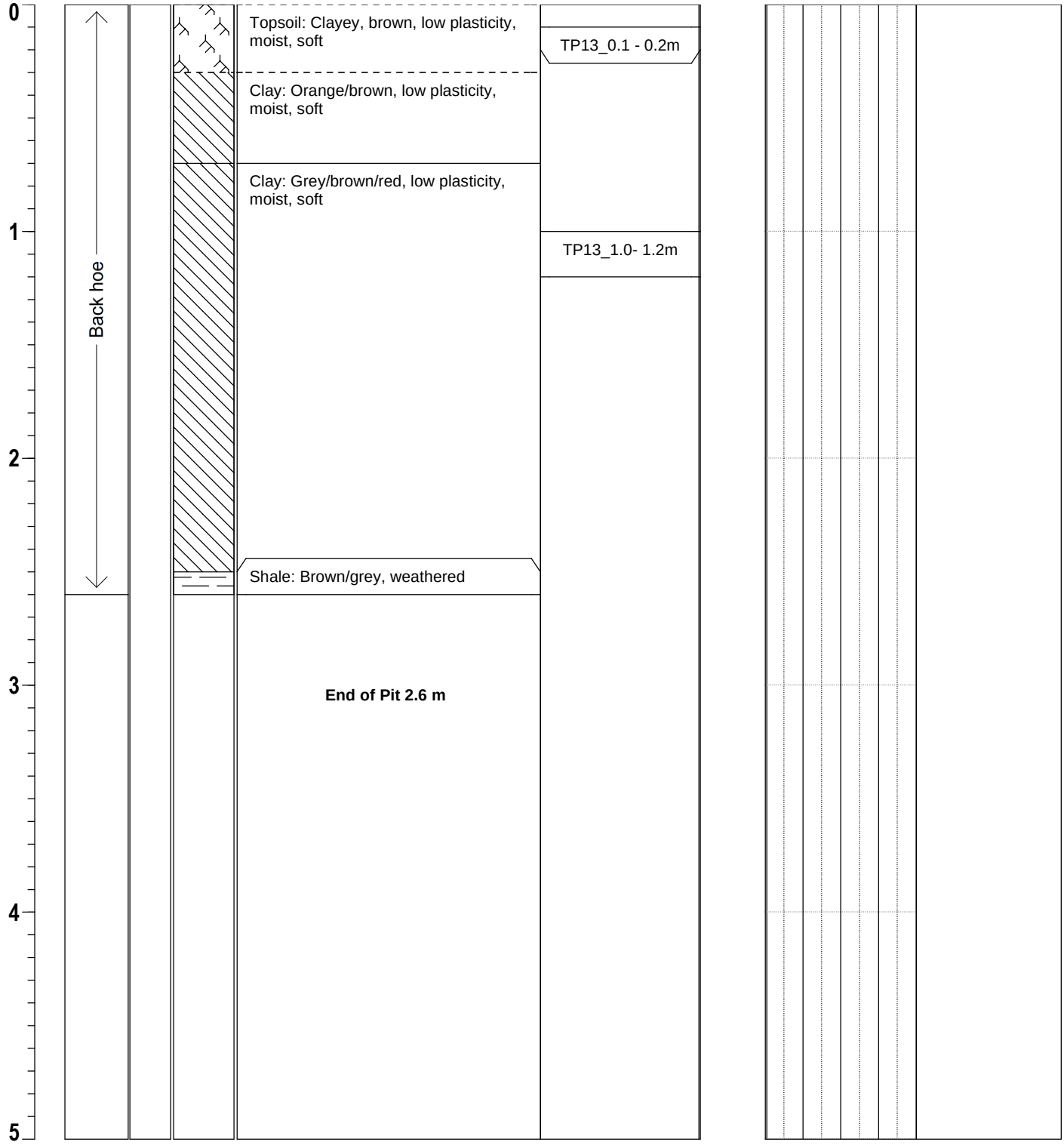
Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP13

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, brown, low plasticity, moist, soft	TP13_0.1 - 0.2m			
				Clay: Orange/brown, low plasticity, moist, soft				
1				Clay: Grey/brown/red, low plasticity, moist, soft	TP13_1.0- 1.2m			
2								
				Shale: Brown/grey, weathered				
3				End of Pit 2.6 m				
4								
5								



Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Project ID: CES150404-EXC

Project: Sydney Zoo

Client: Sydney Zoo

Location: Eastern Creek

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55-65 Grandview Street, Pymble NSW 2073
PH: (02) 8569 2200 FAX: (02) 9983 0582

Environmental Log: TP14

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			Well Construction
Depth	Method	Water	Symbol	Description	Sample ID	Type	Salinity (mS) 0 1 2 3	
0	Back hoe			Topsoil: Clayey, brown, low plasticity, moist, soft	TP14_0.1 - 0.2m			
				Shaley Clay: Grey/Yellow, medium plasticity, dry to moist, stiff to firm				
1					TP14_0.9- 1.0m			
				End of Pit 1.0 m				
2								
3								
4								
5								

Drill Company: Nealings Drilling

Drill Model: Truck Mounted Drill Rig

Hole Diameter (mm): 50 mm

Date Commenced: 3 June 2015

Date Completed: 3 June 2015

Logged/checked by: WS / JB

Appendix H
Soil and Groundwater Laboratory Test Certificates

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

CERTIFICATE OF ANALYSIS 129059

Client:

Consulting Earth Scientists Pty Ltd
Suite 3, Level 1
55 Grandview Street
Pymble
NSW 2073

Attention: Jack Dobson

Sample log in details:

Your Reference:	**CES150404-EXC-SYDNEY ZOO**
No. of samples:	17 Soils
Date samples received / completed instructions received	04/06/2015 / 04/06/2015

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: / Issue Date:	12/06/15 / 12/06/15
Date of Preliminary Report:	Not Issued

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

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	129059-1	129059-2	129059-3	129059-4	129059-5
Your Reference	----------	TP1	TP3	TP4	TP5	TP6
Depth	----------	0.1-0.15	0.1-0.15	1.0-1.2	0.1-0.15	1.0-1.2
Date Sampled		3/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - 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
Surrogate aaa-Trifluorotoluene	%	111	99	102	107	111

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	129059-6	129059-7	129059-8	129059-9	129059-10
Your Reference	----------	TP7	TP8	TP9	MW1	TP10
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	0.1-0.15	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - 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
Surrogate aaa-Trifluorotoluene	%	107	108	90	110	106

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	129059-11	129059-12	129059-14	129059-16	129059-17
Your Reference	----------	TP11	TP12	TP13	QC101	MW3
Depth	----------	0.9-1.0	1.0-1.1	0.1-0.2	1.0-1.1	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - 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
Surrogate aaa-Trifluorotoluene	%	98	97	101	103	112

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	129059-1	129059-2	129059-3	129059-4	129059-5
Your Reference	----------	TP1	TP3	TP4	TP5	TP6
Depth	----------	0.1-0.15	0.1-0.15	1.0-1.2	0.1-0.15	1.0-1.2
Date Sampled		3/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	5/06/2015	5/06/2015	5/06/2015	5/06/2015	5/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	71	77	74	78	71

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	129059-6	129059-7	129059-8	129059-9	129059-10
Your Reference	----------	TP7	TP8	TP9	MW1	TP10
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	0.1-0.15	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	5/06/2015	5/06/2015	5/06/2015	5/06/2015	5/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	71	71	70	72	66

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	129059-11	129059-12	129059-14	129059-16	129059-17
Your Reference	----------	TP11	TP12	TP13	QC101	MW3
Depth	----------	0.9-1.0	1.0-1.1	0.1-0.2	1.0-1.1	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	5/06/2015	5/06/2015	5/06/2015	5/06/2015	5/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	82	84	68	74	78

PAHs in Soil						
Our Reference:	UNITS	129059-1	129059-2	129059-3	129059-4	129059-5
Your Reference	----------	TP1	TP3	TP4	TP5	TP6
Depth	----------	0.1-0.15	0.1-0.15	1.0-1.2	0.1-0.15	1.0-1.2
Date Sampled		3/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	103	105	103	110	101

PAHs in Soil						
Our Reference:	UNITS	129059-6	129059-7	129059-8	129059-9	129059-10
Your Reference	----------	TP7	TP8	TP9	MW1	TP10
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	0.1-0.15	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	0.05	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	100	103	101	102	96

PAHs in Soil						
Our Reference:	UNITS	129059-11	129059-12	129059-14	129059-16	129059-17
Your Reference	----------	TP11	TP12	TP13	QC101	MW3
Depth	----------	0.9-1.0	1.0-1.1	0.1-0.2	1.0-1.1	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	118	110	104	102	106

Organochlorine Pesticides in soil						
Our Reference:	UNITS	129059-1	129059-2	129059-3	129059-4	129059-5
Your Reference	----------	TP1	TP3	TP4	TP5	TP6
Depth	----------	0.1-0.15	0.1-0.15	1.0-1.2	0.1-0.15	1.0-1.2
Date Sampled		3/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	89	91	89	95	85

Organochlorine Pesticides in soil						
Our Reference:	UNITS	129059-6	129059-7	129059-8	129059-9	129059-10
Your Reference	----------	TP7	TP8	TP9	MW1	TP10
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	0.1-0.15	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	88	84	88	80

Organochlorine Pesticides in soil						
Our Reference:	UNITS	129059-11	129059-12	129059-14	129059-16	129059-17
Your Reference	----------	TP11	TP12	TP13	QC101	MW3
Depth	----------	0.9-1.0	1.0-1.1	0.1-0.2	1.0-1.1	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	102	93	89	88	89

PCBs in Soil						
Our Reference:	UNITS	129059-1	129059-2	129059-3	129059-4	129059-5
Your Reference	----------	TP1	TP3	TP4	TP5	TP6
Depth	----------	0.1-0.15	0.1-0.15	1.0-1.2	0.1-0.15	1.0-1.2
Date Sampled		3/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
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
Surrogate TCLMX	%	89	91	89	95	85

PCBs in Soil						
Our Reference:	UNITS	129059-6	129059-7	129059-8	129059-9	129059-10
Your Reference	----------	TP7	TP8	TP9	MW1	TP10
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	0.1-0.15	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
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
Surrogate TCLMX	%	86	88	84	88	80

PCBs in Soil						
Our Reference:	UNITS	129059-11	129059-12	129059-14	129059-16	129059-17
Your Reference	----------	TP11	TP12	TP13	QC101	MW3
Depth	----------	0.9-1.0	1.0-1.1	0.1-0.2	1.0-1.1	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	06/06/2015	06/06/2015	06/06/2015	06/06/2015	06/06/2015
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
Surrogate TCLMX	%	102	93	89	88	89

Acid Extractable metals in soil						
Our Reference:	UNITS	129059-1	129059-2	129059-3	129059-4	129059-5
Your Reference	----------	TP1	TP3	TP4	TP5	TP6
Depth	----------	0.1-0.15	0.1-0.15	1.0-1.2	0.1-0.15	1.0-1.2
Date Sampled		3/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Arsenic	mg/kg	<4	6	<4	8	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	9	24	3	25	10
Copper	mg/kg	5	10	10	12	25
Lead	mg/kg	9	17	6	19	13
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	9	4	7	10
Zinc	mg/kg	7	17	21	16	46

Acid Extractable metals in soil						
Our Reference:	UNITS	129059-6	129059-7	129059-8	129059-9	129059-10
Your Reference	----------	TP7	TP8	TP9	MW1	TP10
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	0.1-0.15	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Arsenic	mg/kg	8	10	9	6	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	23	12	23	28	12
Copper	mg/kg	8	25	21	6	26
Lead	mg/kg	22	8	22	20	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	12	10	5	12
Zinc	mg/kg	26	50	37	13	55
Phosphorus	mg/kg	190	160	160	[NA]	1,800

Acid Extractable metals in soil						
Our Reference:	UNITS	129059-11	129059-12	129059-13	129059-14	129059-15
Your Reference	----------	TP11	TP12	MW2	TP13	TP14
Depth	----------	0.9-1.0	1.0-1.1	1.0-1.2	0.1-0.2	0.9-1.0
Date Sampled		2/06/2015	2/06/2015	3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Arsenic	mg/kg	8	<4	[NA]	8	[NA]
Cadmium	mg/kg	<0.4	0.5	[NA]	<0.4	[NA]
Chromium	mg/kg	8	13	[NA]	20	[NA]
Copper	mg/kg	20	32	[NA]	10	[NA]
Lead	mg/kg	10	11	[NA]	19	[NA]
Mercury	mg/kg	<0.1	<0.1	[NA]	<0.1	[NA]
Nickel	mg/kg	<1	27	[NA]	7	[NA]
Zinc	mg/kg	17	66	[NA]	19	[NA]
Phosphorus	mg/kg	[NA]	630	170	[NA]	240

Acid Extractable metals in soil			
Our Reference:	UNITS	129059-16	129059-17
Your Reference	----------	QC101	MW3
Depth	----------	1.0-1.1	1.0-1.1
Date Sampled		3/06/2015	3/06/2015
Type of sample		Soil	Soil
Date digested	-	05/06/2015	05/06/2015
Date analysed	-	05/06/2015	05/06/2015
Arsenic	mg/kg	6	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	14	5
Copper	mg/kg	15	21
Lead	mg/kg	16	10
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	6	5
Zinc	mg/kg	19	26
Phosphorus	mg/kg	[NA]	40

Cations in soil						
Our Reference:	UNITS	129059-6	129059-7	129059-8	129059-10	129059-12
Your Reference	----------	TP7	TP8	TP9	TP10	TP12
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	1.0-1.1	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	05/06/2015	05/06/2015	05/06/2015	05/06/2015	05/06/2015
Calcium	mg/kg	470	9	240	190	30
Potassium	mg/kg	410	830	660	620	850
Magnesium	mg/kg	450	2,300	830	2,800	3,400
Sodium	mg/kg	100	2,200	170	2,500	2,600

Cations in soil				
Our Reference:	UNITS	129059-13	129059-15	129059-17
Your Reference	----------	MW2	TP14	MW3
Depth	----------	1.0-1.2	0.9-1.0	1.0-1.1
Date Sampled		3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil
Date digested	-	05/06/2015	05/06/2015	05/06/2015
Date analysed	-	05/06/2015	05/06/2015	05/06/2015
Calcium	mg/kg	10	20	8
Potassium	mg/kg	780	570	540
Magnesium	mg/kg	3,300	1,500	1,600
Sodium	mg/kg	1,800	1,200	2,000

Misc Inorg - Soil						
Our Reference:	UNITS	129059-6	129059-7	129059-8	129059-10	129059-12
Your Reference	----------	TP7	TP8	TP9	TP10	TP12
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	1.0-1.1	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	09/06/2015	09/06/2015	09/06/2015	09/06/2015	09/06/2015
Date analysed	-	09/06/2015	09/06/2015	09/06/2015	09/06/2015	09/06/2015
pH 1:5 soil:water	pH Units	6.2	5.4	5.8	5.6	6.2
Electrical Conductivity 1:5 soil:water	µS/cm	29	530	48	410	750
Chloride, Cl 1:5 soil:water	mg/kg	<10	740	<10	410	1,000
Sulphate, SO4 1:5 soil:water	mg/kg	<10	210	20	190	290
Phosphate as P in soil	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Nitrate as N in soil	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Nitrogen in soil	mg/kg	870	290	1,200	340	470
Ammonia as N in soil	mg/kg	9.0	0.6	5.9	1.0	1.3
Estimated Salinity*	mg/kg	97	1,800	160	1,400	2,500

Misc Inorg - Soil				
Our Reference:	UNITS	129059-13	129059-15	129059-17
Your Reference	----------	MW2	TP14	MW3
Depth	----------	1.0-1.2	0.9-1.0	1.0-1.1
Date Sampled		3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil
Date prepared	-	09/06/2015	09/06/2015	09/06/2015
Date analysed	-	09/06/2015	09/06/2015	09/06/2015
pH 1:5 soil:water	pH Units	7.1	5.2	5.6
Electrical Conductivity 1:5 soil:water	µS/cm	340	710	630
Chloride, Cl 1:5 soil:water	mg/kg	380	790	880
Sulphate, SO4 1:5 soil:water	mg/kg	84	370	340
Phosphate as P in soil	mg/kg	<0.5	<0.5	<0.5
Nitrate as N in soil	mg/kg	<0.5	<0.5	<0.5
Total Nitrogen in soil	mg/kg	400	450	460
Ammonia as N in soil	mg/kg	0.8	2.0	2.6
Estimated Salinity*	mg/kg	1,200	2,400	2,100

Moisture						
Our Reference:	UNITS	129059-1	129059-2	129059-3	129059-4	129059-5
Your Reference	----------	TP1	TP3	TP4	TP5	TP6
Depth	----------	0.1-0.15	0.1-0.15	1.0-1.2	0.1-0.15	1.0-1.2
Date Sampled		3/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/06/2015	5/06/2015	5/06/2015	5/06/2015	5/06/2015
Date analysed	-	9/06/2015	9/06/2015	9/06/2015	9/06/2015	9/06/2015
Moisture	%	16	31	17	20	17

Moisture						
Our Reference:	UNITS	129059-6	129059-7	129059-8	129059-9	129059-10
Your Reference	----------	TP7	TP8	TP9	MW1	TP10
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	0.1-0.15	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/06/2015	5/06/2015	5/06/2015	5/06/2015	5/06/2015
Date analysed	-	9/06/2015	9/06/2015	9/06/2015	9/06/2015	9/06/2015
Moisture	%	20	14	23	19	17

Moisture						
Our Reference:	UNITS	129059-11	129059-12	129059-13	129059-14	129059-15
Your Reference	----------	TP11	TP12	MW2	TP13	TP14
Depth	----------	0.9-1.0	1.0-1.1	1.0-1.2	0.1-0.2	0.9-1.0
Date Sampled		2/06/2015	2/06/2015	3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/06/2015	5/06/2015	5/06/2015	5/06/2015	5/06/2015
Date analysed	-	9/06/2015	9/06/2015	9/06/2015	9/06/2015	9/06/2015
Moisture	%	17	12	13	19	10

Moisture			
Our Reference:	UNITS	129059-16	129059-17
Your Reference	----------	QC101	MW3
Depth	----------	1.0-1.1	1.0-1.1
Date Sampled		3/06/2015	3/06/2015
Type of sample		Soil	Soil
Date prepared	-	5/06/2015	5/06/2015
Date analysed	-	9/06/2015	9/06/2015
Moisture	%	17	14

Asbestos ID - soils						
Our Reference:	UNITS	129059-1	129059-2	129059-3	129059-4	129059-5
Your Reference	----------	TP1	TP3	TP4	TP5	TP6
Depth	----------	0.1-0.15	0.1-0.15	1.0-1.2	0.1-0.15	1.0-1.2
Date Sampled		3/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/06/2015	12/06/2015	12/06/2015	12/06/2015	12/06/2015
Sample mass tested	g	Approx 35g	Approx 30g	Approx 35g	Approx 30g	Approx 35g
Sample Description	-	Brown fine-grained soil	Brown coarse-grained soil & rocks	Grey coarse-grained clayey soil	Brown coarse-grained soil & rocks	Brown coarse-grained clayey soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference:	UNITS	129059-6	129059-7	129059-8	129059-9	129059-10
Your Reference	----------	TP7	TP8	TP9	MW1	TP10
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	0.1-0.15	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/06/2015	12/06/2015	12/06/2015	12/06/2015	12/06/2015
Sample mass tested	g	Approx 30g	Approx 35g	Approx 30g	Approx 35g	Approx 35g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained clayey soil	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference:	UNITS	129059-11	129059-12	129059-14	129059-16	129059-17
Your Reference	----------	TP11	TP12	TP13	QC101	MW3
Depth	----------	0.9-1.0	1.0-1.1	0.1-0.2	1.0-1.1	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/06/2015	12/06/2015	12/06/2015	12/06/2015	12/06/2015
Sample mass tested	g	Approx 40g	Approx 35g	Approx 35g	Approx 30g	Approx 35g
Sample Description	-	Purple coarse-grained clayey soil	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks	Purple coarse-grained clayey soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'TEQ 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. 'TEQ 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. 'TEQ 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-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Soils are analysed following a water extraction.
Inorg-055	Nitrate - determined colourimetrically. Soils are analysed following a water extraction.
Inorg-055/062	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Soils are analysed following a KCl extraction.
Inorg-034	Soil samples are extracted and measured using a conductivity cell and dedicated meter.

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.
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.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/06/2015	129059-1	05/06/2015 || 05/06/2015	LCS-5	05/06/2015
Date analysed	-			06/06/2015	129059-1	06/06/2015 || 06/06/2015	LCS-5	06/06/2015
TRHC$_6$ - C$_9$	mg/kg	25	Org-016	<25	129059-1	<25 || <25	LCS-5	120%
TRHC$_6$ - C$_{10}$	mg/kg	25	Org-016	<25	129059-1	<25 || <25	LCS-5	120%
Benzene	mg/kg	0.2	Org-016	<0.2	129059-1	<0.2 || <0.2	LCS-5	107%
Toluene	mg/kg	0.5	Org-016	<0.5	129059-1	<0.5 || <0.5	LCS-5	116%
Ethylbenzene	mg/kg	1	Org-016	<1	129059-1	<1 || <1	LCS-5	125%
m+p-xylene	mg/kg	2	Org-016	<2	129059-1	<2 || <2	LCS-5	126%
o-Xylene	mg/kg	1	Org-016	<1	129059-1	<1 || <1	LCS-5	125%
naphthalene	mg/kg	1	Org-014	<1	129059-1	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	109	129059-1	111 || 98 || RPD: 12	LCS-5	120%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/06/2015	129059-1	5/06/2015 || 5/06/2015	LCS-5	05/06/2015
Date analysed	-			06/06/2015	129059-1	06/06/2015 || 06/06/2015	LCS-5	06/06/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	129059-1	<50 || <50	LCS-5	101%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	129059-1	<100 || <100	LCS-5	103%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	129059-1	<100 || <100	LCS-5	104%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	129059-1	<50 || <50	LCS-5	101%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	129059-1	<100 || <100	LCS-5	103%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	129059-1	<100 || <100	LCS-5	104%
Surrogate o-Terphenyl	%		Org-003	76	129059-1	71 || 72 || RPD: 1	LCS-5	83%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/06/2015	129059-1	05/06/2015 || 05/06/2015	LCS-5	05/06/2015
Date analysed	-			06/06/2015	129059-1	06/06/2015 || 06/06/2015	LCS-5	06/06/2015
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	LCS-5	113%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	LCS-5	104%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	LCS-5	114%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	LCS-5	108%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	LCS-5	113%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	LCS-5	99%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	129059-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	129059-1	<0.05 || <0.05	LCS-5	132%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	111	129059-1	103 || 101 || RPD: 2	LCS-5	96%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/06/2015	129059-1	05/06/2015 || 05/06/2015	LCS-5	05/06/2015
Date analysed	-			06/06/2015	129059-1	06/06/2015 || 06/06/2015	LCS-5	06/06/2015
HCB	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	LCS-5	88%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	LCS-5	94%
Heptachlor	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	LCS-5	92%
delta-BHC	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	LCS-5	101%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	LCS-5	106%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	LCS-5	107%
Dieldrin	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	LCS-5	113%
Endrin	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	LCS-5	102%
pp-DDD	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	LCS-5	101%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	LCS-5	87%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	94	129059-1	89 || 89 || RPD: 0	LCS-5	85%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/06/2015	129059-1	05/06/2015 || 05/06/2015	LCS-5	05/06/2015
Date analysed	-			06/06/2015	129059-1	06/06/2015 || 06/06/2015	LCS-5	06/06/2015
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	129059-1	<0.1 || <0.1	LCS-5	123%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	129059-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	94	129059-1	89 || 89 || RPD: 0	LCS-5	90%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date digested	-			05/06/2015	129059-1	05/06/2015 || 05/06/2015	LCS-7	05/06/2015
Date analysed	-			05/06/2015	129059-1	05/06/2015 || 05/06/2015	LCS-7	05/06/2015
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	129059-1	<4 || <4	LCS-7	97%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	129059-1	<0.4 || <0.4	LCS-7	97%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	129059-1	9 || 9 || RPD: 0	LCS-7	95%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	129059-1	5 || 6 || RPD: 18	LCS-7	99%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	129059-1	9 || 9 || RPD: 0	LCS-7	92%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	129059-1	<0.1 || <0.1	LCS-7	88%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	129059-1	3 || 3 || RPD: 0	LCS-7	93%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	129059-1	7 || 7 || RPD: 0	LCS-7	93%
Phosphorus	mg/kg	10	Metals-020 ICP-AES	<10	[NT]	[NT]	LCS-7	98%

QUALITY CONTROL Cations in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			05/06/2015	[NT]	[NT]	LCS-7	05/06/2015
Date analysed	-			05/06/2015	[NT]	[NT]	LCS-7	05/06/2015
Calcium	mg/kg	5	Metals-020 ICP-AES	<5	[NT]	[NT]	LCS-7	99%
Potassium	mg/kg	10	Metals-020 ICP-AES	<10	[NT]	[NT]	LCS-7	113%
Magnesium	mg/kg	5	Metals-020 ICP-AES	<5	[NT]	[NT]	LCS-7	95%
Sodium	mg/kg	10	Metals-020 ICP-AES	<10	[NT]	[NT]	LCS-7	93%

QUALITY CONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			09/06/2015	129059-7	09/06/2015 || 09/06/2015	LCS-1	09/06/2015
Date analysed	-			09/06/2015	129059-7	09/06/2015 || 09/06/2015	LCS-1	09/06/2015
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	129059-7	5.4 || 5.3 || RPD: 2	LCS-1	101%
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	129059-7	530 || 530 || RPD: 0	LCS-1	97%
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	129059-7	740 || 600 || RPD: 21	LCS-1	95%
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	129059-7	210 || 180 || RPD: 15	LCS-1	100%
Phosphate as P in soil	mg/kg	0.5	Inorg-060	<0.5	129059-7	<0.5 || [N/T]	LCS-1	98%
Nitrate as N in soil	mg/kg	0.5	Inorg-055	<0.5	129059-7	<0.5 || [N/T]	LCS-1	102%
Total Nitrogen in soil	mg/kg	10	Inorg-055/062	<10	129059-7	290 || [N/T]	LCS-1	103%
Ammonia as N in soil	mg/kg	0.5	Inorg-057	<0.5	129059-7	0.6 || [N/T]	LCS-1	103%
Estimated Salinity*	mg/kg	5	Inorg-034	<5	129059-7	1800 || 1800 || RPD: 0	[NR]	[NR]

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	129059-11	05/06/2015 || 05/06/2015	129059-2	05/06/2015
Date analysed	-	129059-11	06/06/2015 || 06/06/2015	129059-2	06/06/2015
TRHC$_6$ - C$_9$	mg/kg	129059-11	<25 || <25	129059-2	104%
TRHC$_6$ - C$_{10}$	mg/kg	129059-11	<25 || <25	129059-2	104%
Benzene	mg/kg	129059-11	<0.2 || <0.2	129059-2	90%
Toluene	mg/kg	129059-11	<0.5 || <0.5	129059-2	99%
Ethylbenzene	mg/kg	129059-11	<1 || <1	129059-2	109%
m+p-xylene	mg/kg	129059-11	<2 || <2	129059-2	110%
o-Xylene	mg/kg	129059-11	<1 || <1	129059-2	108%
naphthalene	mg/kg	129059-11	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	129059-11	98 || 115 || RPD: 16	129059-2	98%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	129059-11	5/06/2015 || 5/06/2015	129059-2	5/06/2015
Date analysed	-	129059-11	06/06/2015 || 06/06/2015	129059-2	06/06/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	129059-11	<50 || <50	129059-2	109%
TRHC$_{15}$ - C$_{28}$	mg/kg	129059-11	<100 || <100	129059-2	112%
TRHC$_{29}$ - C$_{36}$	mg/kg	129059-11	<100 || <100	129059-2	96%
TRH>C$_{10}$-C$_{16}$	mg/kg	129059-11	<50 || <50	129059-2	109%
TRH>C$_{16}$-C$_{34}$	mg/kg	129059-11	<100 || <100	129059-2	112%
TRH>C$_{34}$-C$_{40}$	mg/kg	129059-11	<100 || <100	129059-2	96%
Surrogate o-Terphenyl	%	129059-11	82 || 72 || RPD: 13	129059-2	77%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	129059-11	05/06/2015 || 05/06/2015	129059-2	05/06/2015
Date analysed	-	129059-11	06/06/2015 || 06/06/2015	129059-2	06/06/2015
Naphthalene	mg/kg	129059-11	<0.1 || <0.1	129059-2	114%
Acenaphthylene	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	129059-11	<0.1 || <0.1	129059-2	105%
Phenanthrene	mg/kg	129059-11	<0.1 || <0.1	129059-2	117%
Anthracene	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	129059-11	<0.1 || <0.1	129059-2	110%
Pyrene	mg/kg	129059-11	<0.1 || <0.1	129059-2	116%
Benzo(a)anthracene	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	129059-11	<0.1 || <0.1	129059-2	101%
Benzo(b,j+k)fluoranthene	mg/kg	129059-11	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	129059-11	<0.05 || <0.05	129059-2	131%
Indeno(1,2,3-c,d)pyrene	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	129059-11	118 || 104 || RPD: 13	129059-2	103%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	129059-11	05/06/2015 || 05/06/2015	129059-2	05/06/2015
Date analysed	-	129059-11	06/06/2015 || 06/06/2015	129059-2	06/06/2015
HCB	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	129059-11	<0.1 || <0.1	129059-2	91%
gamma-BHC	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	129059-11	<0.1 || <0.1	129059-2	97%
Heptachlor	mg/kg	129059-11	<0.1 || <0.1	129059-2	93%
delta-BHC	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	129059-11	<0.1 || <0.1	129059-2	103%
Heptachlor Epoxide	mg/kg	129059-11	<0.1 || <0.1	129059-2	109%
gamma-Chlordane	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	129059-11	<0.1 || <0.1	129059-2	110%
Dieldrin	mg/kg	129059-11	<0.1 || <0.1	129059-2	116%
Endrin	mg/kg	129059-11	<0.1 || <0.1	129059-2	102%
pp-DDD	mg/kg	129059-11	<0.1 || <0.1	129059-2	103%
Endosulfan II	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	129059-11	<0.1 || <0.1	129059-2	86%
Methoxychlor	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	129059-11	102 || 91 || RPD: 11	129059-2	93%

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	129059-11	05/06/2015 || 05/06/2015	129059-2	05/06/2015
Date analysed	-	129059-11	06/06/2015 || 06/06/2015	129059-2	06/06/2015
Aroclor 1016	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	129059-11	<0.1 || <0.1	129059-2	126%
Aroclor 1260	mg/kg	129059-11	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	129059-11	102 || 91 || RPD: 11	129059-2	87%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	129059-11	05/06/2015 || 05/06/2015	129059-2	05/06/2015
Date analysed	-	129059-11	05/06/2015 || 05/06/2015	129059-2	05/06/2015
Arsenic	mg/kg	129059-11	8 || 5 || RPD: 46	129059-2	89%
Cadmium	mg/kg	129059-11	<0.4 || <0.4	129059-2	89%
Chromium	mg/kg	129059-11	8 || 7 || RPD: 13	129059-2	92%
Copper	mg/kg	129059-11	20 || 19 || RPD: 5	129059-2	101%
Lead	mg/kg	129059-11	10 || 8 || RPD: 22	129059-2	88%
Mercury	mg/kg	129059-11	<0.1 || <0.1	129059-2	108%
Nickel	mg/kg	129059-11	<1 || <1	129059-2	85%
Zinc	mg/kg	129059-11	17 || 13 || RPD: 27	129059-2	88%
Phosphorus	mg/kg	[NT]	[NT]	[NR]	[NR]
QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	129059-6	09/06/2015 || 09/06/2015	129059-10	09/06/2015
Date analysed	-	129059-6	09/06/2015 || 09/06/2015	129059-10	09/06/2015
Chloride, Cl 1:5 soil:water	mg/kg	129059-6	<10 || [N/T]	129059-10	#
Sulphate, SO4 1:5 soil:water	mg/kg	129059-6	<10 || [N/T]	129059-10	108%
Phosphate as P in soil	mg/kg	129059-6	<0.5 || <0.5	[NR]	[NR]
Nitrate as N in soil	mg/kg	129059-6	<0.5 || <0.5	[NR]	[NR]
Total Nitrogen in soil	mg/kg	129059-6	870 || 870 || RPD: 0	[NR]	[NR]
Ammonia as N in soil	mg/kg	129059-6	9.0 || 9.0 || RPD: 0	[NR]	[NR]

Report Comments:

Chloride # Percent recovery is not possible to report due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.

Asbestos ID was analysed by Approved Identifier: Paul Ching
Asbestos ID was authorised by Approved Signatory: Paul Ching

INS: Insufficient sample for this test
NA: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

Aileen Hie

From: Jack Dobson <jack.dobson@consultingearth.com.au>
Sent: Monday, 22 June 2015 3:43 PM
To: Alexander Maclean
Cc: Aileen Hie
Subject: RE: Results for registration '129059 - CES150404-EXC-SYDNEY ZOO'

Hi Alexander,

Can we please have testing for Organic Carbon and Boron carried out on the following samples:

-6 -7 -8 -10 -12 -13 -15 -17

TP7 0.1-0.15, TP8 1.0-1.2, TP9 0.1-0.3, TP10 1.0-1.1. TP12 1.0-1.1, MW2 1.0-1.2, TP14 0.9-1.0, MW3 1.0-1.1

Let me know if you require any additional information.

Regards

Envirolab Ref: 129059A
Due: 29/6/15
Std + 1A

Jack Dobson
Associate Environmental Scientist

www.consultingearth.com.au

Suite 3, Level 1
55, Grandview Street
Pymble, NSW, 2073
Tel: +61 2 8569 2200 Fax: +61 2 9983 0582 M: +61 427 110 715

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-----Original Message-----
From: Alexander Maclean [mailto:AMaclean@envirolab.com.au]
Sent: Monday, 15 June 2015 3:21 PM
To: 'jack.dobson@consultingearth.com.au'
Cc: Aileen Hie
Subject: FW: Results for registration '129059 - CES150404-EXC-SYDNEY ZOO'

Regards,

Alexander Maclean | Customer Service | Envirolab Services Pty Ltd

Great Chemistry.Great Service

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200 F 612 9910 6201
mailto:amaclean@envirolab.com.au | http://www.envirolab.com.au

-----Original Message-----
From: Alexander Maclean
Sent: Friday, 12 June 2015 04:19 PM
To: 'Jack Dobson'
Cc: Wesley South; 'kay.lowe@consultingearth.com.au'
Subject: Results for registration '129059 - CES150404-EXC-SYDNEY ZOO'

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the Invoice
a copy of the COC
an excel file containing the results

Please note that a hard copy will not be posted.

Enquiries should be made directly to:
Jacinta Hurst on jhurst@envirolabservices.com.au or David Springer on dspringer@envirolabservices.com.au
or
Tania Notaras on tnotaras@envirolabservices.com.au

Regards

Envirolab Services
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
www.envirolabservices.com.au

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

CERTIFICATE OF ANALYSIS 129059-A

Client:
Consulting Earth Scientists Pty Ltd
Suite 3, Level 1
55 Grandview Street
Pymble
NSW 2073

Attention: Jack Dobson

Sample log in details:

Your Reference:	**CES150404-EXC-SYDNEY ZOO**
No. of samples:	Additional Testing on 8 Soils
Date samples received / completed instructions received	04/06/2015 / 22/06/15

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: / Issue Date:	29/06/15 / 26/06/15
Date of Preliminary Report:	Not Issued

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

Results Approved By:

Jacinta Hurst
Laboratory Manager

Acid Extractable metals in soil						
Our Reference:	UNITS	129059-A-6	129059-A-7	129059-A-8	129059-A-10	129059-A-12
Your Reference	----------	TP7	TP8	TP9	TP10	TP12
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	1.0-1.1	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015
Date analysed	-	22/06/2015	22/06/2015	22/06/2015	22/06/2015	22/06/2015
Boron	mg/kg	<3	<3	<3	<3	<3

Acid Extractable metals in soil				
Our Reference:	UNITS	129059-A-13	129059-A-15	129059-A-17
Your Reference	----------	MW2	TP14	MW3
Depth	----------	1.0-1.2	0.9-1.0	1.0-1.1
Date Sampled		3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil
Date digested	-	22/06/2015	22/06/2015	22/06/2015
Date analysed	-	22/06/2015	22/06/2015	22/06/2015
Boron	mg/kg	<3	<3	<3

Misc Inorg - Soil						
Our Reference:	UNITS	129059-A-6	129059-A-7	129059-A-8	129059-A-10	129059-A-12
Your Reference	----------	TP7	TP8	TP9	TP10	TP12
Depth	----------	0.1-0.15	1.0-1.2	0.1-0.3	1.0-1.1	1.0-1.1
Date Sampled		2/06/2015	2/06/2015	2/06/2015	2/06/2015	2/06/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	25/06/2015	25/06/2015	25/06/2015	25/06/2015	25/06/2015
Date analysed	-	25/06/2015	25/06/2015	25/06/2015	25/06/2015	25/06/2015
Total Organic Carbon (Walkley Black)	mg/kg	12,000	2,600	20,000	1,300	2,200

Misc Inorg - Soil				
Our Reference:	UNITS	129059-A-13	129059-A-15	129059-A-17
Your Reference	----------	MW2	TP14	MW3
Depth	----------	1.0-1.2	0.9-1.0	1.0-1.1
Date Sampled		3/06/2015	3/06/2015	3/06/2015
Type of sample		Soil	Soil	Soil
Date prepared	-	25/06/2015	25/06/2015	25/06/2015
Date analysed	-	25/06/2015	25/06/2015	25/06/2015
Total Organic Carbon (Walkley Black)	mg/kg	2,500	2,600	2,000

Method ID	Methodology Summary
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Inorg-036	Total Organic Carbon - A titrimetric method that measures the oxidisable organic content of soils. Based upon Walkley/Black and 'Rayment and Lyons 2011'.

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date digested	-			05/06/2015	[NT]	[NT]	LCS-7	05/06/2015
Date analysed	-			05/06/2015	[NT]	[NT]	LCS-7	05/06/2015
Boron	mg/kg	3	Metals-020 ICP-AES	<3	[NT]	[NT]	LCS-7	93%
QUALITY CONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			25/06/2015	129059-A-6	25/06/2015 || 25/06/2015	LCS-1	25/06/2015
Date analysed	-			25/06/2015	129059-A-6	25/06/2015 || 25/06/2015	LCS-1	25/06/2015
Total Organic Carbon (Walkley Black)	mg/kg	1000	Inorg-036	<1000	129059-A-6	12000 || 12000 || RPD: 0	LCS-1	99%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
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Perth Lab - MPL Laboratories
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Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
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Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - Envirolab Services
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Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 0406 350 706 / adelaide@envirolab.com.au

Client: Consulting Earth Scientists (CES)

Contact Person: Jack Dobson

Project Mgr: Jack Dobson

Sampler: Wesley South

Address: 55 Grandview Street, Pymble, NSW 2073

Phone: (02) 8569 2200 **Mob:** 0427 110 715

Email: jack.dobson@consultingearth.com.au

Client Project Name / Number / Site etc (ie report title): CES150404-EXC-SYDNEY ZOO

PO No.:

Envirolab Quote No. :

Date results required:

Or choose: standard / same day / 1 day / 2 day / 3 day

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Report format: esdat / equis /

Lab Comments:

Sample information

Tests Required

Envirolab Sample ID	Client Sample ID or information	Depth (Metres)	Date sampled	Type of sample	Combination 5a	Soil Fertility Basic	Comments
1	TP1_0.1-0.15	0.1-0.15	3/06/2015	Soil	x		Provide as much information about the sample as you can
N.R 2	MW3_1.0-1.1	1.0-1.1	2/06/2015	Soil	x	x	
2 3	TP3_0.1-0.15	0.1-0.15	2/06/2015	Soil	x		
3 4	TP4_1.0-1.1 (KEVIN)	1.0-1.1	2/06/2015	Soil	x		
4 5	TP5_0.1-0.15 0.2 (KEVIN)	0.1-0.15	2/06/2015	Soil	x		
5 6	TP6_1.0-1.1 (KEVIN)	1.0-1.1	3/06/2015	Soil	x		
6 7	TP7_0.1-0.15	0.1-0.15	2/06/2015	Soil	x	x	
7 8	TP8_1.0-1.1 (KEVIN)	1.0-1.1	2/06/2015	Soil	x	x	
8	TP9_0.1-0.15 3 (KEVIN)	0.1-0.15	2/06/2015	Soil	x	x	
9	MW1_0.1-0.15	0.1-0.15	2/06/2015	Soil	x		
10	TP10_1.0-1.1	1.0-1.1	2/06/2015	Soil	x	x	
11	TP11_1.0-1.1 0.5 (KEVIN)	1.0-1.1	2/06/2015	Soil	x		
12	TP12_1.0-1.1	1.0-1.1	2/06/2015	Soil	x	x	

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

Job No: 129059
Date Received: 4/6/15
Time Received: 9:05
Received by: KW
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (Company):

Print Name:

Date & Time:

Signature:

Received by (Company): ENS

Print Name: Kevin Wang

Date & Time: 9:05 4/6/15

Signature:

Lab use only:

Samples Received: Cool or Ambient (circle one)

Temperature Received at: **(if applicable)**

Transported by: Hand delivered / courier

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

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Project Mgr: Jack Dobson
Sampler: Wesley South
Address: 55 Grandview Street, Pymble, NSW 2073
Phone: (02) 8569 2200 **Mob:** 0427 110 715
Email: jack.dobson@consultingearth.com.au

Client Project Name / Number / Site etc (ie report title): CES150404-EXC-SYDNEY ZOO
PO No.:
Envirolab Quote No. :
Date results required:
Or choose: standard / same day / 1 day / 2 day / 3 day
Note: Inform lab in advance if urgent turnaround is required - surcharges apply
Report format: esdat / equis /
Lab Comments:

Sample information | **Tests Required** | **Comments**

Envirolab Sample ID	Client Sample ID or information	Depth (Metres)	Date sampled	Type of sample	Combination 5a	Soil Fertility Basic	TRH, BTEX, PAH, Heavy Metals	Comments
13	MW2_1.0-~~1.10~~ (Kevin)	1.0-1.1	3/06/2015	Soil		x		
14	TP13_0.1-~~0.15~~ 0.2 (Kevin)	0.1-0.15	3/06/2015	Soil	x			
15	TP14_~~1.0-1.1~~ 0.1-0.15 (Kevin)	0.1-0.15	3/06/2015	Soil		x		
16	~~TP1_1.0-1.1~~ QC101 (Kevin)	1.0-1.1	3/06/2015	Soil	x			Please rename to QC101
~~16~~	TP8_0.1-0.15	0.1-0.15	3/06/2015	Soil			x	Please send to ALS
								129059

Relinquished by (Company):
Print Name:
Date & Time:
Signature:

Received by (Company): ALS
Print Name: Kevin Wang
Date & Time: ~~10~~ 9:05 04/6/15
Signature:

Lab use only:
Samples Received: Cool or Ambient (circle one)
Temperature Received at: (if applicable)
Transported by: Hand delivered / courier

QA/QC Compliance Assessment for DQO Reporting

Work Order	: **ES1523381**	Page	: 1 of 4
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: JACK DOBSON	Telephone	: +61-2-8784 8555
Project	: CES150404-EXC-SYDNEY ZOO	Date Samples Received	: 04-Jun-2015
Site	: ----	Issue Date	: 12-Jun-2015
Sampler	: ----	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103)							
TP8_0.1-0.15	**03-Jun-2015**	**----**	----	----	**09-Jun-2015**	17-Jun-2015	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
TP8_0.1-0.15	**03-Jun-2015**	**09-Jun-2015**	30-Nov-2015	✓	**10-Jun-2015**	30-Nov-2015	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
TP8_0.1-0.15	**03-Jun-2015**	**09-Jun-2015**	01-Jul-2015	✓	**11-Jun-2015**	01-Jul-2015	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071)							
TP8_0.1-0.15	**03-Jun-2015**	**09-Jun-2015**	17-Jun-2015	✓	**10-Jun-2015**	19-Jul-2015	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
TP8_0.1-0.15	**03-Jun-2015**	**09-Jun-2015**	17-Jun-2015	✓	**09-Jun-2015**	19-Jul-2015	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
TP8_0.1-0.15	**03-Jun-2015**	**09-Jun-2015**	17-Jun-2015	✓	**09-Jun-2015**	17-Jun-2015	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	19	**10.53**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	11	**18.18**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	2	14	**14.29**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	**14.29**	**10.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	11	**9.09**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	14	**7.14**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	**14.29**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	11	**9.09**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	14	**7.14**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	**14.29**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	11	**9.09**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	EP071	1	14	**7.14**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	**14.29**	**5.00**	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.

Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
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Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
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Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - Envirolab Services
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Ph 0406 350 706 / adelaide@envirolab.com.au

Client: Consulting Earth Scientists (CES)
Contact Person: Jack Dobson
Project Mgr: Jack Dobson
Sampler: Wesley South
Address: 55 Grandview Street, Pymble, NSW 2073
Phone: (02) 8569 2200 **Mob:** 0427 110 715
Email: jack.dobson@consultingearth.com.au

Client Project Name / Number / Site etc (ie report title): CES150404-EXC-SYDNEY ZOO
PO No.:
Envirolab Quote No. :
Date results required:
Or choose: standard / same day / 1 day / 2 day / 3 day
Note: Inform lab in advance if urgent turnaround is required - surcharges apply
Report format: esdat / equis /
Lab Comments:

Sample information | **Tests Required** | **Comments**

Envirolab Sample ID	Client Sample ID or information	Depth (Metres)	Date sampled	Type of sample	Combination 5a	Soil Fertility Basic	TRH, BTEX, PAH, Heavy Metals	Comments
	MW2_1.0-1.10	1.0-1.1	3/06/2015	Soil		x		Provide as much information about the sample as you can
	TP13_0.1-0.15	0.1-0.15	3/06/2015	Soil	x			
	TP14_1.0-1.1	0.1-0.15	3/06/2015	Soil		x		
	TP1_1.0-1.1	1.0-1.1	3/06/2015	Soil	x			
10	TP8_0.1-0.15	0.1-0.15	3/06/2015	Soil			x	Please rename to QC101 Please send to ALS

Environmental Division Sydney
Work Order Reference
ES1523381
Telephone : +61-2-8784 8555

129059

Relinquished by (Company): EL
Print Name: PT
Date & Time: 4/6/15 12:50
Signature: PT

Received by (Company): ALS
Print Name: Kevin Wang
Date & Time: 9:05 04/6/15
Signature:

Lab use only:
Samples Received: Cool or Ambient (circle one)
Temperature Received at: (if applicable)
Transported by: Hand delivered / courier

Soil Stockpile 4/6/15 15:20 10?

QUALITY CONTROL REPORT

Work Order	: **ES1523381**	Page	: 1 of 8
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: JACK DOBSON	Contact	:
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: jack.dobson@consultingearth.com.au	E-mail	:
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 9983 0582	Facsimile	: +61-2-8784 8500
Project	: CES150404-EXC-SYDNEY ZOO	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 04-Jun-2015
C-O-C number	: ----	Date Analysis Commenced	: 09-Jun-2015
Sampler	: ----	Issue Date	: 12-Jun-2015
Site	: ----	No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Shobhna Chandra	Metals Coordinator	Sydney Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 120969)									
ES1523376-008	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.8	10.5	2.20	0% - 50%
ES1523382-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	17.6	18.4	4.57	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 121094)									
ES1523379-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	10	17.2	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	3	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	85	85	0.00	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	25	28	10.1	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	26	27	0.00	No Limit
ES1523382-009	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	14	19.3	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	7	22.7	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	16	25.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	23	32	31.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	105	114	8.91	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 121093)									
ES1523379-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1523382-009	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 120618)									
ES1523454-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 120618) - continued									
ES1523454-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1523326-046	Anonymous	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 119577)									
ES1523389-004	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 120617)									
ES1523454-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1523326-046	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 119577)									
ES1523389-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 120617)									
ES1523454-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 120617) - continued									
ES1523326-046	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 119577)									
ES1523389-004	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 121094)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	109	92	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	99.5	87	121
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	97.8	80	136
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	103	93	127
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	100	86	124
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	106	93	131
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	101	81	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 121093)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	79.7	70	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 120618)								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	103	79	123
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	98.0	77	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	105	79	123
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	90.5	73	121
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	92.2	76	122
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	91.0	70	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	95.2	72	114
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	95.4	77	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	105	81	123
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	93.6	72	113
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	97.5	79	123
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	105	77	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	96.8	71	113
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	109	80	124
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	107	79	123
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	99.2	79	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 119577)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	102	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 120617)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	104	71	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	250 mg/kg	113	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	105	64	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 119577)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 119577) - continued								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	98.0	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 120617)								
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	111	70	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	115	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	200 mg/kg	84.4	63	131
EP080: BTEXN (QCLot: 119577)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	98.2	62	116
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	106	58	118
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	109	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	112	62	138
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	110	60	120
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	113	62	128

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 121094)							
ES1523379-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	91.1	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.2	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	100	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	104	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	97.8	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	98.1	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	96.1	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 121093)							
ES1523379-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	87.2	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 120618)							
ES1523326-046	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	94.1	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 119577)							
ES1523389-004	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	93.4	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 120617)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 120617) - continued							
ES1523326-046	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	94.2	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	104	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	123	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 119577)							
ES1523389-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	85.7	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 120617)							
ES1523326-046	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	860 mg/kg	99.0	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	120	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	111	52	132
EP080: BTEXN (QCLot: 119577)							
ES1523389-004	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	86.8	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	98.8	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	97.3	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	89.2	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	99.6	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	101	70	130

CHAIN OF CUSTODY - Client

18297

ENVIROLAB GROUP - National Phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
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Adelaide Lab - Envirolab Services
7 Palmerton Road Windsor Gardens, SA 5087
Ph 0406 350 706 / adelaide@envirolab.com.au

Client: CES	**Client Project Name / Number / Site etc (ie report title):** CES150404-LTC
Contact Person: WESLEY SOUTH	**PO No.:**
Project Mgr: JACK DOBSON	**Envirolab Quote No. :**
Sampler: VS	**Date results required:**
Address: PYMBLE	**Or choose:** standard / same day / 1 day / 2 day / 3 day
	Note: Inform lab in advance if urgent turnaround is required - surcharges apply
Phone: **Mob:** 0427050336	**Lab comments:**
Fax: jack.dobson@consultingearth.com.au	
Email: wesley.south@consultingearth.com.au	

Sample information					Tests Required	Comments
Envirolab Sample ID	**Client Sample ID or information**	**Depth**	**Date sampled**	**Type of sample**	Combo 9	**Provide as much information about the sample as you can**
1	MW01		11/6/15	WATER	X	
2	MW03		11/6	"	X	
3	QAQC01		11/6	"	X	

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

Job No: 129438
Date Received: 12/6/15
Time Received: 12.55
Received by: LBR
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (company): CES		**Received by (company):** ECS	
Print Name: WESLEY SOUTH		**Print Name:** LBR	
Date & Time: 12/6/15		**Date & Time:** 12/6/15 12.55	
Signature:		**Signature:**	

Lab use only:
Samples Received: Cool or Ambient (circle one)
Temperature Received at: (if applicable)
Transported by: Hand delivered / courier

White - Lab copy / Blue - Client copy / Pink - Retain in Book

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
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CERTIFICATE OF ANALYSIS 129438

Client:
Consulting Earth Scientists Pty Ltd
Suite 3, Level 1
55 Grandview Street
Pymble
NSW 2073

Attention: Wesley South, Jack Dobson

Sample log in details:

Your Reference:	**CES150404-EXC**
No. of samples:	3 Waters
Date samples received / completed instructions received	12/06/2015 / 12/06/2015

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: / Issue Date:	19/06/15 / 17/06/15
Date of Preliminary Report:	Not Issued

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

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Water				
Our Reference:	UNITS	129438-1	129438-2	129438-3
Your Reference	----------	MW01	MW03	QAQC01
Date Sampled	----------	11/06/2015	11/06/2015	11/06/2015
Type of sample		Water	Water	Water
Date extracted	-	12/06/2015	12/06/2015	12/06/2015
Date analysed	-	13/06/2015	13/06/2015	13/06/2015
$TRHC_6$ - C_9	µg/L	<10	<10	<10
$TRHC_6$ - C_{10}	µg/L	<10	<10	<10
$TRHC_6$ - C_{10} less BTEX (F1)	µg/L	<10	<10	<10
Benzene	µg/L	<1	<1	<1
Toluene	µg/L	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2
o-xylene	µg/L	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1
Surrogate Dibromofluoromethane	%	102	103	102
Surrogate toluene-d8	%	94	94	93
Surrogate 4-BFB	%	95	94	94

svTRH (C10-C40) in Water				
Our Reference:	UNITS	129438-1	129438-2	129438-3
Your Reference	----------	MW01	MW03	QAQC01
Date Sampled	----------	11/06/2015	11/06/2015	11/06/2015
Type of sample		Water	Water	Water
Date extracted	-	16/06/2015	16/06/2015	16/06/2015
Date analysed	-	16/06/2015	16/06/2015	16/06/2015
$TRHC_{10}$ - C_{14}	µg/L	<50	<50	<50
$TRHC_{15}$ - C_{28}	µg/L	<100	<100	<100
$TRHC_{29}$ - C_{36}	µg/L	<100	<100	<100
$TRH>C_{10}$ - C_{16}	µg/L	<50	<50	<50
$TRH>C_{10}$ - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50
$TRH>C_{16}$ - C_{34}	µg/L	<100	<100	<100
$TRH>C_{34}$ - C_{40}	µg/L	<100	<100	<100
Surrogate o-Terphenyl	%	91	93	95

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	129438-1 MW01 11/06/2015 Water	129438-2 MW03 11/06/2015 Water	129438-3 QAQC01 11/06/2015 Water
Date extracted	-	16/06/2015	16/06/2015	16/06/2015
Date analysed	-	16/06/2015	16/06/2015	16/06/2015
Naphthalene	µg/L	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1
Fluorene	µg/L	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1
Anthracene	µg/L	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1
Pyrene	µg/L	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1
Chrysene	µg/L	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	97	93	104

OCP in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	129438-1 MW01 11/06/2015 Water	129438-2 MW03 11/06/2015 Water	129438-3 QAQC01 11/06/2015 Water
Date extracted	-	16/06/2015	16/06/2015	16/06/2015
Date analysed	-	16/06/2015	16/06/2015	16/06/2015
HCB	µg/L	<0.2	<0.2	<0.2
alpha-BHC	µg/L	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2
Surrogate TCMX	%	94	87	94

PCBs in Water				
Our Reference:	UNITS	129438-1	129438-2	129438-3
Your Reference	----------	MW01	MW03	QAQC01
Date Sampled	----------	11/06/2015	11/06/2015	11/06/2015
Type of sample		Water	Water	Water
Date extracted	-	16/06/2015	16/06/2015	16/06/2015
Date analysed	-	16/06/2015	16/06/2015	16/06/2015
Aroclor 1016	µg/L	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2
Surrogate TCLMX	%	94	87	94

Total Phenolics in Water				
Our Reference:	UNITS	129438-1	129438-2	129438-3
Your Reference	----------	MW01	MW03	QAQC01
Date Sampled	----------	11/06/2015	11/06/2015	11/06/2015
Type of sample		Water	Water	Water
Date extracted	-	12/06/2015	12/06/2015	12/06/2015
Date analysed	-	12/06/2015	12/06/2015	12/06/2015
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05	<0.05

HM in water - total				
Our Reference:	UNITS	129438-1	129438-2	129438-3
Your Reference	----------	MW01	MW03	QAQC01
Date Sampled	----------	11/06/2015	11/06/2015	11/06/2015
Type of sample		Water	Water	Water
Date prepared	-	15/06/2015	15/06/2015	15/06/2015
Date analysed	-	15/06/2015	15/06/2015	15/06/2015
Arsenic-Total	µg/L	4	3	3
Cadmium-Total	µg/L	<0.1	0.2	<0.1
Chromium-Total	µg/L	6	<1	6
Copper-Total	µg/L	18	1	15
Lead-Total	µg/L	7	<1	6
Mercury-Total	µg/L	<0.05	<0.05	<0.05
Nickel-Total	µg/L	10	7	9
Zinc-Total	µg/L	51	30	46

Miscellaneous Inorganics				
Our Reference:	UNITS	129438-1	129438-2	129438-3
Your Reference	----------	MW01	MW03	QAQC01
Date Sampled	----------	11/06/2015	11/06/2015	11/06/2015
Type of sample		Water	Water	Water
Date prepared	-	12/06/2015	12/06/2015	12/06/2015
Date analysed	-	12/06/2015	12/06/2015	12/06/2015
Total Cyanide	mg/L	<0.004	<0.004	<0.004

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-014	Cyanide - free, total, weak acid dissociable by segmented flow analyser (in line dialysis with colourimetric finish). Solids are extracted in a caustic media prior to analysis.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/06/2015	[NT]	[NT]	LCS-W3	12/06/2015
Date analysed	-			13/06/2015	[NT]	[NT]	LCS-W3	13/06/2015
TRHC$_6$ - C$_9$	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W3	110%
TRHC$_6$ - C$_{10}$	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W3	110%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	110%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	111%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	112%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W3	109%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W3	111%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	100	[NT]	[NT]	LCS-W3	99%
Surrogate toluene-d8	%		Org-016	94	[NT]	[NT]	LCS-W3	99%
Surrogate 4-BFB	%		Org-016	95	[NT]	[NT]	LCS-W3	102%
QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/06/2015	129438-1	16/06/2015 || 16/06/2015	LCS-W2	16/06/2015
Date analysed	-			16/06/2015	129438-1	16/06/2015 || 16/06/2015	LCS-W2	16/06/2015
TRHC$_{10}$ - C$_{14}$	µg/L	50	Org-003	<50	129438-1	<50 || <50	LCS-W2	99%
TRHC$_{15}$ - C$_{28}$	µg/L	100	Org-003	<100	129438-1	<100 || <100	LCS-W2	97%
TRHC$_{29}$ - C$_{36}$	µg/L	100	Org-003	<100	129438-1	<100 || <100	LCS-W2	103%
TRH>C$_{10}$ - C$_{16}$	µg/L	50	Org-003	<50	129438-1	<50 || <50	LCS-W2	99%
TRH>C$_{16}$ - C$_{34}$	µg/L	100	Org-003	<100	129438-1	<100 || <100	LCS-W2	97%
TRH>C$_{34}$ - C$_{40}$	µg/L	100	Org-003	<100	129438-1	<100 || <100	LCS-W2	103%
Surrogate o-Terphenyl	%		Org-003	81	129438-1	91 || 90 || RPD: 1	LCS-W2	70%
QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/06/2015	129438-1	16/06/2015 || 16/06/2015	LCS-W1	16/06/2015
Date analysed	-			16/06/2015	129438-1	16/06/2015 || 16/06/2015	LCS-W1	16/06/2015
Naphthalene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	LCS-W1	86%
Acenaphthylene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	LCS-W1	68%
Phenanthrene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	LCS-W1	73%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Anthracene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	LCS-W1	70%
Pyrene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	LCS-W1	74%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	[NR]	[NR]
Chrysene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	LCS-W1	74%
Benzo(b,j+k) fluoranthene	µg/L	2	Org-012 subset	<2	129438-1	<2 || <2	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	LCS-W1	84%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	129438-1	<1 || <1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	104	129438-1	97 || 91 || RPD: 6	LCS-W1	91%
QUALITY CONTROL OCP in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/06/2015	129438-1	16/06/2015 || 16/06/2015	LCS-W1	16/06/2015
Date analysed	-			16/06/2015	129438-1	16/06/2015 || 16/06/2015	LCS-W1	16/06/2015
HCB	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	[NR]	[NR]
alpha-BHC	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	LCS-W1	80%
gamma-BHC	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	[NR]	[NR]
beta-BHC	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	LCS-W1	73%
Heptachlor	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	LCS-W1	74%
delta-BHC	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	[NR]	[NR]
Aldrin	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	LCS-W1	82%
Heptachlor Epoxide	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	LCS-W1	74%
gamma-Chlordane	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	[NR]	[NR]
alpha-Chlordane	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	[NR]	[NR]
Endosulfan I	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	[NR]	[NR]
pp-DDE	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	LCS-W1	79%
Dieldrin	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	LCS-W1	80%
Endrin	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	LCS-W1	79%
pp-DDD	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	LCS-W1	71%
Endosulfan II	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	[NR]	[NR]
pp-DDT	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	[NR]	[NR]
Endrin Aldehyde	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	[NR]	[NR]
Endosulfan Sulphate	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	LCS-W1	78%
Methoxychlor	µg/L	0.2	Org-005	<0.2	129438-1	<0.2 || <0.2	[NR]	[NR]

QUALITY CONTROL OCP in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Surrogate TCMX	%		Org-005	89	129438-1	94 || 93 || RPD: 1	LCS-W1	74%
QUALITY CONTROL PCBs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/06/2015	129438-1	16/06/2015 || 16/06/2015	LCS-W1	16/06/2015
Date analysed	-			16/06/2015	129438-1	16/06/2015 || 16/06/2015	LCS-W1	16/06/2015
Aroclor 1016	µg/L	2	Org-006	<2	129438-1	<2 || <2	[NR]	[NR]
Aroclor 1221	µg/L	2	Org-006	<2	129438-1	<2 || <2	[NR]	[NR]
Aroclor 1232	µg/L	2	Org-006	<2	129438-1	<2 || <2	[NR]	[NR]
Aroclor 1242	µg/L	2	Org-006	<2	129438-1	<2 || <2	[NR]	[NR]
Aroclor 1248	µg/L	2	Org-006	<2	129438-1	<2 || <2	[NR]	[NR]
Aroclor 1254	µg/L	2	Org-006	<2	129438-1	<2 || <2	LCS-W1	89%
Aroclor 1260	µg/L	2	Org-006	<2	129438-1	<2 || <2	[NR]	[NR]
Surrogate TCLMX	%		Org-006	89	129438-1	94 || 93 || RPD: 1	LCS-W1	80%
QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/06/2015	[NT]	[NT]	LCS-W1	12/06/2015
Date analysed	-			12/06/2015	[NT]	[NT]	LCS-W1	12/06/2015
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	LCS-W1	103%
QUALITY CONTROL HM in water - total	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			15/06/2015	[NT]	[NT]	LCS-W1	15/06/2015
Date analysed	-			15/06/2015	[NT]	[NT]	LCS-W1	15/06/2015
Arsenic-Total	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	99%
Cadmium-Total	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W1	104%
Chromium-Total	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	91%
Copper-Total	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	97%
Lead-Total	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	101%
Mercury-Total	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	LCS-W1	100%
Nickel-Total	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	97%
Zinc-Total	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	103%

QUALITY CONTROL Miscellaneous Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			12/06/2015	[NT]	[NT]	LCS-W1	12/06/2015
Date analysed	-			12/06/2015	[NT]	[NT]	LCS-W1	12/06/2015
Total Cyanide	mg/L	0.004	Inorg-014	<0.004	[NT]	[NT]	LCS-W1	113%

QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	129438-2	16/06/2015
Date analysed	-	[NT]	[NT]	129438-2	16/06/2015
TRH C_{10} - C_{14}	µg/L	[NT]	[NT]	129438-2	115%
TRH C_{15} - C_{28}	µg/L	[NT]	[NT]	129438-2	109%
TRH C_{29} - C_{36}	µg/L	[NT]	[NT]	129438-2	96%
TRH >C_{10} - C_{16}	µg/L	[NT]	[NT]	129438-2	115%
TRH >C_{16} - C_{34}	µg/L	[NT]	[NT]	129438-2	109%
TRH >C_{34} - C_{40}	µg/L	[NT]	[NT]	129438-2	96%
Surrogate o-Terphenyl	%	[NT]	[NT]	129438-2	75%

QUALITY CONTROL PAHs in Water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	129438-2	16/06/2015
Date analysed	-	[NT]	[NT]	129438-2	16/06/2015
Naphthalene	µg/L	[NT]	[NT]	129438-2	102%
Acenaphthylene	µg/L	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	[NT]	[NT]	129438-2	80%
Phenanthrene	µg/L	[NT]	[NT]	129438-2	85%
Anthracene	µg/L	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	[NT]	[NT]	129438-2	80%
Pyrene	µg/L	[NT]	[NT]	129438-2	83%
Benzo(a)anthracene	µg/L	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	[NT]	[NT]	129438-2	86%
Benzo(b,j+k)fluoranthene	µg/L	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	[NT]	[NT]	129438-2	102%
Indeno(1,2,3-c,d)pyrene	µg/L	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	[NT]	[NT]	129438-2	95%

QUALITY CONTROL OCP in water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	129438-2	16/06/2015
Date analysed	-	[NT]	[NT]	129438-2	16/06/2015
HCB	µg/L	[NT]	[NT]	[NR]	[NR]
alpha-BHC	µg/L	[NT]	[NT]	129438-2	100%
gamma-BHC	µg/L	[NT]	[NT]	[NR]	[NR]
beta-BHC	µg/L	[NT]	[NT]	129438-2	88%
Heptachlor	µg/L	[NT]	[NT]	129438-2	94%
delta-BHC	µg/L	[NT]	[NT]	[NR]	[NR]
Aldrin	µg/L	[NT]	[NT]	129438-2	103%
Heptachlor Epoxide	µg/L	[NT]	[NT]	129438-2	92%
gamma-Chlordane	µg/L	[NT]	[NT]	[NR]	[NR]
alpha-Chlordane	µg/L	[NT]	[NT]	[NR]	[NR]
Endosulfan I	µg/L	[NT]	[NT]	[NR]	[NR]
pp-DDE	µg/L	[NT]	[NT]	129438-2	99%
Dieldrin	µg/L	[NT]	[NT]	129438-2	99%
Endrin	µg/L	[NT]	[NT]	129438-2	99%
pp-DDD	µg/L	[NT]	[NT]	129438-2	98%
Endosulfan II	µg/L	[NT]	[NT]	[NR]	[NR]
pp-DDT	µg/L	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	µg/L	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	µg/L	[NT]	[NT]	129438-2	97%
Methoxychlor	µg/L	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%	[NT]	[NT]	129438-2	88%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

Appendix I
Soil and Groundwater Analytical Results Screening and QA / QC Data Acceptance Criteria

Table 1
Soil Analytical Results - Public Open Space Land Use Criteria
Sydney Zoo
CES-150405-EXC

				TRH - NEPM 2013						BTEXN							PAHs															Metals								
				C6 - C10 Fraction	C6 - C10 Fraction minus BTEX (F1)	C10 - C16 minus Naphthalene (F2)	>C10 - C14 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	Benzene	Toluene	Ethylbenzene	m&p-Xylene	ortho-Xylene	Total Xylenes	Naphthalene	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(b) & Benzo(k)fluoranthene	Benzo(a)pyrene TEQ (WHO) - Sum	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Phosphorous
LOR				10	10	50	50	100	100	0.2	0.5	0.5	0.5	0.5		1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5	1	2	5	5	2	5	0.1	0.1
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NEPM - HSL C Recreational / Open Space 0-1m (2013)											NL	NL			NL	NL																							
NEPM - HIL C Recreational (2013)																																300	90	300	17000	600	1200	30000	80	80
NEPM - EIL - Urban Residential and Public Open Space (2013)															170	170																100		190	100	1100	30	290		
NEPM - ESL - TPH Fractions Urban Residential and Public Open Space (2013)					180	120		300	2800	50	85	70			180											0.7													
Sample Location	**Date Sampled**	**Sample ID**	**Sample Type**																																					
TP1	3/06/2015	TP1-0.1-0.15m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	1	1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 4	< 0.4	**9**	**5**	**9**	**3**	**7**	< 0.1	-
TP3	2/06/2015	TP3-0.1-0.15m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	**6**	< 0.4	**24**	**10**	**17**	**9**	**17**	< 0.1	-
TP4	2/06/2015	TP4-1.0-1.2m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 4	< 0.4	**3**	**10**	**6**	**4**	**21**	< 0.1	-
TP5	2/06/2015	TP5-0.1-0.15m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	**8**	< 0.4	**25**	**12**	**19**	**7**	**16**	< 0.1	-
TP6	2/06/2015	TP6-1.0-1.1m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 4	< 0.4	**10**	**25**	**13**	**10**	**46**	< 0.1	190
TP7	2/06/2015	TP7-0.1-0.15m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	**8**	< 0.4	**23**	**8**	**22**	**7**	**26**	< 0.1	160
TP8	2/06/2015	TP8-1.0-1.2m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	**10**	< 0.4	**12**	**25**	**8**	**12**	**50**	< 0.1	160
TP9	3/06/2015	TP9-0.1-0.15m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	**9**	< 0.4	**23**	**21**	**22**	**10**	**37**	< 0.1	-
MW1	2/06/2015	MW1-0.1-0.15m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	**6**	< 0.4	**28**	**6**	**20**	**5**	**13**	< 0.1	-
TP10	3/06/2015	TP10-1.0-1.1m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	**6**	< 0.4	**12**	**26**	**17**	**12**	**55**	< 0.1	1,800
TP11	3/06/2015	MW3-1.0-1.1m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	**8**	< 0.4	**8**	**20**	**10**	< 1	**17**	< 0.1	-
TP12	2/06/2015	TP7-0.1-0.15m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 4	**0.5**	**13**	**32**	**11**	**27**	**66**	< 0.1	**630**
TP13	2/06/2015	TP8-1.0-1.2m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	8	< 0.4	**20**	**10**	**19**	**7**	**19**	< 0.1	-
QC101	2/06/2015	TP9-0.1-0.15m	FD	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	**6**	< 0.4	**14**	**15**	**16**	**6**	**19**	< 0.1	-
MW3	2/06/2015	MW1-0.1-0.15m	N	< 25	< 25	< 50	< 50	< 100	< 100	< 0.2	< 0.5	< 1	< 2	< 1	< 3	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.1	< 0.1	< 0.2	< 0.5	< 4	< 0.4	**5.0**	**21**	**10**	**5**	**26**	< 0.1	**40**
TP14	2/06/2015	TP14-0.9-1.0m	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240
MW2	2/06/2015	MW2-1.0-1.2m	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170

Legend:
- Not analysed / not calculated
* LOR Exceeds Guideline Trigger Value
Sample Type: N - Primary, FD -
Concentrations for Chromium are Total Chroimum Values. Adopted IL screens
Chromium III

Action Levels:

NEPM - HSL C Recreational / Open Space 0-1m (2013)
NEPM - HIL C Recreational (2013)
NEPM - EIL - Urban Residential and Public Open Space (2013)
NEPM - ESL - TPH Fractions Urban Residential and Public Open Space (2013)

Table 1
Soil Analytical Results - Public Open Space Land Use Criteria
Sydney Zoo
CES-150405-EXC

				OCPs																				PCBs				
				cis-Chlordane	Endrin aldehyde	Methoxychlor	trans-Chlordane	alpha-BHC	beta-BHC	gamma-BHC	delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	alpha-Endosulfan	4,4-DDE	Dieldrin	Endrin	beta-Endosulfan	4,4-DDD	Endosulfan sulfate	4,4-DDT	Hexachlorobenzene (HCB)	Aroclor 1016	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254
LOR				0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.1	0.1	0.1	0.1	0.1
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NEPM - HSL C Recreational / Open Space 0-1m (2013)																												
NEPM - HIL C Recreational (2013)				70	20	400						10	10		340	400	10	10	340	400	340	400	10	1	1	1	1	1
NEPM - EIL - Urban Residential and Public Open Space (2013)																						180						
NEPM - ESL - TPH Fractions Urban Residential and Public Open Space (2013)																												
Sample Location	**Date Sampled**	**Sample ID**	**Sample Type**																									
TP1	3/06/2015	TP1-0.1-0.15m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TP3	2/06/2015	TP3-0.1-0.15m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TP4	2/06/2015	TP4-1.0-1.2m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TP5	2/06/2015	TP5-0.1-0.15m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TP6	2/06/2015	TP6-1.0-1.1m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TP7	2/06/2015	TP7-0.1-0.15m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TP8	2/06/2015	TP8-1.0-1.2m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TP9	3/06/2015	TP9-0.1-0.15m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
MW1	2/06/2015	MW1-0.1-0.15m	N																									
TP10	3/06/2015	TP10-1.0-1.1m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TP11	3/06/2015	MW3-1.0-1.1m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TP12	2/06/2015	TP7-0.1-0.15m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TP13	2/06/2015	TP8-1.0-1.2m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
QC101	2/06/2015	TP9-0.1-0.15m	FD	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
MW3	2/06/2015	MW1-0.1-0.15m	N	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TP14	2/06/2015	TP14-0.9-1.0m	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW2	2/06/2015	MW2-1.0-1.2m	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Legend:
- Not analysed / not calculated
* LOR Exceeds Guideline Trigger Value
Sample Type: N - Primary, FD -
Concentrations for Chromium are Total Chroimum Values. Adopted IL screens
Chromium III

Action Levels:

NEPM - HSL C Recreational / Open Space 0-1m (2013)
NEPM - HIL C Recreational (2013)
NEPM - EIL - Urban Residential and Public Open Space (2013)
NEPM - ESL - TPH Fractions Urban Residential and Public Open Space (2013)

Table 2
Groundwater Analytical Results - Environmental Investigation Levels
Groundwater Analytical Results - Public Open Space Land Use Criteria
Sydney Zoo
CES-150405-EXC

			Sample Location	**MW1**	**MW3**	**MW3**
			Primary Sample	MW01	MW03	MW03
			Sample I.D	MW01	MW03	QAQC01
			Sample Date	11/06/2015	11/06/2015	11/06/2015
			Sample Type	PS	PS	FD
Analyte	**LOR**	**Units**	**ANZECC 2000 Protection of Aquatic Ecosystems (Freshwater) - 95% Level of Protection[1]**			
TRH - NEPM 2013						
C6 - C9 Fraction	20	ug/l	-	< 10	< 10	< 10
C6 - C10 Fraction minus BTEX (F1)	20	ug/l	-	< 10	< 10	< 10
>C10 - C16 Fraction	50	ug/l	-	< 50	< 50	< 50
>C10 - C16 Fraction minus Naphthalene (F2)	Calculated	ug/l	-	< 50	< 50	< 50
>C16 - C34 Fraction	100	ug/l	-	< 100	< 100	< 100
>C34 - C40 Fraction	100	ug/l	-	< 100	< 100	< 100
>C10 - C40 Fraction (sum)	100	ug/l	-	< 100	< 100	< 100
BTEXN						
Benzene	1	ug/l	**950**	< 1	< 1	< 1
Toluene	2	ug/l	**180[2]**	< 1	< 1	< 1
Ethylbenzene	2	ug/l	**80[2]**	< 1	< 1	< 1
m&p-Xylene	2	ug/l	**200***	< 2	< 2	< 2
ortho-Xylene	2	ug/l	**350**	< 1	< 1	< 1
Total Xylenes	2	ug/l	-	< 2	< 2	< 2
Sum of BTEX	1	ug/l	-	< 1	< 1	< 1
Naphthalene	5	ug/l	**16**	< 1	< 1	< 1
Lead						
Lead	1	ug/l	**3.4**	**7**	< 1	**6**
PAHs						
Acenaphthene	1	ug/l	-	< 1	< 1	< 1
Acenaphthylene	1	ug/l	-	< 1	< 1	< 1
Anthracene	1	ug/l	**0.4[2]**	< 1	< 1	< 1
Benz(a)anthracene	1	ug/l	-	< 1	< 1	< 1
Benzo(a)pyrene	0.5[3]	ug/l	**0.2[2]**	< 0.5	< 1	< 1
Benzo(b)fluoranthene	2	ug/l	-	< 2	< 2	< 2
Benzo(g,h,i)perylene	1	ug/l	-	< 1	< 1	< 1
Benzo(k)fluoranthene	2	ug/l	-	< 2	< 2	< 2
Chrysene	1	ug/l	-	< 1	< 1	< 1
Dibenz(a,h)anthracene	1	ug/l	-	< 1	< 1	< 1
Fluoranthene	1	ug/l	**1.4[2]**	< 1	< 1	< 1
Fluorene	1	ug/l	-	< 1	< 1	< 1
Indeno(1,2,3,cd)pyrene	1	ug/l	-	< 1	< 1	< 1
Naphthalene	1	ug/l	**16**	< 1	< 1	< 1
2-methylnaphthalene	0.1	ug/l	-	< 1	< 1	< 1
1-methylnaphthalene	0.1	ug/l	-	< 1	< 1	< 1
Phenanthrene	1	ug/l	**2[2]**	< 1	< 1	< 1
Pyrene	1	ug/l	-	< 1	< 1	< 1
Sum of polycyclic aromatic hydrocarbons	0.5	ug/l	-	< 1	< 1	< 1
Benzo(a)pyrene TEQ (zero)	0.5	ug/l	-	< 1	< 1	< 1
OCPs						
HCB	< 0.2	ug/l	**320**	< 0.2	< 0.2	< 0.2
alpha-BHC	< 0.2	ug/l	-	< 0.2	< 0.2	< 0.2
gamma-BHC	< 0.2	ug/l	-	< 0.2	< 0.2	< 0.2
beta-BHC	< 0.2	ug/l	**2[2]**	< 0.2	< 0.2	< 0.2
Heptachlor	< 0.2	ug/l	-	< 0.2	< 0.2	< 0.2
delta-BHC	< 0.2	ug/l	**2[2]**	< 0.2	< 0.2	< 0.2
Aldrin	< 0.2	ug/l	-	< 0.2	< 0.2	< 0.2
Endrin	< 0.2	ug/l	**490**	< 0.2	< 0.2	< 0.2
pp-DDD	< 0.2	ug/l	**160**	< 0.2	< 0.2	< 0.2
Endosulfan II	< 0.2	ug/l	**34[2]**	< 0.2	< 0.2	< 0.2
pp-DDT	< 0.2	ug/l	-	< 0.2	< 0.2	< 0.2
Endrin Aldehyde	< 0.2	ug/l	**20**	< 0.2	< 0.2	< 0.2
Endosulfan Sulphate	< 0.2	ug/l	-	< 0.2	< 0.2	< 0.2
Methoxychlor	< 0.2	ug/l	-	< 0.2	< 0.2	< 0.2

Legend
TPH: Total petroleum hydrocarbons
TRH: Total recoverable hydrocarbons
BTEXN: Benzene, toluene, ethylbenzene, xylenes and naphthalene
PAHs: Polycyclic aromatic hydrocarbons
PS: Primary sample, FD: Field duplicate, FT: Field triplicate
LOR: Limit of reporting
ND: Not detected
1: High reliability trigger value
2: Low reliability trigger value
3: Investigation criteria less than the laboratory LOR
-': No guideline / Not analysed
ug/l: micrograms per litre
* Guideline for p-xylene only

Exceeds the ANZECC 2000 Protection of Aquatic Ecosystems Freshwater 95% Level of Protection